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December 20, 2000

STID  
744  
Review 1/25/2001

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

Subject: *Quarterly Groundwater Monitoring Report, Third Quarter 2000*  
ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California  
Delta Project No. D000-306

Dear Mr. Supple:

Delta Environmental Consultants, Inc. is submitting the attached report that presents the results of the third quarter 2000 groundwater monitoring at ARCO Products Company Service Station No. 2111 located at 1156 Davis Street, San Leandro, California. The monitoring program complies with the Alameda County Health Care Services Agency requirements regarding underground tank investigations.

The interpretations contained in this report represent our professional opinions and are based, in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeological and engineering practices at this time and location. Other than this, no warranty is implied or intended.

If you have any questions concerning this project, please contact Steven W. Meeks at (916) 536-2613.

Sincerely,

**DELTA ENVIRONMENTAL CONSULTANTS, INC.**

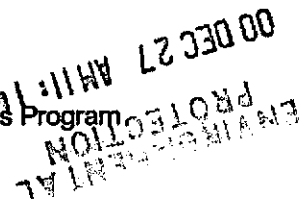
Trevor L. Atkinson  
Project Engineer

Steven W. Meeks, P.E.  
Project Manager  
California Registered Civil Engineer No. C057461



TLA (LRP003.306.doc)  
Enclosures

cc: Mr. Amir Gholami – Alameda County Health Care Services Agency  
Mr. Mike Bakaldin, San Leandro Fire Department, Hazardous Materials Program



Providing a Competitive Edge

Date: December 20, 2000

### ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 2111 Address: 1156 Davis Street, San Leandro, CA  
ARCO Environmental Engineer/Phone No.: Paul Supple 925-299-8891  
Consulting Co./Contact Person Delta Environmental Consultants, Inc.  
Steven W. Meeks, P.E.  
Consultant Project No.: D000-306  
Primary Agency/Regulatory ID No. Alameda County Health Care Services Agency

#### WORK PERFORMED THIS QUARTER

1. Performed quarterly groundwater monitoring and sampling for third quarter 2000
2. Prepared and submitted quarterly groundwater monitoring and sampling report for second quarter 2000.

#### WORK PROPOSED FOR NEXT QUARTER

1. Perform quarterly groundwater monitoring and sampling for fourth quarter 2000.
2. Implement installation of remediation piping during tank upgrade activities in November and December of 2000 for possible future site remediation.
3. Perform quarterly pumping activities from monitoring well MW-2 and MW-7 as approved per ACHCSA letter dated October 12, 2000.

#### QUARTERLY MONITORING:

Current Phase of Project	<u>Quarterly groundwater monitoring</u>
Frequency of Groundwater Sampling:	<u>Quarterly: MW-2 through MW-7</u>
Frequency of Groundwater Monitoring:	<u>Quarterly (groundwater)</u>
Is Free Product (FP) Present On-Site:	<u>No</u>
FP Recovered this Quarter:	<u>None</u>
Cumulative FP Recovered to Date:	<u>0.381 gallons</u>
Bulk Soil Removed This Quarter:	<u>None</u>
Bulk Soil Removed to Date:	<u>Unknown</u>
Current Remediation Techniques:	<u>Bailing free product as needed</u>
Approximate Depth to Groundwater:	<u>15.34</u>
Groundwater Gradient:	<u>0.004 West-Northwest</u>

#### DISCUSSION:

- Free product was not present in the monitoring wells during the September 18, 2000 monitoring events other than sheens (<0.01' thick) observed in monitoring well MW-2.
- A general remediation piping/conduit plan is currently being prepared for possible future use. The remediation piping/conduits are anticipated to be installed during the tank replacement activities.

#### ATTACHMENTS:

- Table 1 Groundwater Elevation and Analytical Data
- Table 2 Groundwater Flow Direction and Gradient
- Figure 1 Groundwater Analytical Summary Map
- Figure 2 Groundwater Elevation Contour Map
- Appendix A Sampling and Analysis Procedures
- Appendix B Historical Groundwater Elevation Analytical Data Table  
Groundwater Flow Direction and Gradient Table
- Appendix C Certified Analytical Reports with Chain-of-Custody Documentation
- Appendix D Field Data Sheet

TABLE 1

## GROUNDWATER ANALYTICAL DATA

ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as Gasoline (µg/L)	MTBE (µg/L)
MW-1	06/26/00	39.60	16.46	23.14	NA	NA	NA	NA	NA	NA
	07/20/00		16.89	22.71	110	<0.5	<0.5	2.7	360	2,100
	09/19/00		17.62	21.98	76	<0.5	<0.5	2.3	290	1,500
MW-2	06/26/00	37.99	14.60	23.39 <sup>a</sup>	NA	NA	NA	NA	NA	NA
	07/20/00		15.14	22.85	2,300	18,000	2,500	19,000	95,000	13,000
	09/19/00		15.95	22.04	1,200	6,300	2,000	14,000	63,000	19,000
MW-3	06/26/00	39.32	15.96	23.36	NA	NA	NA	NA	NA	NA
	07/20/00		16.42	22.90	<0.5	<0.5	<0.5	<1.0	<50	130
	09/19/00		17.18	22.14	17	<0.5	1.4	2.4	190	160
MW-4	06/26/00	38.10	14.59	23.51	NA	NA	NA	NA	NA	NA
	07/20/00		15.04	23.06	7.9	<0.5	<0.5	1.1	97	51
	09/19/00		15.83	22.27	7.0	<0.5	<0.5	<1.0	110	60
MW-5	06/26/00	37.21	14.27	22.94	NA	NA	NA	NA	NA	NA
	07/20/00		14.69	22.52	<0.5	<0.5	<0.5	<1.0	55	14,000
	09/19/00		15.36	21.85	<0.5	<0.5	<0.5	<1.0	54	13,000
MW-6	06/26/00	37.11	13.46	23.65	NA	NA	NA	NA	NA	NA
	07/20/00		13.94	23.17	<0.5	<0.5	<0.5	<1.0	<50	<3.0
	09/19/00		14.41	22.70	<0.5	<0.5	<0.5	<1.0	<50	<3.0

TABLE 1

GROUNDWATER ANALYTICAL DATA

ARCO Service Station No. 2111  
 1156 Davis Street  
 San Leandro, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as Gasoline (µg/L)	MTBE (µg/L)
MW-7	06/26/00	38.68	14.34	24.34	NA	NA	NA	NA	NA	NA
	07/20/00		15.26	23.42	5.4	<0.5	2.8	5.9	14,000	71,000
	09/19/00		15.70	22.98	420	38	470	220	8,400	5,600

<sup>a</sup> Product sheen noted

TPH = Total Petroleum Hydrocarbons

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted

µg/L = Micrograms per liter

NM = Not measured

NC = Not calculated

Note: Please refer to Appendix B for Historical Groundwater Elevation and Analytical Data Tables developed by IT Corporation

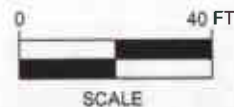
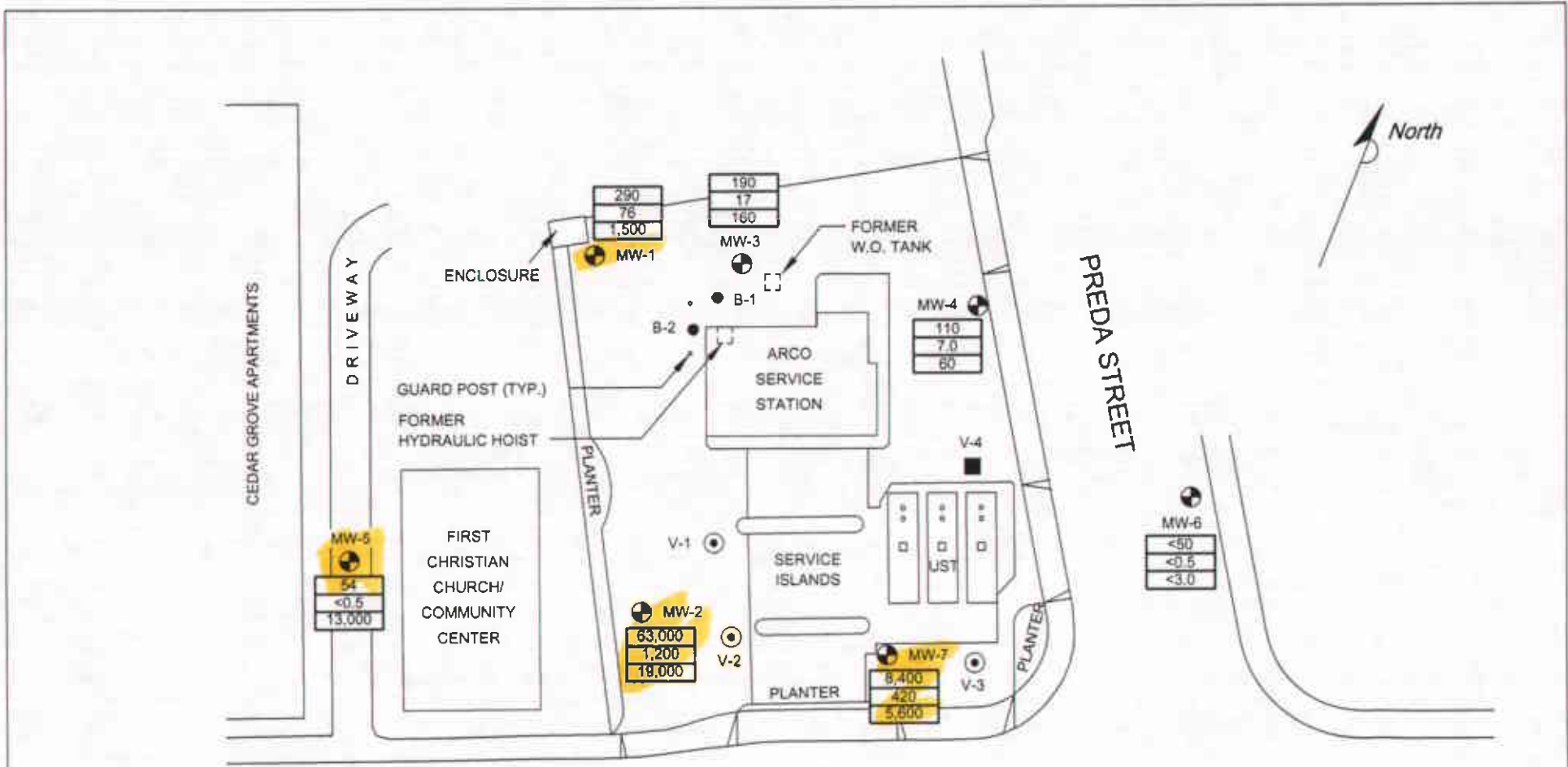
**TABLE 2**

**GROUNDWATER FLOW DIRECTION AND GRADIENT**

ARCO Service Station No. 2111  
1156 Davis Street  
San Leandro, California

<b>Date Measured</b>	<b>Average Flow Direction</b>	<b>Average Hydraulic Gradient</b>
07/20/00	West-Northwest	0.006
09/19/00	West-Northwest	0.004

Note: Please refer to Appendix B for Historical Groundwater Elevation and Analytical Data  
Tables developed by IT Corporation



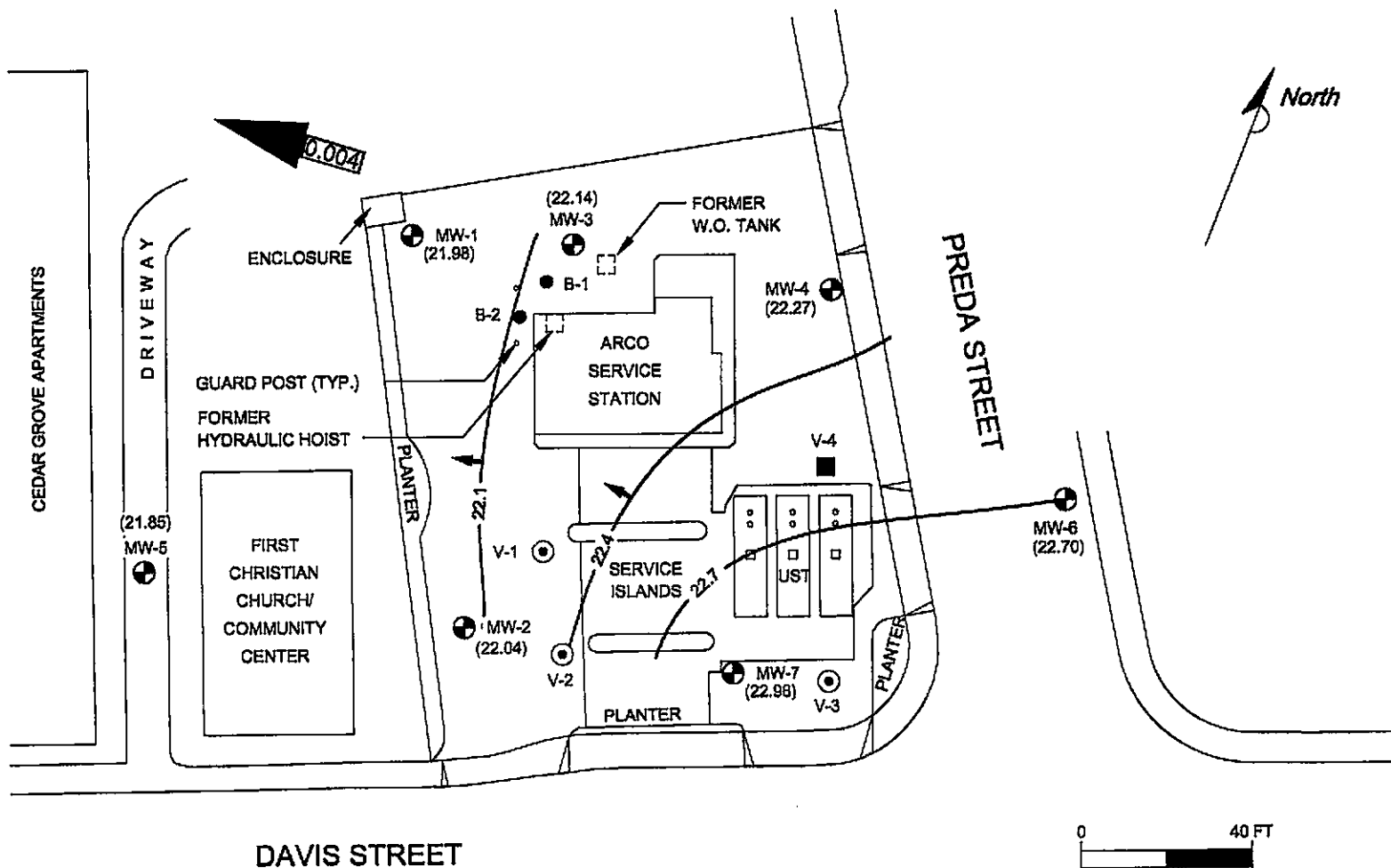
**LEGEND:**

- MW-1 MONITORING WELL LOCATION
  - ⊙ V-1 VAPOR EXTRACTION WELL LOCATION
  - B-1 SOIL BORING LOCATION
  - V-4 DESTROYED WELL LOCATION
- |      |                                         |
|------|-----------------------------------------|
| <50  | TPH AS GASOLINE IN MICROGRAMS PER LITER |
| <0.5 | BENZENE IN MICROGRAMS PER LITER         |
| <3.0 | MTBE IN MICROGRAMS PER LITER            |
- NS NOT SAMPLED

**FIGURE 1**  
GROUND WATER ANALYTICAL SUMMARY  
THIRD QUARTER 2000 (9/19/00)  
ARCO SERVICE STATION NO. 2111  
1156 DAVIS STREET  
SAN LEANDRO, CALIFORNIA

PROJECT NO. D000-306	DRAWN BY TLA 10/20/00	<b>Delta</b> Environmental Consultants, Inc.
FILE NO.	PREPARED BY TLA	
REVISION NO. 1	REVIEWED BY	

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**LEGEND:**

- MW-1 MONITORING WELL LOCATION
- ⊙ V-1 VAPOR EXTRACTION WELL LOCATION
- B-1 SOIL BORING LOCATION
- V-4 DESTROYED WELL LOCATION
- (22.71) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- 22.9 - WATER TABLE CONTOUR IN FEET ABOVE MSL
- GROUND WATER FLOW DIRECTION
- 0.004 APPROXIMATE GROUND WATER FLOW GRADIENT

**FIGURE 2**  
**GROUND WATER ELEVATION CONTOUR MAP**  
**THIRD QUARTER 2000 (9/19/00)**  
**ARCO SERVICE STATION NO. 2111**  
**1156 DAVIS STREET**  
**SAN LEANDRO, CALIFORNIA**

PROJECT NO. D000-306	DRAWN BY TLA 10/20/00
FILE NO. 2111-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY



**APPENDIX A**

**Sampling and Analysis Procedures**



## **FIELD METHODS AND PROCEDURES**

### **1.0 GROUND WATER AND LIQUID-PHASE HYDROCARBON DEPTH ASSESSMENT**

A water/liquid-phase hydrocarbon (LPH) interface probe was used to assess the thickness of LPH, if present, and a water level indicator was used to measure ground water depth in monitoring wells that did not contain LPH. Depth to ground water was measured from the top of each monitoring well casing. The tip of the water level indicator was subjectively analyzed for LPH sheen. All measurements and physical observations were recorded in the field.

### **2.0 SUBJECTIVE ANALYSIS OF GROUND WATER**

Prior to purging, a water sample was collected from the monitoring well for subjective analysis. The sample was retrieved by gently lowering a clean, disposable bailer to approximately one-half the bailer length past the air/liquid interface. The bailer was then retrieved and the sample contained within the bailer was examined for LPH and the appearance of a LPH sheen.

### **3.0 MONITORING WELL PURGING AND SAMPLING**

Monitoring wells were purged using a centrifugal pump or disposable bailers until pH, temperature, and conductivity of the purge water had stabilized and a minimum of three to four well volumes of water had been removed. Ground water removed from the wells was stored in 55-gallon barrels at the site. The barrels were labeled with corresponding monitoring well numbers and the date of purging. After purging, ground water levels were allowed to stabilize. A ground water sample was then removed from each of the wells using a dedicated disposable bailer. If the well was purged dry, it was allowed to sufficiently recharge and a sample was collected. Samples were collected in air-tight vials, appropriately labeled, and stored on ice from the time of collection through the time of delivery to the laboratory. A chain-of-custody form was completed to document possession of the samples. Ground water samples were transported to the laboratory and analyzed within the EPA-specified holding times for the requested analyses. Purge water will be collected from the storage barrels in a vacuum truck and transported to an appropriate facility for treatment and/or disposal.

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 previously stated in the first paragraph of this sub-section. 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.

**APPENDIX B**

Historical Data Tables  
(IT Corporation)

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**

**ARCO Service Station 2111**  
**1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 µg/L	LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged
MW-1	08-01-95	39.60	17.45	ND	22.15	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-1	12-14-95	39.60	17.09	ND	22.51	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	03-21-96	39.60	14.72	ND	24.88	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	05-24-96	39.60	15.94	ND	23.66	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	08-09-96	39.60	17.89	ND	21.71	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	11-06-96	39.60	18.66	ND	20.94	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	03-24-97	39.60	16.13	ND	23.47	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	05-27-97	39.60	17.23	ND	22.37	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	08-07-97	39.60	18.68	ND	20.92	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	11-10-97	39.60	19.19	ND	20.41	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	02-16-98	39.60	12.61	ND	26.99	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	04-15-98	39.60	14.30	ND	25.30	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	07-24-98	39.60	16.40	ND	23.20	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	10-19-98	39.60	17.90	ND	21.70	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-1	01-28-99	39.60	16.85	ND	22.75	01-28-99	<20,000	580	<200	<200	320	14,000	--	--	--		
MW-1	06-25-99	39.60	17.35	ND	22.25	06-25-99	730	140	5	3	2	7,700	--	--	--	0.79	NP
MW-1	08-25-99	39.60	18.20	ND	21.40	08-25-99	390	66	8.5	<2.5	8.6	3,700	--	--	--	1.56	NP
MW-1	11-10-99	39.60	17.77	ND	21.83	11-10-99	360	70	13	2.2	13	980	--	--	--	0.30	NP
MW-1	02-09-00	39.60	16.25	ND	23.35	02-09-00	190	4.5	0.9	<0.5	12	3,500	--	--	--	0.53	NP
MW-2	08-01-95	37.99	15.67	ND	22.32	08-01-95	23,000	1,300	310	500	3,500	--	--	--	--		
MW-2	12-14-95	37.99	15.36	ND	22.63	12-14-95	7,300	900	25	180	1,000	<200	--	--	--		
MW-2	03-21-96	37.99	12.84	ND	25.15	03-21-96	9,600	850	30	280	1,400	250	--	--	--		
MW-2	05-24-96	37.99	14.03	ND	23.96	05-24-96	2,300	300	<5	73	310	<25	--	--	--		
MW-2	08-09-96	37.99	16.10	ND	21.89	08-09-96	2,800	290	6	75	320	50	--	--	--		

**Table 1  
Historical Groundwater Elevation and Analytical Data  
Petroleum Hydrocarbons and Their Constituents**

**ARCO Service Station 2111  
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged Y/NP
MW-2	11-06-96	37.99	16.98	ND	21.01	11-06-96	750	76	<1	15	51	110	--	--	--	
MW-2	03-24-97	37.99	14.22	ND	23.77	03-24-97	790	18	<1	2	6	280	--	--	--	
MW-2	05-27-97	37.99	15.42	ND	22.57	05-28-97	750	14	<1	<1	10	150	--	--	--	
MW-2	08-07-97	37.99	16.92	ND	21.07	08-07-97	360	31	<2.5	<2.5	15	260	--	--	--	
MW-2	11-10-97	37.99	17.52	ND	20.47	11-10-97	1,300	82	<5	14	49	550	--	--	--	
MW-2	02-16-98	37.99	12.04	ND	25.95	02-16-98	<2,500	<25	<25	<25	<25	4,200	--	--	--	
MW-2	04-15-98	37.99	12.34	ND	25.65	04-15-98	<10,000	<100	<100	<100	<100	7,300	--	--	--	
MW-2	07-24-98	37.99	14.45	ND	23.54	07-24-98	<2,500	<25	<25	<25	<25	1,500	--	--	--	
MW-2	10-19-98	37.99	16.08	ND	21.91	10-19-98	<1,000	18	<10	<10	<10	1,100	--	--	--	
MW-2	01-28-99	37.99	15.59	0.02	22.41 [1]	01-28-99	160,000	3,000	24,000	4,400	31,000	23,000	--	--	--	
MW-2	06-25-99	37.99	19.20	3.73[4]	21.51 [1]	06-25-99	120,000	6,900	21,000	2,600	19,000	18,000	17,000[3]	--	0.49	NP
MW-2	08-25-99	37.99	16.49	0.02	21.51 [1]	08-25-99	92,000	2,200	16,000	3,200	19,000	11,000	9,400[3]	--	0.84	NP
MW-2	11-10-99	37.99	16.08	ND	21.91	11-10-99	56,000	2,400	5,900	1,500	10,000	17,000	21,000[3]	--	0.41	NP
MW-2	02-09-00	37.99	14.85	ND	23.14	02-09-00	1,700	270	14	17	21	70,000	55,000[3]	--	0.97	NP
MW-3	08-01-95	39.32	17.00	ND	22.32	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	600	76[2]	
MW-3	12-14-95	39.32	16.70	ND	22.62	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	
MW-3	03-21-96	39.32	14.17	ND	25.15	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	
MW-3	05-24-96	39.32	15.30	ND	24.02	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	
MW-3	08-09-96	39.32	17.58	ND	21.74	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	--	
MW-3	11-06-96	39.32	18.33	ND	20.99	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	03-24-97	39.32	15.44	ND	23.88	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	05-27-97	39.32	16.75	ND	22.57	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	08-07-97	39.32	18.35	ND	20.97	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	11-10-97	39.32	18.83	ND	20.49	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**

**ARCO Service Station 2111**  
**1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-3	02-16-98	39.32	11.99	ND	27.33	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	04-15-98	39.32	13.75	ND	25.57	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	07-24-98	39.32	15.90	ND	23.42	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	10-19-98	39.32	17.45	ND	21.87	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-3	01-28-99	39.32	16.40	ND	22.92	01-28-99	<100	14	4	<1	6	100	--	--	--	
MW-3	06-25-99	39.32	17.92	ND	21.40	06-25-99	83	9.0	1.4	<0.5	2.5	220	--	--	--	1.11 NP
MW-3	08-25-99	39.32	17.79	ND	21.53	08-25-99	240	41	12	3.7	9.9	160	--	--	--	1.13 NP
MW-3	11-10-99	39.32	17.37	ND	21.95	11-10-99	620	100	9.7	4.1	21	150	--	--	--	0.24 NP
MW-3	02-09-00	39.32	15.77	ND	23.55	02-09-00	<50	<0.5	0.7	<0.5	<1	180	--	--	--	0.62 NP
MW-4	08-01-95	38.10	15.65	ND	22.45	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
MW-4	12-14-95	38.10	15.35	ND	22.75	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	03-21-96	38.10	12.74	ND	25.36	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	05-24-96	38.10	14.03	ND	24.07	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	08-09-96	38.10	16.10	ND	22.00	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	11-06-96	38.10	17.00	ND	21.10	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	03-24-97	38.10	14.21	ND	23.89	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	05-27-97	38.10	15.38	ND	22.72	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	08-07-97	38.10	16.95	ND	21.15	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	11-10-97	38.10	17.53	ND	20.57	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	02-16-98	38.10	10.65	ND	27.45	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	04-15-98	38.10	12.20	ND	25.90	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	07-24-98	38.10	14.47	ND	23.63	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	10-19-98	38.10	16.20	ND	21.90	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-4	01-28-99	38.10	15.02	ND	23.08	01-28-99	340	52	5.5	<0.5	74	31	--	--	--	

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**

**ARCO Service Station 2111**  
**1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged Y/NP
MW-4	06-25-99	38.10	15.57	ND	22.53	06-25-99	510	78	4.1	0.5	18	94	..	..	0.90	NP
MW-4	08-25-99	38.10	16.43	ND	21.67	08-25-99	660	130	21	6.4	39	110	..	..	1.01	NP
MW-4	11-10-99	38.10	16.02	ND	22.08	11-10-99	510	98	5.1	3.1	15	69	..	..	0.28	NP
MW-4	02-09-00	38.10	14.30	ND	23.80	02-09-00	<50	<0.5	0.9	<0.5	<1	55	..	..	0.67	NP
MW-5	03-21-96	37.21	12.60	ND	24.61	03-22-96	<50	<0.5	<0.5	<0.5	<0.5	82	..	..	..	..
MW-5	05-24-96	37.21	13.71	ND	23.50	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	7	..	..	..	..
MW-5	08-09-96	37.21	15.60	ND	21.61	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	8	..	..	..	..
MW-5	11-06-96	37.21	16.36	ND	20.85	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	100	..	..	..	..
MW-5	03-24-97	37.21	13.87	ND	23.34	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	460	..	..	..	..
MW-5	05-27-97	37.21	14.71	ND	22.50	05-28-97	<100	<1	<1	<1	<1	120	..	..	..	..
MW-5	08-07-97	37.21	16.90	ND	20.31	08-07-97	<250	<2.5	<2.5	<2.5	<2.5	250	..	..	..	..
MW-5	11-10-97	37.21	16.88	ND	20.33	11-10-97	<1,000	<10	<10	<10	<10	770	..	..	..	..
MW-5	02-16-98	37.21	10.56	ND	26.65	02-16-98	<200	<2	<2	<2	<2	230	..	..	..	..
MW-5	04-15-98	37.21	12.20	ND	25.01	04-15-98	<500	<5	<5	<5	<5	900	..	..	..	..
MW-5	07-24-98	37.21	14.20	ND	23.01	07-24-98	<500	<5	<5	<5	<5	570	..	..	..	..
MW-5	10-19-98	37.21	15.74	ND	21.47	10-19-98	<250	<2.5	<2.5	<2.5	<2.5	300	..	..	..	..
MW-5	01-28-99	37.21	14.60	ND	22.61	01-28-99	<500	8	<5	<5	<5	290	..	..	..	..
MW-5	06-25-99	37.21	15.10	ND	22.11	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	1,300	..	..	0.76	NP
MW-5	08-25-99	37.21	15.91	ND	21.30	08-25-99	<50	<0.5	<0.5	<0.5	<0.5	6,700	..	..	0.98	NP
MW-5	11-10-99	37.21	15.52	ND	21.69	11-10-99	130	2.0	7.0	1.3	21	5,000	..	..	0.21	NP
MW-5	02-09-00	37.21	14.03	ND	23.18	02-09-00	92	<0.5	0.8	<0.5	1.0	7,900	..	..	0.51	NP
MW-6	03-21-96	37.11	11.55	ND	25.56	03-22-96	<50	<0.5	1.9	<0.5	<0.5	<3	..	..	..	..
MW-6	05-24-96	37.11	12.80	ND	24.31	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	6	..	..	..	..

**Table 1**  
**Historical Groundwater Elevation and Analytical Data**  
**Petroleum Hydrocarbons and Their Constituents**

**ARCO Service Station 2111**  
**1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-6	08-09-96	37.11	Not surveyed			08-09-96	Not sampled: Car parked on well									
MW-6	11-06-96	37.11	Not surveyed			11-06-96	Not sampled: Car parked on well									
MW-6	03-24-97	37.11	13.06	ND	24.05	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-6	05-27-97	37.11	14.30	ND	22.81	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-6	08-07-97	37.11	16.40	ND	20.71	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-6	11-10-97	37.11	16.53	ND	20.58	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-6	02-16-98	37.11	Not surveyed			02-16-98	Not sampled: Car parked on well									
MW-6	04-15-98	37.11	10.95	ND	26.16	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-6	07-24-98	37.11	13.30	ND	23.81	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-6	10-19-98	37.11	Not surveyed			10-19-98	Not sampled: Car parked on well									
MW-6	01-28-99	37.11	13.92	ND	23.19	01-28-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	
MW-6	06-25-99	37.11	15.47	ND	21.64	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	0.74 NP
MW-6	08-25-99	37.11	15.39	ND	21.72	08-25-99	<50	<0.5	3.4	0.6	3.7	<3	--	--	--	0.92 NP
MW-6	11-10-99	37.11	14.92	ND	22.19	11-10-99	<50	<0.5	<0.5	<0.5	<1	<3	--	--	--	0.31 NP
MW-6	02-09-00	37.11	13.30	ND	23.81	02-09-00	<50	<0.5	0.9	<0.5	1.3	<3	--	--	--	0.79 NP
MW-7	03-21-96	38.68	13.32	ND	25.36	03-22-96	32,000	870	450	970	4,900	280	--	--	--	
MW-7	05-24-96	38.68	14.58	ND	24.10	05-24-96	22,000	570	40	42	1,900	<200[2]	--	--	--	
MW-7	08-09-96	38.68	15.33	ND	23.35	08-09-96	14,000	390	<10	180	470	<200[2]	--	--	--	
MW-7	11-06-96	38.68	16.95	ND	21.73	11-06-96	9,500	440	<10	210	150	<100[2]	--	--	--	
MW-7	03-24-97	38.68	14.65	ND	24.03	03-24-97	6,400	420	<10	260	13	480	--	--	--	
MW-7	05-27-97	38.68	15.58	ND	23.10	05-28-97	5,000	420	<5	230	10	460	--	--	--	
MW-7	08-07-97	38.68	17.10	ND	21.58	08-07-97	3,900	350	<5	200	10	330	--	--	--	
MW-7	11-10-97	38.68	18.05	ND	20.63	11-10-97	5,600	590	10	370	43	540	--	--	--	
MW-7	02-16-98	38.68	12.03	ND	26.65	02-16-98	<5,000	390	<50	<50	61	4,300	--	--	--	

**Table 1  
Historical Groundwater Elevation and Analytical Data  
Petroleum Hydrocarbons and Their Constituents**

**ARCO Service Station 2111  
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-7	04-15-98	38.68	13.02	ND	25.66	04-15-98	<10,000	<100	<100	<100	<100	8,900	--	--	--	
MW-7	07-24-98	38.68	14.18	ND	24.50	07-24-98	5,800	180	<50	74	<50	4,200	--	--	--	
MW-7	10-19-98	38.68	15.99	ND	22.69	10-19-98	<2,500	54	<25	72	<25	3,000	--	--	--	
MW-7	01-28-99	38.68	15.69	ND	22.99	01-28-99	4,500	560	250	<50	94	6,200	--	--	--	
MW-7	06-25-99	38.68	15.36	ND	23.32	06-25-99	3,900	520	160	46	100	45,000	63,000[3]	--	--	0.56 NP
MW-7	08-25-99	38.68	16.71	ND	21.97	08-25-99	3,400	730	77	51	110	62,000	76,000[3]	--	--	0.90 NP
MW-7	11-10-99	38.68	16.76	ND	21.92	11-10-99	15,000	340	19	13	20	55,000	91,000[3]	--	--	0.37 NP
MW-7	02-09-00	38.68	14.45	0.03	24.25 [1]	02-09-00	Not sampled: free product present									

ft-MSL: elevation in feet, relative to mean sea level  
 TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method  
 MTBE: Methyl tert-butyl ether  
 TRPH: total recoverable petroleum hydrocarbons  
 TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method  
 \*: EPA method 8020 prior to 11/10/99  
 EPA: United States Environmental Protection Agency  
 µg/L: micrograms per liter  
 mg/L: milligrams per liter  
 ND: none detected  
 --: not available or not analyzed  
 <: less than laboratory detection limit stated to the right  
 [1]: [corrected elevation (Z')] = Z + (h \* 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water  
 [2]: chromatogram fingerprint is not characteristic of diesel  
 [3]: also analyzed for fuel oxygenates  
 [4]: this value is suspected to be erroneous based on subsequent check by bailer (following day). See discussion



**Table 2  
Groundwater Flow Direction and Gradient**

**ARCO Service Station 2111  
1156 Davis Street, San Leandro, California**

<b>Date Measured</b>	<b>Average Flow Direction</b>	<b>Average Hydraulic Gradient</b>
08-01-95	NR	NR
12-14-95	West	0.002
03-21-96	West-Southwest	0.005
05-24-96	West	0.003
08-09-96	West-Northwest	0.01
11-06-96	West-Northwest	0.007
03-24-97	West	0.005
05-27-97	North-Northwest	0.006
08-07-97	West	0.009
11-10-97	West	0.002
02-16-98	South-Southwest	0.013
04-15-98	West-Southwest	0.014
07-24-98	Northwest	0.01
10-19-98	West	0.008
01-28-99	Southwest	0.01
06-25-99	North-Northwest	0.017
08-25-99	West-Northwest	0.005
11-10-99	West-Southwest	0.002
<b>02-09-00</b>	<b>West-Northwest</b>	<b>0.015</b>

NR: not recorded



3164 Gold Camp Drive, Suite 200  
 Rancho Cordova, California 95670  
 Direct: (916) 638-2085  
 Fax: (916) 638-8385

Arco Site Address: 1156 Davis Street  
San Leandro, California  
 Arco Project Manager: Paul Supple  
 Site Sampled By: Doulos

Arco Site Number: Arco 2111  
 Delta Project No.: D000-306  
 Delta Project PM: Steve Meeks  
 Date Sampled: 09/19/00

Site Contact & Phone Number: \_\_\_\_\_

Water Level Data						Purge Volume Calculations					Sampling Analytes				Sample Record			
Well ID	Time	Depth to Water (feet)	Top of Screen Interval (feet)	Total Depth of Well (feet)	Check if Purge Not Required	Casing Water Column (A)	Well Diameter (inches)	Multiplier Value (B)	Three Casing Volumes (gallons)	Actual Water Purged (gallons)	BTEX (8020) VOA	TPH-g (8015M) VOA	MTBE (8020) VOA	Other	Dissolved Oxygen (mg/L)	Sample Frequency (A, S, Q)	Sample I.D.	Sample Time
MW-1	12:56	17.62		26.0	<input type="checkbox"/>	8.38	4 inch	2.0	16.8	---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Q/5,8,11		
MW-2	13:01	15.95		26.3	<input type="checkbox"/>	10.35	4 inch	2.0	20.7	---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Q/5,8,11		
MW-3	13:07	17.18		26.5	<input type="checkbox"/>	9.32	4 inch	2.0	18.6	---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Q/5,8,11		
MW-4	13:14	15.83		21.6	<input type="checkbox"/>	5.77	4 inch	2.0	11.5	---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Q/5,8,11		
MW-5	13:19	15.36		23.6	<input type="checkbox"/>	8.24	2 inch	0.5	4.1	---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Q/5,8,11		
MW-6	13:24	14.41		24.8	<input type="checkbox"/>	10.39	2 inch	0.5	5.2	---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Q/5,8,11		
MW-7	13:29	15.70		26.9	<input type="checkbox"/>	11.20	4 inch	2.0	22.4	---	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Q/5,8,11		
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
					<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

(A)-Casing Water Column: Depth to Bottom - Depth to Water (B)-Multiplier Values: (2" Well: 0.5) (4" Well: 2.0) (6" Well: 4.4) Sampling Sequence: Quarterly: MW-1, MW-4, MW-3, MW-6, MW-5, MW-2, MW-7

Sampling Notes: List depth of Sample on C.O.C. (I.e. MW-1(30)). Make Sure to Note on C.O.C. "Provide Lowest Reporting Limit Available." If the water level is below the top of the screen, take a grab sample. If the water level is above the screen, purge as normal.



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Arco Site Address: 1156 Davis Street  
San Leandro, California

Arco Site Number: Arco 2111  
 Delta Project No.: D000-306

Arco Project Manager: Paul Supple

Delta Project PM: Steve Meeks

Site Sampled By: Doulos

Date Sampled: 09/19/00

Site Contact & Phone Number: \_\_\_\_\_

Well ID	Time	Temp °C	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °C	pH Units	Sp. Cond.	Gallons	Well ID	Time	Temp °C	pH Units	Sp. Cond.	Gallons
<b>MW-1</b>	<b>No Purge</b>																
<b>MW-2</b>	<b>No Purge</b>																
<b>MW-3</b>	<b>No Purge</b>																
<b>MW-4</b>	<b>No Purge</b>																
<b>MW-5</b>	<b>No Purge</b>																
<b>MW-6</b>	<b>No Purge</b>																
<b>MW-7</b>	<b>No Purge</b>																

**APPENDIX D**

Certified Analytical Reports  
And  
Chain-of-Custody Documentation

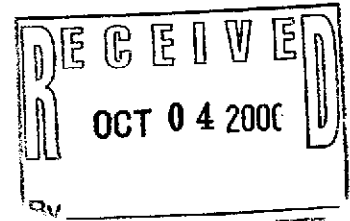


OCT 02 2000

September 25, 2000

Service Request No.: S2002530

Mr. Jay Johnson  
Delta Environmental Consultants  
3164 Gold Camp Dr. Suite 200  
Rancho Cordova, CA 95670



**RE: TO#25993.00/RAT#8/2111 SAN LEANDRO**

Dear Mr. Johnson:

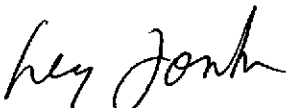
Enclosed are the results of the sample(s) submitted to our laboratory on September 20, 2000. All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply to the sample(s) analyzed. Columbia Analytical Services is not responsible for use of less than the complete report. Signature of this CAS Analytical Report confirms that pages 2 through 14, following, have been thoroughly reviewed and approved for release.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 2352, expiration: January 31, 2001).

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

Respectfully submitted,

**Columbia Analytical Services, Inc.**

  
Greg Jordan  
Laboratory Director

cc

**COLUMBIA ANALYTICAL SERVICES, Inc.****Acronyms**

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** ARCO  
**Project:** TO#25993.00/RAT#8/2111 SAN LEANDRO  
**Sample Matrix:** Water

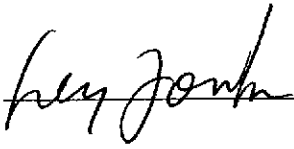
**Service Request:** S2002530  
**Date Collected:** 9/19/00  
**Date Received:** 9/20/00

BTEX, MTBE and TPH as Gasoline

**Sample Name:** MW-1-17  
**Lab Code:** S2002530-001  
**Test Notes:**

**Units:** ug/L (ppb)  
**Basis:** NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/20/00	290	
Benzene	EPA 5030	8021B	0.5	1	NA	9/20/00	76	
Toluene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/20/00	2.3	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	20	NA	9/20/00	1500	

Approved By: 

Date: 9/25/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO  
Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
Sample Matrix: Water

Service Request: S2002530  
Date Collected: 9/19/00  
Date Received: 9/20/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-2-15  
Lab Code: S2002530-002  
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	100	NA	9/20/00	63000	
Benzene	EPA 5030	8021B	0.5	100	NA	9/20/00	1200	
Toluene	EPA 5030	8021B	0.5	100	NA	9/20/00	6300	
Ethylbenzene	EPA 5030	8021B	0.5	100	NA	9/20/00	2000	
Xylenes, Total	EPA 5030	8021B	1	100	NA	9/20/00	14000	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	100	NA	9/20/00	19000	

Approved By: 

Date: 9/25/00

1S22/020597p



**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** ARCO  
**Project:** TO#25993.00/RAT#8/2111 SAN LEANDRO  
**Sample Matrix:** Water

**Service Request:** S2002530  
**Date Collected:** 9/19/00  
**Date Received:** 9/20/00

**BTEX, MTBE and TPH as Gasoline**

**Sample Name:** MW-3-17  
**Lab Code:** S2002530-003  
**Test Notes:**

**Units:** ug/L (ppb)  
**Basis:** NA

<b>Analyte</b>	<b>Prep Method</b>	<b>Analysis Method</b>	<b>MRL</b>	<b>Dilution Factor</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Result</b>	<b>Result Notes</b>
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/20/00	190	
Benzene	EPA 5030	8021B	0.5	1	NA	9/20/00	17	
Toluene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/20/00	1.4	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/20/00	2.4	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	1	NA	9/20/00	160	

Approved By: \_\_\_\_\_

*Ray Joubert*

Date: \_\_\_\_\_

*9/25/00*

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO  
Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
Sample Matrix: Water

Service Request: S2002530  
Date Collected: 9/19/00  
Date Received: 9/20/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4-15  
Lab Code: S2002530-004  
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	9/20/00	110	
Benzene	EPA 5030	8021B	0.5	1	NA	9/20/00	7.0	
Toluene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/20/00	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	1	NA	9/20/00	60	

Approved By:

*hey joun*

Date:

*9/25/00*

1S22/020597p

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** ARCO  
**Project:** TO#25993.00/RAT#8/2111 SAN LEANDRO  
**Sample Matrix:** Water

**Service Request:** S2002530  
**Date Collected:** 9/19/00  
**Date Received:** 9/20/00

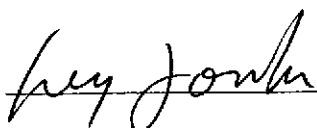
BTEX, MTBE and TPH as Gasoline

**Sample Name:** MW-6-14  
**Lab Code:** S2002530-005  
**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	9/20/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/20/00	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	1	NA	9/20/00	ND	

Approved By: \_\_\_\_\_



Date: 9/25/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO  
Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
Sample Matrix: Water

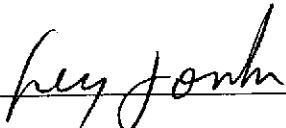
Service Request: S2002530  
Date Collected: 9/19/00  
Date Received: 9/20/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-7-15  
Lab Code: S2002530-006  
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	10	NA	9/21/00	8400	
Benzene	EPA 5030	8021B	0.5	10	NA	9/21/00	420	
Toluene	EPA 5030	8021B	0.5	10	NA	9/21/00	38	
Ethylbenzene	EPA 5030	8021B	0.5	10	NA	9/21/00	470	
Xylenes, Total	EPA 5030	8021B	1	10	NA	9/21/00	220	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	250	NA	9/20/00	5600	

Approved By: 

Date: 9/25/00

1S22/020597p

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** ARCO  
**Project:** TO#25993.00/RAT#8/2111 SAN LEANDRO  
**Sample Matrix:** Water

**Service Request:** S2002530  
**Date Collected:** 9/19/00  
**Date Received:** 9/20/00

BTEX, MTBE and TPH as Gasoline

**Sample Name:** TB  
**Lab Code:** S2002530-007  
**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	1	NA	9/20/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/20/00	ND	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	1	NA	9/20/00	ND	

Approved By: \_\_\_\_\_

*Greg Joubert*

Date: \_\_\_\_\_

*9/25/00*

1S22/020597p

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** ARCO  
**Project:** TO#25993.00/RAT#8/2111 SAN LEANDRO  
**Sample Matrix:** Water

**Service Request:** S2002530  
**Date Collected:** NA  
**Date Received:** NA


BTEX, MTBE and TPH as Gasoline

**Sample Name:** Method Blank  
**Lab Code:** S200920-WB1  
**Test Notes:**

**Units:** ug/L (ppb)  
**Basis:** NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/20/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/20/00	ND	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	1	NA	9/20/00	ND	

Approved By: \_\_\_\_\_



Date: \_\_\_\_\_

9/25/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO  
 Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
 Sample Matrix: Water

Service Request: S2002530  
 Date Collected: NA  
 Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank  
 Lab Code: S200921-WB1  
 Test Notes:

Units: ug/L (ppb)  
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/21/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	9/21/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	9/21/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/21/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/21/00	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	1	NA	9/21/00	ND	

Approved By: hey jonh Date: 9/25/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO  
 Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
 Sample Matrix: Water

Service Request: S2002530  
 Date Collected: NA  
 Date Received: NA  
 Date Extracted: NA  
 Date Analyzed: 9/20/00

Matrix Spike/Duplicate Matrix Spike Summary  
 BTEX and TPH as Gasoline

Sample Name: MW-6-14  
 Lab Code: S2002530-005MS, S2002530-005DMS  
 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
				MS	DMS		MS	DMS	CAS Acceptance Limits				
									MS	DMS			
Benzene	EPA 5030	8021B	0.5	25	25	ND	25.3	24.7	101	99	75-135	2	
Toluene	EPA 5030	8021B	0.5	25	25	ND	24.7	24.4	99	98	73-136	1	
Ethylbenzene	EPA 5030	8021B	0.5	25	25	ND	23.1	22.9	92	92	69-142	<1	
Gasoline	EPA 5030	CA/LUFT	50	500	500	ND	469	450	94	90	75-135	4	

Approved By: 

Date: 9/25/00

DMS/020597p



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO  
Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
LCS Matrix: Water

Service Request: S2002530  
Date Collected: NA  
Date Received: NA  
Date Extracted: NA  
Date Analyzed: 9/20/00

Laboratory Control Sample Summary  
BTEX and TPH as Gasoline

Sample Name: Lab Control Sample  
Lab Code: S200920-LCS  
Test Notes:

Units: ug/L (ppb)  
Basis: NA

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Benzene	EPA 5030	8021B	25	24.9	100	75-135	
Toluene	EPA 5030	8021B	25	23.9	96	73-136	
Ethylbenzene	EPA 5030	8021B	25	23.3	93	69-142	
Gasoline	EPA 5030	CA/LUFT	500	452	90	75-135	

Approved By: *[Signature]*

Date: 9/25/00

LCS/020597p

**COLUMBIA ANALYTICAL SERVICES, INC.**

**QA/QC Report**

**Client:** ARCO  
**Project:** TO#25993.00/RAT#8/2111 SAN LEANDRO  
**Sample Matrix:** Water

**Service Request:** S2002530  
**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:** 8021B CALUFT

**Units:** PERCENT  
**Basis:** NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			a,a,a-Trifluorotoluene	a,a,a-Trifluorotoluene
MW-1-17	S2002530-001		98	101
MW-2-15	S2002530-002		96	100
MW-3-17	S2002530-003		101	100
MW-4-15	S2002530-004		103	102
MW-6-14	S2002530-005		97	101
MW-7-15	S2002530-006		87	102
TB	S2002530-007		100	102
Method Blank	S200920-WB1		97	89
Method Blank	S200921-WB1		103	97
MW-6-14	S2002530-005MS		96	113
MW-6-14	S2002530-005DMS		96	103
Lab Control Sample	S200920-LCS		97	112

CAS Acceptance Limits: 70-130 70-130

Approved By:                                 *Lucy Johnson*                                

Date:                                 *9/25/00*                                

SUR2/020397p

ARCO Facility no. <b>2111</b>	City (Facility) <b>SAN LEANDRO</b>	Project manager (Consultant) <b>JAY JOHNSON</b>	Laboratory name <b>Columbia</b>
ARCO engineer <b>Paul Supple</b>	Telephone no. (ARCO)	Telephone no. (Consultant)	Contract number
Consultant name <b>Stratus</b>		Address (Consultant)	

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX & MTBE 802/EPA 6020	BTEX/TPH EPA 1602/8020/8015	TPH Modified 8015 Gas <input checked="" type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCPL Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAM Metals EPA 6010/7000 TTLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org. IDHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment <b>Courier</b>	
			Soil	Water	Other	Ice	Acid																
MW-1-17	①	4		X		X	X	9-19-00	1339	X	X												Special detection Limit/reporting
MW-2-15	②								1355														Special QA/QC
MW-3-17	③								1410														
MW-4-15	④								1425														
MW-6-19	⑤								1500														
MW-7-15	⑥								1520														
TB	⑦	2							800													Remarks	

Condition of sample:	Temperature received: <b>Due: 10/4/00 R11/D3-B</b>
Relinquished by sampler <b>Ryn Brooks</b>	Date <b>9-20-00</b> Time <b>11:00</b>
Relinquished by	Date
Relinquished by	Date
Received by <b>Wendy Zolman</b>	Date <b>9/20/00</b> Time <b>11:35</b>
Received by	Date
Received by laboratory	Date
Received by laboratory	Date

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

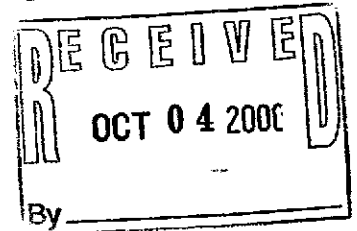


OCT 02 2000

September 25, 2000

Service Request No.: S2002531

Mr. Jay Johnson  
Delta Environmental Consultants  
3164 Gold Camp Dr. Suite 200  
Rancho Cordova, CA 95670



**RE: TO#25993.00/RAT#8/2111 SAN LEANDRO**

Dear Mr. Johnson:

Enclosed are the results of the sample(s) submitted to our laboratory on September 20, 2000. All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply to the sample(s) analyzed. Columbia Analytical Services is not responsible for use of less than the complete report. Signature of this CAS Analytical Report confirms that pages 2 through 7, following, have been thoroughly reviewed and approved for release.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 2352, expiration: January 31, 2001).

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

Respectfully submitted,

**Columbia Analytical Services, Inc.**

Greg Jordan  
Laboratory Director

cc

**COLUMBIA ANALYTICAL SERVICES, Inc.****Acronyms**

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO  
Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
Sample Matrix: Water

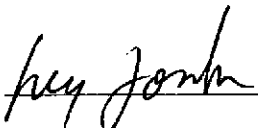
Service Request: S2002531  
Date Collected: 9/19/00  
Date Received: 9/20/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-5-15  
Lab Code: S2002531-001  
Test Notes:

Units: ug/L (ppb)  
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/21/00	54	
Benzene	EPA 5030	8021B	0.5	1	NA	9/21/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	9/21/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/21/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/21/00	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	100	NA	9/20/00	13000	

Approved By: 

Date: 9/25/00

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO  
Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
Sample Matrix: Water

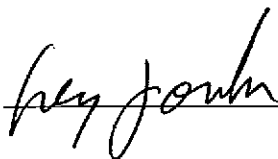
Service Request: S2002531  
Date Collected: NA  
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank  
Lab Code: S200920-WB4  
Test Notes:

Units: ug/L (ppb)  
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	9/20/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	9/20/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	9/20/00	ND	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	1	NA	9/20/00	ND	

Approved By: 

Date: 9/25/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO  
 Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
 Sample Matrix: Water

Service Request: S2002531  
 Date Collected: NA  
 Date Received: NA  
 Date Extracted: NA  
 Date Analyzed: 9/20/00

Matrix Spike/Duplicate Matrix Spike Summary  
 BTEX and TPH as Gasoline

Sample Name: BATCH QC  
 Lab Code: S2002530-005MS, S2002530-005DMS  
 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
				MS	DMS		MS	DMS	CAS Acceptance Limits				
									MS	DMS	MS	DMS	
Benzene	EPA 5030	8021B	0.5	25	25	ND	25.3	24.7	101	99	75-135		2
Toluene	EPA 5030	8021B	0.5	25	25	ND	24.7	24.4	99	98	73-136		1
Ethylbenzene	EPA 5030	8021B	0.5	25	25	ND	23.1	22.9	92	92	69-142		<1
Gasoline	EPA 5030	CA/LUFT	50	500	500	ND	469	450	94	90	75-135		4

Approved By: freya joubert Date: 9/25/00

DMS/020597p



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO  
 Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
 LCS Matrix: Water

Service Request: S2002531  
 Date Collected: NA  
 Date Received: NA  
 Date Extracted: NA  
 Date Analyzed: 9/20/00

Laboratory Control Sample Summary  
 BTEX and TPH as Gasoline

Sample Name: Lab Control Sample  
 Lab Code: S200920-LCS2  
 Test Notes:

Units: ug/L (ppb)  
 Basis: NA

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Benzene	EPA 5030	8021B	25	24.4	98	75-135	
Toluene	EPA 5030	8021B	25	24.2	97	73-136	
Ethylbenzene	EPA 5030	8021B	25	22.6	90	69-142	
Gasoline	EPA 5030	CA/LUFT	500	449	90	75-135	

Approved By:

*frey jonh*

Date:

*9/25/00*

LCS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO  
Project: TO#25993.00/RAT#8/2111 SAN LEANDRO  
Sample Matrix: Water

Service Request: S2002531  
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: 8021B CA/LUFT

Units: PERCENT  
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			a,a,a-Trifluorotoluene	a,a,a-Trifluorotoluene
MW-5-15	S2002531-001		99	100
Method Blank	S200920-WB4		100	102
BATCH QC	S2002530-005MS		96	113
BATCH QC	S2002530-005DMS		96	103
Lab Control Sample	S200920-LCS2		96	111

CAS Acceptance Limits: 70-130 70-130

Approved By: 

Date: 9/25/00

SUR2/020397p

ARCO Facility no. <b>2111</b>	City (Facility) <b>SAN LEANDRO</b>	Project manager (Consultant) <b>Jay Johnson</b>	Laboratory name <b>Columbia</b>
ARCO engineer <b>Paul Supple</b>	Telephone no. (ARCO)	Telephone no. (Consultant)	Contract number
Consultant name <b>Stratus</b>		Address (Consultant)	

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX+MTBE EPA 802/EPA 8020	BTEX/TPH EPA 146/200/201/8015	TPH Modified 8015 Gas VCL Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/SMS03E	EPA 801/8010	EPA 824/8240	EPA 825/8270	TCLP Metals VOA VOA Semi	CAM Metals EPA 8010/7000 TTL C STL C	Lead Org./DHS Lead EPA 7420/7421	Method of shipment <b>Courier</b>	
			Soil	Water	Other	Ice	Acid															
MW-5-15	①	411		X		X	X	9-19-00	1445	X		X										Special detection Limit/reporting
																						Special QA/QC
																						Remarks
																						Lab number
																						Turnaround time

Condition of sample:			Temperature received: <b>Due: 10/4/00 Ru/D3-B</b>		
Relinquished by sampler <b>Rgn Budo</b>	Date <b>9-20-00</b>	Time <b>11:00</b>	Received by <b>Jay Johnson</b>	Date <b>9/20/00</b>	Time <b>11:35</b>
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days