PACIFIC
ENVIRONMENTAL
GROUP, INC.

Date August 15, 1991
Project 330-06.11

To: Mr. Charles Carmel
ARCO Products Company
P. O. Box 5811
San Mateo, California 94402

We have enclosed:

Copies	Description
1	Progress Letter for ARCO Service Station 608,
	17601 Hesperian Blvd., San Lorenzo.

For your:
- x Use
- Approval
- Review
- x Information

Comments: Please call if you have any questions concerning this letter.

Tina Berry TB

cc: Chris Winsor, ARCO Products Company
Pamela Evans, Alameda County Health Agency - Haz. Mat'ls Divsion
Richard Hiett, Regional Water Quality Control Board - S.F. Bay Region

82 11.12 01 CW 15

1601 Civic Center Drive, Suite 202, Santa Clara, California 95050 (408) 984-6536 FAX: (408) 243-3911
620 Contra Costa Boulevard, Suite 209, Pleasant Hill, California 94523 (415) 825-0855 FAX: (415) 825-0882

PACIFIC
ENVIRONMENTAL
GROUP INC.

August 15, 1991
Project 330-06.11

Mr. Charles Carmel
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Re: Progress Letter
ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Dear Mr. Carmel:

This progress letter presents the second quarter 1991 groundwater monitoring data and includes groundwater quality data for five additional monitoring wells installed for the referenced site. The site location is noted on Figure 1. The work was conducted in accordance with a Work Plan prepared by Pacific Environmental Group, Inc. (PACIFIC) for ARCO, dated February 13, 1991, and was approved in a letter by the Alameda County Health Care Services Agency on March 21, 1991. A letter dated July 11, 1991 was issued by PACIFIC requesting an extension to submit a report by August 20, 1991. Verbal approval to submit a progress letter by August 20 was provided by Pamela Evans of the Alameda County Environmental Health Department on July 22, 1991.

The current investigation consisted of the installation and sampling of five additional groundwater monitoring wells and quarterly sampling and analysis of previously existing site wells. Groundwater samples collected were analyzed for total petroleum hydrocarbons, calculated as gasoline, and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). Well installation, groundwater sampling, and analytical procedures are documented in Attachment A. Also included in this letter is an evaluation of the documented wells within a 1/2 mile radius of the site and a proposed scope of work designed to further define the extent of dissolved hydrocarbons in the groundwater in the site area.

FINDINGS

The five new monitoring wells (MW-13 through MW-17) were installed on June 25 and 26, 1991 and were proposed to define the extent of hydrocarbons in the groundwater. The wells were developed and sampled on July 3, 1991. Chemical analysis of groundwater samples collected from the new wells indicate that dissolved gasoline is present in Wells MW-15, MW-16, and MW-17 at concentrations ranging between 570 and 2,700 parts per billion (ppb). Non-detectable levels of dissolved gasoline and BTEX compounds were reported for groundwater samples collected from Wells MW-13 and MW-14.

Wells constructed prior to these new wells (MW-5 through MW-11, and E-1A) were sampled on June 26, 1991 as part of the on-going quarterly monitoring program. In general, the groundwater quality data collected from these wells are consistent with previous quarters. Dissolved gasoline concentrations ranged from non-detectable levels in Wells MW-7, MW-9, and MW-11 to 9,300 ppb in Well MW-10. A gasoline and benzene concentration map is presented in Figure 2. Gasoline isoconcentration lines (Figure 2) were constructed assuming a logarithmic change in concentration between data points. Current and historical analytical data is presented in Table 1.

Depth to water data, obtained from all site wells on July 3, 1991, indicate that groundwater flow was to the west with an approximate gradient of 0.003. This flow direction and gradient are consistent with historical data. A groundwater contour map based on the July data is shown on Figure 3.

CONCLUSIONS AND RECOMMENDED ACTION

The results of the groundwater monitoring program indicate that the lateral margin of the plume has been defined to non-detectable levels by Wells MW-9, MW-11, MW-13, and MW-14. The upgradient (eastern) extent is defined to non-detectable levels by Well MW-7. However, groundwater samples collected from Wells MW-15, MW-16, and MW-17 indicate that the downgradient (western) extent of the plume is not defined. Consequently, PACIFIC recommends that four additional groundwater monitoring wells be installed downgradient from these wells following the procedures outlined in Attachment A. The locations of the proposed wells are shown on Figure 4. PACIFIC recommends that groundwater samples obtained from the proposed wells be analyzed for total petroleum hydrocarbons, calculated as gasoline, and BTEX compounds.

WELL SURVEY

Applied Geosystem's (AGS's) report to ARCO dated March 9, 1988 listed 23 wells within 1/2 mile of the site. PACIFIC conducted an additional well survey with Alameda County in July 1989. That survey identified 18 wells within a 1/2-mile radius of the site and was included in the October 4, 1989 Work Plan. It appears that the difference in the number of wells reported from the two surveys is due to abandonment of wells which were active during the AGS survey.

Only four of the 18 wells reported in PACIFIC's well survey are located in the general downgradient direction from the site and so it is believed that these are the only documented wells which could be potentially impacted by hydrocarbons from the site. The wells are shown on Figure 1 and labeled E, F, G, and H. Table 2 summarizes the information obtained in the well survey obtained from Alameda County for Wells E, F, G and H.

PACIFIC will obtain additional information on the documented wells from the California Department of Water Resources in attempt to obtain additional construction details not provided in the previous surveys. Construction details such as lithology, screened interval, seal depth, etc., could be useful in evaluating the potential threat of hydrocarbons in groundwater on these wells. Additionally, the four wells proposed in this letter are located between the downgradient site wells and Wells E, F, G and H. Groundwater quality data from the proposed wells should also aid in evaluating the potential impact to these documented wells.

ARCO has compiled a list of property owners and addresses to investigate the existence of undocumented wells in the site area. A letter will be issued to selected property owners to assist in determining the impact to undocumented wells and to facilitate corrective action. Sampling, analysis and/or abandonment of documented and undocumented wells that may be impacted by hydrocarbons may be appropriate.

SCHEDULE

Upon approval from Alameda County of the additional investigation proposed in this letter PACIFIC, on behalf of ARCO, will initiate pursuing encroachment for the off-site field work. It is estimated that encroachment can be obtained from Alameda County Public Works Department by October 15, 1991 which would allow completion of the field work by October 31, 1991. Based on this schedule, a technical assessment report will be issued by December 16, 1991. Results of the additional water supply well research will be included in this report.

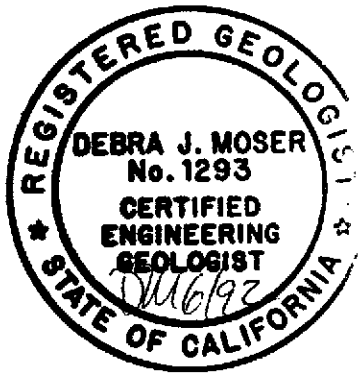
If there are any questions regarding the contents of this letter, please call.

Sincerely,

Pacific Environmental Group, Inc.

Tina Berry
Senior Staff Geologist

Debra J. Moser
Senior Geologist
CEG 1293



Attachments: Table 1 - Quarterly Groundwater Monitoring Results
Figure 1 - Gasoline and Benzene Concentration Map
Figure 2 - Groundwater Contour Map
Figure 3 - Proposed Well Location Map
Attachment A - Drilling, Groundwater Sampling and Analytical Procedures
Certified Analytical Reports
Chain-of-Custody Documentation
Field Data Sheets

cc: Chris Winsor, ARCO Products Company
Pamela Evans, Alameda County Health Agency-Hazardous Materials Division
Richard Hiett, Regional Water Quality Control Board - S.F. Bay Region

Table 1
Summary of Groundwater Analytical Results
ARCO Service Station 0608

Low-Boiling Hydrocarbons

Well Number (Elev.)	Sample Date	Groundwater Elevation (feet, MSL)	Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)
MW-1	01/11/88	NA	300	20	10	50	80
			Well Destroyed				
MW-2	07/05/85	NA	32,000	1,000	690	NA*	1,500*
	01/11/88	NA	3,300	804	115	168	166
			Well Destroyed				
MW-3	01/11/88	NA	1,800	20	20	80	60
(33.27)	03/07/89	21.31	150,000	4,600	5,200	5,600	13,000
	06/21/89	20.42	63,000	2,700	5,800	3,300	12,000
	12/12/89	19.81	Not Sampled--Insufficient Water Volume				
	03/29/90	20.06	1,100,000**	13,000	60,000	17,000	91,000
	05/08/90	20.04	NS	NS	NS	NS	NS
	06/22/90	NA	Not Sampled--Insufficient Water Volume				
	07/18/90		Well Destroyed				
MW-4	01/11/88	NA	62,000	2,700	7,900	850	5,200
(32.43)	09/12/88	NA	Not Sampled--Separate-Phase Hydrocarbon				
	03/07/89	21.67	84,000	2,400	3,400	2,500	7,600
	06/21/89	20.47	31,000	400	800	200	1,500
	12/12/89	NA	Not Sampled--Well Dry				
	03/29/90	20.71	Not Sampled-0.01 foot Separate-Phase Hydrocarbon				
	05/08/90	20.24	NS	NS	NS	NS	NS
	06/22/90	NA	Not Sampled--Well Dry				
	07/18/90	NA	Well Destroyed				
MW-5	01/11/88	NA	31,000	4,000	2,700	3,800	5,500
(33.99)	03/07/89	21.25	1,300	340	ND	140	50
	06/21/89	20.73	1,100	200	ND	130	40
	12/12/89	NA	Not Sampled--Well Dry				
	03/29/90	20.69	Not Sampled--Insufficient Water Volume				
	05/08/90	NA	NS	NS	NS	NS	NS
	06/22/90	20.47	Not Sampled--Insufficient Water Volume				
	09/19/90	20.00	Not Sampled--Well Dry				
	12/27/90	NA	Not Sampled--Well Dry				
	03/21/91	20.99	Not Sampled--Well Dry				
	06/26/91	20.74	Not Sampled--Well Dry				
	07/03/91	20.66	NS	NS	NS	NS	NS

Table 1 (continued)
Summary of Groundwater Analytical Results
ARCO Service Station 0608

Low-Boiling Hydrocarbons

Well Number (Elev)	Sample Date	Groundwater Elevation (feet, MSL)	Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)
MW-11	04/13/90	NA	<50	<0.3	<0.3	<0.3	<0.3
(32.54)	05/08/90	19.70	NS	NS	NS	NS	NS
	06/22/90	19.72	63	0.4	0.9	0.7	3
	09/19/90	18.45	<50	<0.3	<0.3	<0.3	<0.3
	12/27/90	18.88	<50	<0.3	<0.3	<0.3	<0.3
	03/21/91	20.69	<30	<0.30	<0.30	<0.30	<0.30
	06/26/91	19.85	<30	<0.30	<0.30	<0.30	<0.30
	07/03/91	19.73	NS	NS	NS	NS	NS
E-1A	09/19/90	18.75	<50	7	0.9	1	2
(MW-12)	12/27/90	19.09	<50	3	0.5	1	1
(33.06)	03/21/91	20.95	<30	4.2	<0.30	1.1	0.89
	06/26/91	20.16	41	6.3	<0.30	1.2	0.59
	07/03/91	20.06	NS	NS	NS	NS	NS
MW-13 (35.42)	07/03/91	20.23	<30	<0.30	<0.30	<0.30	<0.30
MW-14 (30.46)	07/03/91	19.41	<30	<0.30	<0.30	<0.30	<0.30
MW-15 (31.41)	07/03/91	18.98	570	1.8	1.0	1.0	2.2
MW-16 (31.39)	07/03/91	18.47	2,700	31	6.9	4.6	3.1
MW-17 (32.43)	07/03/91	18.68	1,200	12	1.9	28	40

NA = Data not available
ppb = Parts per billion
NS = Not sampled

* = Ethylbenzene and xylenes given as a combined value.
** = Well contained slight product sheen.

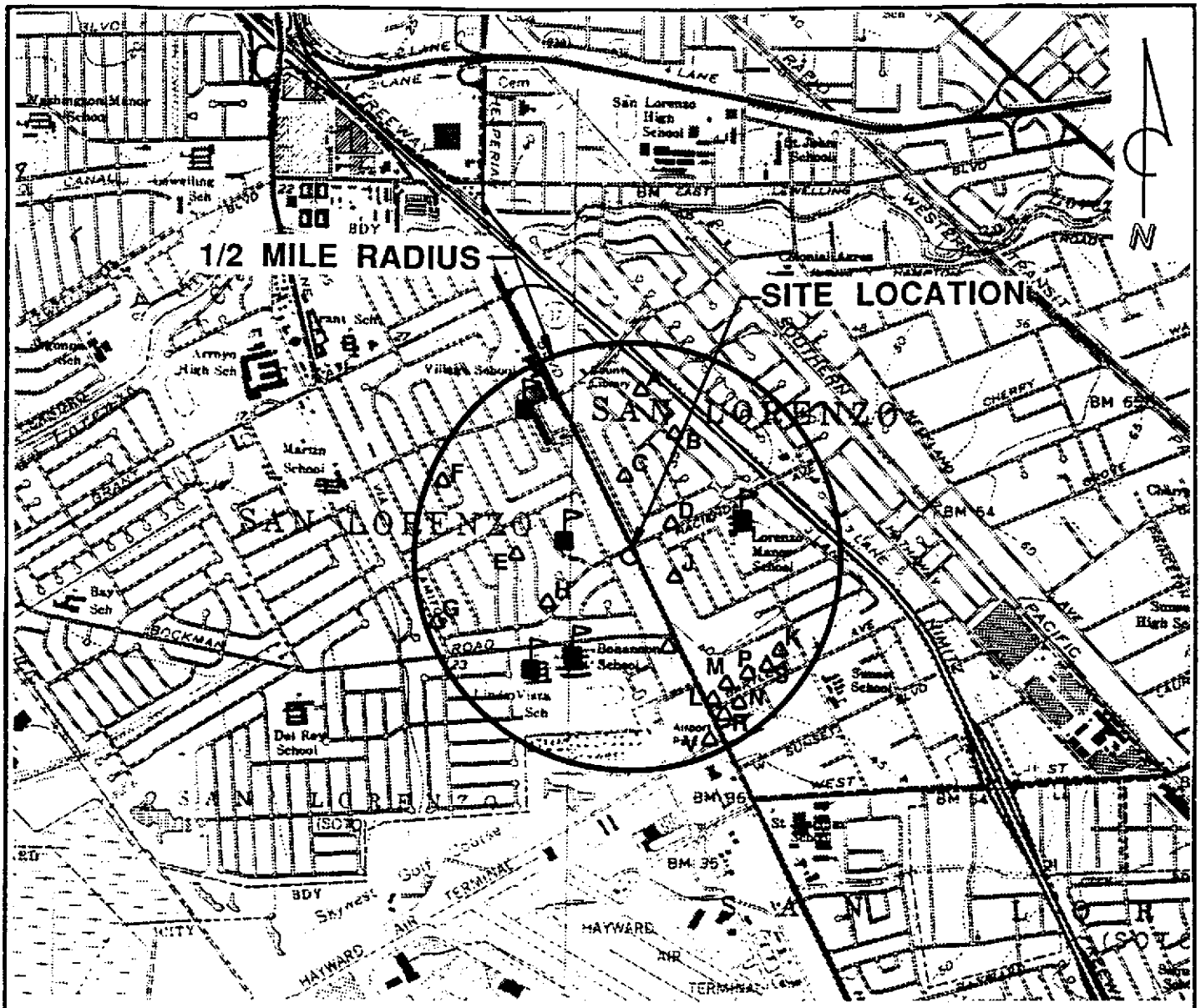
MW-1 and MW-2 destroyed prior to 3/7/89 sampling event.
MW-3, MW-4 and MW-6 (E-1) destroyed 7/18/90.

Table 2
Water Supply Well Data
ARCO Service Station 0608

Well I.D.	Well Loc.	Year Drilled	Depth (feet)	Use	Well Diameter (inches)	Approximate Distance from Site (feet)
E	T3SR2W18C1	1977	25	IRR	4	1,300
F	T3SR2W18D1	1953	98	DOM	6	2,500
G	T3SR2W18E1	U	U	IRR	U	2,500
H	T3SR2W18F3	1977	29	IRR	4	1,000

KEY:

DOM - Domestic
IRR - Irrigation
U - Unknown



QUADRANGLE LOCATIONS

LEGEND:

SCHOOL

WATER SUPPLY WELL DESIGNATION AND APPROXIMATE LOCATION

REFERENCE:
USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: HAYWARD, CALIFORNIA
DATED: 1959 REVISED: 1980
TITLED: SAN LEANDRO, CALIFORNIA
DATED: 1959 REVISED: 1980

SCALE

2000 0 2000 FEET

PACIFIC ENVIRONMENTAL GROUP, INC.

ARCO SERVICE STATION #0608
17601 Hesperian Boulevard
San Lorenzo, California

SITE LOCATION MAP

FIGURE: 1

PROJECT: 330-06.11

N

RESIDENTIAL

POTRERO COURT

APARTMENTS

APARTMENTS

VIA ARRIBA

SHOPS

HESPERIAN BOULEVARD

RESTAURANT

VIA MAGDALENA

CHURCH AND SCHOOL

19.00

MW-14 (19.41)

MW-17 (18.68)

?

18.50

19.50

RESIDENTIAL

RESIDENTIAL

RESTAURANT

MW-9 (20.09)

SITE LOCATION

E-1A (20.06)

MW-8 (20.04)

MW-5 (20.66)

MW-7 (20.45)

20.00

ALLEY

MW-13 (20.23)

RESIDENTIAL

SHOPS

MW-16 (18.47)

RESIDENTIAL

MW-10 (19.51)

MW-15 (18.98)

MW-11 (19.73)

HACIENDA AVENUE

RESIDENTIAL

VIA FLORES

VIA ENCINAS COURT

VIA ALAMO

LEGEND

MW-7 — GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

E-1A — GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

(19.51) — GROUNDWATER ELEVATION IN FEET - MSL, 7-3-91

20.00 — GROUNDWATER CONTOUR IN FEET - MSL, 7-3-91

APPROXIMATE GRADIENT = 0.003

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE

0 100 200 FEET

ARCO SERVICE STATION #0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

GROUNDWATER CONTOUR MAP

FIGURE: 2

PROJECT: 330-06.11

N

RESIDENTIAL

POTRERO COURT

APARTMENTS

APARTMENTS

VIA ARRIBA

SHOPS

HESPERIAN BOULEVARD

RESTAURANT

VIA MAGDALENA

CHURCH AND SCHOOL

MW-14 ND/ND

MW-17 1,200/12

RESIDENTIAL

RESIDENTIAL

RESTAURANT

MW-9 ND/ND

SITE LOCATION

E-1A 41/6.3

MW-8 2,100/290

MW-5 (DRY)

MW-7 ND/ND

ALLEY

MW-16 2,700/31

MW-10 9,300/51

1,000

MW-15 570/1.8

100

MW-11 ND/ND

MW-13 ND/ND

RESIDENTIAL

RESIDENTIAL

SHOPS

HACIENDA AVENUE

VIA ENCINAS COURT

VIA ALAMO

VIA FLORES

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

LEGEND

MW-7 — GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

E-1A — GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

41/6.3 — GASOLINE/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION (ppb), 6-26-91 or 7-3-91

100 — GASOLINE ISOCONCENTRATION CONTOUR IN ppb, 6-26-91 or 7-3-91

ND — NON-DETECTABLE LEVELS

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE

0 100 200 FEET

ARCO SERVICE STATION #0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

DISSOLVED GASOLINE AND BENZENE CONCENTRATION MAP

FIGURE: 3

PROJECT: 330-06.11

N

RESIDENTIAL

POTRERO COURT

APARTMENTS

APARTMENTS

VIA ARRIBA

SHOPS

HESPERIAN BOULEVARD

RESTAURANT

VIA MAGDALENA

CHURCH AND SCHOOL

MW-17

MW-14

RESIDENTIAL

RESIDENTIAL

RESTAURANT

MW-9

SITE LOCATION

E-1A

MW-16

MW-10

MW-8

MW-5

MW-7

RESIDENTIAL

MW-15

ALLEY

MW-11

MW-13

RESIDENTIAL

SHOPS

VIA FLORES

HACIENDA AVENUE

VIA ENCINAS COURT

VIA ALAMO

LEGEND

MW-7 — GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

E-1A — GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

PROPOSED GROUNDWATER MONITORING WELL LOCATION

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE

0 100 200 FEET

ARCO SERVICE STATION #0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

PROPOSED WELL LOCATION MAP

FIGURE: **4**

PROJECT: 330-06.11

ATTACHMENT A
DRILLING, GROUNDWATER SAMPLING AND ANALYTICAL PROCEDURES

Drilling and Well Construction Procedures

The borings for Wells MW-13 through MW-17 were drilled using 8-inch diameter hollow-stem auger drilling equipment and were logged by a PACIFIC geologist using the Unified Soil Classification System and standard geologic techniques. Soil samples for logging and possible chemical analysis were collected at approximate 5-foot intervals by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the auger. The sampler was driven a maximum of 18 inches using a 140-pound hammer with a 30-inch drop. Soil samples for chemical analysis were retained in brass liners, capped with aluminium foil and plastic end caps, and sealed in clean glass containers. These samples were placed on ice for transport to the laboratory, accompanied by chain-of-custody documentation. All down-hole drilling equipment was steam-cleaned between borings.

The borings were converted to groundwater monitoring wells by the installation of 3-inch diameter, Schedule 40 PVC casing and 0.020-inch factory slotted screen. Screen was placed from the bottom of each boring to approximately 5 feet above the static water level. The annular space was packed with Lonestar 2/12 sand across the entire screened interval, extending 2 feet above the top of the screen. The well was then sealed with approximately 2 feet of bentonite above the top of the sand pack, and cement grout to the ground surface. A locking, watertight cap and protective vault box were installed at the top of each well. All wells were surveyed for elevation based on mean sea level by a licensed surveyor.

Well Development and Sampling Procedures

Well development consisted of surging and bailing the well until it produced clear water while attempting to remove 10 casing volumes of water. The sampling procedure for each well consists first of measuring the water level and checking for the presence of separate-phase hydrocarbons using either an electronic indicator and a clear Teflon

bailer or an oil-water interface probe. Wells not containing separate-phase hydrocarbons are then purged of approximately four casing volumes (or to dryness) using a centrifugal pump, gas displacement pump, or bailer. Equipment used for the current sampling event is noted on the attached field data sheets. During purging, temperature, pH, and electrical conductivity are monitored in order to document that these parameters are stable prior to collecting samples. After purging, water levels are allowed to partially recover. Groundwater samples are collected using a Teflon bailer, placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported on ice to a California State-certified laboratory.

Laboratory Analyses

The groundwater samples were analyzed for the presence of total petroleum hydrocarbons (calculated as gasoline), and BTEX compounds. The analyses were performed according to modified EPA Methods 8015, 8020, and 5030 utilizing a purge-and-trap extraction technique. Final detection was by gas chromatography using a flame-ionization detector and photo-ionization detector. The methods of analyses for the groundwater samples are documented in the certified analytical reports. The certified analytical reports, chain-of-custody documents, and field data sheets are attached to this report.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group
1601 Civic Center Drive, Suite 202
Santa Clara, CA 95050
Attention: Tina Berry

Project: #330-06.05, Arco 0608, San Lorenzo

Enclosed are the results from 7 water samples received at Sequoia Analytical on June 27,1991. The requested analyses are listed below:

1064281	Water, MW-7	6/26/91	EPA 5030/8015/8020
1064282	Water, MW-8	6/26/91	EPA 5030/8015/8020
1064283	Water, MW-9	6/26/91	EPA 5030/8015/8020
1064284	Water, MW-10	6/26/91	EPA 5030/8015/8020 EPA 5030/8015/8020
1064285	Water, MW-11	6/26/91	EPA 5030/8015/8020
1064286	Water, E-1A	6/26/91	EPA 5030/8015/8020
1064287	Water, Trip Blank	6/26/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	#330-06.05, Arco 0608, San Lorenzo	Sampled:	Jun 26, 1991
1601 Civic Center Drive, Suite 202	Matrix Descript:	Water	Received:	Jun 27, 1991
Santa Clara, CA 95050	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jul 2, 1991
Attention: Tina Berry	First Sample #:	106-4281	Reported:	Jul 11, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
106-4281	MW-7	N.D.	N.D.	N.D.	N.D.	N.D.
106-4283	MW-9	N.D.	N.D.	N.D.	N.D.	N.D.
106-4284	MW-10	9,300	51	N.D.	59	34
106-4285	MW-11	N.D.	N.D.	N.D.	N.D.	N.D.
106-4286	E-1A	41	6.3	N.D.	1.2	0.59
106-4287	Trip Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**30**	**0.30**	**0.30**	**0.30**	**0.30**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	#330-06.05, Arco 0608, San Lorenzo	Sampled:	Jun 26, 1991
1601 Civic Center Drive, Suite 202	Matrix Descript:	Water	Received:	Jun 27, 1991
Santa Clara, CA 95050	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jul 2, 1991
Attention: Tina Berry	First Sample #:	106-4282	Reported:	Jul 11, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
106-4282	MW-8	2,100	290	N.D.	56	N.D.
106-4284	MW-10	9,300	51	N.D.	59	34
Detection Limits:		**600**	**6.0**	**6.0**	**6.0**	**6.0**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

VM Tague

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group
1601 Civic Center Drive, Suite 202
Santa Clara, CA 95050
Attention: Tina Berry

Client Project ID: #330-06.05, Arco 0608, San Lorenzo

Q C Sample Group: 1064281-87

Reported: Jul 11, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 2, 1991	Jul 2, 1991	Jul 2, 1991	Jul 2, 1991
QC Sample #:	GBLK070291	GBLK070291	GBLK070291	GBLK070291
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	100	100	100	300
Matrix Spike % Recovery:	100	100	100	100
Conc. Matrix Spike Dup.:	100	100	100	310
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	0	0	0	3.3

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

% Recovery: $\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}} \times 100$

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

Chain of C

Laboratory name:

CLIENT NAME: Pacific Enviro. MASTER LOG NO. / PAGE: X

REC. BY (PRINT): KC DATE OF LOG-IN: 6/28/91

CIRCLE THE APPROPRIATE RESPONSE		LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC)
1. Custody Seal(s):	Present / (Absent)	106428	A-C	MW7	VOAs	W	6/26	
	Intact / Broken*	82		MW8				
2. Custody Seal Nos.:	X	83		MW9				
		84		MW-10	VOAs			
3. Chain-of-Custody Records:	(Present) / Absent*	84	D		amber			
		85	A-C	MW-11	VOAs			
4. Traffic Reports or Packing List:	Present / (Absent)	86	A-C	EIA				
		87	A/B	trip blanks				
5. Airbill:	Airbill / Sticker							
	Present / (Absent)							
6. Airbill No.:	X							
7. Sample Tags:	(Present) / Absent*							
Sample Tag Nos.:	(Listed) / Not Listed on Chain-of-Custody							
8. Sample Condition:	(Intact)/Broken*/Leaking*							
9. Does information on custody reports, traffic reports and sample tags agree?	(Yes) / No*						-	
10. Proper Preservatives Used:	(Yes) / No*							
11. Date Rec. at Lab:	6/27/91							
12. Time Rec. at Lab:	6:35pm							

* If Circled, contact Project Manager and attach record of resolution

Form SC001

ARCO Facility no. 0608 | City (Facility) San Lorenzo | Project manager (Consultant) Tina Berry | Laboratory name Sequoia

ARCO engineer Chuck Carmel | Telephone no. (ARCO) | Telephone no. (Consultant) 408-984-6536 | Fax no. (Consultant) 243-3911 | Contract number 07-073

Consultant name Pacific Env. Group | Address (Consultant) 1601 Civic Center Dr. #202 Santa Clara | Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Static Acute Haz. Waste	Bioassay Title 22
MW-7		3		X	VOA		HCl	6-26-91	11:30		X					1064281					A-C	
MW-8		3					HCl		11:40		X					1064282						
MW-9		3					HCl		12:30		X					1064283						
MW-10		3					HCl		14:00		X					1064284						
MW-10		1			Filtered Amber		—		14:00							1064284					X	X
MW-11		3			VOA		HCl		13:45		X					1064285						
E-1A		3					HCl		11:35		X					1064286						
Trip Blank		2					HCl		—		X					1064287						

Special detection Limit/reporting

Special QA/QC: A-D

Remarks

Lab number: 1064281

Turnaround time

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

Condition of sample: good | Temperature received: cool

Relinquished by sampler: [signature] | Date 6-27-91 | Time | Received by: Michelle Y. Jamora 6/27/91 4:15PM

Relinquished by | Date | Time | Received by

Relinquished by: Michelle Y. Jamora | Date 6/27/91 | Time | Received by laboratory: K. Goodwin | Date 6/27 | Time 6:30pm

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

APPC-3292 (2-91)

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group
1601 Civic Center Drive, Suite 202
Santa Clara, CA 95050
Attention: Tina Berry

Project: #330-06.05, Arco 0608, San Lorenzo

Enclosed are the results from 6 water samples received at Sequoia Analytical on July 5,1991. The requested analyses are listed below:

1070945	Water, MW-13	7/3/91	EPA 5030/8015/8020
1070946	Water, MW-14	7/3/91	EPA 5030/8015/8020
1070947	Water, MW-15	7/3/91	EPA 5030/8015/8020
1070948	Water, MW-16	7/3/91	EPA 5030/8015/8020
1070949	Water, MW-17	7/3/91	EPA 5030/8015/8020
1070950	Water, Travel Blank	7/3/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	#330-06.05, Arco 0608, San Lorenzo	Sampled:	Jul 3, 1991
1601 Civic Center Drive, Suite 202	Matrix Descript:	Water	Received:	Jul 5, 1991
Santa Clara, CA 95050	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jul 12-15, 1991
Attention: Tina Berry	First Sample #:	107-0945	Reported:	Jul 17, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
107-0945	MW-13	N.D.	N.D.	N.D.	N.D.	N.D.
107-0946	MW-14	N.D.	N.D.	N.D.	N.D.	N.D.
107-0947	MW-15	570	1.8	1.0	1.0	2.2
107-0948	MW-16	2,700	31	6.9	4.6	3.1
107-0949	MW-17	1,200	12	1.9	28	40
107-0950	Travel Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**30**	**0.30**	**0.30**	**0.30**	**0.30**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group
1601 Civic Center Drive, Suite 202
Santa Clara, CA 95050
Attention: Tina Berry

Client Project ID: #330-06.05, Arco 0608, San Lorenzo

Q C Sample Group: 1070945-47

Reported: Jul 17, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 12, 1991	Jul 12, 1991	Jul 12, 1991	Jul 12, 1991
QC Sample #:	GBLK071291	GBLK071291	GBLK071291	GBLK071291
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	100	100	100	300
Matrix Spike % Recovery:	100	100	100	100
Conc. Matrix Spike Dup.:	100	100	100	300
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	0	0	0	0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group
1601 Civic Center Drive, Suite 202
Santa Clara, CA 95050
Attention: Tina Berry

Client Project ID: #330-06.05, Arco 0608, San Lorenzo

Q C Sample Group: 1070948-49

Reported: Jul 16, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	D. Dreblow	D. Dreblow	D. Dreblow	D. Dreblow
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 15, 1991	Jul 15, 1991	Jul 15, 1991	Jul 15, 1991
QC Sample #:	GBLK071591	GBLK071591	GBLK071591	GBLK071591
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	99	98	98	300
Matrix Spike % Recovery:	99	98	98	100
Conc. Matrix Spike Dup.:	100	110	110	320
Matrix Spike Duplicate % Recovery:	100	110	110	107
Relative % Difference:	1.0	12	12	6.5

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

$$\text{\% Recovery:} \quad \frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference:} \quad \frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}} \times 100$$

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group
1601 Civic Center Drive, Suite 202
Santa Clara, CA 95050
Attention: Tina Berry

Client Project ID: #330-06.05, Arco 0608, San Lorenzo

Q C Sample Group: 107-0950

Reported: Jul 17, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 12, 1991	Jul 12, 1991	Jul 12, 1991	Jul 12, 1991
QC Sample #:	BLK071291	BLK071291	BLK071291	BLK071291
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	99	100	100	300
Matrix Spike % Recovery:	99	100	100	100
Conc. Matrix Spike Dup.:	97	97	98	290
Matrix Spike Duplicate % Recovery:	97	97	98	97
Relative % Difference:	2.0	3.0	2.0	3.4

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}}$	x 100
Relative % Difference:	$\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}}$	x 100

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: PACIFIC ENV. GROUP
REC. BY (PRINT): SP
MASTER LOG NO. / PAGE:
DATE OF LOG-IN: 7-8

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / (Absent) — Intact / Broken*
2. Custody Seal Nos.:
3. Chain-of-Custody Records: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker Present / (Absent)
6. Airbill No.:
7. Sample Tags: (Present) / Absent* — Sample Tag Nos.: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact)/Broken*/Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper Preservatives Used: (Yes) / No*
11. Date Rec. at Lab: 7/5
12. Time Rec. at Lab: 11:35

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC)
1070945	A-L	MW-13	3 VOAs	W	7/3	
46		MW-14				
47		MW-15				
48		MW-16				
49		MW-17				
50	A-B	T.B.	2 VOAs	W	7/3	

* If Circled, contact Project Manager and attach record of resolution

ARCO Facility no. 6600 | City (Facility) San Lorenzo | Project manager (Consultant) Tina Berry | Laboratory name Sequoia

ARCO engineer Chuck Carmel | Telephone no. (ARCO) | Telephone no. (Consultant) 408-984-6536 | Fax no. (Consultant) 243-3911 | Contract number 07-073

Consultant name Pac. Env. Group | Address (Consultant) 1601 Civic Center Dr. #207 Santa Clara | Method of shipment Sequoia courier

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	8TEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
TB Blank		2		X				7-3-91			X			1070950			X/B			
MW-13		3														45	A-C			
MW-14		3														46				
MW-15		3														47				
MW-16		3														48				
MW-17		3														49				

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number 1070950

Turnaround time

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

Condition of sample: good | Temperature received: cool

	Date	Time		Date	Time
Relinquished by sampler	7-5-91	11:00	Received by		
Relinquished by			Received by		
Relinquished by	7/5/91	11:35	Received by laboratory	7/5/91	11:30

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

APPC-3292 (2-91)

Water/Product Depth Field Sheet

ent: ARCO

ect No.: 330-06.05

cation: San Lorenzo
17601 Hesperian

Field Dates: 6-26-91

Sampler: SP

Probe Type:
- ☐ Oil/Water Interface
- ☒ Electronic Indicator
- ☐ Bell Sounder
- ☐ Other _____

ell ID	Date	Time	TD	TOB DTL	TOB DTW	TOC DTL	TOC DTW	SPH/Liquid Removed (gallons)	Comments (i.e. SPH thickness after bailing)
-5	626	10:09	13.5		13.25				
~~-6~~									
-7		10:07	20.		13.85				
-8		10:05	21.5		12.66				
-9		10:15	19.5		11.92				
-10		10:20	23		12.00				
-11		10:24	20		12.69				
1A		10:00	25.5		12.90				

Monitoring Well Field Sheet

Client: ARCO Sampler: SP
Project No.: 330-06.05 Field Dates: 6-26-91
Location: San Lorenzo Well I.D.: MW-7

Well Information

Total Depth: 20 Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 13.85 TOB Product: ☐ Yes (☒) No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: 6-26-91 Color: ___
Time: 10:07 Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information

Date Purged: 6-26-91 Purge Method: (☒ Bailer) ☐ Positive Displacement
Calculated Purge: 9 (gal) ~~☒ Centrifugal~~ ☐ Dedicated ☐ Gas Displacement
Actual Purge: 9 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
3	11:15	6.97	957	63.4	Grey	NO
6	11:18	6.95	978	64.2	↓	↓
9	11:21	6.95	965	64.6		

Comments:

Sample Information

Sampler: SP
Sample I.D.: MW-7
Date Sampled: 6-26-91
Time Sampled: 11:30

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Pacific Environmental Group, Inc.

Monitoring Well Field Sheet

Client: ARCO
Sampler: SP
Project No.: 330-06.05
Field Dates: 6-26-91
Location: San Lorenzo
Well I.D.: MW-8

Well Information

Total Depth: 21.5
Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 12.66 TOB
Product: ☐ Yes ☒ No
Depth to Liquid: TOC ___ TOB
Thickness (feet): ___
Date: 6-26-91
Color: ___
Time: 10:05
Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information

Date Purged: 6-26-91
Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 13.5 (gal)
☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 7 (gal)
☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (umhos)	Temp (°F)	Color	Odor
4.5	11:06	6.74	969	62.7	cloudy	strong
7	11:07	6.86	966	64.3	cloudy	strong

Comments: well dry at 7 gallons

Sample Information

Sampler: SP
Sample I.D.: MW-8
Date Sampled: 6-26-91
Time Sampled: 11:40

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Pacific Environmental Group, Inc.

Monitoring Well Field Sheet

Client: ARCO Sampler: SP
Project No.: 330-06.05 Field Dates: 6-26-91
Location: San Lorenzo Well I.D.: MW-9

Well Information

Total Depth: 19.5 Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 11.92 TOB Product: ☐ Yes ☑ No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: 6-26-91 Color: ___
Time: 10:15 Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☑ Electronic Indicator ☐ Bell Sounder

Purge Information

Date Purged: 6-26-91 Purge Method: ☒ Bailer ☐ Positive Displacement
Calculated Purge: 11.5 (gal) ☐ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 12 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
4	12:09	6.92	953	66.1	Brown	NO
8	12:13	6.97	941	66.8	↓	↓
12	12:18	6.98	936	66.6	↓	↓

Comments:

Sample Information

Sampler: SP
Sample I.D.: MW-9
Date Sampled: 6-26-91
Time Sampled: 12:30

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX
			~~Static Acute~~ SP
			~~Haz. Waste~~ SP

Monitoring Well Field Sheet

Client: Arco Sampler: SP
Project No.: 330-06.05 Field Dates: 6-26-91
Location: San Lorenzo Well I.D.: MW-10

Well Information

Total Depth: 23 Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 12.00 TOB Product: ☐ Yes ☒ No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: 6-26-91 Color: ___
Time: 10:20 Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☑ Electronic Indicator ☐ Bell Sounder

Purge Information

Date Purged: 6-26-91 Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 16.5 (gal) ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 17 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
5.5	13:05	6.69	1004	67.6	Grey	Strong
11	13:06	6.72	1000	67.3	↓	↓
16.5	13:08	6.69	997	67.1	↓	↓

Comments:

Sample Information

Sampler: SP
Sample I.D: MW-10
Date Sampled: 6-26-91
Time Sampled: 14:00

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX
1	Liter Amber	—	Static Acute
			Haz. Waste
			Bioassay
			Title 22

Monitoring Well Field Sheet

Client: Arco Sampler: SP
Project No.: 330-06.05 Field Dates: 6-26-91
Location: San Lorenzo Well I.D.: ~~MW-11~~ SP MW-11

Well Information

Total Depth: 20 Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 12.69 TOB Product: ☐ Yes ☒ No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: 6-26-91 Color: ___
Time: 10:24 Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information

Date Purged: 6-26-91 Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 11 (gal) ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 11 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
4	13:25	6.85	973	67.3	Grey	Slight
8	13:27	6.92	955	66.5	↓	↓
11	13:28	6.93	942	66.0	↓	

Comments:

Sample Information

Sampler: SP
Sample I.D.: MW-11
Date Sampled: 6-26-91
Time Sampled: 13:45

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Monitoring Well Field Sheet

Client: Arco | Sampler: SP
Project No.: 330-06.05 | Field Dates: 6-26-91
Location: San Lorenzo | Well I.D.: E1A

Well Information

Total Depth: 25.5 | Diameter: 2" 3" 4" 5" (6")
Depth to Water: TOC 12.90 TOB | Product: ☐ Yes ☒ No
Depth to Liquid: TOC TOB | Thickness (feet):
Date: 6-26-91 | Color:
Time: 10:00 | Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information

Date Purged: 6-26-91 | Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 73 (gal) | ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 75 (gal) | ☐ Other

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor SP
25	10:46	7.03	958	64.1	clear	~~none~~ slight
50	10:50	6.95	968	65.7	↓	↓
73	10:54	6.96	973	66.4	↓	↓

Comments:

Sample Information

Sampler: SP
Sample I.D.: E-1A
Date Sampled: 6-26-91
Time Sampled: 11:35

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Pacific Environmental Group, Inc.

Water/Product Depth Field Sheet

Client: ARCO
Project No.: 330-06.05
Location: San Lorenzo

Field Dates: 7-3-9'
Sampler: SP

Probe Type:
- ☐ Oil/Water Interface
- ☒ Electronic Indicator
- ☐ Bell Sounder
- ☐ Other _____

Well ID	Date	Time	TD	TOB DTL	TOB DTW	TOC DTL	TOC DTW	SPH/Liquid Removed (gallons)	Comments (i.e. SPH thickness after bailing)
MW-5	7-3	6:59			13.33				
MW-7	↓	6:54			13.95				
MW-8		7:03			12.75				
MW-9		7:08			12.02				
MW-10		7:10			12.16				
MW-11		7:12			12.81				
MW-13		6:50	~~24~~ 25		15.19				
MW-14		7:23	23		11.05				
MW-15		7:16	23.5		12.43				
MW-16		7:18	23		12.92				
MW-17		10:09	24		13.75				
E-1A	↓	6:57			13.00				

Monitoring Well Field Sheet

Client: Arco Sampler: SP
Project No.: 330-06.05 Field Dates: 7-3-91
Location: San Lorenzo Well I.D.: MW-13

Well Information

Total Depth: 24 Diameter: 2" (3") 4" (5") 6" ___
Depth to Water: TOC 15.19 TOB Product: ☐ Yes ☒ No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: ___ Color: ___
Time: ___ Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information

Development
Date Purged: 7-3-91 Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 34 (gal) ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 34 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
11.5	8:03	7.06	865	68.1	Brown	NO
23	8:05	7.00	760	68.0	Brown	
34	8:08	6.99	755	68.4	cloudy	

Comments: 10 case volumes removed before sampling. Well was surged with surge block
Well noticeably cleaner at the end of purge.

Sample Information

Sampler: SP
Sample I.D.: MW-13
Date Sampled: 7-3-91
Time Sampled: 08:45

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

Monitoring Well Field Sheet

Client: ARCO Sampler: SP

Project No.: 330-0605 Field Dates: 7-3-91

Location: San Lorenzo Well I.D.: MW-14

Well Information

Total Depth: Before Dev 23 Diameter: 2" (3") 4" 5" 6" ___

Depth to Water: TOC 11.05 TOB Product: ☐ Yes ☐ No

Depth to Liquid: TOC TOB Thickness (feet): ___

Date: ___ Color: ___

Time: ___ Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information

Development

Date Purged: 7-3-91 Purge Method: ☐ Bailer ☐ Positive Displacement

Calculated Purge: 42 (10 casings gal) ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement

Actual Purge: 24 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (umhos)	Temp (°F)	Color	Odor
11	9:32	7.23	1060	68.8	Brown	Slight
24	9:40	7.22	847	68.6	Brown	NO

Comments: Well was surged with surge block
well dry at 11 gallons, recharged within 10 minutes
Well dry at 24 gallons. Allowed to Recharge before Sampling

Sample Information

Sampler: SP

Sample I.D.: MW-14

Date Sampled: 7-3-91

Time Sampled: 10:30

Sample Method:

☒ Bailer ☐ Positive Displacement

☐ Dedicated ☐ Other ___

Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Pacific Environmental Group, Inc.

Monitoring Well Field Sheet

Client: ARCO Sampler: SP
Project No.: 330-06.05 Field Dates: 7-3-91
Location: San Lorenzo Well I.D.: MW-15

Well Information

Total Depth: 23.5 Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 12.43 TOB Product: ☐ Yes ☐ No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: ___ Color: ___
Time: ___ Comments:

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information (Development)

Date Purged: 7-3-91 Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 40.5 (gal) ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 40.5 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
13.5	11:01	7.07	976	69.2	Brown	~~NO~~ Strong
27	11:04	6.85	793	68.8	"	"
40.5	11:06	6.91	781	68.8	"	"

Comments: Well was surged with surge block
10 casings removed.

Sample Information

Sampler: SP
Sample I.D.: MW-15
Date Sampled: 7-3-91
Time Sampled: 11:45

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Monitoring Well Field Sheet

Client: ARCO Sampler: SP
Project No.: 330-06.05 Field Dates: 7-3-91
Location: San Lorenzo Well I.D.: MW-16

Well Information

Total Depth: 23 Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 12.12 TOB Product: ☐ Yes ☐ No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: ___ Color: ___
Time: ___ **Comments:**

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information (Development)

Date Purged: 7-3-91 Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 38 (gal) ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 16 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
8	11:27	7.10	1006	70.4	Brown	Moderate
16	11:45	7.08	951	69.2	Brown	Moderate

Comments: Well was surged with surge block Well dry at 8 and 16 gallons. Well allowed to Recharge before Sampling

Sample Information

Sampler: SP
Sample I.D.: MW-16
Date Sampled: 7-3-91
Time Sampled: 12:30

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

Monitoring Well Field Sheet

Client: ARCO Sampler: SP
Project No.: 330-06.05 Field Dates: 7-3-91
Location: San Lorenzo Well I.D.: MW-17

Well Information

Total Depth: 24 Diameter: 2" (3") 4" 5" 6" ___
Depth to Water: TOC 13.75 TOB Product: ☐ Yes ☐ No
Depth to Liquid: TOC TOB Thickness (feet): ___
Date: 7-3-91 Color: ___
Time: 10:09 **Comments:**

Probe Type: ☐ Oil/Water Interface ☐ Other ☒ Electronic Indicator ☐ Bell Sounder

Purge Information

Date Purged: 7-3-91 Purge Method: ☐ Bailer ☐ Positive Displacement
Calculated Purge: 38.5 (gal) ☒ Centrifugal ☐ Dedicated ☐ Gas Displacement
Actual Purge: 38.5 (gal) ☐ Other ___

Vol (gal)	Time	pH (std. units)	EC (µmhos)	Temp (°F)	Color	Odor
13	10:23	7.08	768	68.5	Brown	Moderate
26	10:25	7.08	732	67.2	Brown	Strong
38.5	10:28	7.11	726	66.5	Cloudy	Strong

Comments: Well was surged with a Surge block 10 case volumes removed, well was noticeably cleaner

Sample Information

Sampler: SP
Sample I.D: MW-17
Date Sampled: 7-3-91
Time Sampled: 11:00

Sample Method:
☒ Bailer ☐ Positive Displacement
☐ Dedicated ☐ Other ___
Comments:

No. Containers	Size/Type	Pres.	Analysis
3	40ml VOA	HCl	Gas/BTEX

GROUNDWATER ELEVATION CALCULATIONS

Filename :3300605/:2q91
Field Date:07/03/91

Well Number	Top of Box Elevation	Depth to Water	Depth to Liquid	Floating Product	Groundwater Elevation
MW-5	33.99	13.33			20.66
MW-7	~~33.99~~ 34.40	13.95			~~20.04~~ 20.45
MW-8	32.79	12.75			20.04
MW-9	32.11	12.02			20.09
MW-10	31.67	12.16			19.51
MW-11	32.54	12.81			19.73
E-1A	33.06	13			20.06
MW-13	35.42	15.19			20.23
MW-14	30.46	11.05			19.41
MW-15	31.41	12.43			18.98
MW-16	31.39	12.92			18.47
MW-17	32.43	13.75			18.68