



98 SEP -1 PM 2:37

August 21, 1998
Project 20805-121-006

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

Re: First Quarter 1998 Laboratory Analytical Results, Groundwater Samples,
Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California

Dear Mr. Sullivan:

Enclosed please find a copy of the first quarter 1998 groundwater monitoring results for ARCO service station No. 0601, San Leandro, California. Included are the laboratory analytical results for the groundwater samples collected from wells MW-9 and MW-10 during the first quarter of 1998. These wells are located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. The groundwater samples were collected on February 19, 1998, during quarterly sampling of the ARCO Products Company service station 0601, 712 Lewelling Boulevard, San Leandro. The laboratory analytical results indicate that the groundwater sample concentrations were not detectable for total petroleum hydrocarbons as gasoline, and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes.

Please call if you have questions.

Sincerely,

Pinnacle

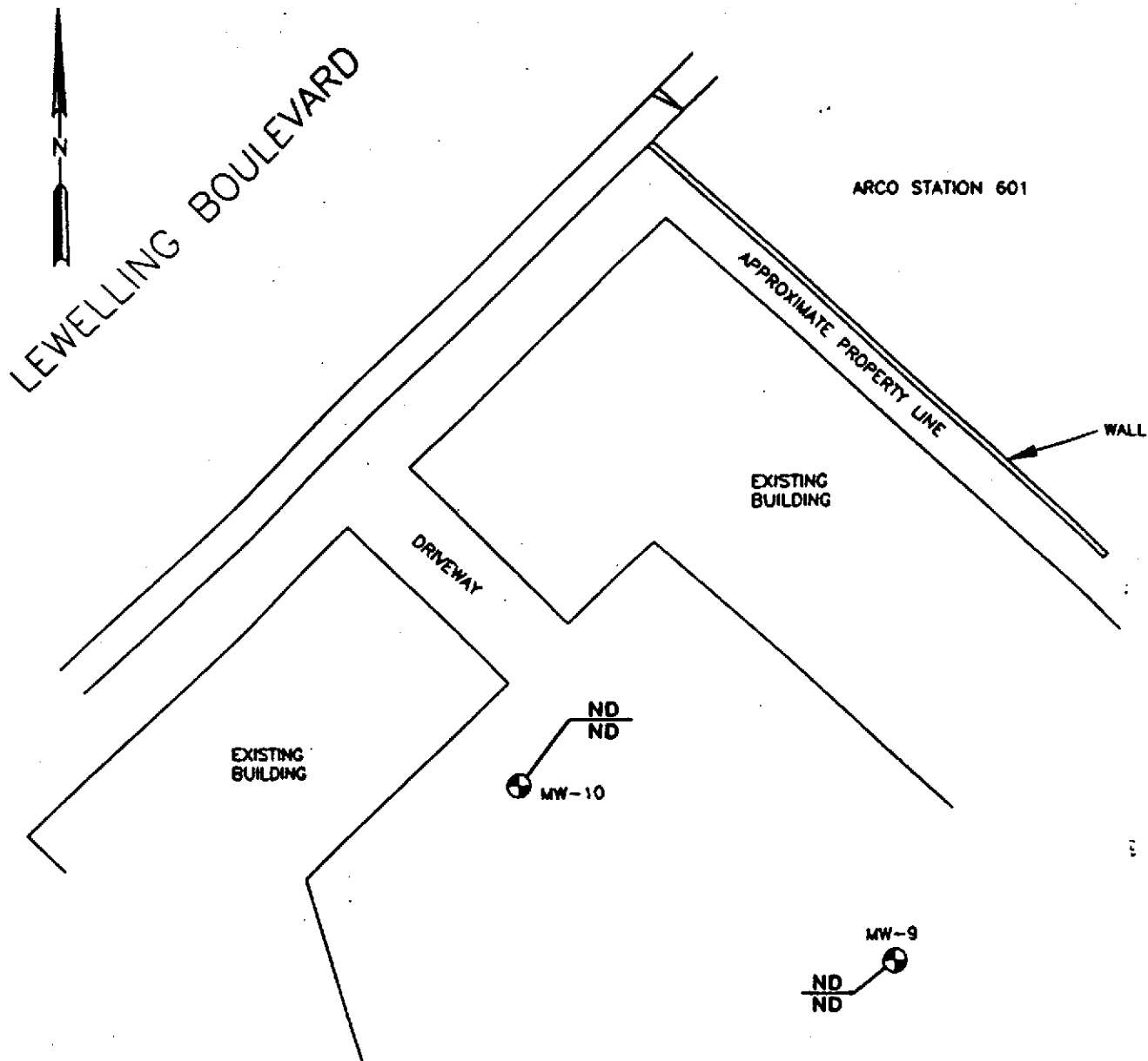
Glen Vanderveen for
Glen Vanderveen
Project Manager

Attachments: Figure 1 Generalized Site Plan
Attachment A Copies of Certified Analytical Reports and
Chain-of-Custody Documentation, Wells MW-9 and
MW-10, First Quarter 1998

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



EA-SANJOSE-CAD/DRAWINGS: G:\805-121\SJC\TMNR.dwg Xrefs: <NONE>
 Scale: 1" = 1.00' DimScale: 1" = 1.00' Date: 12/2/97 Time: 8:51 AM Operator: KAJ



EXPLANATION



Groundwater monitoring well

ND

ND

TPHG concentration in groundwater (ppb)

Benzene concentration in groundwater (ppb)

ND Not detected

0 40 80



SCALE IN FEET (APPROX.)

Base map modified from RESNA, 1994.



Emcon

DATE NOV. 1997

DWN KAJ

APP

REV

PROJECT NO.

805-121.005

FIGURE 1

CHATEAU MANOR APARTMENTS
 724 LEWELLING BLVD.

SAN LEANDRO, CALIFORNIA

**QUARTERLY GROUNDWATER MONITORING
 GENERALIZED SITE PLAN**

APPENDIX A

**COPIES OF CERTIFIED ANALYTICAL REPORTS,
AND CHAIN-OF-CUSTODY DOCUMENTATION,
WELLS MW-9 AND MW-10,
FIRST QUARTER 1998**



March 5, 1998

Service Request No.: S9800356

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-121.005/TO#22312.00/601 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on February 20, 1998. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 9, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely,

A handwritten signature in dark ink, appearing to read 'Steven L. Green', written over a horizontal line.

Steven L. Green
Project Chemist

A handwritten signature in dark ink, appearing to read 'Bernadette J. Cox for', written over a horizontal line.

Greg Anderson
Regional QA Coordinator

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: 20805-121.005/TOW#22312.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9800356
 Date Collected: 2/19/98
 Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-9(15)
 Lab Code: S9800356-001
 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	2/22/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/22/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TOW22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-10(16)
Lab Code: S9800356-002
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	2/22/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/22/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980221-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	2/21/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/21/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
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-9(15)	S9800356-001		95	80
MW-10(16)	S9800356-002		94	82
MW-9(15)	S9800356-001MS		101	81
MW-9(15)	S9800356-001DMS		96	82
Method Blank	S980221-WB1		96	85

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9800356
 Date Collected: NA
 Date Received: NA
 Date Extracted: NA
 Date Analyzed: 2/22/98

Matrix Spike/Duplicate Matrix Spike Summary
 BTE

Sample Name: MW-9(15)
 Lab Code: S9800356-001MS, S9800356-001DMS
 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				
Benzene	EPA 5030	8020	0.5	25	25	ND	26	25	104	100	75-135	4
Toluene	EPA 5030	8020	0.5	25	25	ND	26	25	104	100	73-136	4
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100	69-142	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO

Service Request: 89800356
Date Analyzed: 2/21/98

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	Percent Recovery	Result Notes
					Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	90-110	96	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	26	85-115	104	
Ethylbenzene	EPA 5030	8020	25	25	85-115	100	
Xylenes, Total	EPA 5030	8020	75	76	85-115	101	
Methyl tert -Butyl Ether	EPA 5030	8020	25	23	85-115	92	

ICV032196

ARCO Products Company

Division of Atlantic/Richfield Company

Task Order No. **77312.00**

Chain of Custody

ARCO Facility no. **0601** City (Facility) **San Leandro** Project manager (Consultant) **Gary Messerotes**
 ARCO engineer **Paul Supple** Telephone no. (ARCO) **(408) 453-7300** Telephone no. (Consultant) **(408) 453-0452** Fax no. (Consultant) **(408) 453-0452**
 Consultant name **EMCON** Address (Consultant) **971 Ringwood Ave. San Jose, CA 95131**

Laboratory Name

CAS

Contract Number

Method of shipment

Sampler will deliver

Special Detection Limit/reporting

Lowest Possible

Special QA/QC

As Normal

Remarks

RAT8

#20905-21.00

Lab Number

6800356

Turnaround Time:

Priority Rush

1 Business Day ☐

Rush

2 Business Days ☐

Expedited

5 Business Days ☐

Standard

10 Business Days ☒

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX	EPA 8020	BTEX/TPH	EPA 8015	Gas	Diesel	Oil and Grease	413.1	413.2	TPH	EPA 418.1/SM 503E	EPA 801/8010	EPA 824/8240	EPA 825/8270	TCDF	Semi Metals	VOACI	VOACI	CMI Metals	EPA 6010/7000	TLCI	STLCI	Lead Org/CHCI	Lead EPA 7420/74210
			Soil	Water	Other	Ice	Acid																										
MU-9051	2			X		X	HCL	2-11-88	12:10			X																					
MU-10(16)	2			X		X	HCL	↓	12:30			X																					

Condition of sample:

Relinquished by sampler

Relinquished by

Relinquished by

Temperature received:

Received by

Received by

Received by laboratory

Date

Time

ENVIRONMENTAL
PROTECTION
98 SEP -1 PM 2:37



August 6, 1998
Project 20805-121.006

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

Re: Quarterly Groundwater Monitoring Report, First Quarter 1998, for ARCO Service Station
No. 0601, Located at 712 Lewelling Boulevard, San Leandro, California

Dear Mr. Supple:

Pinnacle Environmental Solutions, a division of EMCON (Pinnacle), is submitting the attached report which presents the results of the **first quarter 1998** groundwater monitoring program at ARCO Products Company (ARCO) Service Station No. 0601, located at 712 Lewelling Boulevard, San Leandro, California (see Figure 1). Pertinent site features, including existing monitoring and groundwater extraction wells, are shown in Figure 2. The monitoring program complies with the Alameda County Health Care Services Agency requirements regarding underground tank investigations.

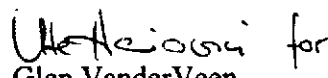
LIMITATIONS

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


Jay R. Johnson, R.G.
Senior Project Supervisor

Attachment: Quarterly Groundwater Monitoring Report, First Quarter 1998

cc: Scott Seery, ACHCSA
Mike Bakaldin, SLFD



ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 0601 Address: 712 Lewelling Boulevard, San Leandro, California
 Pinnacle Project No. 20805-121.006
 ARCO Environmental Engineer/Phone No.: Paul Supple /(510) 299-8891
 Pinnacle Project Manager/Phone No.: Glen VanderVeen /(925) 977-9020
 Primary Agency/Regulatory ID No.: ACHCSA /Scott Seery

WORK PERFORMED THIS QUARTER (First - 1998):

1. Prepared and submitted quarterly groundwater monitoring report for fourth quarter 1997.
2. Performed quarterly groundwater monitoring and sampling for first quarter 1998.
3. Stimulated natural biodegradation with oxygen releasing compounds (ORCs) in groundwater monitoring wells MW-2, MW-3, MW-4 and MW-5.

WORK PROPOSED FOR NEXT QUARTER (Second - 1998):

1. Prepare and submit quarterly groundwater monitoring report for first quarter 1998.
2. Perform quarterly groundwater monitoring and sampling for second quarter 1998.
3. Continue to monitor dissolved oxygen in groundwater monitoring wells.
4. Evaluate potential off-site plume migration.

QUARTERLY MONITORING:

Current Phase of Project:	<u>Quarterly Groundwater Monitoring</u>
Frequency of Sampling:	<u>Annual (1st quarter): MW-2, MW-11, MW-12, MW-13</u> <u>Semi-annual (1st/3rd quarter): MW-9, MW-15</u> <u>Quarterly: MW-1, MW-3 through MW-8, MW-10, MW-14</u>
Frequency of Monitoring:	<u>Quarterly (groundwater)</u>
Is Floating Product (FP) Present On-site:	☐ Yes ☒ No
Cumulative FP Recovered to Date :	<u>3.45 gallons, Well MW-1</u>
FP Recovered This Quarter :	<u>None</u>
Bulk Soil Removed to Date :	<u>1,505 cubic yards of TPH impacted soil</u>
Bulk Soil Removed This Quarter :	<u>None</u>
Water Wells or Surface Waters within 2000 ft., impacted by site:	<u>None</u>
Current Remediation Techniques:	<u>Enhanced bioremediation</u>
Average Depth to Groundwater:	<u>5.78 feet</u>
Groundwater Gradient (Average):	<u>variable across the site, overall east</u>

ATTACHMENTS:

- Table 1 - Groundwater Monitoring Data, First Quarter 1998
- Table 2 - Historical Groundwater Elevation and Analytical Data, Petroleum Hydrocarbons and Their Constituents
- 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 Monitoring Data
First Quarter 1998

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

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	02-19-98	19.19	5.57	13.62	ND	EAST	VAR	02-19-98	74000	2500	120	2200	4100	<300^	--	--	--
MW-2	02-19-98	21.12	5.22	15.90	ND	EAST	VAR	02-19-98	2000	160	50	66	230	25	--	--	--
MW-3	02-19-98	22.99	5.24	17.75	ND	EAST	VAR	02-19-98	80000	620	1200	2500	13000	<600^	--	--	--
MW-4	02-19-98	22.38	6.78	15.60	ND	EAST	VAR	02-19-98	1800	93	51	29	420	110	--	--	--
MW-5	02-19-98	22.45	4.65	17.80	ND	EAST	VAR	02-19-98	40000	5100	3800	620	2900	<300^	--	--	--
MW-6	02-19-98	22.77	5.78	16.99	ND	EAST	VAR	02-19-98	2600	540	8	90	88	<30^	--	--	--
MW-7	02-19-98	22.89	6.13	16.76	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-8	02-19-98	20.89	4.46	16.43	ND	EAST	VAR	02-19-98	2000	<2^	<2^	9	<2^	140	--	--	--
MW-9	02-19-98	22.26	7.11	15.15	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	02-19-98	21.33	4.65	16.68	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-11	02-19-98	20.97	6.25	14.72	ND	EAST	VAR	02-19-98	<50	<0.5	1.6	<0.5	1.8	7	--	--	--
MW-12	02-19-98	20.11	6.28	13.83	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-13	02-19-98	20.75	6.44	14.31	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-14	02-19-98	20.90	6.27	14.63	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-15	02-19-98	22.08	4.66	17.42	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	48	--	--	--

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

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

ft/ft: foot per foot

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

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

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

VAR: gradient variable across the site

--: not analyzed

ND: none detected

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

Pinnacle

Rev. 0, 8/21/98

Table 2
Historical 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	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L			
MW-1	02-22-96	22.26	6.01	** 16.26	0.01	NW	0.007	03-14-96	100000	6200	320	2500	12000	<1000*	--	--	--			
MW-1	05-20-96	22.26	7.03	15.23	ND	SW	0.007	05-21-96	340000	6600	240	4500	22000	<1000^	--	150	<2500*			
MW-1	08-26-96	22.26	8.16	14.10	ND	SSW	0.004	08-26-96	210000	7900	320	3400	15000	<1000^	--	--	--			
MW-1	11-20-96	22.26	7.84	14.42	ND	SSE	0.004	11-20-96	62000	5900	77	2000	7700	<300^	--	--	--			
MW-1	03-24-97	19.19	8.05	11.14	ND	SE	0.013	03-24-97	170000	6500	<200^	2400	9900	<1000^	--	--	--			
MW-1	05-23-97	19.19	8.42	10.77	ND	SE	0.014	05-23-97	83000	6200	84	2500	9000	<300^	--	--	--			
MW-1	08-19-97	19.19	8.65	10.54	ND	SE	0.04	08-19-97	83000	4500	<100^	2200	8100	<600^	--	--	--			
MW-1	11-19-97	19.19	8.54	10.65	ND	SE	0.016	11-19-97	250000	4400	<500^	3800	9900	<3000^	--	--	--			
MW-1	02-19-98	19.19	5.57	13.62	ND	EAST	VAR	02-19-98	74000	2500	120	2200	4100	<300^	--	--	--			
MW-2	03-17-95	21.33	6.12	15.21	ND	WSW	0.006	03-17-95	10000	460	77	260	550	--	--	--	--			
MW-2	06-01-95	21.33	6.56	14.77	ND	SW	0.003	06-01-95	13000	400	78	210	410	--	--	--	--			
MW-2	08-31-95	21.33	7.18	14.15	ND	SSW	0.005	08-31-95	5000	280	18	120	140	<50^	--	--	--			
MW-2	11-27-95	21.33	7.39	13.94	ND	SSW	0.004	11-27-95	3200	230	12	77	90	--	--	--	--			
MW-2	02-22-96	21.33	5.78	15.55	ND	NW	0.007	03-14-96	11000	290	67	190	330	<50^	--	--	--			
MW-2	05-20-96	21.33	6.27	15.06	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter											
MW-2	08-26-96	21.33	7.30	14.03	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter											
MW-2	11-20-96	21.33	7.28	14.05	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter											
MW-2	03-24-97	21.12	7.11	14.01	ND	SE	0.013	03-24-97	4800	570	6	71	32	67	--	--	--			
MW-2	05-23-97	21.12	7.44	13.68	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter											
MW-2	08-19-97	21.12	7.64	13.48	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter											
MW-2	11-19-97	21.12	7.70	13.42	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter											
MW-2	02-19-98	21.12	5.22	15.90	ND	EAST	VAR	02-19-98	2800	160	50	66	230	<25	--	--	--			

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
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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	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-3	03-17-95	20.11	5.46	14.65	ND	WSW	0.006	03-17-95	370000	4800	12000	5800	34000	--	--	--	--
MW-3	06-01-95	20.11	6.34	13.77	ND	SW	0.003	06-01-95	270000	6000	11000	5200	28000	--	--	--	--
MW-3	08-31-95	20.11	6.60	** 13.52	0.02	SSW	0.005	08-31-95	Not sampled: well contained floating product								
MW-3	11-27-95	20.11	6.76	** 13.36	0.01	SSW	0.004	11-27-95	150000	5100	8800	3900	21000	--	--	--	--
MW-3	02-22-96	20.11	5.14	** 14.98	0.01	NW	0.007	03-14-96	150000	4400	7600	4100	22000	<3000^	--	--	--
MW-3	05-20-96	20.11	5.17	14.94	ND	SW	0.007	05-21-96	410000	4700	8000	6300	36000	<3000^	--	--	--
MW-3	08-26-96	20.11	7.04	13.07	ND	SSW	0.004	08-26-96	260000	4000	6100	4200	24000	<2000^	--	--	--
MW-3	11-20-96	20.11	6.26	13.85	ND	SSE	0.004	11-20-96	190000	3200	5800	3300	20000	<1000^	--	--	--
MW-3	03-24-97	22.99	6.94	16.05	ND	SE	0.013	03-24-97	430000	2700	7600	7000	39000	<5000^	--	--	--
MW-3	05-23-97	22.99	6.98	16.01	ND	SE	0.014	05-23-97	130000	2100	4300	3500	19000	<700^	--	--	--
MW-3	08-19-97	22.99	7.25	15.74	ND	SE	0.04	08-19-97	100000	2000	3200	<100^	19000	<600^	--	--	--
MW-3	11-19-97	22.99	7.25	15.74	ND	SE	0.016	11-19-97	93000	1700	2400	2800	16000	<600^	--	--	--
MW-3	02-19-98	22.99	5.24	17.75	ND	EAST	VAR	02-19-98	80000	620	1200	2500	13000	<800^	--	--	--
MW-4	03-17-95	20.75	6.65	14.10	ND	WSW	0.006	03-17-95	16000	1800	970	310	2500	--	--	--	--
MW-4	06-01-95	20.75	7.25	13.50	ND	SW	0.003	06-01-95	16000	2800	870	380	2700	--	--	--	--
MW-4	08-31-95	20.75	7.75	13.00	ND	SSW	0.005	08-31-95	9000	2000	270	270	1400	<100^	--	--	--
MW-4	11-27-95	20.75	7.87	12.88	ND	SSW	0.004	11-27-95	3800	890	130	130	550	--	--	--	--
MW-4	02-22-96	20.75	7.29	13.46	ND	NW	0.007	03-14-96	940	150	82	19	130	<20^	--	--	--
MW-4	05-20-96	20.75	7.30	13.45	ND	SW	0.007	05-21-96	6700	1100	330	120	1100	<100^	--	--	--
MW-4	08-26-96	20.75	7.57	13.18	ND	SSW	0.004	08-26-96	14000	2400	510	350	2100	<100^	--	--	--
MW-4	11-20-96	20.75	7.89	12.86	ND	SSE	0.004	11-20-96	420	55	17	11	62	<3	--	--	--
MW-4	03-24-97	22.38	6.90	15.48	ND	SE	0.013	03-24-97	6800	620	150	81	1300	<50^	--	--	--
MW-4	05-23-97	22.38	7.80	14.58	ND	SE	0.014	05-23-97	9000	1300	240	200	1600	<60^	--	--	--
MW-4	08-19-97	22.38	-	NA	ND	SE	0.04	08-19-97	Not sampled: well is dry								
MW-4	11-19-97	22.38	-	NA	ND	SE	0.016	11-19-97	3700*	600	93	120	710	<60^	--	--	--
MW-4	02-19-98	22.38	6.78	15.60	ND	EAST	VAR	02-19-98	1800	93	51	29	420	110^	--	--	--

Table 2
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ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHC LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method
		ft.-MSL	feet	ft.-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5	03-17-95	20.90	5.51	15.39	ND	WSW	0.006	03-17-95	48000	6400	2000	740	5100	--	--	--	--
MW-5	06-01-95	20.90	6.55	14.35	ND	SW	0.003	06-01-95	76000	11000	5400	1400	7700	--	--	--	--
MW-5	08-31-95	20.90	6.80	14.10	ND	SSW	0.005	08-31-95	53000	12000	1600	1000	6000	<500^	--	--	--
MW-5	11-27-95	20.90	7.13	13.77	ND	SSW	0.004	11-27-95	43000	7900	3300	950	4900	--	--	--	--
MW-5	02-22-96	20.90	5.12	15.78	ND	NW	0.007	03-14-96	52000	9100	3300	940	5000	<500^	--	--	--
MW-5	05-20-96	20.90	5.87	15.03	ND	SW	0.007	05-21-96	55000	9300	3800	1100	5400	<500^	--	--	--
MW-5	08-26-96	20.90	7.15	13.75	ND	SSW	0.004	08-26-96	47000	5300	2100	780	3200	<300^	--	--	--
MW-5	11-20-96	20.90	6.88	14.02	ND	SSE	0.004	11-20-96	53000	8700	5700	920	4400	<500^	--	--	--
MW-5	03-24-97	22.45	7.13	15.32	ND	SE	0.013	03-24-97	39000	8200	3200	720	3100	<500^	--	--	--
MW-5	05-23-97	22.45	7.42	15.03	ND	SE	0.014	05-23-97	29000	6600	1700	400	1500	<600^	--	--	--
MW-5	08-19-97	22.45	7.58	14.87	ND	SE	0.04	08-19-97	16000	4600	790	<50^	1300	<300^	--	--	--
MW-5	11-19-97	22.45	7.58	14.87	ND	SE	0.016	11-19-97	22000	5800	1300	380	1300	<300^	--	--	--
MW-5	02-19-98	22.45	4.65	17.80	ND	EAST	VAR	02-19-98	40000	5100	3800	620	2900	<300^	--	--	--
MW-6	03-17-95	22.08	6.66	15.42	ND	WSW	0.006	03-17-95	45000	9300	<100^	1900	3600	--	--	--	--
MW-6	06-01-95	22.08	7.60	14.48	ND	SW	0.003	06-01-95	23000	5600	<50^	1300	1900	--	--	--	--
MW-6	08-31-95	22.08	7.92	14.16	ND	SSW	0.005	08-31-95	26000	8000	<100^	1900	900	<500^	--	--	--
MW-6	11-27-95	22.08	8.21	13.87	ND	SSW	0.004	11-27-95	6700	1800	<20^	480	230	--	--	--	--
MW-6	02-22-96	22.08	6.21	15.87	ND	NW	0.007	03-14-96	17000	3100	69	810	1500	<300^	--	--	--
MW-6	05-20-96	22.08	7.07	15.01	ND	SW	0.007	05-21-96	16000	3700	<50^	1100	1100	<300^	--	--	--
MW-6	08-26-96	22.08	7.93	14.15	ND	SSW	0.004	08-26-96	23000	5800	<50^	2000	560	<300^	--	--	--
MW-6	11-20-96	22.08	8.02	14.06	ND	SSE	0.004	11-20-96	11000	3300	<50^	480	370	<300^	--	--	--
MW-6	03-24-97	22.77	7.95	14.82	ND	SE	0.013	03-24-97	9700	1900	<20^	800	270	<100^	--	--	--
MW-6	05-23-97	22.77	8.17	14.60	ND	SE	0.014	05-23-97	16000	4300	<50^	1400	180	<300^	--	--	--
MW-6	08-19-97	22.77	-	NA	ND	SE	0.04	08-19-97	Not sampled: well is dry								
MW-6	11-19-97	22.77	-	NA	ND	SE	0.016	11-19-97	Not sampled: well is dry								
MW-6	02-19-98	22.77	5.78	16.99	ND	EAST	VAR	02-19-98	2600	540	8	90	88	<30^	--	--	--

Table 2
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ARCO Service Station 601
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Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-7	03-17-95	22.89	7.68	15.21	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	06-01-95	22.89	8.40	14.49	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	08-31-95	22.89	9.09	13.80	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	0.6	<0.5	<3	--	--	--
MW-7	11-27-95	22.89	9.15	13.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	0.9	<0.5	--	--	--	--
MW-7	02-22-96	22.89	7.44	15.45	ND	NW	0.007	03-14-96	110	1.4	<0.5	3.8	3	<3	--	--	--
MW-7	05-20-96	22.89	8.47	14.42	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-7	08-26-96	22.89	8.81	14.08	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-7	11-20-96	22.89	9.17	13.72	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-7	03-24-97	22.89	8.31	14.58	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-7	05-23-97	22.89	9.26	13.63	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-7	08-19-97	22.89	-	NA	ND	SE	0.04	08-19-97	Not sampled: well is dry								
MW-7	11-19-97	22.89	-	NA	ND	SE	0.016	11-19-97	Not sampled: well is dry								
MW-7	02-19-98	22.89	6.13	16.76	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-8	03-17-95	20.97	6.14	14.83	ND	WSW	0.006	03-17-95	5400	<5^	<5^	35	<5^	--	--	--	--
MW-8	06-01-95	20.97	6.50	14.47	ND	SW	0.003	06-01-95	2600	<2.5^	<2.5^	15	<2.5^	--	--	--	--
MW-8	08-31-95	20.97	7.35	13.62	ND	SSW	0.005	08-31-95	1400	<3^	<3^	5	<3^	520	--	900	--
MW-8	11-27-95	20.97	7.60	13.37	ND	SSW	0.004	11-27-95	620	<0.5	<0.5	<0.5	0.5	--	560	900	510*
MW-8	02-22-96	20.97	5.35	15.62	ND	NW	0.007	03-14-96	5800	<5^	<5^	28	<5^	110	--	1900	6800*
MW-8	05-20-96	20.97	5.92	15.05	ND	SW	0.007	05-21-96	6100	<5^	<5^	26	<5^	240	--	--	--
MW-8	08-26-96	20.97	7.08	13.89	ND	SSW	0.004	08-26-96	970	<1^	<1^	3	<1^	710	--	--	--
MW-8	11-20-96	20.97	7.01	13.96	ND	SSE	0.004	11-20-96	3900	<2.5^	<2.5^	12	<2.5^	930	--	--	--
MW-8	03-24-97	20.89	7.33	13.56	ND	SE	0.013	03-24-97	1400	<10^	<10^	<10^	12	1300	--	--	--
MW-8	05-23-97	20.89	7.55	13.34	ND	SE	0.014	05-23-97	730	<5^	<5^	<5^	<5^	630	--	--	--
MW-8	08-19-97	20.89	7.87	13.02	ND	SE	0.04	08-19-97	<500^	<5^	<5^	<5^	<5^	290	--	--	--
MW-8	11-19-97	20.89	7.87	13.02	ND	SE	0.016	11-19-97	<200^	<2^	<2^	<2^	<2^	260	--	--	--
MW-8	02-19-98	20.89	4.46	16.43	ND	EAST	VAR	02-19-98	2000	<2^	<2^	9	<2^	140	--	--	--

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Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method		
		R-MSL	feet	R-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
MW-9	03-17-95	20.89	6.94	13.95	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	06-01-95	20.89	8.15	12.74	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	08-31-95	20.89	8.10	12.79	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-27-95	20.89	8.38	12.51	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	02-22-96	20.89	7.36	13.53	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	05-20-96	20.89	7.81	13.08	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-9	08-26-96	20.89	8.00	12.89	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-20-96	20.89	7.06	13.83	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-9	03-24-97	22.26	7.74	14.52	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	05-23-97	22.26	8.28	13.98	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-9	08-19-97	22.26	8.32	13.94	ND	SE	0.04	08-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-19-97	22.26	8.32	13.94	ND	SE	0.016	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-9	02-19-98	22.26	7.11	15.15	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	03-17-95	21.12	6.26	14.86	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	06-01-95	21.12	7.63	13.49	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	08-31-95	21.12	8.17	12.95	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-27-95	21.12	8.38	12.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	02-22-96	21.12	5.41	15.71	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	05-20-96	21.12	6.78	14.34	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-10	08-26-96	21.12	8.00	13.12	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-20-96	21.12	7.81	13.31	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-10	03-24-97	21.33	7.87	13.46	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	05-23-97	21.33	8.33	13.00	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-10	08-19-97	21.33	8.39	12.94	ND	SE	0.04	08-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-19-97	21.33	8.39	12.94	ND	SE	0.016	11-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	02-19-98	21.33	4.65	16.68	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		

Table 2
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ARCO Service Station 601
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Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method	
		R-MSL	feet	R-MSL	feet	MWN	R/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
MW-11	03-17-95	22.38	6.94	15.44	ND	WSW	0.006	03-17-95	100	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
MW-11	06-01-95	22.38	7.90	14.48	ND	SW	0.003	06-01-95	210	<0.5	<0.5	0.9	0.7	--	--	--	--	
MW-11	08-31-95	22.38	8.18	14.20	ND	SSW	0.005	08-31-95	680	<0.5	<0.5	4	1.8	<3	--	--	--	
MW-11	11-27-95	22.38	8.48	13.90	ND	SSW	0.004	11-27-95	340	<0.5	<0.5	2.2	1.6	--	--	--	--	
MW-11	02-22-96	22.38	6.63	15.75	ND	NW	0.007	03-14-96	150	<0.5	<0.5	<0.8^	0.8	<3	--	--	--	
MW-11	05-20-96	22.38	7.25	15.13	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter									
MW-11	08-26-96	22.38	8.22	14.16	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter									
MW-11	11-20-96	22.38	8.37	14.01	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter									
MW-11	03-24-97	20.97	8.15	12.82	ND	SE	0.013	03-24-97	63	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-11	05-23-97	20.97	8.48	12.49	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter									
MW-11	08-19-97	20.97	8.67	12.30	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter									
MW-11	11-19-97	20.97	8.67	12.30	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter									
MW-11	02-19-98	20.97	6.25	14.72	ND	EAST	VAR	02-19-98	<50	<0.5	1.6	<0.5	1.8	7	--	--	--	
MW-12	03-17-95	22.77	7.09	15.68	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
MW-12	06-01-95	22.77	8.40	14.37	ND	SW	0.003	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-12	08-31-95	22.77	8.55	14.22	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-12	11-27-95	22.77	8.95	13.82	ND	SSW	0.004	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-12	02-22-96	22.77	6.81	15.96	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-12	05-20-96	22.77	7.56	15.21	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter									
MW-12	08-26-96	22.77	8.63	14.14	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter									
MW-12	11-20-96	22.77	8.38	14.39	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter									
MW-12	03-24-97	20.11	8.75	11.36	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-12	05-23-97	20.11	8.92	11.19	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter									
MW-12	08-19-97	20.11	9.20	10.91	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter									
MW-12	11-19-97	20.11	9.20	10.91	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter									
MW-12	02-19-98	20.11	6.28	13.83	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	

Table 2
Historical 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	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L			
MW-13	03-17-95	22.45	6.91	15.54	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--			
MW-13	06-01-95	22.45	7.72	14.73	ND	SW	0.003	06-01-95	Not sampled: well sampled annually, during the first quarter											
MW-13	08-31-95	22.45	7.58	14.87	ND	SSW	0.005	08-31-95	Not sampled: well sampled annually, during the first quarter											
MW-13	11-27-95	22.45	7.98	14.47	ND	SSW	0.004	11-27-95	Not sampled: well sampled annually, during the first quarter											
MW-13	02-22-96	22.45	6.71	15.74	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--			
MW-13	05-20-96	22.45	6.98	15.47	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter											
MW-13	08-26-96	22.45	7.85	14.60	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter											
MW-13	11-20-96	22.45	7.76	14.69	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter											
MW-13	03-24-97	20.75	7.85	12.90	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--			
MW-13	05-23-97	20.75	8.16	12.59	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter											
MW-13	08-19-97	20.75	8.40	12.35	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter											
MW-13	11-19-97	20.75	8.40	12.35	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter											
MW-13	02-19-98	20.75	6.44	14.31	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--			
MW-14	03-17-95	22.99	8.17	14.82	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--			
MW-14	06-01-95	22.99	8.57	14.42	ND	SW	0.003	06-01-95	Not sampled: well sampled annually, during the first quarter											
MW-14	08-31-95	22.99	9.05	13.94	ND	SSW	0.005	08-31-95	Not sampled: well sampled annually, during the first quarter											
MW-14	11-27-95	22.99	9.19	13.80	ND	SSW	0.004	11-27-95	Not sampled: well sampled annually, during the first quarter											
MW-14	02-22-96	22.99	6.52	16.47	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--			
MW-14	05-20-96	22.99	7.88	15.11	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter											
MW-14	08-26-96	22.99	8.83	14.16	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter											
MW-14	11-20-96	22.99	8.95	14.04	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter											
MW-14	03-24-97	20.90	8.98	11.92	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--			
MW-14	05-23-97	20.90	9.61	11.29	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter											
MW-14	08-19-97	20.90	9.80	11.10	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter											
MW-14	11-19-97	20.90	9.80	11.10	ND	SE	0.016	11-19-97	<50	1.7	<0.5	0.6	3	<3	--	--	--			
MW-14	02-19-98	20.90	6.27	14.63	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--			

Table 2
Historical 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	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method		
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
MW-15	03-17-95	19.19	5.21	13.98	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-15	06-01-95	19.19	5.84	13.35	ND	SW	0.003	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-15	08-31-95	19.19	6.18	13.01	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-15	11-27-95	19.19	6.42	12.77	ND	SSW	0.004	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-15	02-22-96	19.19	4.84	14.35	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	--		
MW-15	05-20-96	19.19	5.31	13.88	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-15	08-26-96	19.19	6.05	13.14	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--	--		
MW-15	11-20-96	19.19	5.46	13.73	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-15	03-24-97	22.08	6.00	16.08	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	15	--	--	--		
MW-15	05-23-97	22.08	6.25	15.83	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-15	08-19-97	22.08	6.34	15.74	ND	SE	0.04	08-19-97	99*	<0.5	<0.5	<0.5	0.7	6	--	--	--		
MW-15	11-19-97	22.08	6.34	15.74	ND	SE	0.016	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters								--	--	--
MW-15	02-19-98	22.08	4.66	17.42	ND	EAST	VAR	02-19-98	<50	<0.5	<0.5	<0.5	<0.5	48	--	--	--		

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

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

ft/ft: foot per foot

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

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

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

ND: none detected

VAR: gradient variable across the site

--: not analyzed

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

*: 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 *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

Table 3
Historical Groundwater Analytical Data
Metals*
1994 - 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-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-31-95	<5	40	16	50	90
MW-8	11-27-95	<5	130	77	170	280
MW-8	03-14-96	<5	30	7	40	60
MW-8	05-21-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-26-96	--	--	--	--	--
MW-8	11-20-96	--	--	--	--	--
MW-8	03-24-97	--	--	--	--	--
MW-8	05-23-97	<0.005	<0.01	<0.005	<0.02	<0.02
MW-8	08-19-97	--	--	--	--	--
MW-8	02-19-98	--	--	--	--	--

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

--: not analyzed

[^]: MRL was elevated because of matrix interference

*: 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-Dichloroethane µg/L	1,1-Dichloroethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methylnaphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methylphenol µg/L
MW-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	--	--	--	--	--	--	--	1300	790	<50^	<50^	<100^
MW-1	11-19-97	--	--	--	--	--	--	--	<5	<5	5	<5	<10
MW-1	02-19-98	--	--	--	--	--	--	--	870	330	<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	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-31-95	--	--	--	--	--	--	--	62	8	<5	<5	<5
MW-8	11-27-95	--	--	--	--	--	--	--	15	<5	<5	<5	<5
MW-8	03-14-96	--	--	--	--	--	--	--	400	55	<50	<50	<50
MW-8	05-21-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-26-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	11-20-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	03-24-97	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	05-23-97	--	--	--	--	--	--	--	26	<5	<5	<5	<10
MW-8	08-19-97	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	11-19-97	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	02-19-98	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

-- : not analyzed

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

*: 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).

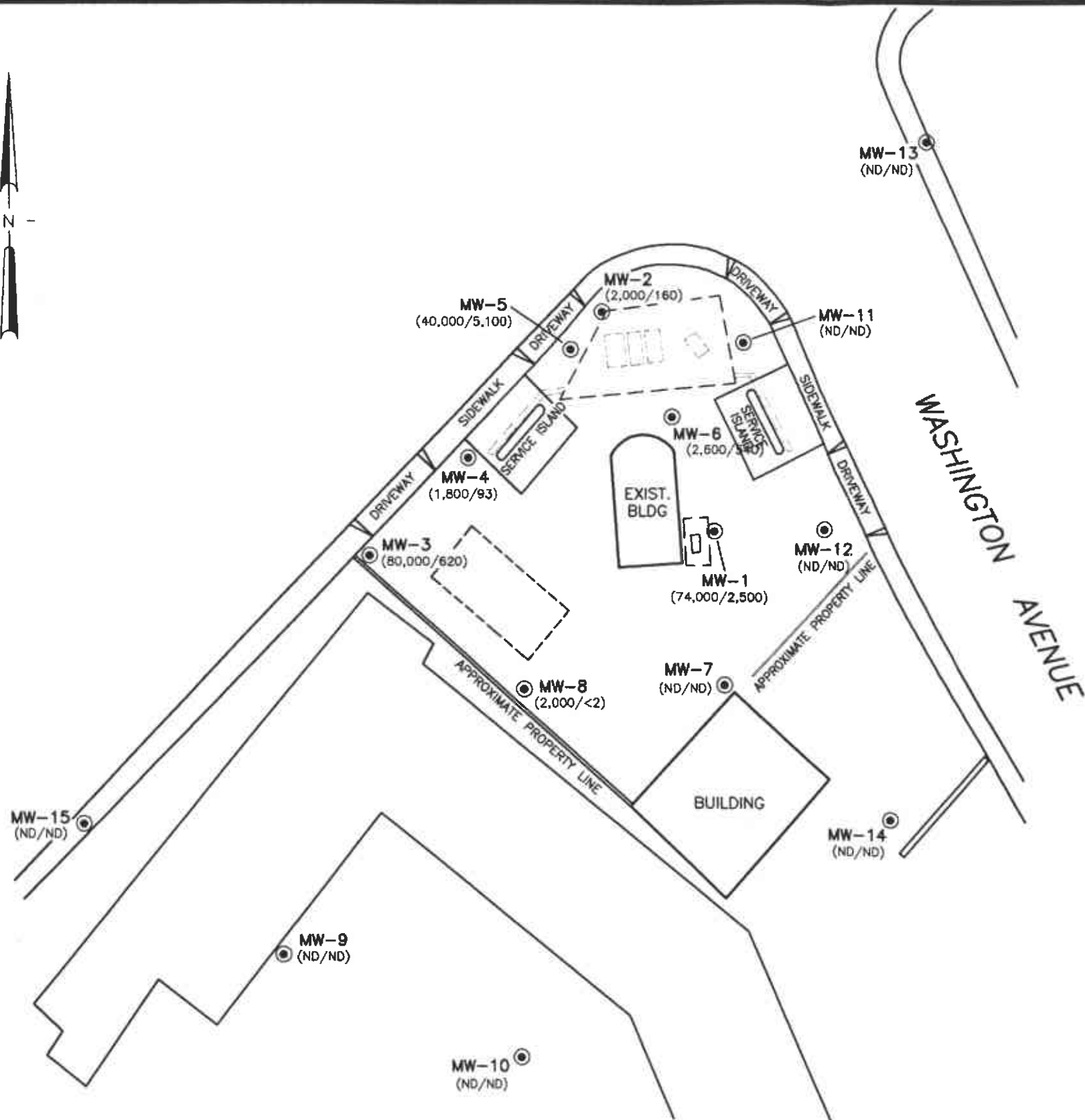
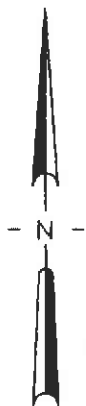
**: The sample was analyzed initially on 8/22/97, within the recommended holding time, and the surrogates were below normal CAS control limits.

The sample was reextracted on 9/2/97, 7 days past the recommended holding time, and the QA/QC results for reanalysis are within CAS acceptance criteria.

Table 5
Approximate Cumulative Floating Product Recovered

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

Well Designation	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
1991 to 1998 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
- (74,000/2,500) Concentration of total petroleum hydrocarbons, as gasoline (TPHG) and benzene in groundwater (ug/L); samples were collected on 2/19/98
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- < Method reporting limit raised due to high analyte concentration requiring sample dilution or matrix interference

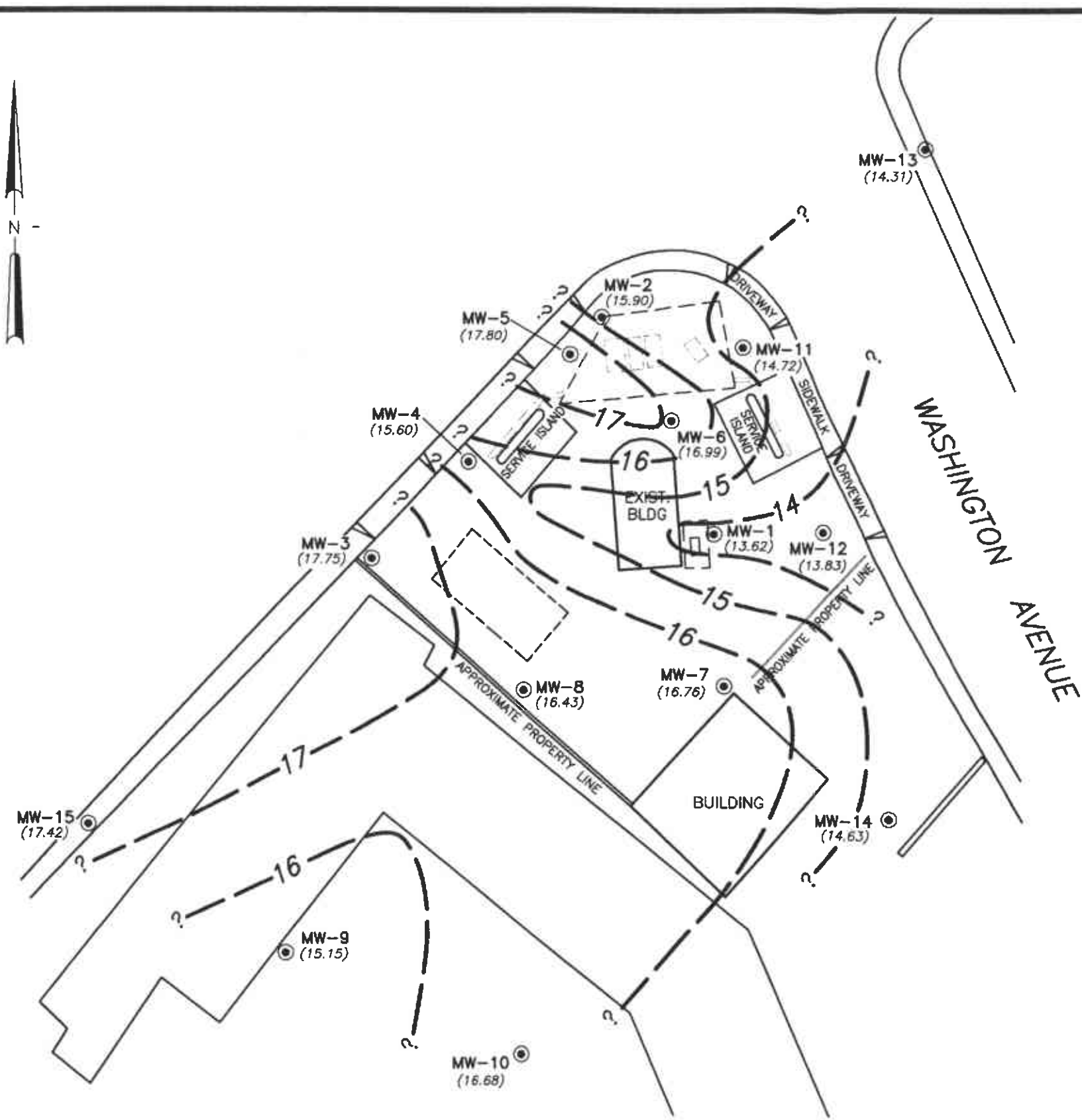
0 50 100
SCALE IN FEET
(Approximate)

Pinnacle

ENVIRONMENTAL SOLUTIONS
A DIVISION OF EMCON

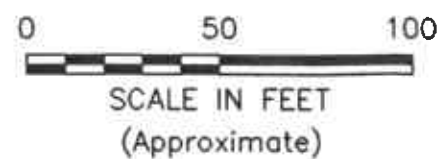
DATE AUG. 1998
DWN KAB
APP
REV
PROJECT NO.
805-121.006

FIGURE 1
ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
SAN LEANDRO, CALIFORNIA
GROUNDWATER ANALYTICAL SUMMARY
1ST QUARTER 1998



EXPLANATION

- ⊙ Groundwater monitoring well
- Former underground gasoline storage tank
- Existing underground gasoline storage tank
- Approximate limit of gasoline tank excavation
- Former product line
- (13.62) Groundwater elevation (Ft.-MSL) measured 2/19/98
- ?- Groundwater elevation contour (Ft.-MSL)



DATE AUG. 1998
DWN KAB
APP
REV
PROJECT NO.
805-121.006

FIGURE 2
ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
SAN LEANDRO, CALIFORNIA
GROUNDWATER ELEVATION CONTOURS
1ST QUARTER 1998

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1" 1/2" 0" 1"
SANJOSE-CAD: N:\805121\SUGWC.dwg Xrefs: <NONE>
Scale: 1" = 50.00 DimScale: 1" = 50.00 Date: 4/8/98 Time: 1:25 PM Operator: KBlack

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 EMCON's San Jose or Sacramento office location for temporary storage. EMCON 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 EMCON 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 EMCON to an ARCO-approved laboratory by courier or taken directly to the laboratory by the environmental sampler. Sample shipments from EMCON 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 EMCON 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)



OWT

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:

$$P = \pi r^2 \times 7.48 \times h$$

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

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

pH = ± 0.1 pH units

COND. = $\pm 10\%$

TEMP. = $\pm 1.0^\circ\text{F}$

YES

WELL PURGING
CRITERIA MET;
PROCEED TO
WELL SAMPLING.

NO

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

YES

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

YES

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

NO

RECORD WELL
AS DRY FOR
PURPOSES OF
SAMPLING.



EMCON

MONITORING WELL PURGING PROTOCOL

FIGURE

A-1



WATER SAMPLE FIELD DATA SHEET

Rev. 5/98

PROJECT NO : _____
PURGED BY : _____
SAMPLED BY : _____

SAMPLE ID : _____
CLIENT NAME : _____
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 : _____
DATE SAMPLED : _____

END PURGE : _____
SAMPLING TIME : _____

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/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

_____ 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: _____

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 _____



EMCON

WATER SAMPLE FIELD DATA SHEET

FIGURE

A-2



OWT

EMCON - 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:



EMCON

SAMPLING AND ANALYSIS REQUEST FORM

FIGURE

A-3

APPENDIX B

CERTIFIED ANALYTICAL REPORTS, AND CHAIN-OF-CUSTODY DOCUMENTATION



March 5, 1998

Service Request No.: S9800356

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-121.005/TO#22312.00/601 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on February 20, 1998. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 9, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Steven L. Green'.

Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read 'Bernadette J. Cox for'.

Greg Anderson
Regional QA Coordinator

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: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-9(15)
Lab Code: S9800356-001
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	2/22/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/22/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-10(16)
Lab Code: S9800356-002
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	2/22/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/22/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980221-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	2/21/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/21/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
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-9(15)	S9800356-001		95	80
MW-10(16)	S9800356-002		94	82
MW-9(15)	S9800356-001MS		101	81
MW-9(15)	S9800356-001DMS		96	82
Method Blank	S980221-WB1		96	85

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800356
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 2/22/98

Matrix Spike/Duplicate Matrix Spike Summary
BTE

Sample Name: MW-9(15)
Lab Code: S9800356-001MS, S9800356-001DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO

Service Request: 89800356
Date Analyzed: 2/21/98

**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
					Acceptance Limits	Percent Recovery	
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	90-110	96	
Benzene	EPA 5030	8020	25	26	85-115	104	
Toluene	EPA 5030	8020	25	26	85-115	104	
Ethylbenzene	EPA 5030	8020	25	25	85-115	100	
Xylenes, Total	EPA 5030	8020	75	76	85-115	101	
Methyl tert -Butyl Ether	EPA 5030	8020	25	23	85-115	92	

ICV032196

Chain of Custody



March 5, 1998

Service Request No.: S9800357

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-121.005/TO#22312.00/601 SAN LEANDRO

Dear Mr. Messerotes:

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

Sincerely,

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Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read 'Bernadette J. Cox for', written over a horizontal line.

Greg Anderson
Regional QA Coordinator

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: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

Dissolved Metals

Sample Name: MW-1(10)
Lab Code: S9800357-010
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
Antimony	NONE	6010A	0.05	1	NA	3/4/98	0.06	
Arsenic	NONE	6010A	0.05	1	NA	3/4/98	ND	
Barium	NONE	6010A	0.01	1	NA	3/4/98	11	
Beryllium	NONE	6010A	0.005	1	NA	3/4/98	ND	
Cadmium	NONE	6010A	0.005	1	NA	3/4/98	<0.01	M1
Chromium	NONE	6010A	0.01	1	NA	3/4/98	ND	
Cobalt	NONE	6010A	0.01	1	NA	3/4/98	ND	
Copper	NONE	6010A	0.01	1	NA	3/4/98	ND	
Lead	NONE	6010A	0.05	1	NA	3/4/98	ND	
Mercury	METHOD	7470	0.0004	1	3/3/98	3/3/98	ND	
Molybdenum	NONE	6010A	0.01	1	NA	3/4/98	0.02	
Nickel	NONE	6010A	0.02	1	NA	3/4/98	ND	
Selenium	NONE	6010A	0.05	1	NA	3/4/98	ND	
Silver	NONE	6010A	0.02	1	NA	3/4/98	ND	
Thallium	NONE	6010A	0.05	1	NA	3/4/98	<0.1	M1
Vanadium	NONE	6010A	0.01	1	NA	3/4/98	0.02	
Zinc	NONE	6010A	0.02	1	NA	3/4/98	ND	

M1

The MRL was elevated because of matrix interferences.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: NA
Date Received: NA

Dissolved Metals

Sample Name: Method Blank
Lab Code: S980304-MB
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
Antimony	NONE	6010A	0.05	1	NA	3/4/98	ND	
Arsenic	NONE	6010A	0.05	1	NA	3/4/98	ND	
Barium	NONE	6010A	0.01	1	NA	3/4/98	ND	
Beryllium	NONE	6010A	0.005	1	NA	3/4/98	ND	
Cadmium	NONE	6010A	0.005	1	NA	3/4/98	ND	
Chromium	NONE	6010A	0.01	1	NA	3/4/98	ND	
Cobalt	NONE	6010A	0.01	1	NA	3/4/98	ND	
Copper	NONE	6010A	0.01	1	NA	3/4/98	ND	
Lead	NONE	6010A	0.05	1	NA	3/4/98	ND	
Mercury	METHOD	7470	0.0004	1	3/3/98	3/3/98	ND	
Molybdenum	NONE	6010A	0.01	1	NA	3/4/98	ND	
Nickel	NONE	6010A	0.02	1	NA	3/4/98	ND	
Selenium	NONE	6010A	0.05	1	NA	3/4/98	ND	
Silver	NONE	6010A	0.02	1	NA	3/4/98	ND	
Thallium	NONE	6010A	0.05	1	NA	3/4/98	ND	
Vanadium	NONE	6010A	0.01	1	NA	3/4/98	ND	
Zinc	NONE	6010A	0.02	1	NA	3/4/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-12(11)
Lab Code: S9800357-001
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	2/25/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/25/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-13(12)
Lab Code: S9800357-002
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	2/25/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/25/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-14(11)
Lab Code: S9800357-003
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	1	NA	2/21/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/21/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-7(9)
Lab Code: S9800357-004
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	1	NA	2/25/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Methyl tert-Butyl Ether	EPA 5030	8020	3	1	NA	2/25/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-11(9)
Lab Code: S9800357-005
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	1	NA	2/28/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/28/98	1.6	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/28/98	1.8	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/28/98	7	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4(8)
Lab Code: S9800357-006
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	4	NA	2/28/98	1800	
Benzene	EPA 5030	8020	0.5	4	NA	2/28/98	93	
Toluene	EPA 5030	8020	0.5	4	NA	2/28/98	51	
Ethylbenzene	EPA 5030	8020	0.5	4	NA	2/28/98	29	
Xylenes, Total	EPA 5030	8020	0.5	4	NA	2/28/98	420	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	2/28/98	110	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-5(8)
Lab Code: S9800357-007
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	100	NA	2/22/98	40000	
Benzene	EPA 5030	8020	0.5	100	NA	2/22/98	5100	
Toluene	EPA 5030	8020	0.5	100	NA	2/22/98	3800	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	2/22/98	620	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	2/22/98	2900	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	2/22/98	<300	C1

C1

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-6(8)
Lab Code: S9800357-008
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	10	NA	2/26/98	2600	
Benzene	EPA 5030	8020	0.5	10	NA	2/26/98	540	
Toluene	EPA 5030	8020	0.5	10	NA	2/26/98	8	
Ethylbenzene	EPA 5030	8020	0.5	10	NA	2/26/98	90	
Xylenes, Total	EPA 5030	8020	0.5	10	NA	2/26/98	88	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	10	NA	2/26/98	<30	C1

C1

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3(11)
Lab Code: S9800357-009
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	200	NA	2/22/98	80000	
Benzene	EPA 5030	8020	0.5	200	NA	2/22/98	620	
Toluene	EPA 5030	8020	0.5	200	NA	2/22/98	1200	
Ethylbenzene	EPA 5030	8020	0.5	200	NA	2/22/98	2500	
Xylenes, Total	EPA 5030	8020	0.5	200	NA	2/22/98	13000	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	200	NA	2/22/98	<600	C1

C1

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1(10)
Lab Code: S9800357-010
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	3/5/98	74000	
Benzene	EPA 5030	8020	0.5	100	NA	3/5/98	2500	
Toluene	EPA 5030	8020	0.5	100	NA	3/5/98	120	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	3/5/98	2200	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	3/5/98	4100	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	3/5/98	<300	C1

C1

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-2(8)
Lab Code: S9800357-011
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	4	NA	2/26/98	2000	
Benzene	EPA 5030	8020	0.5	4	NA	2/26/98	160	
Toluene	EPA 5030	8020	0.5	4	NA	2/26/98	50	
Ethylbenzene	EPA 5030	8020	0.5	4	NA	2/26/98	66	
Xylenes, Total	EPA 5030	8020	0.5	4	NA	2/26/98	230	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	2/26/98	25	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-15(9)
Lab Code: S9800357-012
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	2/22/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/22/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/22/98	48	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-8(8)
Lab Code: S9800357-013
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	4	NA	2/22/98	2000	
Benzene	EPA 5030	8020	0.5	4	NA	2/22/98	<2	C1
Toluene	EPA 5030	8020	0.5	4	NA	2/22/98	<2	C1
Ethylbenzene	EPA 5030	8020	0.5	4	NA	2/22/98	9	
Xylenes, Total	EPA 5030	8020	0.5	4	NA	2/22/98	<2	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	2/22/98	140	

C1

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S98021-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	2/21/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/21/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/21/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980225-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	2/25/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/25/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/25/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980228-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	2/28/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/28/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980305-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	3/5/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	3/5/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	3/5/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	3/5/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	3/5/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	3/5/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

ARCO Products Company
20805-121.005/TO#22312.00/601 SAN LEANDRO
Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-1(10)
Lab Code: S9800357-010
Test Notes: C1

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Aniline	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Bis(2-chloroethyl) Ether	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Phenol	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2-Chlorophenol	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
1,3-Dichlorobenzene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
1,4-Dichlorobenzene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
1,2-Dichlorobenzene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Benzyl Alcohol	EPA 3510	8270B	10	10	2/23/98	2/25/98	<100	
Bis(2-chloroisopropyl) Ether	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2-Methylphenol	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Hexachloroethane	EPA 3510	8270B	10	10	2/23/98	2/25/98	<100	
N-Nitrosodi-n-propylamine	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
3- and 4-Methylphenol*	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Nitrobenzene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Isophorone	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2-Nitrophenol	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2,4-Dimethylphenol	EPA 3510	8270B	10	10	2/23/98	2/25/98	<100	
Bis(2-chloroethoxy)methane	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2,4-Dichlorophenol	EPA 3510	8270B	50	10	2/23/98	2/25/98	<500	
Benzoic Acid	EPA 3510	8270B	50	10	2/23/98	2/25/98	<500	
1,2,4-Trichlorobenzene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Naphthalene	EPA 3510	8270B	5	10	2/23/98	2/25/98	870	
4-Chloroaniline	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Hexachlorobutadiene	EPA 3510	8270B	10	10	2/23/98	2/25/98	<100	
4-Chloro-3-methylphenol	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2-Methylnaphthalene	EPA 3510	8270B	5	10	2/23/98	2/25/98	330	
Hexachlorocyclopentadiene	EPA 3510	8270B	10	10	2/23/98	2/25/98	<100	
2,4,6-Trichlorophenol	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2,4,5-Trichlorophenol	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2-Chloronaphthalene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2-Nitroaniline	EPA 3510	8270B	20	10	2/23/98	2/25/98	<200	
Acenaphthylene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Dimethyl Phthalate	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
2,6-Dinitrotoluene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Acenaphthene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
3-Nitroaniline	EPA 3510	8270B	20	10	2/23/98	2/25/98	<200	
2,4-Dinitrophenol	EPA 3510	8270B	50	10	2/23/98	2/25/98	<500	
Dibenzofuran	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
4-Nitrophenol	EPA 3510	8270B	50	10	2/23/98	2/25/98	<500	
2,4-Dinitrotoluene	EPA 3510	8270B	50	10	2/23/98	2/25/98	<500	
Fluorene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
4-Chlorophenyl Phenyl Ether	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	

*

Quantified as 4-methylphenol.

C1

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

ARCO Products Company
20805-121.005/TO#22312.00/601 SAN LEANDRO
Water

Service Request: S9800357
Date Collected: 2/19/98
Date Received: 2/20/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-1(10)
Lab Code: S9800357-010
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 3510	8270B	5	10	2/23/98	2/25/98	<50	
4-Nitroaniline	EPA 3510	8270B	20	10	2/23/98	2/25/98	<200	
2-Methyl-4,6-dinitrophenol	EPA 3510	8270B	20	10	2/23/98	2/25/98	<200	
N-Nitrosodiphenylamine	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
4-Bromophenyl Phenyl Ether	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Hexachlorobenzene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Pentachlorophenol	EPA 3510	8270B	30	10	2/23/98	2/25/98	<300	
Phenanthrene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Anthracene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Di-n-butyl Phthalate	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Fluoranthene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Pyrene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Butylbenzyl Phthalate	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
3,3'-Dichlorobenzidine	EPA 3510	8270B	20	10	2/23/98	2/25/98	<200	
Benz(a)anthracene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Chrysene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Di-n-octyl Phthalate	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Benzo(b)fluoranthene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Benzo(k)fluoranthene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Benzo(a)pyrene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Indeno(1,2,3-cd)pyrene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Dibenz(a,h)anthracene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	
Benzo(g,h,i)perylene	EPA 3510	8270B	5	10	2/23/98	2/25/98	<50	

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C1

Quantified as 4-methylphenol.

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9800357
 Date Collected: NA
 Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
 Lab Code: S980223-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Aniline	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Bis(2-chloroethyl) Ether	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Phenol	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2-Chlorophenol	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
1,3-Dichlorobenzene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
1,4-Dichlorobenzene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
1,2-Dichlorobenzene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Benzyl Alcohol	EPA 3510	8270B	10	1	2/23/98	2/25/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2-Methylphenol	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Hexachloroethane	EPA 3510	8270B	10	1	2/23/98	2/25/98	ND	
N-Nitrosodi-n-propylamine	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
3- and 4-Methylphenol*	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Nitrobenzene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Isophorone	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2-Nitrophenol	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2,4-Dimethylphenol	EPA 3510	8270B	10	1	2/23/98	2/25/98	ND	
Bis(2-chloroethoxy)methane	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2,4-Dichlorophenol	EPA 3510	8270B	50	1	2/23/98	2/25/98	ND	
Benzoic Acid	EPA 3510	8270B	50	1	2/23/98	2/25/98	ND	
1,2,4-Trichlorobenzene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Naphthalene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
4-Chloroaniline	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Hexachlorobutadiene	EPA 3510	8270B	10	1	2/23/98	2/25/98	ND	
4-Chloro-3-methylphenol	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2-Methylnaphthalene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Hexachlorocyclopentadiene	EPA 3510	8270B	10	1	2/23/98	2/25/98	ND	
2,4,6-Trichlorophenol	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2,4,5-Trichlorophenol	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2-Chloronaphthalene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2-Nitroaniline	EPA 3510	8270B	20	1	2/23/98	2/25/98	ND	
Acenaphthylene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Dimethyl Phthalate	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
2,6-Dinitrotoluene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Acenaphthene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
3-Nitroaniline	EPA 3510	8270B	20	1	2/23/98	2/25/98	ND	
2,4-Dinitrophenol	EPA 3510	8270B	50	1	2/23/98	2/25/98	ND	
Dibenzofuran	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
4-Nitrophenol	EPA 3510	8270B	50	1	2/23/98	2/25/98	ND	
2,4-Dinitrotoluene	EPA 3510	8270B	50	1	2/23/98	2/25/98	ND	
Fluorene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	

* Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

ARCO Products Company
20805-121.005/TO#22312.00/601 SAN LEANDRO
Water

Service Request: S9800357
Date Collected: NA
Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
Lab Code: S980223-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 3510	8270B	5	1	2/23/98	2/25/98	ND	
4-Nitroaniline	EPA 3510	8270B	20	1	2/23/98	2/25/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3510	8270B	20	1	2/23/98	2/25/98	ND	
N-Nitrosodiphenylamine	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Hexachlorobenzene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Pentachlorophenol	EPA 3510	8270B	30	1	2/23/98	2/25/98	ND	
Phenanthrene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Anthracene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Di-n-butyl Phthalate	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Fluoranthene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Pyrene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Butylbenzyl Phthalate	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
3,3'-Dichlorobenzidine	EPA 3510	8270B	20	1	2/23/98	2/25/98	ND	
Benz(a)anthracene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Chrysene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Di-n-octyl Phthalate	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Benzo(b)fluoranthene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Benzo(k)fluoranthene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Benzo(a)pyrene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Indeno(1,2,3-cd)pyrene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Dibenz(a,h)anthracene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	
Benzo(g,h,i)perylene	EPA 3510	8270B	5	1	2/23/98	2/25/98	ND	

*

Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9800357
 Date Collected: NA
 Date Received: NA
 Date Prepared: NA
 Date Analyzed: 3/4/98

Matrix Spike/Duplicate Matrix Spike Summary
 Dissolved Metals

Sample Name: MW-1(10)
 Lab Code: S9800357-0010MS, S9800357-0010DMS
 Test Notes:

Units: mg/L (ppm)
 Basis: NA

Analyte	Units	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference	Result Notes
				MS	DMS		MS	DMS	MS	DMS			
Antimony	mg/L (ppm)	6010A	0.05	1.0	1.0	0.06	1.1	1.1	104	104	75-125	<1	
Arsenic	mg/L (ppm)	6010A	0.05	1.0	1.0	ND	0.82	0.82	82	82	75-125	<1	
Barium	mg/L (ppm)	6010A	0.01	0.10	0.10	11	11	11	P	P	75-125	<1	P
Beryllium	mg/L (ppm)	6010A	0.005	0.10	0.10	ND	0.099	0.099	99	99	75-125	<1	
Cadmium	mg/L (ppm)	6010A	0.005	0.50	0.50	<0.01	0.49	0.49	98	98	75-125	<1	M1
Chromium	mg/L (ppm)	6010A	0.01	0.50	0.50	ND	0.49	0.49	98	98	75-125	<1	
Cobalt	mg/L (ppm)	6010A	0.01	0.20	0.20	ND	0.19	0.18	95	90	75-125	5	
Copper	mg/L (ppm)	6010A	0.01	0.10	0.10	ND	0.090	0.089	90	89	75-125	1	
Lead	mg/L (ppm)	6010A	0.05	1.0	1.0	ND	0.94	0.92	94	92	75-125	2	
Mercury	mg/L (ppm)	7470	0.0004	0.010	0.010	ND	0.012	0.0098	120	98	75-125	20	
Molybdenum	mg/L (ppm)	6010A	0.01	1.0	1.0	0.02	1.2	1.0	118	98	75-125	18	
Nickel	mg/L (ppm)	6010A	0.02	0.50	0.50	ND	0.49	0.48	98	96	75-125	2	
Selenium	mg/L (ppm)	6010A	0.05	0.50	0.50	ND	0.63	0.63	126	126	75-125	<1	A
Silver	mg/L (ppm)	6010A	0.02	0.50	0.50	ND	0.43	0.42	86	84	75-125	2	
Thallium	mg/L (ppm)	6010A	0.05	1.0	1.0	<0.1	1.1	1.1	110	110	75-125	<1	M1
Vanadium	mg/L (ppm)	6010A	0.01	0.10	0.10	0.02	0.12	0.11	100	90	75-125	9	
Zinc	mg/L (ppm)	6010A	0.02	0.50	0.50	ND	0.50	0.49	100	98	75-125	2	

P Not Applicable because of sample matrix. Accuracy of spike recovery value is reduced since the sample concentration was greater than the amount spiked.

M1 The MRL was elevated because of matrix interferences.

A Outside of acceptance limits. Because LCS results were acceptable, no further corrective action was taken.

DMS/020397p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
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-12(11)	S9800357-001		94	79
MW-13(12)	S9800357-002		102	83
MW-14(11)	S9800357-003		91	107
MW-7(9)	S9800357-004		100	80
MW-11(9)	S9800357-005		105	78
MW-4(8)	S9800357-006		105	80
MW-5(8)	S9800357-007		96	107
MW-6(8)	S9800357-008		103	78
MW-3(11)	S9800357-009		114	114
MW-1(10)	S9800357-010		97	91
MW-2(8)	S9800357-011		101	84
MW-15(9)	S9800357-012		90	100
MW-8(8)	S9800357-013		105	110
MW-11(9)	S9800357-005MS		96	81
MW-11(9)	S9800357-005DMS		97	89
Method Blank	S980221-WB2		91	76
Method Blank	S980225-WB1		100	81
Method Blank	S980228-WB1		100	76
Method Blank	S980305-WB1		100	76

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9800357
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 2/25/98

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline

Sample Name: MW-11(9)
Lab Code: S9800357-005MS, S9800357-005DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	Percent Recovery										Relative Percent Difference	Result Notes
			Spike Level		Sample Result	Spike Result		CAS Acceptance		Limits				
			MRL	MS		DMS	MS	DMS	MS	DMS	MS	DMS		
Gasoline	EPA 5030	CA/LUFT	50	250	250	ND	250	260	100	104	75-135	4		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO

Service Request: S9800357
Date Analyzed: 2/21/98

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

Sample Name: ICV **Units:** ug/L (ppb)
Lab Code: ICV1 **Basis:** NA
Test Notes:

ICV Source:

ICV Source:				CAS			
Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery		Result Notes
					Acceptance Limits	Percent Recovery	
TPH as Gasoline	EPA 5030	CA/LUFT	250	260	90-110	104	
Benzene	EPA 5030	8020	25	27	85-115	108	
Toluene	EPA 5030	8020	25	26	85-115	104	
Ethylbenzene	EPA 5030	8020	25	25	85-115	100	
Xylenes, Total	EPA 5030	8020	75	74	85-115	99	
Methyl tert -Butyl Ether	EPA 5030	8020	25	24	85-115	96	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9800357
 Date Collected: NA
 Date Received: NA
 Date Extracted: NA
 Date Analyzed: NA

Surrogate Recovery Summary
 Base Neutral/Acid Semivolatile Organic Compounds

Prep Method: EPA 3510
 Analysis Method: 8270B

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					
			2FP	PHL	NBZ	FBP	TBP	TPH
MW-1(10)	S9800357-010		3	4	57	80	10	93
0223-LCS	S980223-LCS		35	21	72	79	73	103
0223-LCSD	S980223-LCSD		33	20	64	75	66	92
Method Blank	S980223-WB1		32	20	64	70	65	90

CAS Acceptance Limits: D-50 D-58 47-100 53-85 D-119 50-107

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#22312.00/601 SAN LEANDRO
 LCS Matrix: Water

Service Request: S9800357
 Date Collected: NA
 Date Received: NA
 Date Extracted: 2/23/98
 Date Analyzed: 2/25/98

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

Sample Name: Lab Control Sample
 Lab Code: S980223-DLCS, S980223-LCS
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Percent Recovery

Analyte	Prep Method	Analysis Method	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference	Result Notes
			LCS	DLCS	LCS	DLCS	LCS	DLCS			
Phenol	EPA 3510	8270B	100	100	24	24	24	24	5-112	< 1	
2-Chlorophenol	EPA 3510	8270B	100	100	67	62	67	62	23-134	8	
1,4-Dichlorobenzene	EPA 3510	8270B	50	50	39	35	78	70	20-124	11	
N-Nitrosodi-n-propylamine	EPA 3510	8270B	50	50	41	37	82	74	D-230	10	
1,2,4-Trichlorobenzene	EPA 3510	8270B	50	50	40	37	80	74	44-142	8	
4-Chloro-3-methylphenol	EPA 3510	8270B	100	100	65	63	65	63	22-147	3	
Acenaphthene	EPA 3510	8270B	50	50	43	41	86	82	47-145	5	
4-Nitrophenol	EPA 3510	8270B	100	100	17	16	17	16	D-132	6	
2,4-Dinitrotoluene	EPA 3510	8270B	50	50	31	32	62	64	39-139	3	
Pentachlorophenol	EPA 3510	8270B	100	100	110	110	110	110	14-176	< 1	
Pyrene	EPA 3510	8270B	50	50	56	52	112	104	52-115	7	

M. JPH 110A, EXT. F. PC

ARCO Products Company

Division of Atlantic/Richfield Company

Task Order No. 22312.00

Chain of Custody

ARCO Facility no. 0601		City (Facility) San Leandro		Project manager (Consultant) Gary Messerotes		Laboratory Name CAS	
ARCO engineer Paul Supple		Telephone no. (ARCO)		Telephone no. (Consultant) (408) 453-7300		Fax no. (Consultant) (408) 453-0452	
Consultant name EMCON		Address (Consultant) 1921 Ringwood Ave San Jose, CA 95131				Contract Number	

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602 EPA 8020	BTEX/TPH 601 EPA 8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	EPA 601/6010	EPA 624/6240	EPA 627/6270	TCUP Metals ☐ VOAD ☐ VOA ☐	CAN Metals EPA 601/7000 TLC ☐ STLC ☐	Lead Org/MS ☐	Lead EPA 7420/7421 ☐	Method of shipment Sampler will deliver	
			Soil	Water	Other	Ice	Acid																
MW-7(1)1	2		X			X	HCL	2-15-98	12:55	X													Special Detection Limit/reporting Lowest Possible
MW-13(2)2	2		X			X	HCL		12:20	X													
MW-14(1)3	2		X			X	HCL		13:40	X													Special QA/QC As Normal
MW-7(1)4	2		X			X	HCL		14:00	X													
MW-11(1)5	2		X			X	HCL		14:30	X													Remarks RAT8
MW-4(1)6	2		X			X	HCL		12:25	X													
MW-5(1)7	2		X			X	HCL		12:45	X													#20805-121005
MW-6(1)8	2		X			X	HCL		13:15	X													
MW-3(1)9	2		X			X	HCL		13:45	X													Lab Number 59400357
MW-1(10)10	5		X			X	HCL		15:03	X						X	X						
MW-2(1)11	2		X			X	HCL		14:10	X													Turnaround Time: Priority Rush 1 Business Day ☐ Rush 2 Business Days ☐ Expedited 5 Business Days ☐ Standard 10 Business Days ☒
MW-15(1)12	2		X			X	HCL		14:50	X													
MW-9(1)13	2		X			X	HCL	✓	14:40	X													

Condition of sample:				Temperature received:			
Relinquished by sampler		Date	Time	Received by		Date	Time
		2-20-98	09:00			2-20-98	4:15 PM
Relinquished by		Date	Time	Received by		Date	Time
Relinquished by		Date	Time	Received by laboratory		Date	Time

APPENDIX C
FIELD DATA SHEETS

EMCON Groundwater Sampling and Analysis Request Form

PROJECT NAME: **ARCO STATION 601**
712 Lewelling Blvd. San Leandro

Sampling Project #: 21775-208.003
Reporting Project #: 20805-121.005

DATE REQUESTED: 19-Feb-98

Project Manager: Gary Messerotes

Groundwater Monitoring Instructions

Quarterly Monitoring- 2nd Month Of The Quarter

Bring a water trailer for purge water transport. Perform a water level survey prior to sampling (See ARCO SOP). The survey points are the tops of the well casings. Purge three (3) casing volumes. Please use the Reporting Project Number (#20805-121.005) on the chain-of-custody, sample containers and analytical results. **MW-9 and MW-10 should be put on a separate chain-of-custody.** Please see page 2 for additional information. Sample ID's on the on the C-O-C and the sample bottles must include the depth at which the sample was collected [i.e. MW-1(30)]. If MW-1 contains product take additional parameters at MW-8. Sample all regardless of prod.

Treatment System Instructions

No treatment system at this site.

Lisle Rath Pager# (888) 606-0933

Site Contact: _____ Site Phone: (415) 483-3237 Well Locks: **ARCO Key**

Well ID or Source	Casing Diameter (inches)	Casing Length (feet)	Floating Product (feet)	Analyses Requested
MW-9	2.0	16.2	ND	Depth To Water Total Depth
MW-10	2.0	19.3	ND	
MW-12	4.0	11.9	ND	
MW-13	2.0	13.3	ND	
MW-14	2.0	13.1	ND	
Above wells in any order				
MW-7	4.0	9.7	Dry	
MW-11	4.0	12.0	ND	
MW-4	4.0	8.6	ND	
MW-5	4.0	10.4	ND	
MW-6	4.0	8.6	Dry	
MW-3	4.0	11.9	IP	
MW-1	4.0	12.0	IP	
MW-2	4.0	12.4	ND	
MW-8	4.0	10.3	ND	
MW-15	2.0	10.4	ND	
Above wells in indicated order				

Laboratory Instructions:

Provide lowest detection limits possible.

Please report well MW-9 and MW-10 on a separate CAR.

Please use the EMCON Reporting Project Number (#20805-121.005) on the CARs.

ND = None Detected IP = Intermittent Product

EMCON - Groundwater Sampling and Analysis Request Form

PROJECT NAME : ARCO STATION 601
712 Lewelling Blvd. San Leandro

Sampling Project #: 21775-208.003
Reporting Project #: 20805-121.005

DATE REQUESTED : 18-Nov-97

Project Manager: Gary Messerotes

Groundwater Monitoring Instructions	Treatment System Instructions
See page one for additional instructions If well MW-1 does not contain product, please take the added parameters at this well. contains product, then take additional parameters at well MW-8. Sample all wells regardless of product per John Young's request Sample ID's on the C-O-C and the sample bottles must include the depth at which the sample was collected [i.e. MW-1 (30)]	No treatment system at this site. Lisle Rath Pager# (888) 606-0933

Site Contact: _____ **Site Phone:** (415) 483-3237 **Well Locks:** ARCO Key

Well ID or Source	Casing Diameter (inches)	Casing Length (feet)	Floating Product (feet)	Analyses Requested
MW-9				<Separate COC & CAR
MW-10				<Separate COC & CAR
MW-12				
MW-13				
MW-14				
Above wells in any order				
MW-7				Dissolved Oxygen (Field Reading)
MW-11		(See Page One)		TPH-Gasoline
MW-4				BTEX
MW-5				MTBE by EPA 8020
MW-6				(Fill 2- 40ml HCL VOAs)
MW-3				
MW-1				
MW-2				
MW-15				
MW-8				
Above wells in indicated order				
MW-1		(See page one)		Add: EPA 8270 (Fill 2- 1liter NP Glass) Dissolved Metals: Cd, Cr, Ni by (6010) Pb by (7421) (Fill 1- 500ml HNO3 LPE) Field Filtered

Laboratory Instructions:

Please report well MW-9 and MW-10 on a separate CAR.

Provide lowest detection limits possible.

Please use the EMCON Reporting Project Number (#20805-121.003) on the CARs.

ND = None Detected IP = Intermittent Product

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 21775-208.003 STATION ADDRESS : 712 Lewelling Blvd., San Leandro

DATE : 2/19/98

ARCO STATION # : 601

FIELD TECHNICIAN : Mike Ross/ Chris Chaco

DAY : Thursday

DTW Order	WELL ID	Well Box Seal	Type Of Well Lid	Well Lid Secure	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	19/16	Yes	ARCO	LWC	7.11	7.11	NR	NR	16.2	water in box
2	MW-10	OK	19/16	Yes	ARCO	LWC	4.65	4.65			17.8	
3	MW-12	OK	19/16	Yes	ARCO	LWC	6.28	6.28			11.6	
4	MW-13	OK	19/16	Yes	ARCO	LWC	6.44	6.44			13.0	
5	MW-14	OK	19/16	Yes	ARCO	LWC	6.27	6.27			12.9	
6	MW-7	OK	19/16	Yes	ARCO	LWC	6.13	6.13			9.6	
7	MW-11	OK	19/16	Yes	ARCO	LWC	6.25	6.25			11.8	
8	MW-4	OK	19/16	Yes	ARCO	LWC	6.78	6.78			8.5	
9	MW-5	OK	19/16	Yes	ARCO	LWC	4.65	4.64			9.0	
10	MW-6	OK	19/16	Yes	ARCO	LWC	5.78	5.78			8.6	
11	MW-3	OK	20	Yes	ARCO	LWC	5.24	5.24			12.0	
12	MW-1	OK	20	Yes	ARCO	LWC	5.57	5.57			11.2	
13	MW-2	OK	19/16	Yes	ARCO	LWC	5.22	5.22			9.2	
14	MW-15	OK	19/16	Yes	ARCO	LWC	4.66	4.66			10.00	water in box
15	MW-8	OK	19/16	Yes	ARCO	LWC	4.46	4.46			10.2	

SURVEY POINTS ARE TOP OF WELL CASINGS



EMCON
ASSOCIATES

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 20805 21775-208 003 SAMPLE ID: MW-1 (10')

PURGED BY: C. Chaco CLIENT NAME: ARCO 601

SAMPLED BY: ↓ LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL): — VOLUME IN CASING (gal.): 3.67
DEPTH TO WATER (feet): 5.57 CALCULATED PURGE (gal.): 11.03
DEPTH OF WELL (feet): 11.2 ACTUAL PURGE VOL. (gal.): 11.5

DATE PURGED: 2-19-98 Start (2400 Hr) 14:50 End (2400 Hr) 14:59
DATE SAMPLED: ↓ Start (2400 Hr) 15:02 End (2400 Hr) 15:04

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1455</u>	<u>4.0</u>	<u>7.28</u>	<u>717</u>	<u>62.4</u>	<u>clr</u>	<u>clr</u>
<u>1457</u>	<u>7.0</u>	<u>7.04</u>	<u>1246</u>	<u>65.4</u>	<u>"</u>	<u>"</u>
<u>1459</u>	<u>11.5</u>	<u>6.98</u>	<u>1139</u>	<u>65.8</u>	<u>"</u>	<u>"</u>

D. O. (ppm): 2-3 ODOR: STRONG NT NT
(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

NT

NT

PURGING EQUIPMENT

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

Other:

SAMPLING EQUIPMENT

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

Other:

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: Heavy Shovel

Meter Calibration: Date: Time: Meter Serial #: Temperature °F:

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

Location of previous calibration:

Signature: Chris Chaco

Reviewed By: NT

Page 1 of 15



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-208.003SAMPLE ID: MW-2 (8')PURGED BY: P. ChacoCLIENT NAME: ARCW 601SAMPLED BY: JLOCATION: San LeandroTYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): — VOLUME IN CASING (gal.): 2.60
 DEPTH TO WATER (feet): 5.22 CALCULATED PURGE (gal.): 7.80
 DEPTH OF WELL (feet): 9.2 ACTUAL PURGE VOL. (gal.): 5.0

DATE PURGED: 7-19-98 Start (2400 Hr) 13:58 End (2400 Hr) 14:00
 DATE SAMPLED: J Start (2400 Hr) 14:00 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>14:00</u>	<u>2.0</u>	<u>7.65</u>	<u>1212</u>	<u>62.1</u>	<u>yellow tint</u>	<u>light</u>
	<u>5.0</u>	<u>well dried at</u>	<u>4 gal</u>			
<u>14:10</u>	<u>—</u>	<u>7.29</u>	<u>1525</u>	<u>62.2</u>	<u>"</u>	<u>"</u>

D. O. (ppm): 1-2 ODOR: light
 (COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

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

PURGING EQUIPMENT

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

Other: —

SAMPLING EQUIPMENT

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

Other: —WELL INTEGRITY: Good LOCK #: ARCJREMARKS: —Meter Calibration: Date: — Time: — Meter Serial #: — Temperature °F: —(EC 1000 — / —) (DI —) (pH 7 — / —) (pH 10 — / —) (pH 4 — / —)Location of previous calibration: —Signature: [Signature]Reviewed By: SA Page 2 of 15

**WATER SAMPLE FIELD DATA SHEET**PROJECT NO: 21775-208 003SAMPLE ID: MW-3 (11')PURGED BY: C. ChawCLIENT NAME: ARCO 601SAMPLED BY: ✓LOCATION: SAN LEANDROTYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐CASING ELEVATION (feet/MSL): ✓ VOLUME IN CASING (gal.): 4.41DEPTH TO WATER (feet): 5.24 CALCULATED PURGE (gal.): 13.24DEPTH OF WELL (feet): 12.0 ACTUAL PURGE VOL. (gal.): 14.0DATE PURGED: 2-19-98Start (2400 Hr) 13:30End (2400 Hr) 13:36DATE SAMPLED: ✓Start (2400 Hr) 13:45End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (μ mhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>13:32</u>	<u>4.0</u>	<u>8.25</u>	<u>35.50</u>	<u>52.3</u>	<u>Gray</u>	<u>Flt</u>
<u>13:34</u>	<u>9.0</u>	<u>790</u>	<u>25.94</u>	<u>51.8</u>	<u>Gray</u>	<u>Flt</u>
<u>13:36</u>	<u>14.0</u>	<u>785</u>	<u>121.2</u>	<u>51.9</u>	<u>Gray</u>	<u>Flt</u>

D. O. (ppm): 3-4ODOR: Strong

(COBALT 0 - 500)

(NTU 0 - 200
or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

NONE**PURGING EQUIPMENT**

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

Other: ☐**SAMPLING EQUIPMENT**

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

Other: ☐WELL INTEGRITY: Good LOCK #: ARCOREMARKS: Heavy screenMeter Calibration: Date: ☐ Time: ☐ Meter Serial #: ☐ Temperature °F: ☐(EC 1000 ☐ / ☐) (DI ☐) (pH 7 ☐ / ☐) (pH 10 ☐ / ☐) (pH 4 ☐ / ☐)Location of previous calibration: Signature: [Signature]Reviewed By: [Signature]Page 3 of 15



EMCON
ASSOCIATES

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-208.003

SAMPLE ID: MW-4 (8')

PURGED BY: C. Chaco

CLIENT NAME: ARCO 601

SAMPLED BY: V

LOCATION: SAN LEANDRO

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.12

DEPTH TO WATER (feet): 6.78 CALCULATED PURGE (gal.): 3.37

DEPTH OF WELL (feet): 8.5 ACTUAL PURGE VOL (gal.): 1.5

DATE PURGED: 2-19-98 Start (2400 Hr) 12:15 End (2400 Hr) -

DATE SAMPLED: V Start (2400 Hr) 12:25 End (2400 Hr) -

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>12:16</u>	<u>1.5</u>	<u>7.12</u>	<u>1326</u>	<u>65.0</u>	<u>clr</u>	<u>mod</u>

well dried nt 1.5 gal

<u>12:25</u>	<u>-</u>	<u>7.26</u>	<u>1329</u>	<u>64.1</u>	<u>clr</u>	<u>mod</u>
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D. O. (ppm): 0-1 ODOR: None

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

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

PURGING EQUIPMENT

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

Other: ☐

SAMPLING EQUIPMENT

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

Other: ☐

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS:

Meter Calibration: Date: 993 / 1/15/00 Time: Meter Serial #: Temperature °F:

(EC 1000 993) (DI 1/15/00) (pH 7 721) (pH 10 700) (pH 4)

Location of previous calibration:

Signature: [Signature] Reviewed By: [Signature] Page 4 of 15



EMCON
ASSOCIATES

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-208.003

SAMPLE ID: MW-5 (8')

PURGED BY: C. Chaco

CLIENT NAME: ARCO 601

SAMPLED BY: C. Chaco

LOCATION: SAN LEANDRO

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

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

CASING ELEVATION (feet/MSL): VOLUME IN CASING (gal.): 2.84

DEPTH TO WATER (feet): 4.65 CALCULATED PURGE (gal.): 8.52

DEPTH OF WELL (feet): 9.00 ACTUAL PURGE VOL. (gal.): 4.5

DATE PURGED: 2-19-98

Start (2400 Hr) 12:35

End (2400 Hr) 12:39

DATE SAMPLED: ↓

Start (2400 Hr) 12:45

End (2400 Hr)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>12:37</u>	<u>3.0</u>	<u>7.85</u>	<u>1245</u>	<u>61.7</u>	<u>cloudy</u>	<u>not</u>

<u>well checked</u>	<u>at</u>	<u>4.5 gal</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
---------------------	-----------	----------------	-----------------------------	-----------------------------	-----------------------------	-----------------------------

<u>12:45</u>	<u>—</u>	<u>7.35</u>	<u>1628</u>	<u>62.8</u>	<u>cloudy</u>	<u>not</u>
--------------	----------	-------------	-------------	-------------	---------------	------------

D. O. (ppm): 1-2 ODOR: strong

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

Field QC samples collected at this well:

Parameters field filtered at this well:

PURGING EQUIPMENT

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

Other:

SAMPLING EQUIPMENT

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

Other:

WELL INTEGRITY: Good LOCK #: ARCO

REMARKS: Noticeable seep

Meter Calibration: Date: Time: Meter Serial #: Temperature °F:

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

Location of previous calibration:

Signature: [Signature]

Reviewed By: [Signature] Page 5 of 15



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 21775-208.003

SAMPLE ID: MW-6 (8' 2)

PURGED BY: C. Chaw

CLIENT NAME: ALCO 601

SAMPLED BY: ↓

LOCATION: San Leandro

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

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

CASING ELEVATION (feet/MSL): — VOLUME IN CASING (gal.): 1.84
DEPTH TO WATER (feet): 5.78 CALCULATED PURGE (gal.): 5.52
DEPTH OF WELL (feet): 8.60 ACTUAL PURGE VOL (gal.): 2.0

DATE PURGED: 2-19-98 Start (2400 Hr) 13:05 End (2400 Hr) 13:10

DATE SAMPLED: ↓ Start (2400 Hr) 13:15 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>13:10</u>	<u>2.0</u>	<u>7.31</u>	<u>1355</u>	<u>61.1</u>	<u>yellow tint</u>	<u>light</u>
<u>13:15</u>	<u>—</u>	<u>7.23</u>	<u>1368</u>	<u>62.2</u>	<u>"</u>	<u>"</u>

D. O. (ppm): 1-2 ODOR: slight (COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

NR

NR

PURGING EQUIPMENT

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

Other: —

SAMPLING EQUIPMENT

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

Other: —

WELL INTEGRITY: Good LOCK #: ALCO

REMARKS:

Meter Calibration: Date: — Time: — Meter Serial #: — Temperature °F: —

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

Location of previous calibration: —

Signature: [Signature]

Reviewed By: [Signature]

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WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



PROJECT NO: 21775-208.003
 PURGED BY: M. Ross
 SAMPLED BY: M. Ross

SAMPLE ID: MW-2(9)
 CLIENT NAME: ARCO 601
 LOCATION: San Leandro, Ca

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

CASING ELEVATION (feet/MSL): NA VOLUME IN CASING (gal.): 2.26
 DEPTH OF WELL (feet): 9.6 CALCULATED PURGE (gal.): 6.80
 DEPTH OF WATER (feet): 6.13 ACTUAL PURGE VOL. (gal.): 3.0

DATE PURGED: 2-19-98 END PURGE: 1351
 DATE SAMPLED: 2-19-98 SAMPLING TIME: 1400

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1349</u>	<u>2.5</u>	<u>7.01</u>	<u>1768</u>	<u>56.2</u>	<u>lgt brn</u>	<u>Trace</u>
<u>1351</u>	<u>600 DRY @</u>	<u>@</u>	<u>3.0</u>	<u>60.0</u>	<u>Gal 600</u>	
<u>1400</u>	<u>Recharge</u>	<u>7.11</u>	<u>1829</u>	<u>57.3</u>	<u>clr</u>	<u>clr</u>

OTHER: D.O. 1-2 m/c ODOR: None NR NR
 (COBALT 0-100) (NTU 0-200)

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK LOCK: ARCO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date: 2-19-98 Time: 1100 Meter Serial No.: 600112
 E.C. 1000 / pH 7 / pH 10 / pH 4 /

Temperature °F See MW-9
 SIGNATURE: M. Ross REVIEWED BY: MR PAGE 7 OF 15



WATER SAMPLE FIELD DATA SHEET

Rev. 3, 2/94

PROJECT NO: 20775-121 005SAMPLE ID: MW-8 (18')PURGED BY: C. ChacoCLIENT NAME: ARCO 601SAMPLED BY: JLOCATION: FremontTYPE: Ground Water ☒ Surface Water ☐ Treatment Effluent ☐ Other ☐CASING DIAMETER (inches): 2 ☐ 3 ☐ 4 ☒ 4.5 ☐ 6 ☐ Other ☐CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 3.75DEPTH TO WATER (feet): 4.46 CALCULATED PURGE (gal.): 11.25DEPTH OF WELL (feet): 10.2 ACTUAL PURGE VOL (gal.): 12.0DATE PURGED: 2-19-88Start (2400 Hr) 14:28End (2400 Hr) 14:35DATE SAMPLED: JStart (2400 Hr) 14:40End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>14:30</u>	<u>4.0</u>	<u>730</u>	<u>1163</u>	<u>61.3</u>	<u>cloudy Gray</u>	<u>NR</u>
<u>14:33</u>	<u>8.0</u>	<u>728</u>	<u>1145</u>	<u>62.0</u>	<u>GRAY</u>	<u>NR</u>
<u>14:35</u>	<u>12.0</u>	<u>724</u>	<u>1121</u>	<u>63.0</u>	<u>"</u>	<u>NR</u>

D. O. (ppm): 2-3ODOR: strong

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

Field QC samples collected at this well:

Parameters field filtered at this well:

PURGING EQUIPMENT

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

Other:

SAMPLING EQUIPMENT

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

Other: WELL INTEGRITY: Good LOCK #: ARCOREMARKS: Meter Calibration: Date: Time: Meter Serial #: Temperature °F: (EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)Location of previous calibration: Signature: C. ChacoReviewed By: MAPage 8 of 15



OWT

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO: 21775-208.003SAMPLE ID: MW-9(15)PURGED BY: M. RossCLIENT NAME: ARCO 601SAMPLED BY: M. RossLOCATION: San Leandro, CaTYPE: Groundwater ☒ Surface Water ☐ Leachate ☐ Other ☐CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.48
 DEPTH OF WELL (feet): 16.2 CALCULATED PURGE (gal.): 4.45
 DEPTH OF WATER (feet): 7.11 ACTUAL PURGE VOL. (gal.): 4.3

DATE PURGED: 2-19-99END PURGE: 1204DATE SAMPLED: 2-19-98SAMPLING TIME: 1210

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1200</u>	<u>1.5</u>	<u>6.85</u>	<u>1112</u>	<u>61.3</u>	<u>dr</u>	<u>dr</u>
<u>1202</u>	<u>3.0</u>	<u>6.99</u>	<u>1050</u>	<u>61.8</u>	<u>↓</u>	<u>↓</u>
<u>1204</u>	<u>4.5</u>	<u>7.08</u>	<u>1073</u>	<u>61.9</u>	<u>↓</u>	<u>↓</u>

OTHER: D.O. 1-2 mg/LODOR: NoneNRNR

(COBALT 0-100)

(NTU 0-200)

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OKLOCK: ARCOREMARKS: _____

 _____pH, E.C., Temp. Meter Calibration Date: 2-19-98Time: 1100Meter Serial No.: 600112E.C. 1000 9891 1000pH 7 921 1700pH 10 976 1000pH 4 401 1400Temperature °F 61.5SIGNATURE: M. RossREVIEWED BY: MA

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**OWT**

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97

PROJECT NO: 21775-208.003PURGED BY: M. RossSAMPLED BY: M. RossSAMPLE ID: MW-10(16)CLIENT NAME: ARLO 601LOCATION: SAN LEANORO, CATYPE: Groundwater ☒ Surface Water ☐ Leachate ☐ Other ☐CASING DIAMETER (inches): 2 ☒ 3 ☐ 4 ☐ 4.5 ☐ 6 ☐ Other ☐CASING ELEVATION (feet/MSL): NRVOLUME IN CASING (gal.): 2.18DEPTH OF WELL (feet): 17.8CALCULATED PURGE (gal.): 6.49DEPTH OF WATER (feet): 4.65ACTUAL PURGE VOL. (gal.): 2.0DATE PURGED: 2-19-98END PURGE: 1224DATE SAMPLED: 2-19-98SAMPLING TIME: 1230

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1217</u>	<u>2.5</u>	<u>7.16</u>	<u>1193</u>	<u>58.4</u>	<u>Brown</u>	<u>Heavy</u>
<u>1220</u>	<u>5.0</u>	<u>7.24</u>	<u>1150</u>	<u>59.3</u>	<u>11</u>	<u>11</u>
<u>1224</u>	<u>7.0</u>	<u>7.32</u>	<u>1071</u>	<u>60.0</u>	<u>11</u>	<u>11</u>

OTHER: D.O. D-1 mg/LODOR: NoneNRNR

(COBALT 0-100)

(NTU 0-200)

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

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

Other: **SAMPLING EQUIPMENT**

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

Other: DisposalsWELL INTEGRITY: OKLOCK: ARLOREMARKS: pH, E.C., Temp. Meter Calibration Date: 2-19-98Time: 1100Meter Serial No.: 600112E.C. 1000 pH 7 pH 10 pH 4 Temperature °F See MW-9SIGNATURE: Mike RossREVIEWED BY: JA

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WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



PROJECT NO: 21775-208.003

SAMPLE ID: MW-11(9)

PURGED BY: M. Ross

CLIENT NAME: ARCO 601

SAMPLED BY: M. Ross

LOCATION: San Leandro, CA

TYPE: Groundwater ☒ Surface Water ☐ Leachate ☐ Other ☐

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

CASING ELEVATION (feet/MSL): NR

VOLUME IN CASING (gal.): 3.62

DEPTH OF WELL (feet): 11.8

CALCULATED PURGE (gal.): 10.87

DEPTH OF WATER (feet): 6.25

ACTUAL PURGE VOL. (gal.): 11.0

DATE PURGED: 2-19-98

END PURGE: 1419

DATE SAMPLED: 2-19-98

SAMPLING TIME: 1430

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1412</u>	<u>4.0</u>	<u>7.38</u>	<u>1685</u>	<u>52.7</u>	<u>Light Blue</u>	<u>Trace</u>
<u>1415</u>	<u>7.5</u>	<u>7.28</u>	<u>1663</u>	<u>58.7</u>	<u>U</u>	<u>U</u>
<u>1419</u>	<u>11.0</u>	<u>7.36</u>	<u>1600</u>	<u>58.3</u>	<u>U</u>	<u>U</u>

OTHER: D.O. 1-2 MS/L

ODOR: NONE

NR
(COBALT 0-100)

NR
(NTU 0-200)

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

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

WELL INTEGRITY: OK

LOCK: ARCO

REMARKS:

pH, E.C., Temp. Meter Calibration Date: 2-19-98

Time: 1100

Meter Serial No. 600112

E.C. 1000

pH 7

pH 10

pH 4

Temperature °F

SIGNATURE: M. Ross

REVIEWED BY: 910

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WATER SAMPLE FIELD DATA SHEET

Rev. _____



OWT

PROJECT NO: 21775-2008.003

PURGED BY: M. Ross

SAMPLED BY: M. Ross

SAMPLE ID: MW-12(11)

CLIENT NAME: ARLO 601

LOCATION: San Leandro, Ca

TYPE: Groundwater ☒ Surface Water ☐ Leachate ☐ Other ☐

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

CASING ELEVATION (feet/MSL): NR

VOLUME IN CASING (gal.): 3.47

DEPTH OF WELL (feet): 6 11.6

CALCULATED PURGE (gal.): 15.42

DEPTH OF WATER (feet): 6.28

ACTUAL PURGE VOL. (gal.): 20.5

DATE PURGED: 2-19-98

END PURGE: 1245

DATE SAMPLED: 2-19-98

SAMPLING TIME: 1255

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1240</u>	<u>9.5</u>	<u>7.16</u>	<u>1608</u>	<u>58.9</u>	<u>light blue</u>	<u>Trace</u>
<u>1244</u>	<u>7.0</u>	<u>7.20</u>	<u>1740</u>	<u>58.1</u>	<u>"</u>	<u>"</u>
<u>1248</u>	<u>10.5</u>	<u>7.14</u>	<u>1733</u>	<u>59.0</u>	<u>"</u>	<u>"</u>

OTHER: D.O. 1-2 ms/c

ODOR: None

NR
(COBALT 0-100)

NR
(NTU 0-200)

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

PURGING EQUIPMENT

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

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

SAMPLING EQUIPMENT

☐ 2" Bladder Pump
☐ Bomb Sampler
☐ Dipper
☐ Well Wizard™
 Other: DISPOSABLE

☒ Bailer (Teflon)
☐ Bailer (Stainless Steel)
☐ Submersible Pump
☐ Dedicated

WELL INTEGRITY: OK

LOCK: ARLO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date: 2-19-98

Time: 1100

Meter Serial No.: 600112

E.C. 1000 1

pH 7

pH 10

pH 4

Temperature °F 56

SIGNATURE: M. Ross

REVIEWED BY: MA

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WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



OWT

PROJECT NO: 21775-208.003

PURGED BY: M. Ross

SAMPLED BY: M. Ross

SAMPLE ID: MW-13(12)

CLIENT NAME: ARLO 601

LOCATION: San Leandro, Ca

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.07
 DEPTH OF WELL (feet): 13.0 CALCULATED PURGE (gal.): 3.21
 DEPTH OF WATER (feet): 6.44 ACTUAL PURGE VOL. (gal.): 3.5

DATE PURGED: 2-19-98

END PURGE: 1313

DATE SAMPLED: 2-19-98

SAMPLING TIME: 1320

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1309</u>	<u>1.5</u>	<u>7.10</u>	<u>1840</u>	<u>55.4</u>	<u>light BW</u>	<u>Trace</u>
<u>1311</u>	<u>2.5</u>	<u>7.14</u>	<u>1860</u>	<u>57.1</u>	<u>1"</u>	<u>11</u>
<u>1313</u>	<u>3.5</u>	<u>7.22</u>	<u>1821</u>	<u>57.9</u>	<u>2"</u>	<u>11</u>

OTHER: D.O. 2-3 AS/L ODOR: NONE NR NR
 (COBALT 0-100) (NTU 0-200)

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK LOCK: ARLO

REMARKS:

pH, E.C., Temp. Meter Calibration Date: 2-19-98 Time: 1100 Meter Serial No.: 600112

E.C. 1000 1 pH 7 1 pH 10 1 pH 4 1

Temperature °F See MW-9

SIGNATURE: [Signature] REVIEWED BY: [Signature] PAGE 13 OF 15

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



OWT

PROJECT NO: 21775-208.003

PURGED BY: M. Ross

SAMPLED BY: M. Ross

SAMPLE ID: MW-14 (11)

CLIENT NAME: ARCO 601

LOCATION: San Leandro, Ca

TYPE: Groundwater ☒ Surface Water ☐ Leachate ☐ Other ☐

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

CASING ELEVATION (feet/MSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>1.08</u>
DEPTH OF WELL (feet): <u>12.9</u>	CALCULATED PURGE (gal.): <u>3.24</u>
DEPTH OF WATER (feet): <u>6.27</u>	ACTUAL PURGE VOL. (gal.): <u>3.5</u>

DATE PURGED: 2-19-98

END PURGE: 1333

DATE SAMPLED: 2-19-98

SAMPLING TIME: 1340

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1329</u>	<u>1.5</u>	<u>7.06</u>	<u>1440</u>	<u>54.2</u>	<u>Light BAW</u>	<u>Trace</u>
<u>1331</u>	<u>2.5</u>	<u>7.17</u>	<u>1872</u>	<u>57.6</u>	<u>"</u>	<u>"</u>
<u>1333</u>	<u>3.5</u>	<u>7.21</u>	<u>1900</u>	<u>57.7</u>	<u>"</u>	<u>"</u>

OTHER: D.O. 1-2 mg/L ODOR: NONE NR NR
(COBALT 0-100) (NTU 0-200)

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK LOCK: ARCO

REMARKS: _____

pH, E.C., Temp. Meter Calibration Date: 2-19-98 Time: 1100 Meter Serial No.: 600112

E.C. 1000 1 pH 7 1 pH 10 1 pH 4 1

Temperature °F: See MW-9
 SIGNATURE: Mite REVIEWED BY: NA PAGE 14 OF 15

WATER SAMPLE FIELD DATA SHEET

Rev. 1/97



PROJECT NO: 21775-208.003
 PURGED BY: M. Ross
 SAMPLED BY: M. Ross

SAMPLE ID: MW-15(9)
 CLIENT NAME: M. Ross
 LOCATION: M. Ross

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

CASING ELEVATION (feet/MSL): NR
 DEPTH OF WELL (feet): 10.00
 DEPTH OF WATER (feet): 4.66
 VOLUME IN CASING (gal.): 0.87
 CALCULATED PURGE (gal.): 2.61
 ACTUAL PURGE VOL. (gal.): 3.0

DATE PURGED: 2-19-98
 DATE SAMPLED: 2-19-98

END PURGE: 1440
 SAMPLING TIME: 1450

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1437</u>	<u>1.0</u>	<u>7.42</u>	<u>1186</u>	<u>57.3</u>	<u>cl</u>	<u>cl</u>
<u>1438</u>	<u>2.0</u>	<u>7.41</u>	<u>1198</u>	<u>59.2</u>	<u>cl</u>	<u>cl</u>
<u>1440</u>	<u>3.0</u>	<u>7.41</u>	<u>1211</u>	<u>59.8</u>	<u>cl</u>	<u>cl</u>

OTHER: 0.0-0.3 mg/L ODOR: None NR NR
 (COBALT 0-100) (NTU 0-200)

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK LOCK: ARL

REMARKS:

pH, E.C., Temp. Meter Calibration Date: 2-19-98 Time: 1100 Meter Serial No.: 600112

E.C. 1000 1 pH 7 1 pH 10 1 pH 4 1

Temperature °F See MW-9
 SIGNATURE: M. Ross REVIEWED BY: NA PAGE 15 OF 15

1921 Ringwood Avenue

1998

ARCO 601

San Jose, California

21775-208.003

Well ID	Quarter	Date	Purge Volume (gallons)	Did well dry	Well Contained Product	Gallons			
						First	96.50		
						Second	0.00		
						Third	24.50		
						Fourth	25.50		
MW-1	First	02/19/98	11.50	NO	NO				
	Second								
	Third	08/19/97	2.00	YES	NO				
	Fourth	11/18/97	2.00	YES	NO				
MW-2	First	02/19/98	5.00	YES	NO				
	Second								
	Third	08/19/97	NA	NA	NO				
	Fourth	11/18/97	NA	NA	NO				
MW-3	First	02/19/98	14.00	NO	NO				
	Second								
	Third	08/19/97	9.50	NO	NO				
	Fourth	11/18/97	12.00	NO	NO				
MW-4	First	02/19/98	1.50	YES	NO				
	Second								
	Third	08/19/97	NA	NA	NO				
	Fourth	11/18/97	0.50	YES	NO				
MW-5	First	02/19/98	4.50	YES	NO				
	Second								
	Third	08/19/97	2.00	YES	NO				
	Fourth	11/18/97	2.00	YES	NO				
MW-6	First	02/19/98	2.00	YES	NO				
	Second								
	Third	08/19/97	NA	NA	NO				
	Fourth	11/18/97	DRY	NA	NO				
MW-7	First	02/19/98	3.00	YES	NO				
	Second								
	Third	08/19/97	NA	NA	NO				
	Fourth	11/18/97	DRY	NA	NO				
MW-8	First	02/19/98	12.00	NO	NO				
	Second								
	Third	08/19/97	2.00	YES	NO				
	Fourth	11/18/97	2.00	YES	NO				
MW-9	First	02/19/98	4.50	NO	NO				
	Second								
	Third	08/19/97	4.00	NO	NO				
	Fourth	11/18/97	NA	NA	NO				
MW-10	First	02/19/98	7.00	NO	NO				
	Second								
	Third	08/19/97	5.00	NO	NO				
	Fourth	11/18/97	5.00	NO	NO				

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Well ID	Quarter	Date	Purge Volume (gallons)	Did well dry	Well Contained Product	Gallons	
						First	96.50
						Second	0.00
						Third	24.50
						Fourth	25.50
MW-11	First	02/19/98	11.00	NO	NO		
	Second						
	Third	08/19/97	NA	NA	NO		
	Fourth	11/18/97	NA	NA	NO		
MW-12	First	02/19/98	10.50	NO	NO		
	Second						
	Third	08/19/97	NA	NA	NO		
	Fourth	11/18/97	NA	NA	NO		
MW-13	First	02/19/98	3.50	NO	NO		
	Second						
	Third	08/19/97	NA	NA	NO		
	Fourth	11/18/97	NA	NA	NO		
MW-14	First	02/19/98	3.50	NO	NO		
	Second						
	Third	08/19/97	NA	NA	NO		
	Fourth	11/18/97	2.00	NO	NO		
MW-15	First	02/19/98	3.00	NO	NO	Steam water (gal) _____	
	Second						
	Third	08/19/97	2.00	NO	NO		
	Fourth	11/18/97	NA	NA	NO		