



2201 Broadway, Suite 101
Oakland, CA 94612-3023
Tel. 510.740.5800
Fax. 510.663.3315

October 21, 1999
Project 791639

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

Re: Quarterly Groundwater Monitoring Results, Third Quarter 1999, for Chateau Manor
Apartments, located at 724 Lewelling Boulevard, San Leandro, California

Dear Mr. Sullivan:

On behalf of ARCO Products Company (ARCO), Pinnacle Environmental Solutions, a member of The IT Group (Pinnacle), is submitting the attached laboratory analytical results for groundwater samples collected from wells MW-9 and MW-10 during the third quarter of 1999. These wells are located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. The groundwater samples were collected during quarterly sampling of ARCO Service Station No. 0601, located at 712 Lewelling Boulevard, San Leandro, California. 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,

Pinnacle

A handwritten signature in black ink, appearing to read 'Glen VanderVeen', written over a horizontal line.

Glen VanderVeen
Project Manager

Attachments: Figure 1	Site Plan
Appendix A	Copies of Certified Analytical Report and Chain-of Custody- Documentation, Wells MW-9 and MW-10, Third Quarter 1999

cc: Scott Seery, ACHCSA
Paul Supple, ARCO Products Company
File

DRAWN BY
K. Black

PROJECT
NUMBER 791639

10-14-99



LEWELLING BOULEVARD

DRIVEWAY

SIDEWALK

ARCO SERVICE
STATION 601

APPROXIMATE PROPERTY LINE

EXISTING
BUILDING

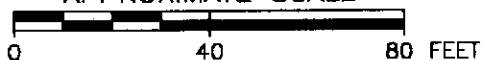
● MW-9

● MW-10

EXPLANATION

● Groundwater monitoring well

APPROXIMATE SCALE



CHATEAU MANOR APARTMENTS

FIGURE 1
SITE PLAN

724 LEWELLING BOULEVARD
SAN LEANDRO, CALIFORNIA

APPENDIX A

**COPIES OF CERTIFIED ANALYTICAL REPORT,
AND CHAIN-OF-CUSTODY DOCUMENTATION,
WELLS MW-9 AND MW-10
THIRD QUARTER 1999**



September 9, 1999

Service Request No.: S9902603

Mr. Glen Vanderveen
IT/EMCON
2201 Broadway, Suite 101
Oakland, CA 94612

RE: TO#24118.00/RAT8/601 SAN LEANDRO

Dear Mr. Vanderveen:

Enclosed are the results of the sample(s) submitted to our laboratory on August 25, 1999. All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply to the sample(s) analyzed. Columbia Analytical Services is not responsible for use of less than the complete report. Signature of this CAS Analytical Report confirms that pages 2 through 9, following, have been thoroughly reviewed and approved for release.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 1496, expiration: January 31, 2001).

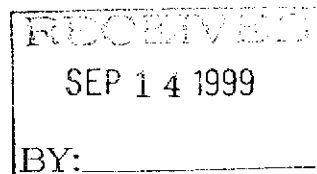
If you have any questions, please call me at (408) 748-9700.

Respectfully submitted,

Columbia Analytical Services, Inc.

Bernadette Troncales
Project Chemist

Greg Jordan
Laboratory Director



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: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-9(15)
Lab Code: S9902603-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/4/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/4/99	ND	

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-10(18)
Lab Code: S9902603-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/4/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/4/99	ND	

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S990903-WB4
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/3/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/3/99	ND	

Approved By: _____

Date: _____

QA/QC Report

Service Request: S9902603
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Units: PERCENT
Basis: NAPage 6

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/2/99

Lab Control/Duplicate Lab Control Sample Summary
BTE

Sample Name: Lab Control Sample
Lab Code: S990903-LCS, S990903-DLCS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	Percent Recovery										
			Spike Level				Sample Result	Spike Result				CAS Acceptance Limits	Relative Percent Difference
			MRL	MS	DMS	MS	DMS	MS	DMS	MS	DMS		
Benzene	EPA 5030	8020	0.5	25	25	ND	26	26	104	104	75-135	<1	
Toluene	EPA 5030	8020	0.5	25	25	ND	23	24	92	96	73-136	4	
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	25	26	100	104	69-142	4	

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/2/99

Lab Control/Duplicate Lab Control Sample Summary
TPH as Gasoline

Sample Name: Lab Control Sample

Units: ug/L (ppb)

Lab Code: S990903-LCS,

S990903-DLCS

Basis: NA

Test Notes:

Percent Recovery

Analyte	Prep Method	Analysis Method	Spike Level			Sample Result	Spike Result		CAS		Relative Percent Difference	Result Notes
			MRL	MS	DMS		MS	DMS	MS	DMS	Acceptance Limits	
Gasoline	EPA 5030	CA/LUFT	50	250	250	ND	252	278	101	111	75-135	10

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO

Service Request: S9902603
Date Analyzed: 9/2/99

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

Sample Name: ICV
Lab Code: ICVI
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Percent Recovery	Result Notes
					Percent Recovery Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	85-115	96	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	24	85-115	96	
Ethylbenzene	EPA 5030	8020	25	25	85-115	100	
Xylenes, Total	EPA 5030	8020	75	74	85-115	99	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	22	85-115	88	

Approved By: _____

Date: _____

ICV/032196

ARCO Products Company
Division of Atlantic Richfield Company

Task Order No. 7418 00

Chain of Custody

59902603

Task Order No

2418.00

Chain of Custody

ARCO Facility no.						City (Facility)								Project manager (Consultant)													
0601						San Leandro								Glen Vander Veen													
ARCO engineer						Telephone no. (ARCO)								Telephone no. (Consultant)							Fax no. (Consultant)						
Paul Supple														(408)453-7300							(408)437-9526						
Consultant name						Address (Consultant)																					
EMCON						ZZOI Broadway #101 Oakland, CA 94612																					
Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 8010	BTX TPH incl. n-PHE EPA Method 8015	TPH Modified 8015 Gas Diesel Oil and Grease 413.1 413.2	TPH EPA 418.1 SSM 503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCUP Semi Metals VOAC VOAD	CAM Metals EPA 6010/7080 TTLCD STL CD	Lead Org/DHSD Lead EPA 7420/7421	Method of shipment							
			Soil	Water	Other	Ice	Acid													Sampler will deliver							
MW-9(15)	Z	(1)	X			X	HCL	8/25/99	1133		X										Special Detection Limit/reporting						
MW-10(15)	Z	(2)	X			X	HCL	L	1151		X										Lowest Possible						
																					Special QA/QC						
																					As Normal						
																					Remarks						
																					RAT &						
																					2 - 40ml HCL						
																					VOCAS						
																					# 791639						
																					Lab Number						
																					Turnaround Time:						
																					Priority Rush						
																					1 Business Day						
																					Rush						
																					2 Business Days						
																					Expedited						
																					5 Business Days						
																					Standard						
																					10 Business Days						
Condition of sample:										Temperature received: Due: 9/9/99 RII D3																	
Relinquished by sampler										Date	Time	Received by Joseph Pacheco CAS 8/25/99 1450															
Relinquished by										Date	Time	Received by															
Relinquished by										Date	Time	Received by laboratory					Date	Time									

Distribution: White Copy – Laboratory; Canary Copy – ARCO Environmental Engineering; Pink Copy – Consultant



2201 Broadway, Suite 101
Oakland, CA 94612-3023
Tel. 510.740.5800
Fax. 510.663.3315

October 21, 1999
Project 791639

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

Re: Quarterly Groundwater Monitoring Report, Third Quarter 1999, for ARCO Service Station No. 0601, Located at 712 Lewelling Boulevard, San Leandro, California

Dear Mr. Supple:

Pinnacle Environmental Solutions, a member of The IT Group (Pinnacle), is submitting the attached report which presents the results of the third quarter 1999 groundwater monitoring program at ARCO Products Company (ARCO) Service Station No. 0601, located at 712 Lewelling Boulevard, San Leandro, California. The monitoring program complies with the Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

LIMITATIONS

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

Please call if you have questions.

Sincerely,

Pinnacle

Glen VanderVeen
Project Manager

Dan Easter, R.G.
Project Geologist

Attachment: Quarterly Groundwater Monitoring Report, Third Quarter 1999

cc: Scott Seery, ACHCSA
Mike Bakaldin, San Leandro Fire Department

Date: October 21, 1999**ARCO QUARTERLY GROUNDWATER MONITORING REPORT**

Station No.: 0601 Address: 712 Lewelling Boulevard, San Leandro, California
Pinnacle Project No. 791639
ARCO Environmental Engineer/Phone No.: Paul Supple /(925) 299-8891
Pinnacle Project Manager/Phone No.: Glen VanderVeen /(510) 740-5807
Primary Agency/Regulatory ID No.: ACHCSA /Scott Seery

WORK PERFORMED THIS QUARTER (THIRD - 1999):

1. Prepared and submitted quarterly groundwater monitoring report for second quarter 1999.
2. Performed quarterly groundwater monitoring and sampling for third quarter 1999.
3. Submitted letter to ACHCSA responding to ACHCSA's comments (telephone conversations September 13, 1999 and September 17, 1999) to the February 9, 1999 Workplan submitted by Pinnacle.

WORK PROPOSED FOR NEXT QUARTER (FOURTH - 1999):

1. Prepare and submit quarterly groundwater monitoring report for third quarter 1999.
2. Perform quarterly groundwater monitoring and sampling for fourth quarter 1999.

QUARTERLY MONITORING:

Current Phase of Project: Quarterly Groundwater Monitoring
Frequency of Sampling: Annual (1st quarter): MW-2, MW-11, MW-12, MW-13
Semi-annual (1st/3rd quarter): MW-9, MW-15
Quarterly: MW-1, MW-3 through MW-8, MW-10, MW-14
Frequency of Monitoring: Quarterly (groundwater)
Is Floating Product (FP) Present On-site: ☐ Yes ☒ No
Cumulative FP Recovered to Date : 3.45 gallons, Well MW-1
FP Recovered This Quarter : None
Bulk Soil Removed to Date : 1,565 cubic yards of TPH impacted soil
Bulk Soil Removed This Quarter : None
Current Remediation Techniques: Natural Attenuation
Average Depth to Groundwater: 8.0 feet
Groundwater Flow Direction and Gradient
(Average): 0.02 ft/ft toward Southeast

ATTACHMENTS:

- Table 1 - Groundwater Elevation and Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Table 2 - Groundwater Flow Direction and Gradient
- Table 3 - Historical Groundwater Analytical Data, Metals
- Table 4 - Historical Groundwater Analytical Data, Volatile and Semivolatile Organic Compounds
- Table 5 - Approximate Cumulative Floating Product Recovered, Monitoring Well MW-1
- Figure 1 - Groundwater Analytical Summary Map
- Figure 2 - Groundwater Elevation Contour Map
- Appendix A - Sampling and Analysis Procedures
- Appendix B - Certified Analytical Reports and Chain-of-Custody Documentation
- Appendix C - Field Data Sheets

Table 1
Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

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

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Floating Product Thickness feet	Groundwater Elevation ft-MSL	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	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
MW-1	03-17-95	22.26	6.57	ND	15.69	03-17-95	120,000	5,300	370	1,500	13,000	--	--	48,000	6,200*		
MW-1	06-01-95	22.26	7.87	ND	14.39	06-01-95	250,000	7,100	950	3,500	21,000	--	--	38,000	190,000*		
MW-1	08-31-95	22.26	8.12	0.01	** 14.15	08-31-95	Not sampled: well contained floating product										
MW-1	11-27-95	22.26	8.42	Sheen	13.84	11-27-95	310,000	4,600	770	5,700	21,000	--	--	--	--		
MW-1	02-22-96	22.26	6.01	0.01	** 16.26	03-14-96	100,000	6,200	320	2,500	12,000	<1,000*	--	--	--		
MW-1	05-20-96	22.26	7.03	ND	15.23	05-21-96	340,000	6,600	240	4,500	22,000	<1,000	--	150	<2,500*		
MW-1	08-26-96	22.26	8.16	ND	14.10	08-26-96	210,000	7,900	320	3,400	15,000	<1,000	--	--	--		
MW-1	11-20-96	22.26	7.84	ND	14.42	11-20-96	62,000	5,900	77	2,000	7,700	<300	--	--	--		
MW-1	03-24-97	19.19	8.05	ND	11.14	03-24-97	170,000	6,500	<200	2,400	9,900	<1,000	--	--	--		
MW-1	05-23-97	19.19	8.42	ND	10.77	05-23-97	83,000	6,200	84	2,500	9,000	<300	--	--	--		
MW-1	08-19-97	19.19	8.65	ND	10.54	08-19-97	83,000	4,500	<100	2,200	8,100	<600	--	--	--		
MW-1	11-19-97	19.19	8.54	ND	10.65	11-19-97	250,000	4,400	<500	3,800	9,900	<3,000	--	--	--		
MW-1	02-19-98	19.19	5.57	ND	13.62	02-19-98	74,000	2,500	120	2,200	4,100	<300	--	--	--		
MW-1	04-23-98	19.19	6.92	ND	12.27	04-24-98	210,000	2,700	<500	4,200	8,300	<3,000	--	--	--	1.5	P
MW-1	07-27-98	19.19	8.14	ND	11.05	07-27-98	73,000	2,100	88	2,600	4,600	<300	--	--	--	1.0	P
MW-1	10-14-98	19.19	8.58	ND	10.61	10-14-98	47,000	2,900	<50	2,300	3,900	<300	--	--	--	1.5	P
MW-1	01-21-99	19.19	7.84	ND	11.35	01-22-99	45,000	1,400	64	2,100	2,400	<300	--	--	--	1.0	P
MW-1	05-06-99	19.19	8.00	ND	11.19	05-06-99	41,000	1,900	<20	2,800	3,400	<120	--	--	--	0.85	P
MW-1	08-23-99	19.19	8.56	ND	10.63	08-24-99	26,000	1,700	52	1,600	1,500	<75	--	--	--	0.72	P
MW-2	03-17-95	21.33	6.12	ND	15.21	03-17-95	10,000	460	77	260	550	--	--	--	--		
MW-2	06-01-95	21.33	6.56	ND	14.77	06-01-95	13,000	400	78	210	410	--	--	--	--		
MW-2	08-31-95	21.33	7.18	ND	14.15	08-31-95	5,000	280	18	120	140	<50	--	--	--		
MW-2	11-27-95	21.33	7.39	ND	13.94	11-27-95	3,200	230	12	77	90	--	--	--	--		
MW-2	02-22-96	21.33	5.78	ND	15.55	03-14-96	11,000	290	67	190	330	<50	--	--	--		

Table 1
Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

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

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Floating Product Thickness feet	Groundwater Elevation ft-MSL	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	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
MW-2	05-20-96	21.33	6.27	ND	15.06	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-2	08-26-96	21.33	7.30	ND	14.03	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-2	11-20-96	21.33	7.28	ND	14.05	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-2	03-24-97	21.12	7.11	ND	14.01	03-24-97	4,800	570	6	71	32	67	--	--	--		
MW-2	05-23-97	21.12	7.44	ND	13.68	05-23-97	Not sampled: well sampled annually, during the first quarter										
MW-2	08-19-97	21.12	7.64	ND	13.48	08-19-97	Not sampled: well sampled annually, during the first quarter										
MW-2	11-19-97	21.12	7.70	ND	13.42	11-19-97	Not sampled: well sampled annually, during the first quarter										
MW-2	02-19-98	21.12	5.22	ND	15.90	02-19-98	2,000	160	50	66	230	25	--	--	--		
MW-2	04-23-98	21.12	6.24	ND	14.88	04-23-98	Not sampled: well sampled annually, during the first quarter										
MW-2	07-27-98	21.12	7.02	ND	14.10	07-27-98	Not sampled: well sampled annually, during the first quarter										
MW-2	10-14-98	21.12	7.54	ND	13.58	10-14-98	Not sampled: well sampled annually, during the first quarter										
MW-2	01-21-99	21.12	7.15	ND	13.97	01-22-99	1,700	84	4	31	10	13	--	--	--	0.5	P
MW-2	05-06-99	21.12	6.95	ND	14.17	05-06-99	Not sampled: well sampled annually, during the first quarter										
MW-2	08-23-99	21.12	7.49	ND	13.63	08-24-99	Not sampled: well sampled annually, during the first quarter										0.68
MW-3	03-17-95	20.11	5.46	ND	14.65	03-17-95	370,000	4,800	12,000	5,800	34,000	--	--	--	--		
MW-3	06-01-95	20.11	6.34	ND	13.77	06-01-95	270,000	6,000	11,000	5,200	28,000	--	--	--	--		
MW-3	08-31-95	20.11	6.60	0.02	** 13.52	08-31-95	Not sampled: well contained floating product										
MW-3	11-27-95	20.11	6.76	0.01	** 13.36	11-27-95	150,000	5,100	8,800	3,900	21,000	--	--	--	--		
MW-3	02-22-96	20.11	5.14	0.01	** 14.98	03-14-96	150,000	4,400	7,600	4,100	22,000	<3,000	--	--	--		
MW-3	05-20-96	20.11	5.17	ND	14.94	05-21-96	410,000	4,700	8,000	6,300	36,000	<3,000	--	--	--		
MW-3	08-26-96	20.11	7.04	ND	13.07	08-26-96	260,000	4,000	6,100	4,200	24,000	<2,000	--	--	--		
MW-3	11-20-96	20.11	6.26	ND	13.85	11-20-96	190,000	3,200	5,800	3,300	20,000	<1,000	--	--	--		
MW-3	03-24-97	22.99	6.94	ND	16.05	03-24-97	430,000	2,700	7,600	7,000	39,000	<5,000	--	--	--		
MW-3	05-23-97	22.99	6.98	ND	16.01	05-23-97	130,000	2,100	4,300	3,500	19,000	<700	--	--	--		

Table 1
Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

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

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Floating Product Thickness feet	Groundwater Elevation ft-MSL	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	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-3	08-19-97	22.99	7.25	ND	15.74	08-19-97	100,000	2,000	3,200	<100	19,000	<600	--	--	--		
MW-3	11-19-97	22.99	7.25	ND	15.74	11-19-97	93,000	1,700	2,400	2,800	16,000	<600	--	--	--		
MW-3	02-19-98	22.99	5.24	ND	17.75	02-19-98	80,000	620	1,200	2,500	13,000	<600	--	--	--		
MW-3	04-23-98	22.99	6.60	ND	16.39	04-24-98	130,000	1,500	2,400	3,500	18,000	<600	--	--	--	3.5	P
MW-3	07-27-98	22.99	7.00	ND	15.99	07-27-98	140,000	920	1,500	2,400	13,000	<600	--	--	--	1.0	P
MW-3	10-14-98	22.99	7.04	ND	15.95	10-14-98	300,000	1,200	2,400	5,700	32,000	970	--	--	--	1.0	P
MW-3	01-21-99	22.99	6.50	ND	16.49	01-22-99	120,000	860	1,500	2,600	14,000	<600	--	--	--	0.5	P
MW-3	05-06-99	22.99	6.90	ND	16.09	05-06-99	49,000	670	1,400	2,500	11,000	170	--	--	--	1.03	NP
MW-3	08-23-99	22.99	6.53	ND	16.46	08-24-99	51,000	440	930	2,200	9,200	<150	--	--	--	0.67	NP
MW-4	03-17-95	20.75	6.65	ND	14.10	03-17-95	16,000	1,800	970	310	2,500	--	--	--	--		
MW-4	06-01-95	20.75	7.25	ND	13.50	06-01-95	16,000	2,800	870	380	2,700	--	--	--	--		
MW-4	08-31-95	20.75	7.75	ND	13.00	08-31-95	9,000	2,000	270	270	1,400	<100	--	--	--		
MW-4	11-27-95	20.75	7.87	ND	12.88	11-27-95	3,800	890	130	130	550	--	--	--	--		
MW-4	02-22-96	20.75	7.29	ND	13.46	03-14-96	940	150	82	19	130	<20	--	--	--		
MW-4	05-20-96	20.75	7.30	ND	13.45	05-21-96	6,700	1,100	330	120	1,100	<100	--	--	--		
MW-4	08-26-96	20.75	7.57	ND	13.18	08-26-96	14,000	2,400	510	350	2,100	<100	--	--	--		
MW-4	11-20-96	20.75	7.89	ND	12.86	11-20-96	420	55	17	11	62	<3	--	--	--		
MW-4	03-24-97	22.38	6.90	ND	15.48	03-24-97	6,800	620	150	81	1,300	<50	--	--	--		
MW-4	05-23-97	22.38	7.80	ND	14.58	05-23-97	9,000	1,300	240	200	1,600	<60	--	--	--		
MW-4	08-19-97	22.38	DRY	ND	N/A	08-19-97	Not sampled: well is dry										
MW-4	11-19-97	22.38	DRY	ND	N/A	11-19-97	3700*	600	93	120	710	<60	--	--	--		
MW-4	02-19-98	22.38	6.78	ND	15.60	02-19-98	1,800	93	51	29	420	110	--	--	--		
MW-4	04-23-98	22.38	6.47	ND	15.91	04-23-98	6,500	700	110	180	1,300	93	--	--	--	0.5	P
MW-4	07-27-98	22.38	7.22	ND	15.16	07-27-98	10,000	1,400	140	290	1,900	<120	--	--	--	1.5	P

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MW-4	10-14-98	22.38	7.60	ND	14.78	10-14-98	6,500	900	63	200	1,200	63	--	--	--	1.0	P
MW-4	01-21-99	22.38	7.43	ND	14.95	01-22-99	1,700	140	22	56	320	13	--	--	--	0.5	P
MW-4	05-06-99	22.38	6.55	ND	15.83	05-06-99	3,300	250	36	73	890	41	--	--	--	1.28	P
MW-4	08-23-99	22.38	7.16	ND	15.22	08-24-99	7,400	500	73	230	1,700	57	--	--	--	0.89	P
MW-5	03-17-95	20.90	5.51	ND	15.39	03-17-95	48,000	6,400	2,000	740	5,100	--	--	--	--		
MW-5	06-01-95	20.90	6.55	ND	14.35	06-01-95	76,000	11,000	5,400	1,400	7,700	--	--	--	--		
MW-5	08-31-95	20.90	6.80	ND	14.10	08-31-95	53,000	12,000	1,600	1,000	6,000	<500	--	--	--		
MW-5	11-27-95	20.90	7.13	ND	13.77	11-27-95	43,000	7,900	3,300	950	4,900	--	--	--	--		
MW-5	02-22-96	20.90	5.12	ND	15.78	03-14-96	52,000	9,100	3,300	940	5,000	<500	--	--	--		
MW-5	05-20-96	20.90	5.87	ND	15.03	05-21-96	55,000	9,300	3,800	1,100	5,400	<500	--	--	--		
MW-5	08-26-96	20.90	7.15	ND	13.75	08-26-96	47,000	5,300	2,100	780	3,200	<300	--	--	--		
MW-5	11-20-96	20.90	6.88	ND	14.02	11-20-96	53,000	8,700	5,700	920	4,400	<500	--	--	--		
MW-5	03-24-97	22.45	7.13	ND	15.32	03-24-97	39,000	8,200	3,200	720	3,100	<500	--	--	--		
MW-5	05-23-97	22.45	7.42	ND	15.03	05-23-97	29,000	6,600	1,700	400	1,500	<600	--	--	--		
MW-5	08-19-97	22.45	7.58	ND	14.87	08-19-97	16,000	4,600	790	<50	1,300	<300	--	--	--		
MW-5	11-19-97	22.45	7.58	ND	14.87	11-19-97	22,000	5,800	1,300	380	1,300	<300	--	--	--		
MW-5	02-19-98	22.45	4.65	ND	17.80	02-19-98	40,000	5,100	3,800	620	2,900	<300	--	--	--		
MW-5	04-23-98	22.45	6.25	ND	16.20	04-23-98	45,000	8,000	4,000	970	4,200	<600	--	--	--	1.5	P
MW-5	07-27-98	22.45	6.71	ND	15.74	07-27-98	30,000	8,000	2,000	590	1,900	<600	--	--	--	1.5	P
MW-5	10-14-98	22.45	7.19	ND	15.26	10-14-98	33,000	7,400	1,900	550	1,700	<300	--	--	--	1.5	P
MW-5	01-21-99	22.45	7.03	ND	15.42	01-22-99	34,000	6,200	2,600	630	2,300	<600	--	--	--	2.5	P
MW-5	05-06-99	22.45	7.02	ND	15.43	05-06-99	7,900	2,400	200	240	580	12	--	--	--	1.07	NP
MW-5	08-23-99	22.45	7.04	ND	15.41	08-24-99	25,000	5,800	2,300	570	2,000	67	--	--	--	1.04	P

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MW-6	03-17-95	22.08	6.66	ND	15.42	03-17-95	45,000	9,300	<100	1,900	3,600	--	--	--	--		
MW-6	06-01-95	22.08	7.60	ND	14.48	06-01-95	23,000	5,600	<50	1,300	1,900	--	--	--	--		
MW-6	08-31-95	22.08	7.92	ND	14.16	08-31-95	26,000	8,000	<100	1,900	900	<500	--	--	--		
MW-6	11-27-95	22.08	8.21	ND	13.87	11-27-95	6,700	1,800	<20	480	230	--	--	--	--		
MW-6	02-22-96	22.08	6.21	ND	15.87	03-14-96	17,000	3,100	69	810	1,500	<300	--	--	--		
MW-6	05-20-96	22.08	7.07	ND	15.01	05-21-96	16,000	3,700	<50	1,100	1,100	<300	--	--	--		
MW-6	08-26-96	22.08	7.93	ND	14.15	08-26-96	23,000	5,800	<50	2,000	560	<300	--	--	--		
MW-6	11-20-96	22.08	8.02	ND	14.06	11-20-96	11,000	3,300	<50*	480	370	<300	--	--	--		
MW-6	03-24-97	22.77	7.95	ND	14.82	03-24-97	9,700	1,900	<20	800	270	<100	--	--	--		
MW-6	05-23-97	22.77	8.17	ND	14.60	05-23-97	16,000	4,300	<50	1,400	180	<300	--	--	--		
MW-6	08-19-97	22.77	-	ND	NA	08-19-97	Not sampled: well is dry										
MW-6	11-19-97	22.77	-	ND	NA	11-19-97	Not sampled: well is dry										
MW-6	02-19-98	22.77	5.78	ND	16.99	02-19-98	2,600	540	8	90	88	<30	--	--	--		
MW-6	04-23-98	22.77	6.83	ND	15.94	04-24-98	7,600	1,300	13	520	190	<60	--	--	--	0.5	P
MW-6	07-27-98	22.77	7.80	ND	14.97	07-27-98	15,000	3,600	<25	1,100	230	<150	--	--	--	1.0	P
MW-6	10-14-98	22.77	8.31	ND	14.46	10-14-98	8,700	2,400	<20	220	36	<120	--	--	--	2.0	P
MW-6	01-21-99	22.77	7.90	ND	14.87	01-22-99	4,800	1,100	<25	340	79	<150	--	--	--	2.0	P
MW-6	05-06-99	22.77	7.70	ND	15.07	05-06-99	1,300	240	2.3	85	19	5	--	--	--	1.18	P
MW-6	08-23-99	22.77	8.24	ND	14.53	08-24-99	4,200	970	12	110	29	<15	--	--	--	0.90	P
MW-7	03-17-95	22.89	7.68	ND	15.21	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-7	06-01-95	22.89	8.40	ND	14.49	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-7	08-31-95	22.89	9.09	ND	13.80	08-31-95	<50	<0.5	<0.5	0.6	<0.5	<3	--	--	--		
MW-7	11-27-95	22.89	9.15	ND	13.74	11-27-95	<50	<0.5	<0.5	0.9	<0.5	--	--	--	--		
MW-7	02-22-96	22.89	7.44	ND	15.45	03-14-96	110	1.4	<0.5	3.8	3.0	<3	--	--	--		

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MW-7	05-20-96	22.89	8.47	ND	14.42	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-7	08-26-96	22.89	8.81	ND	14.08	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-7	11-20-96	22.89	9.17	ND	13.72	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-7	03-24-97	22.89	8.31	ND	14.58	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-7	05-23-97	22.89	9.26	ND	13.63	05-23-97	Not sampled: well sampled annually, during the first quarter										
MW-7	08-19-97	22.89	-	ND	NA	08-19-97	Not sampled: well is dry										
MW-7	11-19-97	22.89	-	ND	NA	11-19-97	Not sampled: well is dry										
MW-7	02-19-98	22.89	6.13	ND	16.76	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-7	04-23-98	22.89	7.44	ND	15.45	04-23-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.5	P
MW-7	07-27-98	22.89	8.75	ND	14.14	07-27-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.5	P
MW-7	10-14-98	22.89	9.22	ND	13.67	10-14-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.5	P
MW-7	01-21-99	22.89	9.07	ND	13.82	01-22-99	52	<0.5	<0.5	<0.5	0.27	<3	--	--	--	3.0	P
MW-7	05-06-99	22.89	8.32	ND	14.57	05-06-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.83	P
MW-7	08-23-99	22.89	9.25	ND	13.64	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.42	P
MW-8	03-17-95	20.97	6.14	ND	14.83	03-17-95	5,400	<5	<5	35	<5	--	--	--	--		
MW-8	06-01-95	20.97	6.50	ND	14.47	06-01-95	2,600	<2.5	<2.5	15	<2.5	--	--	--	--		
MW-8	08-31-95	20.97	7.35	ND	13.62	08-31-95	1,400	<3	<3	5	<3	520	--	900	--		
MW-8	11-27-95	20.97	7.60	ND	13.37	11-27-95	620	<0.5	<0.5	<0.5	0.5	--	560	900	510*		
MW-8	02-22-96	20.97	5.35	ND	15.62	03-14-96	5,800	<5	<5	28	<5	110	--	1,900	6,800*		
MW-8	05-20-96	20.97	5.92	ND	15.05	05-21-96	6,100	<5	<5	26	<5	240	--	--	--		
MW-8	08-26-96	20.97	7.08	ND	13.89	08-26-96	970	<1	<1	3	<1	710	--	--	--		
MW-8	11-20-96	20.97	7.01	ND	13.96	11-20-96	3,900	<2.5	<2.5	12	<2.5	930	--	--	--		
MW-8	03-24-97	20.89	7.33	ND	13.56	03-24-97	1,400	<10	<10	<10	12	1,300	--	--	--		
MW-8	05-23-97	20.89	7.55	ND	13.34	05-23-97	730	<5	<5	<5	<5	630	--	--	--		

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MW-8	08-19-97	20.89	7.87	ND	13.02	08-19-97	<500	<5	<5	<5	<5	290	--	--	--		
MW-8	11-19-97	20.89	7.87	ND	13.02	11-19-97	<200	<2	<2	<2	<2	260	--	--	--		
MW-8	02-19-98	20.89	4.46	ND	16.43	02-19-98	2,000	<2	<2	9	<2	140	--	--	--		
MW-8	04-23-98	20.89	6.35	ND	14.54	04-24-98	4,500	<5	<5	<5	11	590	--	--	--	0.5	P
MW-8	07-27-98	20.89	7.43	ND	13.46	07-27-98	Not sampled										
MW-8	10-14-98	20.89	7.79	ND	13.10	10-14-98	Not sampled										
MW-8	01-21-99	20.89	6.54	ND	14.35	01-22-99	2,000	<2	<2	3	<2	320	--	--	--	2.5	P
MW-8	05-06-99	20.89	7.30	ND	13.59	05-06-99	<50	<0.5	<0.5	<0.5	<0.5	160	--	--	--	12.76	NP
MW-8	08-23-99	20.89	7.45	ND	13.44	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	5	--	--	--	7.85	NP
MW-9	03-17-95	20.89	6.94	ND	13.95	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	06-01-95	20.89	8.15	ND	12.74	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	08-31-95	20.89	8.10	ND	12.79	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-27-95	20.89	8.38	ND	12.51	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	02-22-96	20.89	7.36	ND	13.53	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	05-20-96	20.89	7.81	ND	13.08	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	08-26-96	20.89	8.00	ND	12.89	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-20-96	20.89	7.06	ND	13.83	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	03-24-97	22.26	7.74	ND	14.52	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	05-23-97	22.26	8.28	ND	13.98	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	08-19-97	22.26	8.32	ND	13.94	08-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-19-97	22.26	8.32	ND	13.94	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	02-19-98	22.26	7.11	ND	15.15	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	04-23-98	22.26	8.18	ND	14.08	04-23-98	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	07-27-98	22.26	7.97	ND	14.29	07-27-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	3.6	P

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MW-9	10-14-98	22.26	8.29	ND	13.97	10-14-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	2.5	P
MW-9	01-21-99	22.26	7.63	ND	14.63	01-22-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.5	P
MW-9	05-06-99	22.26	7.27	ND	14.99	05-06-99	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	08-23-99	22.26	8.24	ND	14.02	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.93	P
MW-10	03-17-95	21.12	6.26	ND	14.86	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	06-01-95	21.12	7.63	ND	13.49	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	08-31-95	21.12	8.17	ND	12.95	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-27-95	21.12	8.38	ND	12.74	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	02-22-96	21.12	5.41	ND	15.71	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	05-20-96	21.12	6.78	ND	14.34	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-10	08-26-96	21.12	8.00	ND	13.12	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-20-96	21.12	7.81	ND	13.31	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-10	03-24-97	21.33	7.87	ND	13.46	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	05-23-97	21.33	8.33	ND	13.00	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-10	08-19-97	21.33	8.39	ND	12.94	08-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-19-97	21.33	8.39	ND	12.94	11-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	02-19-98	21.33	4.65	ND	16.68	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	04-23-98	21.33	6.28	ND	15.05	04-23-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.5	P
MW-10	07-27-98	21.33	7.97	ND	13.36	07-27-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	3.3	P
MW-10	10-14-98	21.33	8.41	ND	12.92	10-14-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.0	P
MW-10	01-21-99	21.33	6.65	ND	14.68	01-22-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.5	P
MW-10	05-06-99	21.33	7.74	ND	13.59	05-06-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.76	P
MW-10	08-23-99	21.33	8.37	ND	12.96	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.21	P

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MW-11	03-17-95	22.38	6.94	ND	15.44	03-17-95	100	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-11	06-01-95	22.38	7.90	ND	14.48	06-01-95	210	<0.5	<0.5	0.9	0.7	--	--	--	--		
MW-11	08-31-95	22.38	8.18	ND	14.20	08-31-95	680	<0.5	<0.5	4	1.8	<3	--	--	--		
MW-11	11-27-95	22.38	8.48	ND	13.90	11-27-95	340	<0.5	<0.5	2.2	1.6	--	--	--	--		
MW-11	02-22-96	22.38	6.63	ND	15.75	03-14-96	150	<0.5	<0.5	<0.8	0.8	<3	--	--	--		
MW-11	05-20-96	22.38	7.25	ND	15.13	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-11	08-26-96	22.38	8.22	ND	14.16	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-11	11-20-96	22.38	8.37	ND	14.01	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-11	03-24-97	20.97	8.15	ND	12.82	03-24-97	63	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-11	05-23-97	20.97	8.48	ND	12.49	05-23-97	Not sampled: well sampled annually, during the first quarter										
MW-11	08-19-97	20.97	8.67	ND	12.30	08-19-97	Not sampled: well sampled annually, during the first quarter										
MW-11	11-19-97	20.97	8.67	ND	12.30	11-19-97	Not sampled: well sampled annually, during the first quarter										
MW-11	02-19-98	20.97	6.25	ND	14.72	02-19-98	<50	<0.5	1.6	<0.5	1.8	7	--	--	--		
MW-11	04-23-98	20.97	7.23	ND	13.74	04-23-98	Not sampled: well sampled annually, during the first quarter										
MW-11	07-27-98	20.97	8.05	ND	12.92	07-27-98	Not sampled: well sampled annually, during the first quarter										
MW-11	10-14-98	20.97	8.58	ND	12.39	10-14-98	Not sampled: well sampled annually, during the first quarter										
MW-11	01-21-99	20.97	8.25	ND	12.72	01-22-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.5	P
MW-11	05-06-99	20.97	7.95	ND	13.02	05-06-99	Not sampled: well sampled annually, during the first quarter										
MW-11	08-23-99	20.97	8.51	ND	12.46	08-24-99	Not sampled: well sampled annually, during the first quarter										0.86
MW-12	03-17-95	22.77	7.09	ND	15.68	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-12	06-01-95	22.77	8.40	ND	14.37	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-12	08-31-95	22.77	8.55	ND	14.22	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-12	11-27-95	22.77	8.95	ND	13.82	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-12	02-22-96	22.77	6.81	ND	15.96	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		

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MW-12	05-20-96	22.77	7.56	ND	15.21	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-12	08-26-96	22.77	8.63	ND	14.14	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-12	11-20-96	22.77	8.38	ND	14.39	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-12	03-24-97	20.11	8.75	ND	11.36	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-12	05-23-97	20.11	8.92	ND	11.19	05-23-97	Not sampled: well sampled annually, during the first quarter										
MW-12	08-19-97	20.11	9.20	ND	10.91	08-19-97	Not sampled: well sampled annually, during the first quarter										
MW-12	11-19-97	20.11	9.20	ND	10.91	11-19-97	Not sampled: well sampled annually, during the first quarter										
MW-12	02-19-98	20.11	6.28	ND	13.83	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-12	04-23-98	20.11	7.52	ND	12.59	04-23-98	Not sampled: well sampled annually, during the first quarter										
MW-12	07-27-98	20.11	8.52	ND	11.59	07-27-98	Not sampled: well sampled annually, during the first quarter										
MW-12	10-14-98	20.11	9.06	ND	11.05	10-14-98	Not sampled: well sampled annually, during the first quarter										
MW-12	01-21-99	20.11	8.20	ND	11.91	01-22-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.5	P
MW-12	05-06-99	20.11	8.47	ND	11.64	05-06-99	Not sampled: well sampled annually, during the first quarter										
MW-12	08-23-99	20.11	9.04	ND	11.07	08-24-99	Not sampled: well sampled annually, during the first quarter										0.85
MW-13	03-17-95	22.45	6.91	ND	15.54	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-13	06-01-95	22.45	7.72	ND	14.73	06-01-95	Not sampled: well sampled annually, during the first quarter										
MW-13	08-31-95	22.45	7.58	ND	14.87	08-31-95	Not sampled: well sampled annually, during the first quarter										
MW-13	11-27-95	22.45	7.98	ND	14.47	11-27-95	Not sampled: well sampled annually, during the first quarter										
MW-13	02-22-96	22.45	6.71	ND	15.74	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-13	05-20-96	22.45	6.98	ND	15.47	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-13	08-26-96	22.45	7.85	ND	14.60	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-13	11-20-96	22.45	7.76	ND	14.69	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-13	03-24-97	20.75	7.85	ND	12.90	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-13	05-23-97	20.75	8.16	ND	12.59	05-23-97	Not sampled: well sampled annually, during the first quarter										

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MW-13	08-19-97	20.75	8.40	ND	12.35	08-19-97	Not sampled: well sampled annually, during the first quarter										
MW-13	11-19-97	20.75	8.40	ND	12.35	11-19-97	Not sampled: well sampled annually, during the first quarter										
MW-13	02-19-98	20.75	6.44	ND	14.31	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-13	04-23-98	20.75	6.80	ND	13.95	04-23-98	Not sampled: well sampled annually, during the first quarter										
MW-13	07-27-98	20.75	7.52	ND	13.23	07-27-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.5	P
MW-13	10-14-98	20.75	8.15	ND	12.60	10-14-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	2.0	P
MW-13	01-21-99	20.75	7.85	ND	12.90	01-22-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.5	P
MW-13	05-06-99	20.75	7.82	ND	12.93	05-06-99	Not sampled: well sampled annually, during the first quarter										
MW-13	08-23-99	20.75	8.29	ND	12.46	08-24-99	Not sampled: well sampled annually, during the first quarter										0.94
MW-14	03-17-95	22.99	8.17	ND	14.82	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-14	06-01-95	22.99	8.57	ND	14.42	06-01-95	Not sampled: well sampled annually, during the first quarter										
MW-14	08-31-95	22.99	9.05	ND	13.94	08-31-95	Not sampled: well sampled annually, during the first quarter										
MW-14	11-27-95	22.99	9.19	ND	13.80	11-27-95	Not sampled: well sampled annually, during the first quarter										
MW-14	02-22-96	22.99	6.52	ND	16.47	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-14	05-20-96	22.99	7.88	ND	15.11	05-21-96	Not sampled: well sampled annually, during the first quarter										
MW-14	08-26-96	22.99	8.83	ND	14.16	08-26-96	Not sampled: well sampled annually, during the first quarter										
MW-14	11-20-96	22.99	8.95	ND	14.04	11-20-96	Not sampled: well sampled annually, during the first quarter										
MW-14	03-24-97	20.90	8.98	ND	11.92	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-14	05-23-97	20.90	9.61	ND	11.29	05-23-97	Not sampled: well sampled annually, during the first quarter										
MW-14	08-19-97	20.90	9.80	ND	11.10	08-19-97	Not sampled: well sampled annually, during the first quarter										
MW-14	11-19-97	20.90	9.80	ND	11.10	11-19-97	<50	1.7	<0.5	0.6	3	<3					
MW-14	02-19-98	20.90	6.27	ND	14.63	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-14	04-23-98	20.90	7.75	ND	13.15	04-23-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.5	P
MW-14	07-27-98	20.90	9.24	ND	11.66	07-27-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.0	P

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MW-14	10-14-98	20.90	9.73	ND	11.17	10-14-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.0	P
MW-14	01-21-99	20.90	8.90	ND	12.00	01-22-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	1.5	P
MW-14	05-06-99	20.90	8.98	ND	11.92	05-06-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.73	P
MW-14	08-23-99	20.90	9.68	ND	11.22	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.91	P
MW-15	03-17-95	19.19	5.21	ND	13.98	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-15	06-01-95	19.19	5.84	ND	13.35	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	08-31-95	19.19	6.18	ND	13.01	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-15	11-27-95	19.19	6.42	ND	12.77	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	02-22-96	19.19	4.84	ND	14.35	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	--		
MW-15	05-20-96	19.19	5.31	ND	13.88	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	08-26-96	19.19	6.05	ND	13.14	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--	--		
MW-15	11-20-96	19.19	5.46	ND	13.73	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	03-24-97	22.08	6.00	ND	16.08	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	15	--	--	--		
MW-15	05-23-97	22.08	6.25	ND	15.83	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	08-19-97	22.08	6.34	ND	15.74	08-19-97	99*	<0.5	<0.5	<0.5	0.7	6	--	--	--		
MW-15	11-19-97	22.08	6.34	ND	15.74	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	02-19-98	22.08	4.66	ND	17.42	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	48	--	--	--		
MW-15	04-23-98	22.08	5.18	ND	16.90	04-23-98	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	07-27-98	22.08	6.02	ND	16.06	07-27-98	<50	<0.5	<0.5	<0.5	<0.5	50	--	--	--	1.0	P
MW-15	10-14-98	22.08	6.26	ND	15.82	10-14-98	<50	<0.5	<0.5	<0.5	<0.5	27	--	--	--	1.5	P
MW-15	01-21-99	22.08	5.33	ND	16.75	01-22-99	<50	<0.5	<0.5	<0.5	<0.5	6	--	--	--	1.0	P
MW-15	05-06-99	22.08	5.82	ND	16.26	05-06-99	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-15	08-23-99	22.08	6.24	ND	15.84	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	21	--	--	--	1.14	P

Table 1
Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

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

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Floating Product Thickness feet	Groundwater Elevation ft-MSL	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	Dissolved Oxygen mg/L	Purged/ Not Purged P/NP
ft-MSL: elevation in feet, relative to mean sea level TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method MTBE: Methyl tert-butyl ether TRPH: total recoverable petroleum hydrocarbons TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method µg/L: micrograms per liter mg/L: milligrams per liter ND: none detected DRY: dry well; groundwater was not detected - - : not analyzed *: Sample contains a higher boiling point hydrocarbon mixture quantitated as gasoline. The chromatogram did not match the typical gasoline fingerprint. **: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water ***: For previous historical groundwater elevation and analytical data please refer to <i>Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California</i>, (EMCON, March 14, 1996).																	

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station No. 601
712 Lewelling Boulevard, San Leandro, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
03/17/95	West-Southwest	0.006
06/01/95	Southwest	0.003
08/31/95	South-Southwest	0.005
11/27/95	South-Southwest	0.004
02/22/96	Northwest	0.007
05/20/96	Southwest	0.007
08/26/96	South-Southwest	0.004
11/20/96	South-Southeast	0.004
03/24/97	Southeast	0.013
05/23/97	Southeast	0.014
08/19/97	Southeast	0.04
11/19/97	Southeast	0.016
02/19/98	East	Variable
04/23/98	Variable	Variable
07/27/98	Southeast	0.05
10/14/98	Southeast	0.02
01/21/99	East	0.04
05/06/99	Southeast	0.05
08/23/99	Southeast	0.02

Table 3
Historical Groundwater Analytical Data
Metals*
1995 - Present**

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

Well Designation	Water Sample Field Date	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
MW-1	03-17-95	<5	20	20	<40	60
MW-1	06-01-95	<5	20	22	70	100
MW-1	08-31-95	Not sampled: well contained floating product				
MW-1	11-27-95	Not sampled: well contained floating product				
MW-1	03-14-96	Not sampled: well contained floating product				
MW-1	05-21-96	0.006	<0.01	<0.005	<0.02	<0.02
MW-1	08-26-96	--	--	--	--	--
MW-1	11-20-96	--	--	--	--	--
MW-1	03-24-97	--	--	--	--	--
MW-1	05-23-97	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1				
MW-1	08-19-97	--	--	--	--	--
MW-1	11-19-97	--	--	--	--	--
MW-1	02-19-98	<0.01	<0.01	<0.05	<0.02	<0.02
MW-1	04-23-98	--	--	--	--	--
MW-1	07-27-98	--	--	--	--	--
MW-1	10-14-98	--	--	--	--	--
MW-1	01-22-99	<0.005	<0.01	<0.05	<0.02	<0.02
MW-1	05-06-99	--	--	--	--	--
MW-1	08-24-99	--	--	--	--	--
MW-8	08-31-95	<5	40	16	50	90
MW-8	11-27-95	<5	130	77	170	280
MW-8	03-14-96	<5	30	7	40	60
MW-8	05-23-97	<0.005	<0.01	<0.005	<0.02	<0.02

EPA: United States Environmental Protection Agency

mg/L: micrograms per liter

--: not analyzed

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

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

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

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

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	03-17-95	--	--	--	--	--	--	--	1300	730	<50	ND	150
MW-1	06-01-95	--	--	--	--	--	--	--	2200	1700	<100	240	<100
MW-1	08-31-95	Not sampled: well contained floating product											
MW-1	11-27-95	Not sampled: well contained floating product											
MW-1	03-14-96	Not sampled: well contained floating product											
MW-1	05-21-96	--	--	--	--	--	--	--	1200	860	<50	<50	<50
MW-1	08-26-96	--	--	--	--	--	--	--	2300	1800	<500	<500	<1000
MW-1	11-20-96	--	--	--	--	--	--	--	590	250	91	<50	<100
MW-1	03-24-97	--	--	--	--	--	--	--	730	610	<50	<50	<100
MW-1	05-23-97	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1											
MW-1	08-19-97	--	--	--	--	--	--	--	1,300	790	<50	<50	<100
MW-1	11-19-97	--	--	--	--	--	--	--	<5	<5	5	<5	<10
MW-1	02-19-98	--	--	--	--	--	--	--	870	330	<50	<50	<100
MW-1	04-23-98	Not analyzed											
MW-1	07-27-98	Not analyzed											
MW-1	10-14-98	Not analyzed											
MW-1	01-28-99**	--	--	--	--	--	--	--	950	580	<50	<50	<100
MW-1	05-06-99	Not analyzed											
MW-1	08-24-99	--	--	--	--	--	--	--	1,200	400	<50	<50	<100

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

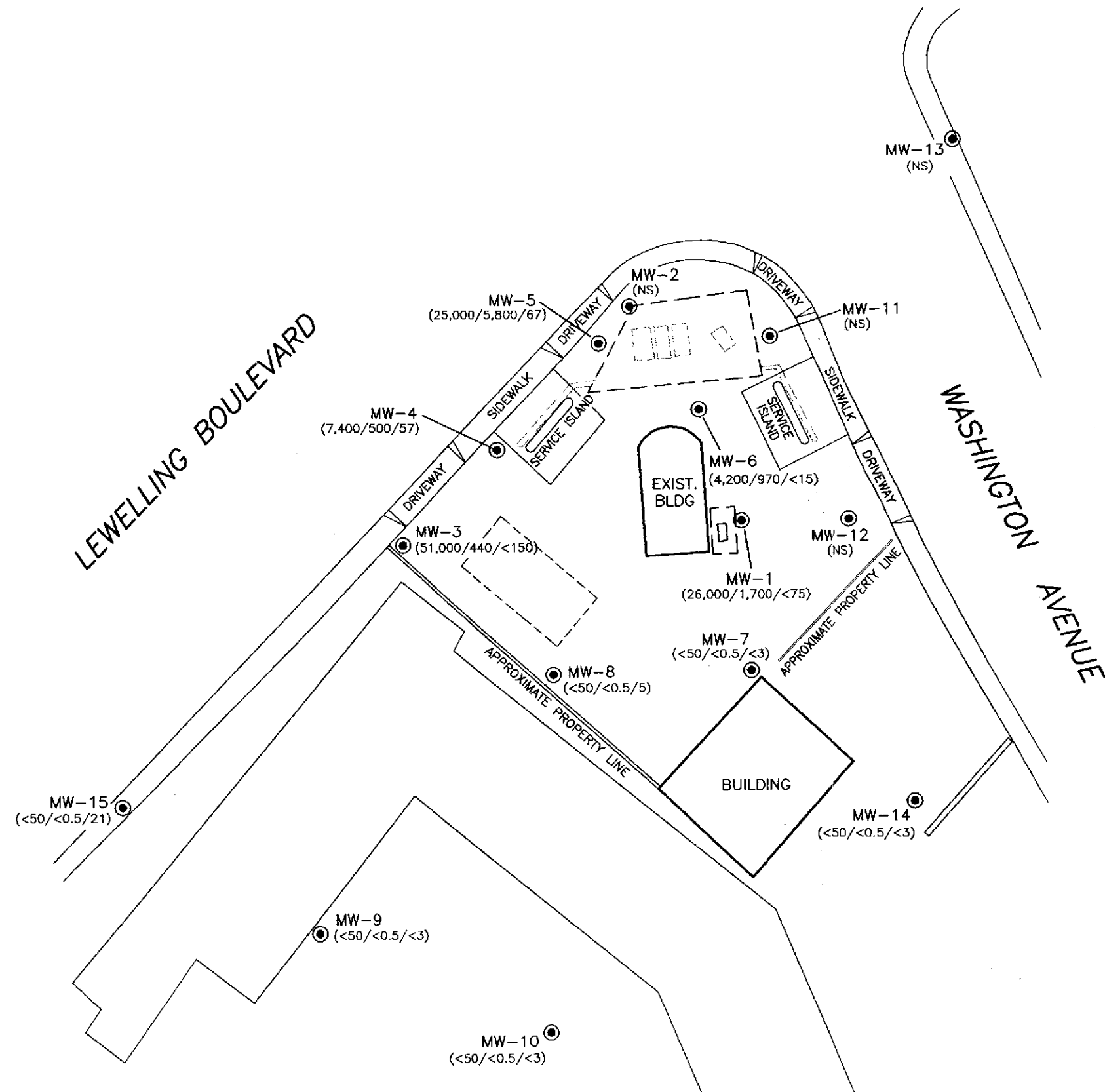
ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

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	08-31-95	--	--	--	--	--	--	--	62	8	<5	<5	<5
MW-8	11-27-95	--	--	--	--	--	--	--	15	<5	<5	<5	<5
MW-8	03-14-96	--	--	--	--	--	--	--	400	55	<50	<50	<50
MW-8	05-23-97	--	--	--	--	--	--	--	26	<5	<5	<5	<10
EPA: United States Environmental Protection Agency µg/L: micrograms per liter -- : not analyzed < = less than the laboratory detection limit stated to the right *: For previous historical analytical data please refer to <i>Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California</i> , (EMCON, March 14, 1996). **: Sampling date is different from Groundwater Monitoring Field Date													

Table 5
Approximate Cumulative Floating Product Recovered

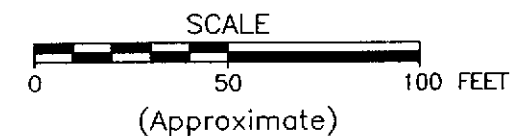
ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Well Desig- nation	Date	Floating Product Recovered gallons
MW-1	1991	3.43
MW-1	1992	0.02
MW-1	1993	0.00
MW-1	1994	0.00
MW-1	1995	0.00
MW-1	1996	0.00
MW-1	1997	0.00
MW-1	1998	0.00
MW-1	1999	0.00
1991 to 1999 Total:		3.45



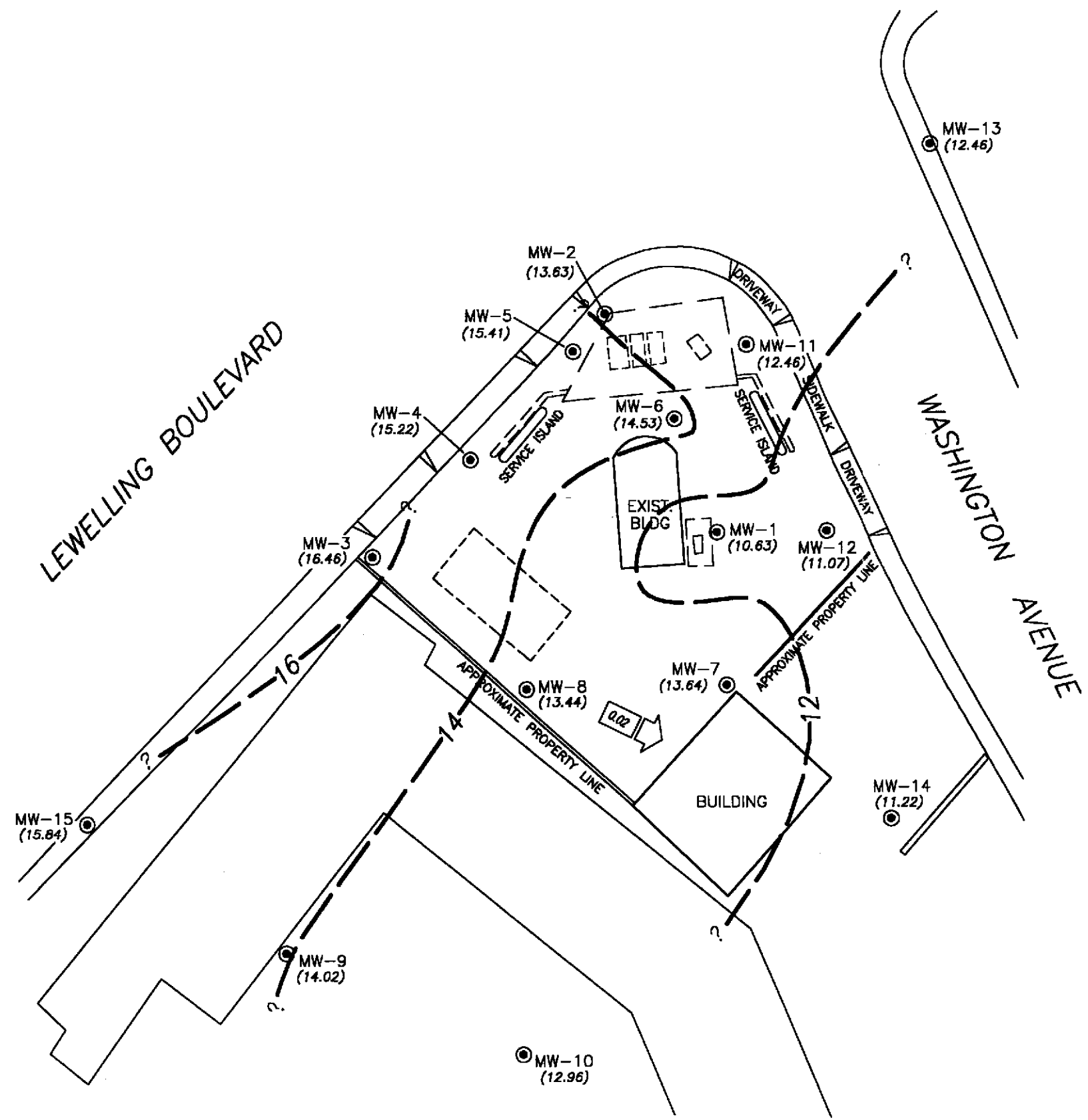
EXPLANATION

- Groundwater monitoring well
- Former underground gasoline storage tank
- Existing underground gasoline storage tank
- Approximate limit of gasoline tank excavation
- Former product line
- (7,400/500/57) Concentration of total petroleum hydrocarbons as gasoline (TPHG), benzene, and MTBE in groundwater (ug/L); samples collected 8/24/99
- < Not detected at or above the indicated laboratory detection limit
- NS Not sampled

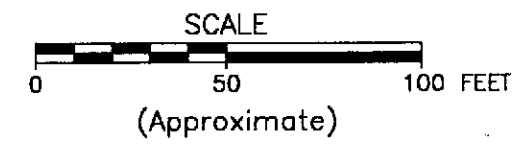


ARCO PRODUCTS COMPANY
SERVICE STATION 601

FIGURE 1
GROUNDWATER ANALYTICAL SUMMARY
THIRD QUARTER 1999
712 LEWELLING BOULEVARD
SAN LEANDRO, CALIFORNIA



- EXPLANATION**
- Groundwater monitoring well
 - Former underground gasoline storage tank
 - Existing underground gasoline storage tank
 - Approximate limit of gasoline tank excavation
 - ==== Former product line
 - (11.07) Groundwater elevation (Ft.-MSL) measured 8/23/99
 - ? --- Groundwater elevation contour (Ft.-MSL)
 - ← Approximate direction of groundwater flow showing gradient



	ARCO PRODUCTS COMPANY SERVICE STATION 601
	FIGURE 2 GROUNDWATER ELEVATION CONTOURS THIRD QUARTER 1999 712 LEWELLING BOULEVARD SAN LEANDRO, CALIFORNIA

APPENDIX A
SAMPLING AND ANALYSIS PROCEDURES

APPENDIX A

SAMPLING AND ANALYSIS PROCEDURES

The sampling and analysis procedures for water quality monitoring programs are contained in this appendix. The procedures provided for consistent and reproducible sampling methods, proper application of analytical methods, and accurate and precise analytical results. Finally, these procedures provided guidelines so that the overall objectives of the monitoring program were achieved.

The following documents have been used as guidelines for developing these procedures:

- Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities, Environmental Protection Agency (EPA)-530/SW-611, August 1977
- Resource Conservation and Recovery Act (RCRA) Groundwater Monitoring Technical Enforcement Guidance Document, Office of Solid Waste and Emergency Response (OSWER) 9950.1, September 1986
- Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, 3rd edition, November 1986
- Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water, EPA-600/4-82-057, July 1982
- Methods for Organic Chemical Analysis of Water and Wastes, EPA-600/4-79-020, revised March 1983
- Leaking Underground Fuel Tank (LUFT) Field Manual, California State Water Resources Control Board, revised October 1989

Sample Collection

Sample collection procedures include equipment cleaning, water level and total well depth measurements, and well purging and sampling.

Equipment Cleaning

Before the sampling event was started, equipment that was used to sample groundwater was disassembled and cleaned with detergent water and then rinsed with deionized water. During field sampling, equipment surfaces that were placed in the well or came into contact with groundwater during field sampling were steam cleaned with deionized water before the next well was purged or sampled.

Water Level, Floating Hydrocarbon, and Total Well Depth Measurements

Before purging and sampling occurred, the depth to water, floating hydrocarbon thickness, and total well depth were measured using an oil/water interface measuring system. The oil/water interface measuring system consists of a probe that emits a continuous audible tone when immersed in a nonconductive fluid, such as oil or gasoline, and an intermittent tone when immersed in a conductive fluid, such as water. The floating hydrocarbon thickness and water level were measured by lowering the probe into the well. Liquid levels were recorded relative to the tone emitted at the groundwater surface. The sonic probe was decontaminated by being rinsed with deionized water or steam cleaned after each use. A bottom-filling, clear Teflon[®] bailer was used to verify floating hydrocarbon thickness measurements of less than 0.02 foot. Alternatively, an electric sounder and a bottom-filling Teflon bailer may have been used to record floating hydrocarbon thickness and depth to water.

The electric sounder is a transistorized instrument that uses a reel-mounted, two-conductor, coaxial cable that connects the control panel to the sensor. Cable markings are stamped at 1-foot intervals. The water level was measured by lowering the sensor into the monitoring well. A low-current circuit was completed when the sensor contacted the water, which served as an electrolyte. The current was amplified and fed into an indicator light and audible buzzer, signaling when water had been contacted. A sensitivity control compensated for highly saline or conductive water. The electric sounder was decontaminated by being rinsed with deionized water after each use. The bailer was lowered to a point just below the liquid level, retrieved, and observed for floating hydrocarbon.

Liquid measurements were recorded to the nearest 0.01 foot on the depth to water/floating product survey form. The groundwater elevation at each monitoring well was calculated by subtracting the measured depth to water from the surveyed elevation of the top of the well casing. (Every attempt was made to measure depth to water for all wells on the same day.) Total well depth was then measured by lowering the sensor to the bottom of the well. Total well depth, used to calculate purge volumes and to determine whether the well screen was partially obstructed by silt, was recorded to the nearest 0.1 foot on the depth to water/floating product survey form.

Well Purging

If the depth to groundwater was above the top of screens of the monitoring wells, then the wells were purged. Before sampling occurred, a polyvinyl chloride (PVC) bailer, centrifugal pump, low-flow submersible pump, or Teflon bailer was used to purge standing water in the casing and gravel pack from the monitoring well. Monitoring wells were purged according to the protocol presented in Figure A-1. In most monitoring wells, the amount of water purged before sampling was greater than or equal to three casing volumes. Some monitoring wells were expected to be evacuated to dryness after removing fewer than three casing volumes. These low-yield monitoring wells were allowed to recharge for up to 24 hours. Samples were obtained as soon as the monitoring wells recharged to a level sufficient for sample collection. If insufficient water recharged after 24 hours, the monitoring well was recorded as dry for the sampling event.

Groundwater purged from the monitoring wells was transported in a 500-gallon water trailer, 55-gallon drum, or a 325-gallon truck-mounted tank to IT's San Jose or Sacramento office location for temporary storage. IT arranged for transport and disposal of the purged groundwater through Integrated Waste Stream Management, Inc.

Field measurements of pH, specific conductance, and temperature were recorded in a waterproof field logbook. Figure A-2 shows an example of the water sample field data sheet on which field data are recorded. Field data sheets were reviewed for completeness by the sampling coordinator after the sampling event was completed.

The pH, specific conductance, and temperature meter were calibrated each day before field activities were begun. The calibration was checked once each day to verify meter performance. Field meter calibrations were recorded on the water sample field data sheet.

Well Sampling

A Teflon bailer was the only equipment acceptable for well sampling. When samples for volatile organic analysis were being collected, the flow of groundwater from the bailer was regulated to minimize turbulence and aeration. Glass bottles of at least 40-milliliters volume and fitted with Teflon-lined septa were used in sampling for volatile organics. These bottles were filled completely to prevent air from remaining in the bottle. A positive meniscus formed when the bottle was completely full. A convex Teflon septum was placed over the positive meniscus to eliminate air. After the bottle was capped, it was inverted and tapped to verify that it contained no air bubbles. The sample containers for other parameters were filled, filtered as required, and capped.

When required, dissolved concentrations of metals were determined using appropriate field filtration techniques. The sample was filtered by emptying the contents of the Teflon bailer into a pressure transfer vessel. A disposable 0.45-micron acrylic copolymer filter was threaded onto the transfer vessel at the discharge point, and the vessel was sealed. Pressure was applied to the vessel with a hand pump and the filtrate directed into the appropriate containers. Each filter was used once and discarded.

Sample Preservation and Handling

The following section specifies sample containers, preservation methods, and sample handling procedures.

Sample Containers and Preservation

Sample containers vary with each type of analytical parameter. Container types and materials were selected to be nonreactive with the particular analytical parameter tested.

Sample Handling

Sample containers were labeled immediately prior to sample collection. Samples were kept cool with cold packs until received by the laboratory. At the time of sampling, each sample was logged on an ARCO chain-of-custody record that accompanied the sample to the laboratory.

Samples that required overnight storage prior to shipping to the laboratory were kept cool (4° C) in a refrigerator. The refrigerator was kept in a warehouse, which was locked when not occupied by an IT employee. A sample/refrigerator log was kept to record the date and time that samples were placed into and removed from the refrigerator.

Samples were transferred from IT to an ARCO-approved laboratory by courier or taken directly to the laboratory by the environmental sampler. Sample shipments from IT to laboratories performing the selected analyses routinely occurred within 24 hours of sample collection.

Sample Documentation

The following procedures were used during sampling and analysis to provide chain-of-custody control during sample handling from collection through storage. Sample documentation included the use of the following:

- Water sample field data sheets to document sampling activities in the field
- Labels to identify individual samples
- Chain-of-custody record sheets for documenting possession and transfer of samples
- Laboratory analysis request sheets for documenting analyses to be performed

Field Logbook

In the field, the sampler recorded the following information on the water sample field data sheet (see Figure A-2) for each sample collected:

- Project number
- Client's name
- Location
- Name of sampler
- Date and time
- Well accessibility and integrity
- Pertinent well data (e.g., casing diameter, depth to water, well depth)
- Calculated and actual purge volumes
- Purging equipment used
- Sampling equipment used
- Appearance of each sample (e.g., color, turbidity, sediment)
- Results of field analyses (temperature, pH, specific conductance)
- General comments

The water sample field data sheet was signed by the sampler and reviewed by the sampling coordinator.

Labels

Sample labels contained the following information:

- Project number
- Sample number (i.e., well designation)
- Sample depth
- Sampler's initials
- Date and time of collection
- Type of preservation used (if any)

Sampling and Analysis Chain-of-Custody Record

The ARCO chain-of-custody record initiated at the time of sampling contained, at a minimum, the sample designation (including the depth at which the sample was collected), sample type, analytical request, date of sampling, and the name of the sampler. The record sheet was signed, timed, and dated by the sampler when transferring the samples. The number of custodians in the chain of possession was minimized. A copy of the ARCO chain-of-custody record was returned to IT with the analytical results.

Groundwater Sampling and Analysis Request Form

A groundwater sampling and analysis request form (see Figure A-3) was used to communicate to the environmental sampler the requirements of the monitoring event. At a minimum, the groundwater sampling and analysis request form included the following information:

- Date scheduled
- Site-specific instructions
- Specific analytical parameters
- Well number
- Well specifications (expected total depth, depth of water, and product thickness)

MONITORING WELL PURGING PROTOCOL

MEASURE AND RECORD DEPTH TO WATER AND
WELL TOTAL DEPTH

CHECK FOR FLOATING PRODUCT

YES

MEASURE AND DOCUMENT
FLOATING PRODUCT THICKNESS.
DO NOT SAMPLE WELL FOR
DISSOLVED CONSTITUENTS.

NO

CALCULATE PURGE VOLUME BY
USING THE FOLLOWING EQUATION:
$$P = \pi r^2 h \times 7.48 \times 3$$

where:

P = calculated purge volume (gallons)

$\pi = 3.14$

r = radius of well casing in feet

h = height of water column in feet

WELL EVACUATED TO PRACTICAL LIMITS
OF DRYNESS BEFORE REMOVING
CALCULATED PURGE VOLUME

EVACUATE WATER FROM WELL EQUAL TO
THE CALCULATED PURGE VOLUME WHILE
MONITORING GROUNDWATER
STABILIZATION INDICATOR PARAMETERS
(pH, CONDUCTIVITY, TEMPERATURE) AT
INTERVALS OF ONE CASING VOLUME.

NO

YES

FINAL TWO SETS OF GROUNDWATER
STABILIZATION INDICATOR PARAMETER
MEASUREMENTS MEET THE FOLLOWING
CRITERIA:

pH = ± 0.1 pH units
COND. = ± 10 %
TEMP. = ± 1.0 °F

WELL RECHARGES TO A LEVEL
SUFFICIENT FOR SAMPLE
COLLECTION WITHIN 24 HOURS
OF EVACUATION TO DRYNESS.

YES

NO

WELL PURGING
CRITERIA MET;
PROCEED TO
WELL SAMPLING.

CONTINUE PURGING; EVACUATE
ADDITIONAL CASING VOLUME
OF WATER, MONITORING
INDICATOR PARAMETERS FOR
STABILITY.

YES

NO

FIELD TEST FIRST
RECHARGE WATER FOR
INDICATOR PARAMETERS,
THEN PROCEED TO WELL
SAMPLING.

RECORD WELL
AS DRY FOR
PURPOSES OF
SAMPLING.

MONITORING WELL PURGING PROTOCOL

FIGURE

A-1

WATER SAMPLE FIELD DATA SHEET

PROJECT NO : _____

SAMPLE ID : _____

PURGED BY : _____

CLIENT NAME : _____

SAMPLED BY : _____

LOCATION : _____

TYPE: Groundwater _____ Surface Water _____ Leachate _____ Other _____

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

CASING ELEVATION (feet/MSL) : _____

VOLUME IN CASING (gal.) : _____

DEPTH OF WELL (feet) : _____

CALCULATED PURGE (gal.) : _____

DEPTH OF WATER (feet) : _____

ACTUAL PURGE VOL. (gal.) : _____

DATE PURGED : _____

END PURGE : _____

DATE SAMPLED : _____

SAMPLING TIME : _____

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm@25°C)	TEMPERATURE (°F)	TURBIDITY (visual/NTU)	TIME (2400 HR)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

OTHER: _____

ODOR: _____

(COBALT 0-100)

(NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1) : _____

PURGING EQUIPMENT

SAMPLING EQUIPMENT

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

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

Other: _____

Other: _____

WELL INTEGRITY: _____ LOCK: _____

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: _____ REVIEWED BY: _____ PAGE _____ OF _____

WATER SAMPLE FIELD DATA SHEET

FIGURE

A-2

**IT - SACRAMENTO
GROUNDWATER SAMPLING AND ANALYSIS REQUEST FORM**

PROJECT NAME :

SCHEDULED DATE :

SPECIAL INSTRUCTIONS / CONSIDERATIONS :

Project

Authorization: _____

EMCON Project No.: _____

OWT Project No.: _____

Task Code: _____

Originals To: _____

cc: _____

Well Lock Number (s)

☐ CHECK BOX TO AUTHORIZE DATA ENTRY

Site Contact: _____

Name

Phone #

Well Number or Source	Casing Diameter (inches)	Casing Length (feet)	Depth to Water (feet)	ANAYSES REQUESTED

Laboratory and Lab QC Instructions:

SAMPLING AND ANALYSIS REQUEST FORM

FIGURE

A-3

APPENDIX B

**CERTIFIED ANALYTICAL REPORTS,
AND CHAIN-OF-CUSTODY DOCUMENTATION**



September 8, 1999

Service Request No.: S9902602

Mr. Glen Vanderveen
IT/EMCON
2201 Broadway, Suite 101
Oakland, CA 94612

RE: TO#24118.00/RAT8/601 SAN LEANDRO

Dear Mr. Vanderveen:

Enclosed are the results of the sample(s) submitted to our laboratory on August 25, 1999. All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply to the sample(s) analyzed. Columbia Analytical Services is not responsible for use of less than the complete report. Signature of this CAS Analytical Report confirms that pages 2 through 23, following, have been thoroughly reviewed and approved for release.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 1496, expiration: January 31, 2001).

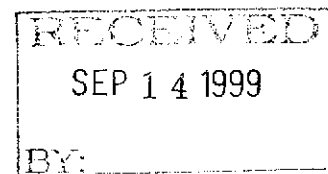
If you have any questions, please call me at (408) 748-9700.

Respectfully submitted,

Columbia Analytical Services, Inc.

Bernadette Troncales
Project Chemist

Greg Jordan
Laboratory Director



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
TTLIC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-14(12)
Lab Code: S9902602-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/5/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/5/99	ND	

Approved By: _____

MT

Date: _____

09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-7(9)
Lab Code: S9902602-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/5/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/5/99	ND	

Approved By: _____



Date: _____

09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4(8)
Lab Code: S9902602-003
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	5	NA	9/5/99	7400	
Benzene	EPA 5030	8020	0.5	5	NA	9/5/99	500	
Toluene	EPA 5030	8020	0.5	5	NA	9/5/99	73	
Ethylbenzene	EPA 5030	8020	0.5	5	NA	9/5/99	230	
Xylenes, Total	EPA 5030	8020	0.5	5	NA	9/5/99	1700	
Methyl tert-Butyl Ether	EPA 5030	8020	3	5	NA	9/5/99	57	

Approved By: _____



Date: _____



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-5(10)
Lab Code: S9902602-004
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	100	NA	9/6/99	25000	
Benzene	EPA 5030	8020	0.5	100	NA	9/6/99	5800	
Toluene	EPA 5030	8020	0.5	100	NA	9/6/99	2300	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	9/6/99	570	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	9/6/99	2000	
Methyl tert -Butyl Ether	EPA 5030	8020	3	10	NA	9/5/99	67	

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-6(8)
Lab Code: S9902602-005
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	5	NA	9/5/99	4200	
Benzene	EPA 5030	8020	0.5	5	NA	9/5/99	970	
Toluene	EPA 5030	8020	0.5	5	NA	9/5/99	12	
Ethylbenzene	EPA 5030	8020	0.5	5	NA	9/5/99	110	
Xylenes, Total	EPA 5030	8020	0.5	5	NA	9/5/99	29	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	5	NA	9/5/99	<15	C1

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

Approved By: _____

Date: _____

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3(11)
Lab Code: S9902602-006
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	50	NA	9/5/99	51000	
Benzene	EPA 5030	8020	0.5	50	NA	9/5/99	440	
Toluene	EPA 5030	8020	0.5	50	NA	9/5/99	930	
Ethylbenzene	EPA 5030	8020	0.5	50	NA	9/5/99	2200	
Xylenes, Total	EPA 5030	8020	0.5	50	NA	9/5/99	9200	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	50	NA	9/5/99	<150	C1

C1

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

Approved By: _____



Date: _____

09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1(11)
Lab Code: S9902602-007
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	25	NA	9/5/99	26000	
Benzene	EPA 5030	8020	0.5	25	NA	9/5/99	1700	
Toluene	EPA 5030	8020	0.5	25	NA	9/5/99	52	
Ethylbenzene	EPA 5030	8020	0.5	25	NA	9/5/99	1600	
Xylenes, Total	EPA 5030	8020	0.5	25	NA	9/5/99	1500	
Methyl tert -Butyl Ether	EPA 5030	8020	3	25	NA	9/5/99	<75	C1

C1

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

Approved By: _____

Date: _____

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-8(10)
Lab Code: S9902602-008
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/5/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/5/99	5	

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-15(10)
Lab Code: S9902602-009
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/5/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/5/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/5/99	21	

Approved By: _____

Date: _____

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S990904-WB2
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/4/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/4/99	ND	

Approved By: _____

Date: _____

09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S990906-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/6/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/6/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/6/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/6/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/6/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/6/99	ND	

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

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

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-14(12)	S9902602-001		91	106
MW-7(9)	S9902602-002		91	103
MW-4(8)	S9902602-003		80	117
MW-5(10)	S9902602-004		94	110
MW-6(8)	S9902602-005		82	139
MW-3(11)	S9902602-006		78	123
MW-1(11)	S9902602-007		81	139
MW-8(10)	S9902602-008		91	106
MW-15(10)	S9902602-009		88	103
Lab Control Sample	S990904-LCS		105	102
Lab Control Sample	S990904-DLCS		99	102
Lab Control Sample	S990904-LCS		91	113
Lab Control Sample	S990904-DLCS		87	113
Method Blank	S990904-WB2		94	88
Method Blank	S990906-WB1		94	106

CAS Acceptance Limits:

69-116

72-139

Approved By: _____

Date: _____

SUR2/020397p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/4/99

Laboratory Control /Duplicate Laboratory Control Sample Summary
BTE

Sample Name: Lab Control Sample
Lab Code: S990904-LCS, S990904-DLCS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Percent Recovery									Relative Percent Difference
				Spike Level			Sample Result	Spike Result		CAS Acceptance		Limits	
				MS	DMS	MS		DMS	MS	DMS			
Benzene	EPA 5030	8020	0.5	25	25	ND	27	26	108	104	75-135	4	
Toluene	EPA 5030	8020	0.5	25	25	ND	24	24	96	96	73-136	<1	
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	26	26	104	104	69-142	<1	

Approved By: _____

Date: _____

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/4/99

Laboratory Control /Duplicate Laboratory Control Sample Summary
TPH as Gasoline

Sample Name: Lab Control Sample
Lab Code: S990904-LCS, S990904-DLCS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Percent Recovery						Relative Percent Difference	Result Notes	
				MS	DMS		Spike Result		CAS Acceptance Limits	MS	DMS	MS			DMS
							MS	DMS							
Gasoline	EPA 5030	CA/LUFT	50	250	250	ND	253	241	101	96	75-135	5			

Approved By: _____

Date: _____

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO

Service Request: S9902602
Date Analyzed: 9/4/99

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

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Percent Recovery	Result Notes
					Percent Recovery Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	85-115	96	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	24	85-115	96	
Ethylbenzene	EPA 5030	8020	25	25	85-115	100	
Xylenes, Total	EPA 5030	8020	75	76	85-115	101	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	24	85-115	96	

Approved By: _____

Date: _____

ICV/032196

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#24118.00/RAT8/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9902602
 Date Collected: 8/24/99
 Date Received: 8/25/99

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-1(11)
 Lab Code: S9902602-007
 Test Notes: C1

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Pyridine	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
N-Nitrosodimethylamine	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Aniline	EPA 3510C	8270C	6	10	8/26/99	8/31/99	<60	
Bis(2-chloroethyl) Ether	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Phenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2-Chlorophenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
1,3-Dichlorobenzene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
1,4-Dichlorobenzene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
1,2-Dichlorobenzene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Benzyl Alcohol	EPA 3510C	8270C	10	10	8/26/99	8/31/99	<100	
Bis(2-chloroisopropyl) Ether	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2-Methylphenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Hexachloroethane	EPA 3510C	8270C	10	10	8/26/99	8/31/99	<100	
N-Nitrosodi-n-propylamine	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
3- and 4-Methylphenol*	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Nitrobenzene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Isophorone	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2-Nitrophenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2,4-Dimethylphenol	EPA 3510C	8270C	10	10	8/26/99	8/31/99	<100	
Bis(2-chloroethoxy)methane	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2,4-Dichlorophenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Benzoic Acid	EPA 3510C	8270C	50	10	8/26/99	8/31/99	<500	
1,2,4-Trichlorobenzene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Naphthalene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	1200	
4-Chloroaniline	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Hexachlorobutadiene	EPA 3510C	8270C	10	10	8/26/99	8/31/99	<100	
4-Chloro-3-methylphenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2-Methylnaphthalene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	400	
Hexachlorocyclopentadiene	EPA 3510C	8270C	10	10	8/26/99	8/31/99	<100	
2,4,6-Trichlorophenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2,4,5-Trichlorophenol	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2-Chloronaphthalene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2-Nitroaniline	EPA 3510C	8270C	20	10	8/26/99	8/31/99	<200	
Acenaphthylene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Dimethyl Phthalate	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
2,6-Dinitrotoluene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Acenaphthene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
3-Nitroaniline	EPA 3510C	8270C	20	10	8/26/99	8/31/99	<200	
2,4-Dinitrophenol	EPA 3510C	8270C	50	10	8/26/99	8/31/99	<500	
Dibenzofuran	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
4-Nitrophenol	EPA 3510C	8270C	50	10	8/26/99	8/31/99	<500	
2,4-Dinitrotoluene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Fluorene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
4-Chlorophenyl Phenyl Ether	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	

* Quantified as 4-methylphenol.
 C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

Approved By: _____

Date: _____

09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

ARCO Products Company
TO#24118.00/RAT8/601 SAN LEANDRO
Water

Service Request: S9902602
Date Collected: 8/24/99
Date Received: 8/25/99

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-1(11)
Lab Code: S9902602-007
Test Notes: C1

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diethyl Phthalate	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
4-Nitroaniline	EPA 3510C	8270C	20	10	8/26/99	8/31/99	<200	
2-Methyl-4,6-dinitrophenol	EPA 3510C	8270C	20	10	8/26/99	8/31/99	<200	
N-Nitrosodiphenylamine	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
4-Bromophenyl Phenyl Ether	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Hexachlorobenzene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Pentachlorophenol	EPA 3510C	8270C	30	10	8/26/99	8/31/99	<300	
Phenanthrene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Anthracene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Di-n-butyl Phthalate	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Fluoranthene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Pyrene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Butyl Benzyl Phthalate	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
3,3'-Dichlorobenzidine	EPA 3510C	8270C	20	10	8/26/99	8/31/99	<200	
Benz(a)anthracene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Chrysene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Bis(2-ethylhexyl) Phthalate	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Di-n-octyl Phthalate	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Benzo(b)fluoranthene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Benzo(k)fluoranthene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Benzo(a)pyrene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Indeno(1,2,3-cd)pyrene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Dibenz(a,h)anthracene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	
Benzo(g,h,i)perylene	EPA 3510C	8270C	5	10	8/26/99	8/31/99	<50	

C1

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

Approved By: _____



Date: _____

09/02/99

IS2p/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#24118.00/RAT8/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9902602
 Date Collected: NA
 Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
 Lab Code: S990826-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Pyridine	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
N-Nitrosodimethylamine	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Aniline	EPA 3510C	8270C	6	1	8/26/99	8/30/99	ND	
Bis(2-chloroethyl) Ether	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Phenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2-Chlorophenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
1,3-Dichlorobenzene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
1,4-Dichlorobenzene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
1,2-Dichlorobenzene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Benzyl Alcohol	EPA 3510C	8270C	10	1	8/26/99	8/30/99	ND	
Bis(2-chloroisopropyl) Ether	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2-Methylphenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Hexachloroethane	EPA 3510C	8270C	10	1	8/26/99	8/30/99	ND	
N-Nitrosodi-n-propylamine	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
3- and 4-Methylphenol*	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Nitrobenzene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Isophorone	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2-Nitrophenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2,4-Dimethylphenol	EPA 3510C	8270C	10	1	8/26/99	8/30/99	ND	
Bis(2-chloroethoxy)methane	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2,4-Dichlorophenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Benzoic Acid	EPA 3510C	8270C	50	1	8/26/99	8/30/99	ND	
1,2,4-Trichlorobenzene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Naphthalene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
4-Chloroaniline	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Hexachlorobutadiene	EPA 3510C	8270C	10	1	8/26/99	8/30/99	ND	
4-Chloro-3-methylphenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2-Methylnaphthalene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Hexachlorocyclopentadiene	EPA 3510C	8270C	10	1	8/26/99	8/30/99	ND	
2,4,6-Trichlorophenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2,4,5-Trichlorophenol	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2-Chloronaphthalene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2-Nitroaniline	EPA 3510C	8270C	20	1	8/26/99	8/30/99	ND	
Acenaphthylene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Dimethyl Phthalate	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
2,6-Dinitrotoluene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Acenaphthene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
3-Nitroaniline	EPA 3510C	8270C	20	1	8/26/99	8/30/99	ND	
2,4-Dinitrophenol	EPA 3510C	8270C	50	1	8/26/99	8/30/99	ND	
Dibenzofuran	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
4-Nitrophenol	EPA 3510C	8270C	50	1	8/26/99	8/30/99	ND	
2,4-Dinitrotoluene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Fluorene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
4-Chlorophenyl Phenyl Ether	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	

* Quantified as 4-methylphenol.

Approved By: 

Date: 09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#24118.00/RAT8/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9902602
 Date Collected: NA
 Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
 Lab Code: S990826-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diethyl Phthalate	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
4-Nitroaniline	EPA 3510C	8270C	20	1	8/26/99	8/30/99	ND	
2-Methyl-4,6-dinitrophenol	EPA 3510C	8270C	20	1	8/26/99	8/30/99	ND	
N-Nitrosodiphenylamine	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
4-Bromophenyl Phenyl Ether	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Hexachlorobenzene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Pentachlorophenol	EPA 3510C	8270C	30	1	8/26/99	8/30/99	ND	
Phenanthrene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Anthracene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Di-n-butyl Phthalate	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Fluoranthene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Pyrene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Butyl Benzyl Phthalate	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
3,3'-Dichlorobenzidine	EPA 3510C	8270C	20	1	8/26/99	8/30/99	ND	
Benz(a)anthracene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Chrysene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Di-n-octyl Phthalate	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Benzo(b)fluoranthene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Benzo(k)fluoranthene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Benzo(a)pyrene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Indeno(1,2,3-cd)pyrene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Dibenz(a,h)anthracene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	
Benzo(g,h,i)perylene	EPA 3510C	8270C	5	1	8/26/99	8/30/99	ND	

Approved By: _____

PT

Date: 09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902602
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds

Prep Method: EPA 3510C
Analysis Method: 8270C

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	P e r c e n t			R e c o v e r y		TPH
			2FPHL	PHL	NBZ	2FBPH	246TBPHL	
MW-1(11)	S9902602-007		29	18	81	72	69	80
Lab Control Sample	S990826-LCS		28	18	75	76	84	92
Lab Control Sample	S990826-DLCS		31	21	89	82	88	98
Method Blank	S990826-WB1		32	20	89	87	97	108

CAS Acceptance Limits: 21-100 10-94 35-114 43-116 10-123 33-141

2FPHL 2-Fluorophenol
 PHL Phenol-D6
 NBZ Nitrobenzene-D5
 2FBPH 2-Fluorobiphenyl
 246TBPHL 2,4,6-Tribromophenol
 TPH Terphenyl-D14

Approved By: _____

PT

Date: _____

09/08/99

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: TO#24118.00/RAT8/601 SAN LEANDRO
 LCS Matrix: Water

Service Request: S9902602
 Date Collected: NA
 Date Received: NA
 Date Extracted: 8/26/99
 Date Analyzed: 8/30-31/99

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary
 Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Lab Control Sample
 Lab Code: S990826-DLCS, S990826-DLCS
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

			Percent Recovery								Relative Percent Difference	Result Notes
Analyte	Prep Method	Analysis Method	True Value		Result		CAS Acceptance					
			LCS	DLCS	LCS	DLCS	LCS	DLCS	Limits			
Phenol	EPA 3510C	8270C	100	100	17	20	17	20	5-112	16		
2-Chlorophenol	EPA 3510C	8270C	100	100	62	72	62	72	23-134	15		
1,4-Dichlorobenzene	EPA 3510C	8270C	50	50	33	39	66	78	20-124	17		
N-Nitrosodi-n-propylamine	EPA 3510C	8270C	50	50	43	51	86	102	D-230	17		
1,2,4-Trichlorobenzene	EPA 3510C	8270C	50	50	33	39	66	78	44-142	17		
4-Chloro-3-methylphenol	EPA 3510C	8270C	100	100	65	73	65	73	22-147	12		
Acenaphthene	EPA 3510C	8270C	50	50	37	43	74	86	47-145	15		
4-Nitrophenol	EPA 3510C	8270C	100	100	18	21	18	21	D-132	15		
2,4-Dinitrotoluene	EPA 3510C	8270C	50	50	33	39	66	78	39-139	17		
Pentachlorophenol	EPA 3510C	8270C	100	100	83	90	83	90	14-176	8		
Pyrene	EPA 3510C	8270C	50	50	42	47	84	94	52-115	11		

Approved By: _____

Date: _____

DLCS/020597p

ARCO Products Company

Division of Atlantic/Richfield Company

59902602

Task Order No.

24118 00

Chain of Custody

[illegible]



September 9, 1999

Service Request No.: S9902603

Mr. Glen Vanderveen
IT/EMCON
2201 Broadway, Suite 101
Oakland, CA 94612

RE: TO#24118.00/RAT8/601 SAN LEANDRO

Dear Mr. Vanderveen:

Enclosed are the results of the sample(s) submitted to our laboratory on August 25, 1999. All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply to the sample(s) analyzed. Columbia Analytical Services is not responsible for use of less than the complete report. Signature of this CAS Analytical Report confirms that pages 2 through 9, following, have been thoroughly reviewed and approved for release.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 1496, expiration: January 31, 2001).

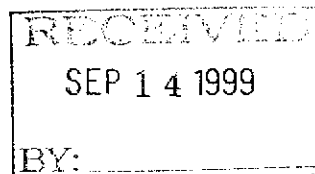
If you have any questions, please call me at (408) 748-9700.

Respectfully submitted,

Columbia Analytical Services, Inc.

Bernadette Troncales
Project Chemist

Greg Jordan
Laboratory Director



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
TTLIC	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: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-9(15)
Lab Code: S9902603-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/4/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/4/99	ND	

Approved By: _____



Date: _____



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: 8/24/99
Date Received: 8/25/99

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-10(18)
Lab Code: S9902603-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/4/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/4/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/4/99	ND	

Approved By: _____

HT

Date: _____

09/09/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S990903-WB4
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/3/99	ND	
Benzene	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Toluene	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	9/3/99	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	9/3/99	ND	

Approved By: _____

Date: _____

09/09/99

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

Prep Method: EPA 5030
Analysis Method: 8020 CALUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-9(15)	S9902603-001		88	89
MW-10(18)	S9902603-002		89	100
Lab Control Sample	S990903-LCS		101	106
Lab Control Sample	S990903-DLCS		98	101
Lab Control Sample	S990903-LCS		96	109
Lab Control Sample	S990903-DLCS		101	117
Method Blank	S990903-WB4		91	107

CAS Acceptance Limits: 69-116 72-139

Approved By: _____

Date: _____

09/09/99

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/2/99

Lab Control/Duplicate Lab Control Sample Summary
BTE

Sample Name: Lab Control Sample
Lab Code: S990903-LCS, S990903-DLCS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	Percent Recovery									
			Spike Level		Sample Result	Spike Result		CAS Acceptance		Relative Percent Difference		
			MRL	MS		DMS	MS	DMS	MS		DMS	Limits
Benzene	EPA 5030	8020	0.5	25	25	ND	26	26	104	104	75-135	<1
Toluene	EPA 5030	8020	0.5	25	25	ND	23	24	92	96	73-136	4
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	25	26	100	104	69-142	4

Approved By: _____

Date: _____

09/09/99

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9902603
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 9/2/99

Lab Control/Duplicate Lab Control Sample Summary
TPH as Gasoline

Sample Name: Lab Control Sample
Lab Code: S990903-LCS,
Test Notes:

S990903-DLCS

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery				Relative Percent Difference	Result Notes
				MS	DMS		MS	DMS	MS	DMS	CAS Acceptance Limits			
Gasoline	EPA 5030	CA/LUFT	50	250	250	ND	252	278	101	111	75-135	10		

Approved By: _____

Date: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: TO#24118.00/RAT8/601 SAN LEANDRO

Service Request: S9902603
Date Analyzed: 9/2/99

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

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Percent Recovery	Result Notes
					Percent Recovery Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	85-115	96	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	24	85-115	96	
Ethylbenzene	EPA 5030	8020	25	25	85-115	100	
Xylenes, Total	EPA 5030	8020	75	74	85-115	99	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	22	85-115	88	

Approved By: _____



Date: _____

09/09/99

ICV032196

ARCO Products Company

Division of Atlantic/Richfield Company

59902603

Task Order No.

24118.00

Chain of Custody

ARCO Facility no.		0601		City (Facility)		San Leandro		Project manager (Consultant)		Glen Vander Veen		Laboratory Name		CAS	
ARCO engineer		Paul Supple		Telephone no. (ARCO)				Telephone no. (Consultant)		(408) 453-7300		Fax no. (Consultant)		(408) 437-9526	
Contract Number				Address (Consultant)		2201 Broadway #101 Oakland, CA 94612									
Sample I.D.		Lab no.		Container no.		Matrix		Preservation		Sampling date		Sampling time		Method of shipment	
						Soil Water Other		Ice Acid						Sampler will deliver	
MW-9 (15)		Z		①		X		X HCL		8/21/99		1133		Special Detection Limit/reporting	
MW-10 (15)		Z		②		X		X HCL		↓		1151		Lowest Possible	
														Special QA/QC	
														As Normal	
														Remarks	
														RAT &	
														2-40ml HCL	
														VOAS	
														#791639	
														Lab Number	
														Turnaround Time:	
														Priority Rush	
														1 Business Day	
														Rush	
														2 Business Days	
														Expedited	
														5 Business Days	
														Standard	
														10 Business Days	
Condition of sample:				Temperature received:		Due: 9/9/99 R11/D3									
Relinquished by sampler		Date		Time		Received by Joseph Pacheco CAS 8/25/99 1430									
Relinquished by		Date		Time		Received by									
Relinquished by		Date		Time		Received by laboratory		Date		Time					

APPENDIX C
FIELD DATA SHEETS

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 792204

STATION ADDRESS : 712 Lewelling Blvd., San Leandro

DATE : 8/23/99

ARCO STATION # : 601

FIELD TECHNICIAN : B. Hendrick

DAY : Monday

DTW Order	WELL ID	Well Box Seal	Type Of Well Lid	Gasket Present	Lock Number	Type Of 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-9	OK	15/16"	YES	ARCO	LWC	8.24	8.24	ND	-	16.2	DO = mg/L - °C 1.43 / 20.3 °C
2	MW-10	OK	15/16"	YES	3900	LWC	8.37	8.37	ND	-	14.3	1.21 / 20.2 °C
3	MW-12	OK	15/16"	YES	3900	LWC	9.04	9.04	ND	-	11.9	0.85 / 22.6 °C
4	MW-13	OK	15/16"	YES	ARCO	LWC	8.29	8.29	ND	-	13.3	0.94 / 20.4 °C
5	MW-14	OK	15/16"	YES	ARCO	LWC	9.68	9.68	ND	-	13.1	0.91 / 21.6 °C
6	MW-7	OK	15/16"	YES	ARCO	LWC	9.25	9.25	ND	-	9.7	1.42 / 21.3 °C
7	MW-11	OK	15/16"	YES	ARCO	LWC	8.51	8.51	ND	-	12.0	0.86 / 23.0 °C
8	MW-4	OK	15/16"	YES	ARCO	LWC	7.16	7.16	ND	-	8.6	0.84 / 22.2 °C
9	MW-5	OK	15/16"	YES	3900	LWC	7.04	7.04	ND	-	10.4	1.04 / 23.8 °C ORC Socks
10	MW-6	OK	15/16"	YES	ARCO	LWC	8.24	8.24	ND	-	8.6	0.90 / 22.4 °C
11	MW-3	OK	HEX	YES	ARCO	LWC	6.53	6.53	ND	-	11.9	0.67 / 22.3 °C Skimmer OK Socks
12	MW-1	OK	HEX	YES	3900	LWC	8.56	8.56	ND	-	12.0	0.72 / 22.8 °C
13	MW-2	OK	15/16"	YES	ARCO	LWC	7.49	7.49	ND	-	12.4	0.68 / 22.8 °C ORC Socks
14	MW-15	OK	15/16"	YES	ARCO	LWC	6.24	6.24	ND	-	10.4	1.14 / 20.8 °C
15	MW-8	OK	15/16"	YES	3900	LWC	7.45	7.45	ND	-	10.3	7.85 / 21.3 °C ORC Socks

SURVEY POINTS ARE TOP OF WELL CASINGS

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



emcon

PROJECT NO: 792204

SAMPLE ID: MW-1(11')

PURGED BY: B. Hewides

CLIENT NAME: ARCO #0601

SAMPLED BY: L

LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____

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

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 2.2

DEPTH OF WELL (feet): 12.0 CALCULATED PURGE (gal.): 6.8

DEPTH OF WATER (feet): 8.82 ACTUAL PURGE VOL. (gal.): 7.0

DATE PURGED: 8/24/99 END PURGE: 1409

DATE SAMPLED: L SAMPLING TIME: 1413

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1405</u>	<u>3.0</u>	<u>7.06</u>	<u>1175</u>	<u>74.1</u>	<u>grey</u>	<u>mod</u>
<u>1407</u>	<u>5.0</u>	<u>7.10</u>	<u>1190</u>	<u>74.1</u>	<u>L</u>	<u>L</u>
<u>1409</u>	<u>7.0</u>	<u>7.19</u>	<u>1231</u>	<u>74.0</u>	<u>L</u>	<u>L</u>

OTHER: Dissolved Oxygen= ODOR: Strong N/A N/A

(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

PURGING EQUIPMENT

SAMPLING EQUIPMENT

<u> </u> 2" Bladder Pump	<u> </u> Bailer (Teflon)	<u> </u> 2" Bladder Pump	<u> </u> Bailer (Teflon)
<u> </u> Centrifugal Pump	<u> </u> Bailer (PVC)	<u> </u> Bomb Sampler	<u> </u> Bailer (Stainless Steel)
<u> </u> Submersible Pump	<u> </u> Bailer (Stainless Steel)	<u> </u> Dipper	<u> </u> Submersible Pump
<u> </u> Well Wizard [®]	<u> </u> Dedicated	<u> </u> Well Wizard [®]	<u> </u> Dedicated
Other: <u> </u>		Other: <u>Disposable Teflon Bailer</u>	

WELL INTEGRITY: Good LOCK:

REMARKS: Intermittent product in purge water
well nearly doted during purge

pH, E.C., Temp. Meter Calibration: Date: see MW-14 Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: BH REVIEWED BY: MA PAGE 1 OF _____

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



EMCON

PROJECT NO: 792204
 PURGED BY: B. H. J. J. J.
 SAMPLED BY: J

SAMPLE ID: MW-3(11)
 CLIENT NAME: ARCO #0601
 LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 _____ 3 _____ 4 X 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 3.5
 DEPTH OF WELL (feet): 11.9 CALCULATED PURGE (gal.): 10.6
 DEPTH OF WATER (feet): 6.53 ACTUAL PURGE VOL. (gal.): 1.0

DATE PURGED: 8/24/99 END PURGE: 1335
 DATE SAMPLED: J SAMPLING TIME: 1350

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1335</u>	<u>1.0</u>	<u>8.73</u>	<u>930</u>	<u>70.9</u>	<u>Black</u>	<u>High</u>

OTHER: Dissolved Oxygen= ODOR: Stray N/A N/A
 (COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

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)
 _____ Bomb Sampler _____ Bailer (Stainless Steel)
 _____ Dipper _____ Submersible Pump
 _____ Well Wizard® _____ Dedicated
 Other: Disposable Teflon Bailer

WELL INTEGRITY: Good LOCK: —

REMARKS: Skimmer and ORC seals installed in well
Replaced 1 universal bolt
emptied the skimmer, no product observed
product seen in purge water
discontinued purge, no sample taken *

pH, E.C., Temp. Meter Calibration: Date: See MW-4 Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: BH REVIEWED BY: 9/10 PAGE 2 OF _____

* Spoke to Steve H. (San Jose) Instructed me to take a grab sample.

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



EMCON

PROJECT NO: 792204

SAMPLE ID: MW-4(8')

PURGED BY: B. H. Jacobs

CLIENT NAME: ARCO #0601

SAMPLED BY: J

LOCATION: San Leandro, California

TYPE: Groundwater ☒ Surface Water ☐ Leachate ☐ Other ☐
CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 0.9
DEPTH OF WELL (feet): 8.6 CALCULATED PURGE (gal.): 2.9
DEPTH OF WATER (feet): 7.16 ACTUAL PURGE VOL. (gal.): 1.5

DATE PURGED: 8/24/99

END PURGE: 1237

DATE SAMPLED: J

SAMPLING TIME: 1248

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1235	1.0	7.27	1214	71.3	clear	low
1247	after recharge	7.42	1183	72.0	↓	↓

OTHER: Dissolved Oxygen=

ODOR: Strong

N/A
(COBALT 0-100)

N/A
(NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

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) ☐
Bomb Sampler ☐ Bailer (Stainless Steel) ☐
Dipper ☐ Submersible Pump ☐
Well Wizard® ☐ Dedicated ☐
Other: Disposable Teflon Bailer

WELL INTEGRITY: Good

LOCK: Arco

REMARKS:

Well Arco @ 1.5 gallons purged - 1237
DTW @ 1238 = 8.5'
DTW @ 1246 = 8.14'

pH, E.C., Temp. Meter Calibration: Date: See MW-14 Time: Meter Serial No.:

E.C. 1000 / pH 7 / pH 10 / pH 4 /

Temperature °F

SIGNATURE:

BH

REVIEWED BY:

NO

PAGE

3

OF

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



emcon

PROJECT NO: 792204
 PURGED BY: B. H. J. J. J.
 SAMPLED BY: J

SAMPLE ID: MW-5 (10')
 CLIENT NAME: ARCO #0601
 LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 _____ 3 _____ 4 X 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 2.1
 DEPTH OF WELL (feet): 10.4 CALCULATED PURGE (gal.): 6.6
 DEPTH OF WATER (feet): 7.04 ACTUAL PURGE VOL. (gal.): 3.0

DATE PURGED: 8/24/99 END PURGE: 1257
 DATE SAMPLED: J SAMPLING TIME: 1308

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1256</u>	<u>2.5</u>	<u>7.43</u>	<u>1866</u>	<u>73.4</u>	<u>gray</u>	<u>mod</u>
<u>1307</u>	<u>after recharge</u>	<u>7.23</u>	<u>1693</u>	<u>73.1</u>	<u>↓</u>	<u>↓</u>

OTHER: Dissolved Oxygen= ODOR: Strong N/A N/A
 (COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

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)
 _____ Bomb Sampler _____ Bailer (Stainless Steel)
 _____ Dipper _____ Submersible Pump
 _____ Well Wizard® _____ Dedicated
 Other: Disposable Teflon Bailer

WELL INTEGRITY: Good LOCK: ARCO

REMARKS: ORC Socks are installed in this well
well sealed @ 3.0 gallons purged - 1257
DTW @ 1258 = 10.3'
DTW @ 1306 = 9.23'

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____
 E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____
 Temperature °F _____

SIGNATURE: _____ REVIEWED BY: MA PAGE 4 OF _____



WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

EMCON

PROJECT NO: 792204

SAMPLE ID: MW-6 (8)

PURGED BY: B. H. Drake

CLIENT NAME: ARCO #0601

SAMPLED BY: L

LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
CASING DIAMETER (inches): 2 _____ 3 _____ 4 X 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): N/A

VOLUME IN CASING (gal.): 0.2

DEPTH OF WELL (feet): 8.6

CALCULATED PURGE (gal.): 0.8

DEPTH OF WATER (feet): 8.24

ACTUAL PURGE VOL. (gal.): 0.3

DATE PURGED: 8/24/99

END PURGE: 1313

DATE SAMPLED: J

SAMPLING TIME: 1323

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1312	0.2	7.26	1434	71.9	14-grey	low
1322	after recharge	7.26	1422	72.1	J	J

OTHER: Dissolved Oxygen=

ODOR: Strong

N/A

N/A

(COBALT 0-100)

(NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1):

N/A

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) _____
Bomb Sampler _____ Bailer (Stainless Steel) _____
Dipper _____ Submersible Pump _____
Well Wizard[®] _____ Dedicated _____

Other: Disposable Teflon Bailer

WELL INTEGRITY: Good

LOCK: Arco

REMARKS: Well dried @ 0.3 gallons purged - 1313

DTW @ 1314 = 8.5'

DTW @ 1321 = 8.38'

pH, E.C., Temp. Meter Calibration: Date: 5/14/14 Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / pH 7 _____ / pH 10 _____ / pH 4 _____ /

Temperature °F _____

SIGNATURE: BH

REVIEWED BY: NA PAGE 5 OF

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



emcon

PROJECT NO: 792204

SAMPLE ID: MW-7 (9')

PURGED BY: B. Hendricks

CLIENT NAME: ARCO #0601

SAMPLED BY: [Signature]

LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 _____ 3 _____ 4 X 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 0.2
 DEPTH OF WELL (feet): 9.7 CALCULATED PURGE (gal.): 0.9
 DEPTH OF WATER (feet): 9.25 ACTUAL PURGE VOL. (gal.): 1.0

DATE PURGED: 8/24/99 END PURGE: 1214
 DATE SAMPLED: ↓ SAMPLING TIME: 1217

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1212</u>	<u>0.3</u>	<u>7.28</u>	<u>1535</u>	<u>70.5</u>	<u>Clear</u>	<u>low</u>
<u>1213</u>	<u>0.6</u>	<u>7.26</u>	<u>1549</u>	<u>69.9</u>	<u>↓</u>	<u>↓</u>
<u>1214</u>	<u>1.0</u>	<u>7.31</u>	<u>1551</u>	<u>69.6</u>	<u>↓</u>	<u>↓</u>

OTHER: Dissolved Oxygen= ODOR: None N/A N/A
 (COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

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)
 _____ Bomb Sampler _____ Bailer (Stainless Steel)
 _____ Dipper _____ Submersible Pump
 _____ Well Wizard® _____ Dedicated
 Other: Disposable Teflon Bailer

WELL INTEGRITY: Good LOCK: Arco

REMARKS: well nearly dried

pH, E.C., Temp. Meter Calibration: Date: See MW-14 Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: [Signature] REVIEWED BY: [Signature] PAGE 6 OF _____

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



emcon

PROJECT NO: 792204
 PURGED BY: B. Heilicks
 SAMPLED BY: L

SAMPLE ID: MW-8 (10')
 CLIENT NAME: ARCO #0601
 LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 _____ 3 _____ 4 X 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 1.8
 DEPTH OF WELL (feet): 10.3 CALCULATED PURGE (gal.): 5.6
 DEPTH OF WATER (feet): 7.45 ACTUAL PURGE VOL. (gal.): 2

DATE PURGED: 8/24/99 END PURGE: no purge
 DATE SAMPLED: L SAMPLING TIME: 1448

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1447</u>	<u>✓</u>	<u>9.89</u>	<u>628</u>	<u>72.4</u>	<u>clear</u>	<u>low</u>

OTHER: Dissolved Oxygen= ODOR: Strong N/A N/A
 (COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

PURGING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
Centrifugal Pump Bailer (PVC)
Submersible Pump Bailer (Stainless Steel)
Well Wizard O Dedicated
 Other: _____

SAMPLING EQUIPMENT

2" Bladder Pump Bailer (Teflon)
Bomb Sampler Bailer (Stainless Steel)
Dipper Submersible Pump
Well Wizard O Dedicated
 Other: Disposable Teflon Bailer

WELL INTEGRITY: Good LOCK: Arco

REMARKS: ORL socks installed
Took grab sample per Steve H.

pH, E.C., Temp. Meter Calibration: Date: See MW-14 Time: _____ Meter Serial No.: _____
 E.C. 1000 _____ / pH 7 _____ / pH 10 _____ / pH 4 _____ /
 Temperature °F _____
 SIGNATURE: BH REVIEWED BY: MA PAGE 7 OF _____

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



EMCON

PROJECT NO: 792204
 PURGED BY: P. Henderson
 SAMPLED BY: L

SAMPLE ID: MW-10 (18')
 CLIENT NAME: ARCO #0601
 LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____
 CASING DIAMETER (inches): 2 X 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 1.7
 DEPTH OF WELL (feet): 19.3 CALCULATED PURGE (gal.): 5.4
 DEPTH OF WATER (feet): 8.37 ACTUAL PURGE VOL. (gal.): 5.5

DATE PURGED: 8/24/99 END PURGE: 1147
 DATE SAMPLED: L SAMPLING TIME: 1151

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1144</u>	<u>2.0</u>	<u>7.44</u>	<u>1149</u>	<u>69.3</u>	<u>Dark Bran</u>	<u>Mod</u>
<u>1146</u>	<u>4.0</u>	<u>7.46</u>	<u>1141</u>	<u>68.7</u>	<u>↓</u>	<u>↓</u>
<u>1147</u>	<u>5.5</u>	<u>7.46</u>	<u>1131</u>	<u>68.5</u>	<u>↓</u>	<u>↓</u>

OTHER: Dissolved Oxygen= ODOR: None N/A N/A
 (COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

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)
 ____ Bomb Sampler _____ Bailer (Stainless Steel)
 ____ Dipper _____ Submersible Pump
 ____ Well Wizard® _____ Dedicated
 Other: Disposable Teflon Bailer

WELL INTEGRITY: Good LOCK: Arco

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: See MW-11 Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: BD REVIEWED BY: MS PAGE 9 OF _____

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



EMCON

PROJECT NO: 792204

SAMPLE ID: MW-14 (12')

PURGED BY: B. H. Hickey

CLIENT NAME: ARCO #0601

SAMPLED BY: J

LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____

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

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 0.5

DEPTH OF WELL (feet): 13.1 CALCULATED PURGE (gal.): 1.7

DEPTH OF WATER (feet): 9.68 ACTUAL PURGE VOL. (gal.): 2.0

DATE PURGED: 8/24/99 END PURGE: 1115

DATE SAMPLED: J SAMPLING TIME: 1117

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1109</u>	<u>1.0</u>	<u>7.20</u>	<u>1994</u>	<u>71.5</u>	<u>lt. Brown</u>	<u>low</u>
<u>1112</u>	<u>1.5</u>	<u>7.20</u>	<u>1994</u>	<u>71.4</u>	<u>J</u>	<u>J</u>
<u>1115</u>	<u>2.0</u>	<u>7.15</u>	<u>1993</u>	<u>71.3</u>	<u>J</u>	<u>J</u>

OTHER: Dissolved Oxygen= ODOR: None N/A N/A
(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

PURGING EQUIPMENT

☐ 2" Bladder Pump ☐ Bailer (Teflon)
☐ Centrifugal Pump ☐ Bailer (PVC)
☐ Submersible Pump ☐ Bailer (Stainless Steel)
☐ Well Wizard® ☐ Dedicated
 Other: Dispo bailer

SAMPLING EQUIPMENT

☐ 2" Bladder Pump ☐ Bailer (Teflon)
☐ Bomb Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard® ☐ Dedicated
 Other: Disposable Teflon Bailer

WELL INTEGRITY: Good LOCK: Arco

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date: 8/24/99 Time: 1103 Meter Serial No.: 600341

E.C. 1000 1406, 1413 pH 7 7.04 / 7.00 pH 10 9.92 / 10.00 pH 4 4.06 / 4.00

Temperature °F 71.7

SIGNATURE: BH REVIEWED BY: MB PAGE 10 OF _____

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



EMCON

PROJECT NO: 792204

PURGED BY: B. Hernandez

SAMPLED BY: L

SAMPLE ID: MW-15 (10)

CLIENT NAME: ARCO #0601

LOCATION: San Leandro, California

TYPE: Groundwater X Surface Water _____ Leachate _____ Other _____

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

CASING ELEVATION (feet/MSL): N/A VOLUME IN CASING (gal.): 0.6

DEPTH OF WELL (feet): 10.4 CALCULATED PURGE (gal.): 2.0

DEPTH OF WATER (feet): 4.24 ACTUAL PURGE VOL. (gal.): 2.0

DATE PURGED: 8/24/99

END PURGE: 1459

DATE SAMPLED: L

SAMPLING TIME: 1503

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1456</u>	<u>1.0</u>	<u>7.67</u>	<u>1131</u>	<u>71.9</u>	<u>Brown</u>	<u>med</u>
<u>1458</u>	<u>1.5</u>	<u>7.72</u>	<u>1144</u>	<u>71.8</u>	<u>↓</u>	<u>↓</u>
<u>1459</u>	<u>2.0</u>	<u>7.68</u>	<u>1156</u>	<u>71.0</u>	<u>↓</u>	<u>↓</u>

OTHER: Dissolved Oxygen=

ODOR: Slight

N/A

N/A

(COBALT 0-100)

(NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

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)
☐ Bomb Sampler ☐ Bailer (Stainless Steel)
☐ Dipper ☐ Submersible Pump
☐ Well Wizard® ☐ Dedicated

Other: Disposable Teflon Bailer

WELL INTEGRITY: Good LOCK: Are

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: See Method 14 Time: _____ Meter Serial No.: _____

E.C. 1000 / pH 7 / pH 10 / pH 4 /

Temperature °F _____

SIGNATURE: BH REVIEWED BY: W PAGE 11 OF _____

1921 Ringwood Avenue

1999

ARCO 0601

San Jose, California

#792204

Well ID	Quarter	Date	Purge Volume (gallons)	Did well dry	Well Contained Product	Gallons	
						First	58.50
						Second	47.00
						Third	27.50
						Fourth	0.00
MW-1	First	01/21/99	6.50	NO	NO		
	Second	05/06/99	6.00	NO	NO		
	Third	08/23/99	7.00	NO	NO		
	Fourth						
MW-2	First	01/21/99	3.50	YES	NO		
	Second	05/06/99	0.00	NA	NO		
	Third	08/23/99	0.00	NA	NO		
	Fourth						
MW-3	First	01/21/99	10.50	NO	NO		
	Second	05/06/99	0.00	GRAB	NO		
	Third	08/23/99	0.00	GRAB	SHEEN		
	Fourth						
MW-4	First	01/21/99	1.00	NO	NO		
	Second	05/06/99	1.50	YES	NO		
	Third	08/23/99	1.50	YES	NO		
	Fourth						
MW-5	First	01/21/99	2.00	YES	NO		
	Second	05/06/99	0.00	GRAB	NO		
	Third	08/23/99	2.50	YES	NO		
	Fourth						
MW-6	First	01/21/99	0.50	YES	NO		
	Second	05/06/99	1.00	YES	NO		
	Third	08/23/99	0.50	YES	NO		
	Fourth						
MW-7	First	01/21/99	0.50	YES	NO		
	Second	05/06/99	1.00	YES	NO		
	Third	08/24/99	1.00	NO	NO		
	Fourth						
MW-8	First	01/21/99	5.00	YES	NO		
	Second	05/06/99	0.00	GRAB	NO		
	Third	08/24/99	0.00	GRAB	NO		
	Fourth						
MW-9	First	01/21/99	4.50	NO	NO		
	Second	05/06/99	0.00	NA	NO		
	Third	08/24/99	4.00	NO	NO		
	Fourth						
MW-10	First	01/21/99	5.50	NO	NO		
	Second	05/06/99	5.00	NO	NO		
	Third	08/24/99	5.50	NO	NO		
	Fourth						

EMCON Associates - Field Services

Historical Monitoring Well Data

1921 Ringwood Avenue

1999

ARCO 0601

San Jose, California

#792204

Well ID	Quarter	Date	Purge Volume (gallons)	Did well dry	Well Contained Product	Gallons	
						First	58.50
						Second	47.00
						Third	27.50
						Fourth	0.00
MW-11	First	01/21/99	7.00	NO	NO		
	Second	05/06/99	0.00	NA	NO		
	Third	08/24/99	0.00	NA	NO		
	Fourth						
MW-12	First	01/21/99	6.50	NO	NO		
	Second	05/06/99	0.00	NA	NO		
	Third	08/24/99	0.00	NA	NO		
	Fourth						
MW-13	First	01/21/99	1.00	YES	NO		
	Second	05/06/99	0.00	NA	NO		
	Third	08/24/99	0.00	NA	NO		
	Fourth						
MW-14	First	01/21/99	2.00	NO	NO		
	Second	05/06/99	2.00	NO	NO		
	Third	08/24/99	2.00	NO	NO		
	Fourth						
MW-15	First	01/21/99	2.50	NO	NO	Steam water (gal) _____	
	Second	05/06/99	0.00	NA	NO		
	Third	08/24/99	2.00	NO	NO		
	Fourth						

ARCO Products Company

Division of Atlantic/Richfield Company

Task Order No.

24119

Chain of Custody

ARCO Facility no.		City (Facility)		Project manager (Consultant)		Laboratory Name	
CACI		San Leandro		C. K. Henderson, Inc.		CA	
ARCO engineer		Telephone no. (ARCO)		Telephone no. (Consultant)		Contract Number	
Paul Supple				408-477-7000			
Consultant name		Address (Consultant)		Fax no. (Consultant)			
FAIRCA		2201 Broadway #101 Oakland, CA 94612		408-477-7000			

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX	EPA 802/EPA 8020	BTEX/TPH	EPA Method 8015	TPH Modified 8015	Gas	Oil and Grease	413.1	413.2	TPH	EPA 418.1/SM 503E	EPA 801/8010	EPA 821/8240	EPA 625/6270	TCLP	Semi Metals	VOAC	VOAC	CAM Metals EPA 6010/7000	TLC	STLC	Lead Org/DHSD	Lead EPA 7420/74210	Method of shipment	Special Detection Limit/reporting	Special QA/QC	Remarks
			Soil	Water	Other	Ice	Acid																													
HW-12(12)	2			X		X	HCL	8/24/94	1117		X																									
HW-749	2			X		X	HCL		1217		X																									
HW-456	2			X		X	HCL		1348		X																									
HW-546	2			X		X	HCL		1308		X																									
HW-120	2			X		X	HCL		1323		X																									
HW-120	2			X		X	HCL		1350		X																									
HW-120	4			X		X	HCL		1402		X												X													
HW-120	2			X		X	HCL		1408		X																									
HW-120				X		X	HCL		1503		X																									

Condition of sample:		Temperature received:	
Relinquished by sampler	Date/Time	Received by	
Relinquished by	Date/Time	Received by	
Relinquished by	Date/Time	Received by laboratory	Date/Time

Expedited 5 Business Days ☐

Standard 10 Business Days ☐

Priority Rush 1 Business Day ☐

Rush 2 Business Days ☐

Chain of Custody

Task Order No. 2476

Distribution: White Copy – Laboratory; Canary Copy – ARCO Environmental Engineering; Pink Copy – Consultant