941607

GeoStrategies Inc.
Environmental Consulting,
Engineering and Geologic Services

Letter of Transmittal

Date: 1/15/93

From: ROBERT MALLORY
To: MR. DENNIS BYRNE (CERTIFIED MAIL)
A.C. H.C.S.A.
80 SWAN WAY #200
OAKLAND, CA. 94621

Project No: 792701
Subject: QUARTERLY MONITORING REPORT - 4th qtr. '92
ARCO SERVICE STATION #2169
889 WEST GRAND AVE.
OAKLAND, CA.

The following items are: ☑ Enclosed ☐ Sent Separately via _____

Date	Description	No. of Copies
1/15/93	QUARTERLY MONITORING REPORT - 4th qtr. 1992	1

These are transmitted:

☐ At you request
☐ For your approval
☐ For your review
☐ Preliminary
☐ For your action
☑ For your files
☐ For your information
☐ _____

Comments:

CC: MR. MICHAEL WHELAN, ARCO PRODUCTS CO.
MR. RICHARD HIETT, RWQCB - S.F. REGION
(CERTIFIED MAIL)

☑ 2140 W. Winton Avenue, Hayward, CA 94545
(510) 352-4800 - Fax (510) 783-1089

☐ 601 University Avenue, Sacramento, CA 95825
(916) 568-7500 - Fax (916) 568-7504

Robert C. Mallory
(Signed)

GeoStrategies Inc.

QUARTERLY MONITORING REPORT - Fourth Quarter 1992

ARCO Service Station No. 2169
889 West Grand Avenue
Oakland, California

792701-5

January 15, 1993

GeoStrategies Inc.

January 15, 1993

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

Attn: Mr. Michael Whelan

Re: QUARTERLY MONITORING REPORT - Fourth Quarter 1992
ARCO Service Station No. 2169
889 West Grand Avenue
Oakland, California

Mr. Whelan:

This Quarterly Monitoring Report by GeoStrategies Inc. (GSI) presents the results of the fourth quarter, 1992 sampling for the above referenced site (Plate 1). Sampling and monitoring data were furnished by the ARCO Products Company contractor.

SITE BACKGROUND

In May, 1991, GSI drilled five exploratory borings (A-A through A-E, Plate 2) onsite. Four borings were drilled around the underground tank complex (UST) and one boring was drilled in the future UST location.

During February and March 1992, the underground storage tanks were removed and replaced. Four steel, single wall tanks ranging in size between 6,000-gallons and 12,000-gallons were removed from the site. Four double wall fiberglass 10,000-gallon tanks were installed at the location shown on Plate 2. In March 1992, GSI installed four groundwater monitoring wells (A-1 through A-4) and one recovery well (AR-1). Three vapor extraction wells (AV-1 through AV-3) and one additional recovery well (AR-2) were installed by GSI in June, 1992. These wells were installed to evaluate the horizontal and vertical extent of petroleum hydrocarbons in soil and groundwater beneath the site.

792701-5

Quarterly ground-water sampling began in April, 1992. Ground-water samples are currently analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020. Samples from Wells [redacted] were also analyzed for Total Petroleum Hydrocarbons calculated as Diesel (TPH-Diesel).

CURRENT QUARTER SAMPLING RESULTS

Depth to water measurements were obtained in each monitoring well on August 7, September 22, and prior to sampling on October 13, 1992. Static ground-water levels were measured from the surveyed top of each well box and recorded to the nearest ±0.01 foot. Water-level data were referenced to Mean Sea Level (MSL) datum and used to construct the potentiometric maps presented on Plates 3, 4, and 5. Shallow ground-water flow is to the west and northwest at approximate hydraulic gradients of 0.01, 0.005, and 0.004, respectively.

Each well was checked for the presence of floating product. No floating product has been observed since the monitoring program began. The three most recent depth-to-water and floating product measurements are included in the attached EMCON Associates (EMCON) monitoring and sampling reports (Appendices A and B) and are presented in Table 1. Historical depth to water and floating product measurements are presented in Table 2.

Ground-water samples were collected on October 13, 1992. Samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and for BTEX according to EPA Method 8020. The ground-water samples were analyzed by Sequoia Analytical (Sequoia), a California State-certified laboratory located in Redwood City, California. Current quarter chemical analytical data are presented in Table 1. TPH-Diesel detected in Wells AR-1 and AR-2 was reported as a non-diesel mix. Current chemical analytical data have also been added to the Historical Ground-water Quality Database presented in Table 3. A chemical concentration map for TPH-Gasoline and benzene is presented on Plate 6.

If you have any questions, please call.

GeoStrategies Inc. by,

Robert C. Mallory
Geologist

John F. Vargas
Senior Geologist
R.G. 5046

REGISTERED GEOLOGIST
JOHN F. VARGAS
NO. 5046
STATE OF CALIFORNIA

Table 1. Ground-water Analyses Data
Table 2 Historical Water-level Data
Table 3. Historical Ground-water Quality Database

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map - August 7, 1992
Plate 4. Potentiometric Map - September 22, 1992
Plate 5. Potentiometric Map - October 13, 1992
Plate 6. TPH-G/Benzene Concentration Map

Appendix A: EMCON Ground-water Monitoring Reports
Appendix B: EMCON Ground-water Sampling Report

QC Review: _____

792701-5

TABLES

TABLE 1

GROUND-WATER ANALYSES DATA

WELL NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	WELL ELEV (FT)	STATIC WATER ELEV (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
A-1	07-Aug-92	-----	-----	-----	-----	-----	-----	----	14.75	2.59	0.00	12.16
A-1	22-Sep-92	-----	-----	-----	-----	-----	-----	----	14.75	2.33	0.00	12.42
A-1	13-Oct-92	19-Oct-92	5600	980	590	85	910	N/A	14.75	2.28	0.00	12.47
A-2	07-Aug-92	-----	-----	-----	-----	-----	-----	----	15.16	2.41	0.00	12.75
A-2	22-Sep-92	-----	-----	-----	-----	-----	-----	----	15.16	2.28	0.00	12.88
A-2	13-Oct-92	20-Oct-92	<50	0.57	<0.50	<0.50	<0.50	N/A	15.16	2.24	0.00	12.92
A-3	07-Aug-92	-----	-----	-----	-----	-----	-----	----	16.38	4.01	0.00	12.37
A-3	22-Sep-92	-----	-----	-----	-----	-----	-----	----	16.38	2.67	0.00	13.71
A-3	13-Oct-92	19-Oct-92	<50	<0.50	<0.50	<0.50	<0.50	N/A	16.38	2.62	0.00	13.76
A-4	07-Aug-92	-----	-----	-----	-----	-----	-----	----	15.89	3.33	0.00	12.56
A-4	22-Sep-92	-----	-----	-----	-----	-----	-----	----	15.89	3.02	0.00	12.87
A-4	13-Oct-92	19-Oct-92	<50	<0.50	<0.50	<0.50	<0.50	N/A	15.89	3.02	0.00	12.87
AR-1	07-Aug-92	-----	-----	-----	-----	-----	-----	----	15.71	2.84	0.00	12.87
AR-1	22-Sep-92	-----	-----	-----	-----	-----	-----	----	15.71	2.72	0.00	12.99
AR-1	13-Oct-92	20-Oct-92	32,000	310	730	570	3,100	22,000*	15.71	2.66	0.00	13.05
AR-2	07-Aug-92	-----	-----	-----	-----	-----	-----	----	15.79	2.54	0.00	13.25
AR-2	22-Sep-92	-----	-----	-----	-----	-----	-----	----	15.79	2.21	0.00	13.58
AR-2	13-Oct-92	20-Oct-92	<50	2.0	0.86	0.51	3.8	58*	15.79	2.14	0.00	13.65

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS
Benzene 1. ppb Xylenes 1,750. ppb Ethylbenzene 680. ppb

CURRENT DHS ACTION LEVELS
Toluene 100.0 ppb

TPH-D = Total Petroleum hydrocarbons calculated as Diesel.

792701-5

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
03-Apr-92	A-1	10.35	14.75	4.40	0.00
20-May-92	A-1	11.66	14.75	3.09	0.00
16-Jun-92	A-1	11.95	14.75	2.80	0.00
17-Jul-92	A-1	12.23	14.75	2.52	0.00
07-Aug-92	A-1	12.16	14.75	2.59	0.00
22-Sep-92	A-1	12.42	14.75	2.33	0.00
13-Oct-92	A-1	12.47	14.75	2.28	0.00
03-Apr-92	A-2	10.97	15.16	4.19	0.00
20-May-92	A-2	12.17	15.16	2.99	0.00
16-Jun-92	A-2	12.43	15.16	2.73	0.00
17-Jul-92	A-2	12.64	15.16	2.52	0.00
07-Aug-92	A-2	12.75	15.16	2.41	0.00
22-Sep-92	A-2	12.88	15.16	2.28	0.00
13-Oct-92	A-2	12.92	15.16	2.24	0.00
03-Apr-92	A-3	11.70	16.38	4.68	0.00
20-May-92	A-3	13.00	16.38	3.38	0.00
16-Jun-92	A-3	13.46	16.38	2.92	0.00
17-Jul-92	A-3	13.45	16.38	2.93	0.00
07-Aug-92	A-3	12.37	16.38	4.01	0.00
22-Sep-92	A-3	13.71	16.38	2.67	0.00
13-Oct-92	A-3	13.76	16.38	2.62	0.00
03-Apr-92	A-4	10.84	15.89	5.05	0.00
20-May-92	A-4	12.13	15.89	3.76	0.00
16-Jun-92	A-4	12.33	15.89	3.56	0.00
17-Jul-92	A-4	12.60	15.89	3.29	0.00
07-Aug-92	A-4	12.56	15.89	3.33	0.00
22-Sep-92	A-4	12.87	15.89	3.02	0.00
13-Oct-92	A-4	12.87	15.89	3.02	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
03-Apr-92	AR-1	11.07	15.71	4.64	0.00
20-May-92	AR-1	12.37	15.71	3.34	0.00
16-Jun-92	AR-1	12.47	15.71	3.24	0.00
17-Jul-92	AR-1	13.00	15.71	2.71	0.00
07-Aug-92	AR-1	12.87	15.71	2.84	0.00
22-Sep-92	AR-1	12.99	15.71	2.72	0.00
13-Oct-92	AR-1	13.05	15.71	2.66	0.00
17-Jul-92	AR-2	13.14	15.79	2.65	0.00
07-Aug-92	AR-2	13.25	15.79	2.54	0.00
22-Sep-92	AR-2	13.58	15.79	2.21	0.00
13-Oct-92	AR-2	13.65	15.79	2.14	0.00

Notes: 1. Static water elevations referenced to Mean Sea Level (MSL).
2. Well elevations and depths-to-water are referenced to top the of the well box.

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-DIESEL (PPB)
A-1	03-Apr-92	10-Apr-92	34000	6200	3900	410	3100	6100
A-1	17-Jul-92	21-Jul-92	5600	3000	500	<100	<100	N/A
A-1	13-Oct-92	19-Oct-92	5600	980	590	85	910	N/A
A-2	03-Apr-92	10-Apr-92	<30	<0.30	<0.30	<0.30	<0.30	<50
A-2	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	<0.50	<0.50	N/A
A-2	13-Oct-92	19-Oct-92	<50	0.57	<0.50	<0.50	<0.50	N/A
A-3	03-Apr-92	10-Apr-92	200	0.79	0.65	4.4	<0.30	130
A-3	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	1.3	2.3	N/A
A-3	13-Oct-92	19-Oct-92	<50	<0.50	<0.50	<0.50	<0.50	N/A
A-4	03-Apr-92	10-Apr-92	35	<0.30	<0.30	<0.30	<0.30	85
A-4	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	<0.50	<0.50	N/A
A-4	13-Oct-92	19-Oct-92	<50	<0.50	<0.50	<0.50	<0.50	N/A
AR-1	03-Apr-92	10-Apr-92	17000	310	1400	320	3000	12000
AR-1	17-Jul-92	29-Jul-92	44000	4300	9100	1800	10000	N/A
AR-1	13-Oct-92	20-Oct-92	32000	310	730	570	3100	22000*
AR-2	17-Jul-92	21-Jul-92	150	6.6	24	6.6	39	N/A
AR-2	13-Oct-92	20-Oct-92	<50	2.0	0.86	0.51	3.8	58*

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMIM CONTAMINANT LEVELS

Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680. ppb

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-DIESEL (PPB)

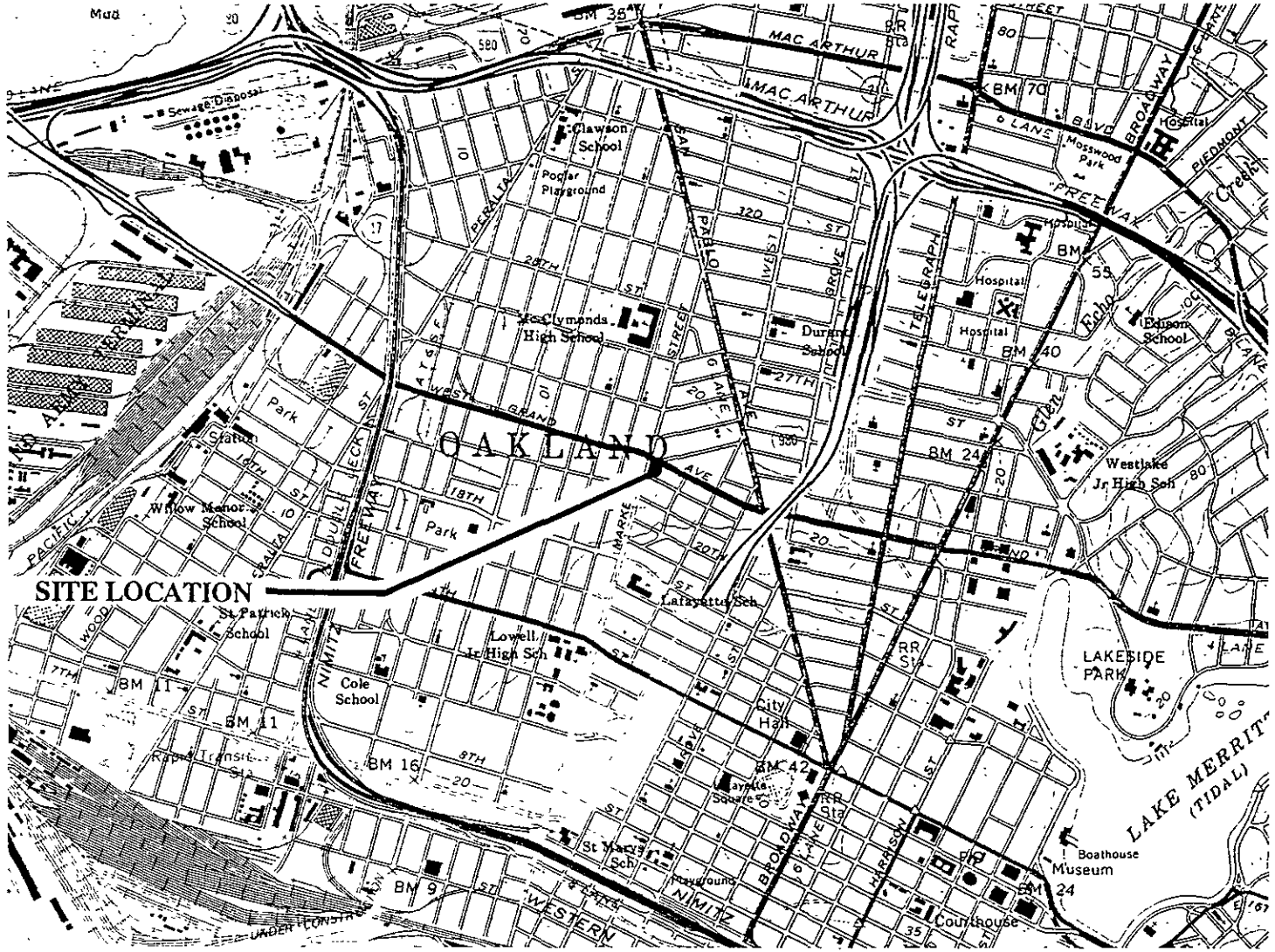
CURRENT DHS ACTION LEVELS

Toluene 100.0 ppb

TPH-D = Total Petroelum Hydrocarbons calculated as Diesel.
TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion
N/A = Not Analyzed
* = Reported as a non-diesel mix.

Notes: 1. DHS Action levels and MCL's are subject to change pending State of California review.
2. All data shown as <X are reported as ND (none detected).

ILLUSTRATIONS



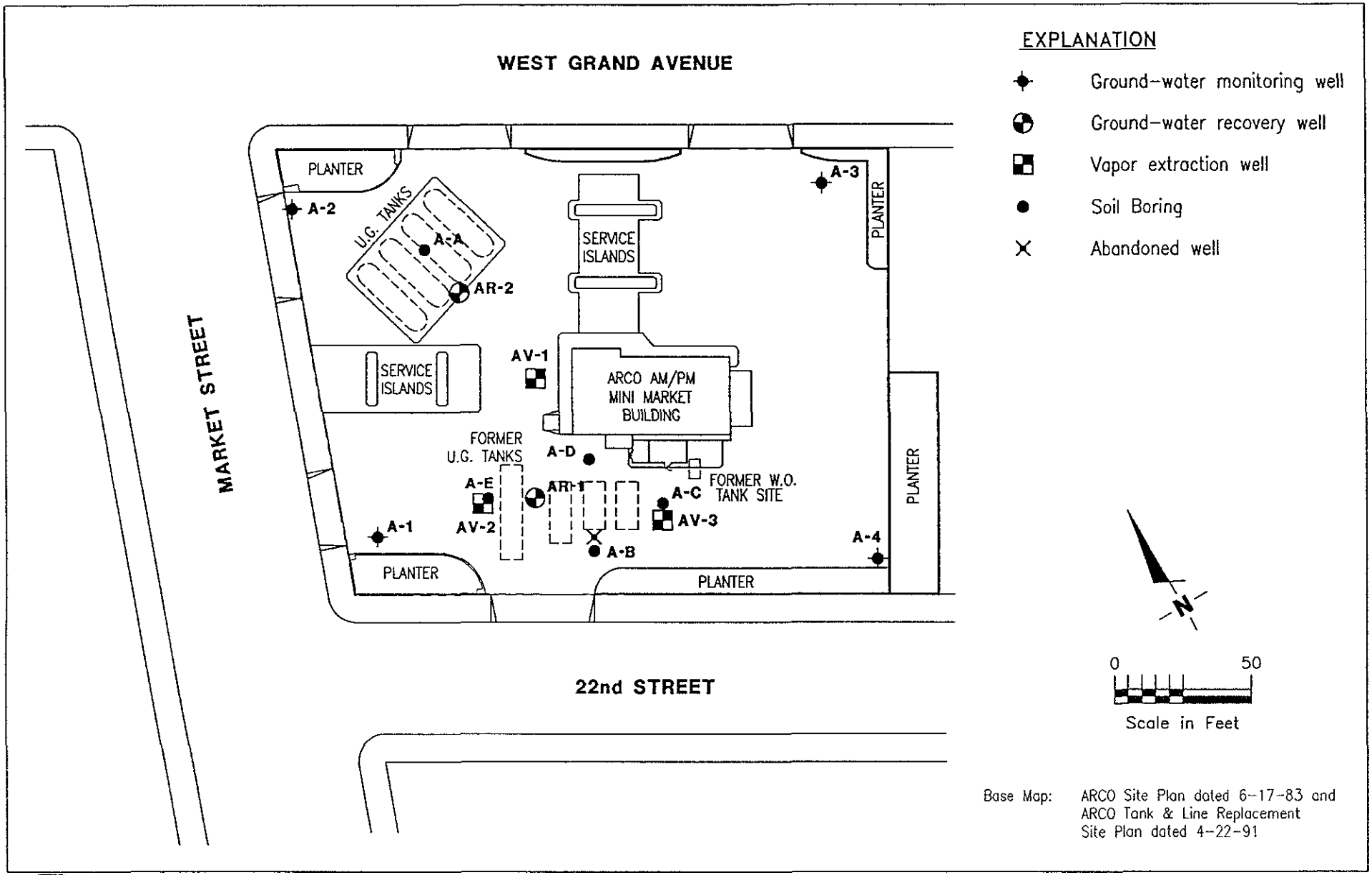
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7927		5/91	



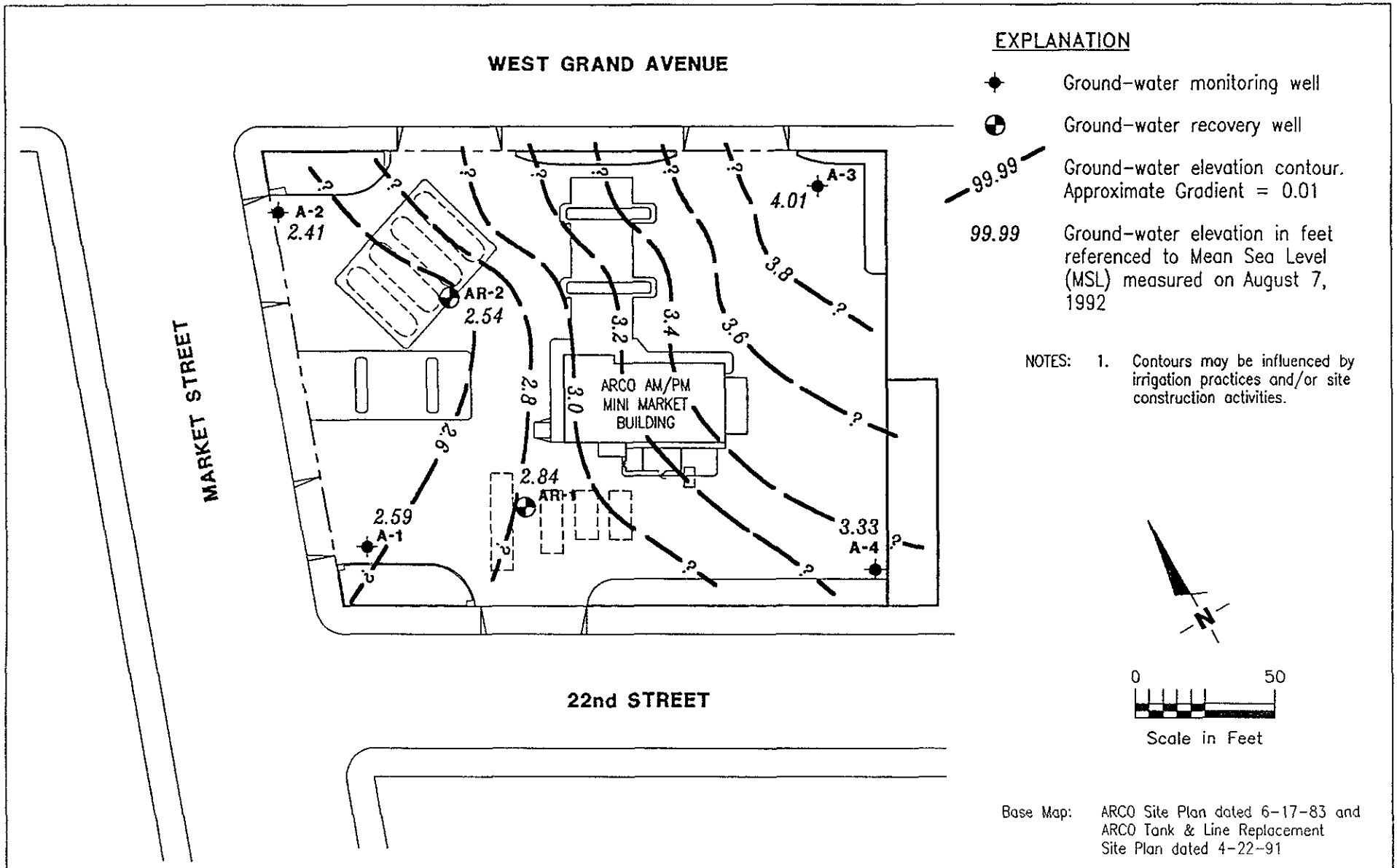
Base Map: ARCO Site Plan dated 6-17-83 and ARCO Tank & Line Replacement Site Plan dated 4-22-91

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7927		12/92	

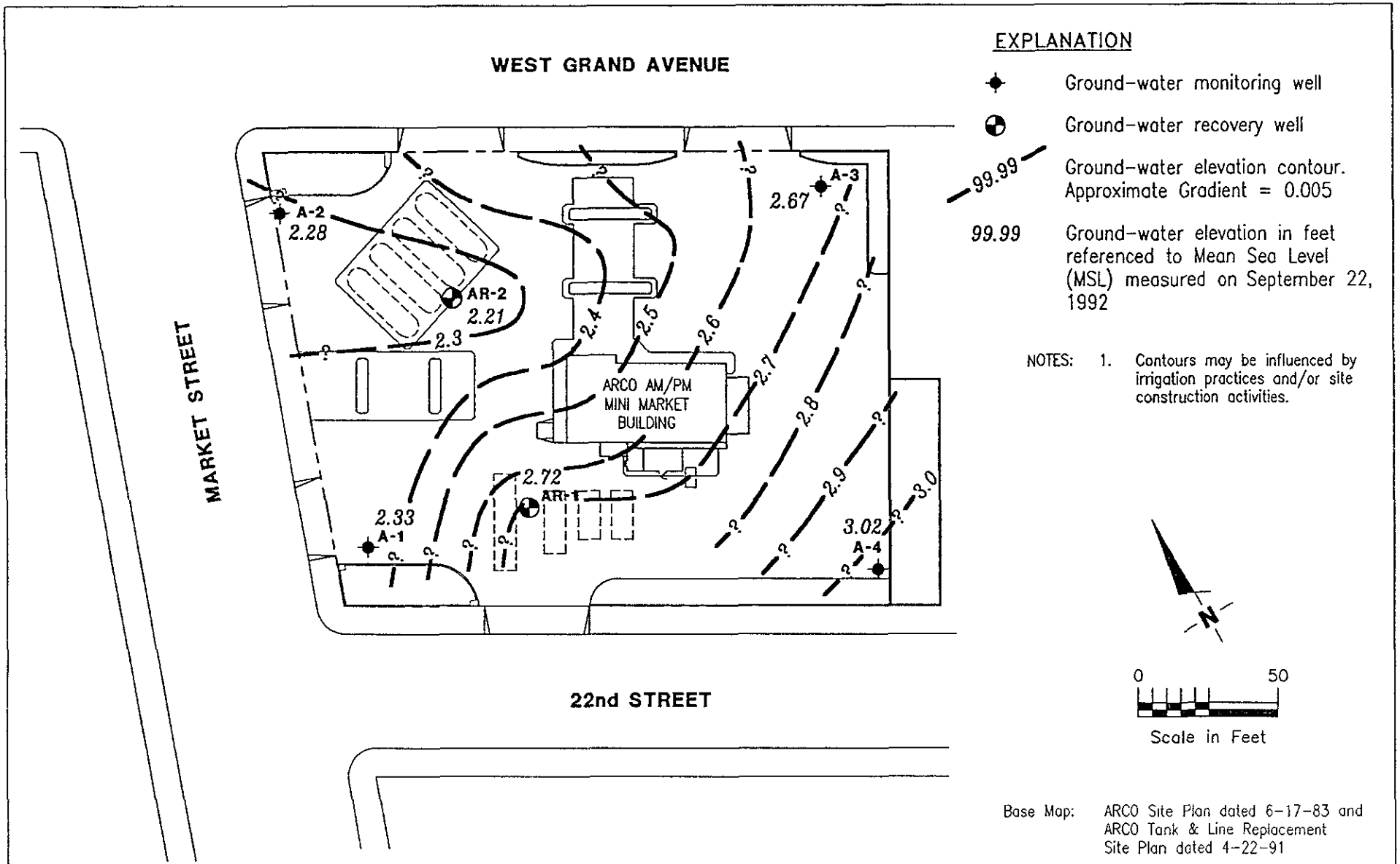


GeoStrategies Inc.

POTENTIOMETRIC MAP – AUGUST 7, 1992
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792701-5		12/92	

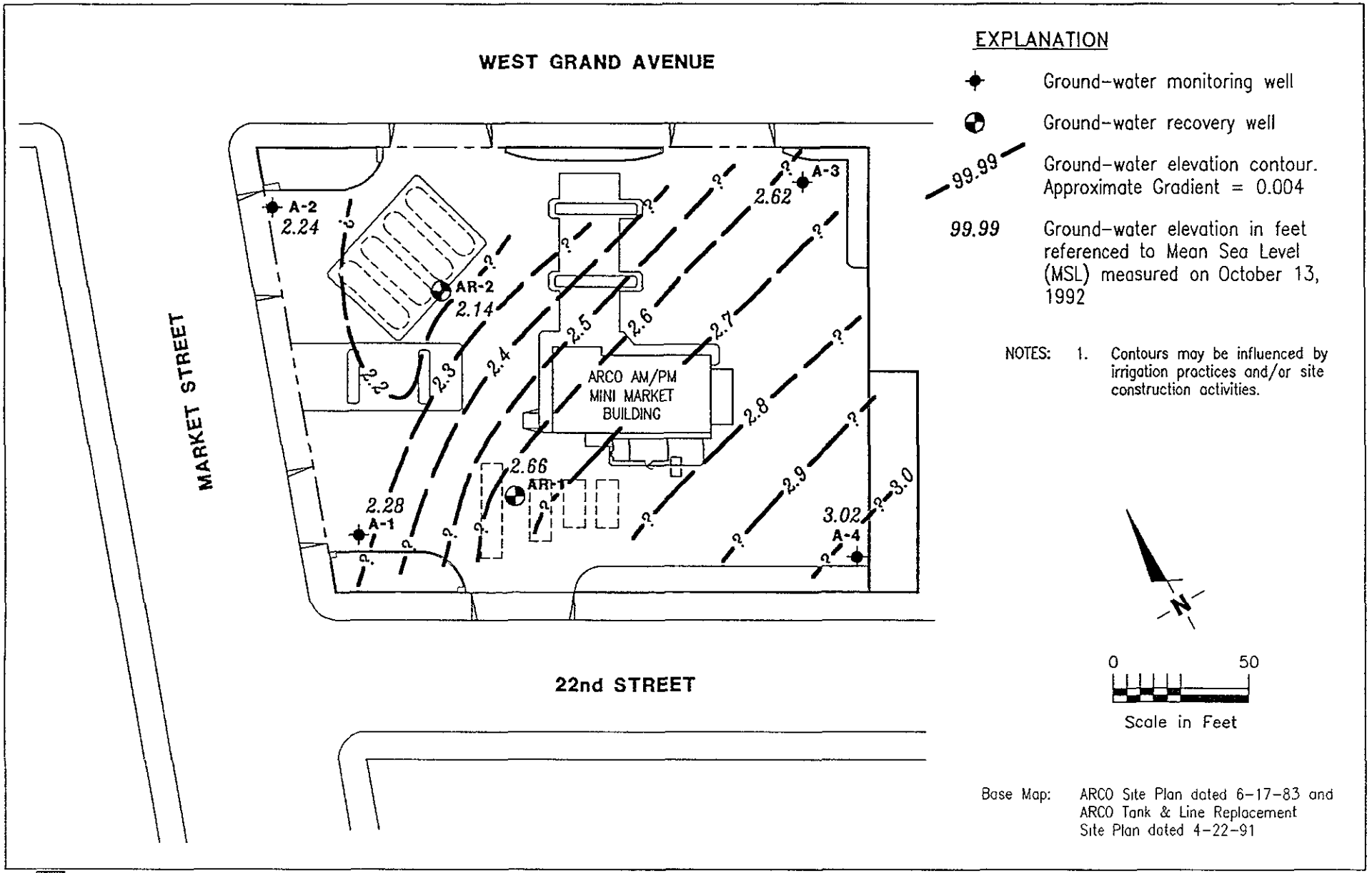


GeoStrategies Inc.

POTENTIOMETRIC MAP – SEPTEMBER 22, 1992
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792701-5		12/92	

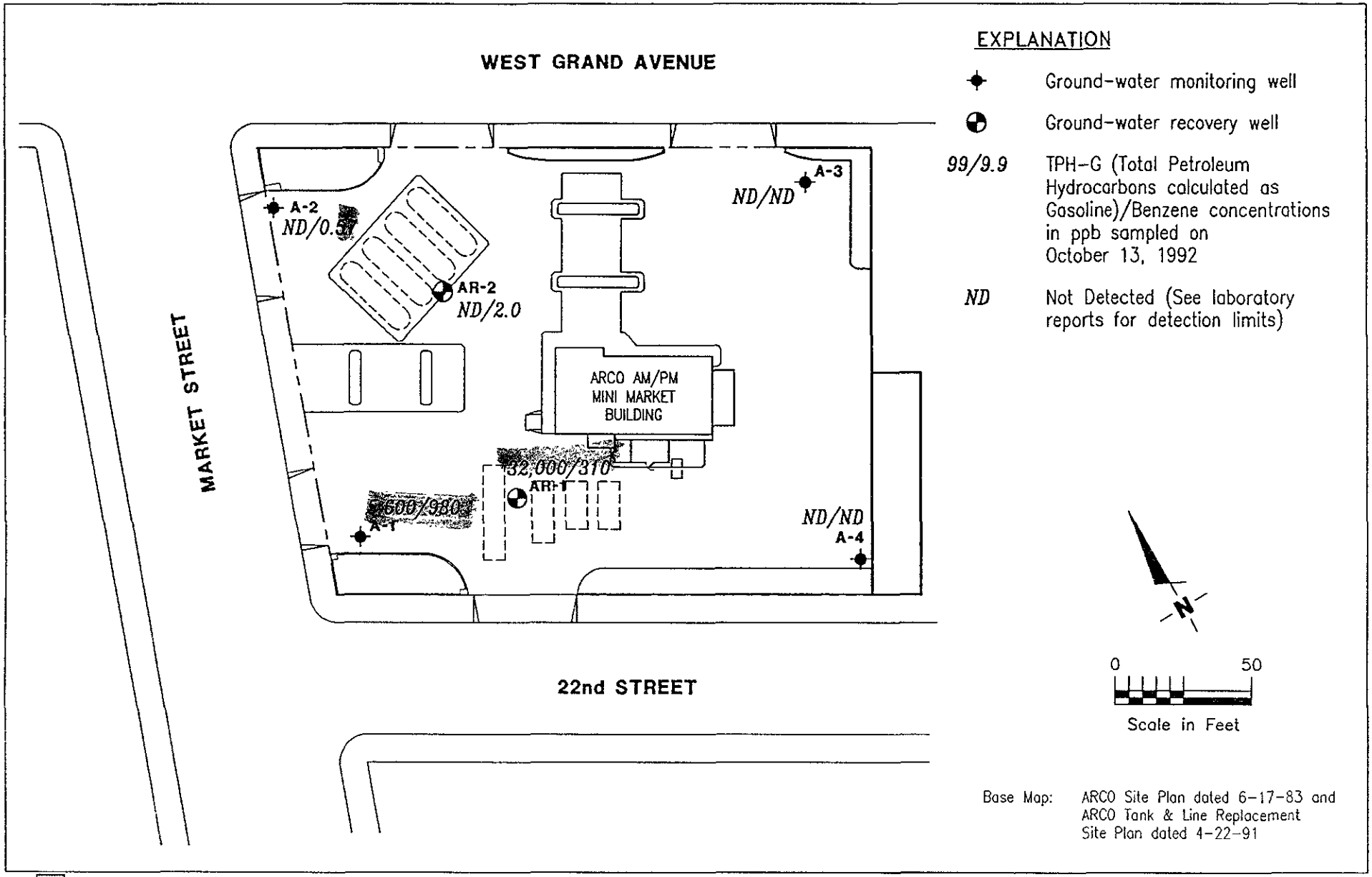


GeoStrategies Inc.

POTENTIOMETRIC MAP – OCTOBER 13, 1992
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792701-5	Rem	12/92	



GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
6

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792701-5		12/92	

APPENDIX A

EMCON GROUND-WATER MONITORING REPORTS

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date Sept 01, 1992
Project G70-52.01

To:
Mr. John Vargas
GeoStrategies Inc.
2140 West Winton Avenue
Hayward, California 94545

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	August 1992 monthly water level survey, ARCO
	station 2169, 889 West Grand Ave. Oakland, CA.

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

6/30/94

Robert C Porter

Robert Porter, Senior Project Engineer

927 - A

1938 Junction Avenue, San Jose California 95131-2102 (408) 453-0719, Fax (408) 453-0452

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-52.01 STATION ADDRESS : 889 West Grand Ave, Oakland, CA DATE : 8-7-92

ARCO STATION # : 2169 FIELD TECHNICIAN : Rich Schaeffer DAY : FRI

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	A-1	OK	yes	OK	2268	yes	12.16	12.16	N.D	N.D	24.5	—
2	A-2	OK	yes	OK	2268	yes	12.75	12.75	N.D	N.D	25.2	—
3	A-3	OK	yes	OK	2268	yes	12.37	12.37	N.D	N.D	29.0	—
4	A-4	OK	yes	OK	2268	yes	12.56	12.56	N.D	N.D	28.1	—
5	AR-1	OK	yes	OK	2268	yes	12.87	12.87	12.87	~~N.D~~	28.0	* Light yellow product Didn't separate in Bailer
6	AR-2	OK	NC*	NONE	NONE	yes	13.25	13.25	N.D	N.D	28.5	—
												Bc it coated the outside
												of Bailer
												* 5" DIA. Lid NEEDS
												+ Hex Bolt ???

SURVEY POINTS ARE TOP OF WELL BOXES

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
OCT 1 3 1992
GeoStrategies Inc.

Date October 3, 1992
Project 0G70-052.01

To:
Mr. John Vargas
GeoStrategies Inc.
2140 West Winton Avenue
Hayward, California 94545

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	September 1992 monthly water level survey, ARCO
	station 2169, 889 West Grand Ave. Oakland, CA.

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No. 4084 Exp. 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Jim Butera JB

Robert Porter, Senior Project Engineer

1921 Ringwood Avenue, San Jose California 95131-2102, (408) 453-0719, Fax (408) 453-0452

927-A

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-052.01 STATION ADDRESS : 889 West Grand Ave, Oakland, CA DATE : Sept. 22, 1992

ARCO STATION # : 2169 FIELD TECHNICIAN : Steve Horton DAY : Tuesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	A-1	good	yes	na	2268	yes	12.42	12.43	ND	ND	24.5	—
2	A-2	good	yes	na	2268	yes	12.88	12.89	ND	ND	25.2	—
3	A-3	good	yes	na	2268	yes	13.71	13.71	ND	ND	29.1	—
4	A-4	good	yes	na	2268	yes	12.87	12.87	ND	ND	28.4	locking cap and lock were off
5	AR-1	good	yes	na	2268	yes	12.99	12.98	ND *	ND *	27.7	HHC was coated with product but did not detect it checked w/ trailer but product would not
6	AR-2	good	yes	na	none	yes	13.58	13.58	ND	ND	29.3	—

SURVEY POINTS ARE TOP OF WELL BOXES

APPENDIX B
EMCON GROUND-WATER SAMPLING REPORT

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date October 29, 1992
Project 0G70-023.01

To:
Mr. John Vargas
GeoStrategies, Inc.
2140 West Winton Avenue
Hayward, California 94545

We are enclosing:

Copies	Description
1	Depth To Water / Floating Product Survey Results
1	Summary of Groundwater Monitoring Data
1	Certified Analytical Reports with Chain-of-Custody
6	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the fourth quarter 1992 monitoring event at ARCO service station 2169, 889 West Grand Avenue, Oakland, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Reviewed by:

Jim Butera JB

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-052.01 STATION ADDRESS : 889 West Grand Ave, Oakland, CA DATE : 10-13-92

ARCO STATION # : 2169 FIELD TECHNICIAN : L. RATH DAY : TUESDAY

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	A-1	good	Yes	good	2268	good	12.47	12.48	ND	ND	24.4	—
2	A-2	good	Yes	good		good	12.92	12.93	ND	ND	26.2	—
3	A-3	good	Yes	good		good	13.76	13.76	ND	ND	30.1	—
4	A-4	good	Yes	good		good	12.87	12.87	ND	ND	28.4	—
5	AR-1	good	Yes	good	✓	good	13.05	13.06	ND	ND	27.8	—
6	AR-2	good	Yes	good	NO Lock	good	27. 13.65	13.65	ND	ND	29.3	—

SURVEY POINTS ARE TOP OF WELL BOXES

Summary of Groundwater Monitoring Data
Fourth Quarter 1992
ARCO Service Station 2169
889 West Grand Avenue, Oakland, California
micrograms per liter (µg/l) and milligrams per liter (mg/l)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	TPH as Diesel (µg/l)
A-1(23)	10/13/92	12.47	ND.[2]	5,600.	980.	590.	85.	910.	NR.[3]
A-2(25)	10/13/92	12.92	ND.	<50.	0.57	<0.5	<0.5	<0.5	NR.
A-3(29)	10/13/92	13.76	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.
A-4(27)	10/13/92	12.87	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.
AR-1(26)	10/13/92	13.05	ND.	32,000.	310.	730.	570.	3,100.	22,000.*
AR-2(25)	10/13/92	13.65	ND.	<50.	2.0	0.86	0.51	3.8	58.*

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. NR. = Not reported, well was not sampled for the above parameter

* = Chromatogram does not match typical diesel fingerprint, number reported as a Non-Diesel Mix

SEQUOIA ANALYTICAL

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

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Project: Arco 2169

Enclosed are the results from 6 water samples received at Sequoia Analytical on October 14,1992. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
2102128	Water, A-1(23)	10/13/92	EPA 5030/8015/8020
2102129	Water, A-2(25)	10/13/92	EPA 5030/8015/8020
2102130	Water, A-3(29)	10/13/92	EPA 5030/8015/8020
2102131	Water, A-4(27)	10/13/92	EPA 5030/8015/8020
2102132	Water, AR-1(26)	10/13/92	EPA 3510/3520/8015 EPA 5030/8015/8020
2102133	Water, AR-2(25)	10/13/92	EPA 3510/3520/8015 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

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	Arco 2169	Sampled: Oct 13, 1992
1938 Junction Avenue	Sample Matrix:	Water	Received: Oct 14, 1992
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported: Oct 27, 1992
Attention: Jim Butera	First Sample #:	210-2128	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 210-2128 A-1(23)	Sample I.D. 210-2129 A-2(25)	Sample I.D. 210-2130 A-3(29)	Sample I.D. 210-2131 A-4(27)	Sample I.D. 210-2132 AR-1(26)	Sample I.D. 210-2133 AR-2(25)
Purgeable Hydrocarbons	50	5,600	N.D.	N.D.	N.D.	32,000	N.D.
Benzene	0.50	980	0.57	N.D.	N.D.	310	2.0
Toluene	0.50	590	N.D.	N.D.	N.D.	730	0.86
Ethyl Benzene	0.50	85	N.D.	N.D.	N.D.	570	0.51
Total Xylenes	0.50	910	N.D.	N.D.	N.D.	3,100	3.8
Chromatogram Pattern:		Gas	Discrete Peaks	--	--	Gas	Gas

Quality Control Data

Report Limit Multiplication Factor:	50	1.0	1.0	1.0	200	1.0
Date Analyzed:	10/19/92	10/20/92	10/19/92	10/19/92	10/20/92	10/20/92
Instrument Identification:	GCHP-3	GCHP-6	GCHP-3	GCHP-2	GCHP-6	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	88	74	99	96	84	92

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	Arco 2169	Sampled:	Oct 13, 1992
1938 Junction Avenue	Sample Matrix:	Water	Received:	Oct 14, 1992
San Jose, CA 95131	Analysis Method:	EPA 3510/3520/8015	Reported:	Oct 27, 1992
Attention: Jim Butera	First Sample #:	210-2132		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 210-2132 AR-1(26)	Sample I.D. 210-2133 AR-2(25)	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Extractable Hydrocarbons	50	22,000	58				
Chromatogram Pattern:		Non-Diesel Mix C9-C14	Non-Diesel Mix <C12				

Quality Control Data

Report Limit Multiplication Factor:	20	1.0
Date Extracted:	10/15/92	10/15/92
Date Analyzed:	10/21/92	10/20/92
Instrument Identification:	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: Arco 2169

QC Sample Group: 2102128, 30

Reported: Oct 27, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Oct 19, 1992	Oct 19, 1992	Oct 19, 1992	Oct 19, 1992
QC Sample #:	GBLK101992	GBLK101992	GBLK101992	GBLK101992
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.8	10	9.7	30
Matrix Spike % Recovery:	98	100	97	100
Conc. Matrix Spike Dup.:	10	10	10	30
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	2.0	0.0	3.0	0.0

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

SEQUOIA ANALYTICAL

Maile A. Springer
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

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: Arco 2169

QC Sample Group: 2102129, 32

Reported: Oct 27, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	R.Lee	R.Lee	R.Lee	R.Lee
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Oct 20, 1992	Oct 20, 1992	Oct 20, 1992	Oct 20, 1992
QC Sample #:	GBLK102092	GBLK102092	GBLK102092	GBLK102092
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.9	10	10	30
Matrix Spike % Recovery:	99	100	100	100
Conc. Matrix Spike Dup.:	10	11	11	32
Matrix Spike Duplicate % Recovery:	100	110	110	107
Relative % Difference:	1.0	9.5	9.5	6.4

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

SEQUOIA ANALYTICAL

Maile A. Springer
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

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: Arco 2169

QC Sample Group: 2102131, 33

Reported: Oct 27, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Oct 19, 1992	Oct 19, 1992	Oct 19, 1992	Oct 19, 1992
QC Sample #:	GBLK101992	GBLK101992	GBLK101992	GBLK101992
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.3	9.3	9.3	28
Matrix Spike % Recovery:	93	93	93	93
Conc. Matrix Spike Dup.:	9.7	9.7	9.7	29
Matrix Spike Duplicate % Recovery:	97	97	97	97
Relative % Difference:	4.2	4.2	4.2	3.5

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

SEQUOIA ANALYTICAL

Maile A. Springer
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

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: Arco 2169

QC Sample Group: 2102132 - 33

Reported: Oct 27, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Extractable Hydrocarbons

Method:	EPA 8015
Analyst:	C.Lee
Reporting Units:	mg/L
Date Analyzed:	Oct 16, 1992
QC Sample #:	DBLK101592-X

Sample Conc.:	N.D.
Spike Conc. Added:	300
Conc. Matrix Spike:	160
Matrix Spike % Recovery:	53
Conc. Matrix Spike Dup.:	200
Matrix Spike Duplicate % Recovery:	67
Relative % Difference:	22

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

SEQUOIA ANALYTICAL

Maile A. Springer
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

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. EMCGC-92-1

ARCO Facility no 2169	City (Facility) OAKLAND	Project manager (Consultant) Jim Butera	Laboratory name SEQUOIA
ARCO engineer Kyle Christie	Telephone no (ARCO) 415 571-2434	Telephone no (Consultant) 408 453-0719	Fax no (Consultant) 408 453-0451
Consultant name EMCON ASSOCIATES	Address (Consultant) 1938 JUNCTION AVE San Jose		Contract number 07-093

Method of shipment: Courier will pick up

Sample I.D	Lab no	Container no	Matrix: Soil	Water	Other	Preservation: Ice	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 ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A1(25)		2		X		X	HCl	10-13-92	1735		X					9102	9108					
A2(25)		2		X		X	HCl	10-13-92	1220		X						9129					
A3(25)		2		X		X	HCl	10-13-92	1305		X						9130					
A4(25)		2		X		X	HCl	10-13-92	1336		X						9131					
MW1(25)		4		X		X	HCl	10-13-92	1420		X	X					9132					
MW2(25)		4		X		X	HCl	10-13-92	1505		X	X					9133					

COPY

Special detection Limit/reporting: Lowest possible

Special QA/QC: AS Normal

Remarks: 2-40ml HCl Vials

Lab number

Turnaround time

Priority Rush 1 Business Day ☐

Rush 2 Business Days ☐

Expedited 5 Business Days ☐

Standard 10 Business Days ☒

Condition of sample

Temperature received:

	Date	Time
Relinquished by sampler: Lee Roth	10-13-92	1317
Relinquished by: [signature]	10/14/92	1530
Relinquished by		

	Date	Time
Received by: [signature]		
Received by: [signature]		
Received by laboratory: Jan Cash	10 14 92	1530

Distribution White copy — Laboratory, Canary copy — ARCO Environmental Engineering, Pink copy — Consultant

APPC-3292 (2-91)

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 06 70-052.01 SAMPLE ID: A-1 (23)

PURGED BY: L. RATH CLIENT NAME: ARCO 2169

SAMPLED BY: L. RATH LOCATION: Oakland CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 41.43

DEPTH TO WATER (feet): 12.48 CALCULATED PURGE (gal.): 22.17

DEPTH OF WELL (feet): 24.4 / 11.92 ACTUAL PURGE VOL. (gal.): 22.5

DATE PURGED: 10-13-92 Start (2400 Hr) 1111 End (2400 Hr) 1130

DATE SAMPLED: 10-13-92 Start (2400 Hr) 1135 End (2400 Hr) ____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1117	4.5	6.92	4550	70.1	gray	Heavy
1121	9.0	6.63	1591	69.8	gray	Heavy
1124	13.5	6.55	1429	70.0	gray	Heavy
1127	18.0	6.70	1434	69.8	gray	Heavy
1130	22.5	6.70	1429	69.5	gray	Heavy

D. O. (ppm): NR ODOR: Strong NR (COBALT 0 - 100) NR (NTU 0 - 200)

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: good LOCK #: 2268

REMARKS: ____

Meter Calibration: Date: 10-13-92 Time: 1105 Meter Serial #: 5516 Temperature °F: 72.8

(EC 1000 985 / 1000) (DI 31.8) (pH 7 7.02 / 7.00) (pH 10 10.09 / 10.00) (pH 4 3.96 / ____)

Location of previous calibration: ____

TR

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 20710-052.01 SAMPLE ID: A-2 (25)

PURGED BY: L RATIT CLIENT NAME: ARCO 2169

SAMPLED BY: L RATIT LOCATION: Oakland CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 41.93

DEPTH TO WATER (feet): 12.94 CALCULATED PURGE (gal.): 24.60

DEPTH OF WELL (feet): 26.2 / 13.26 ACTUAL PURGE VOL. (gal.): 25-0

DATE PURGED: 10-13-92 Start (2400 Hr) 1155 End (2400 Hr) 1212

DATE SAMPLED: 10-13-92 Start (2400 Hr) 1220 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1158	5	6.62	1227	[illegible]	Brown	Heavy
1203	10	6.76	1123	69.5	Brown	Heavy
1206	15	6.69	1109	69.3	Brown	Heavy
1209	20	6.73	1100	69.2	Brown	Heavy
1212	25	6.75	1104	68.9	Brown	Heavy

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

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: Good LOCK #: 2268

REMARKS: ____

Meter Calibration: Date: 10-13-92 Time: 1054 Meter Serial #: 5510 Temperature °F: ____

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

Location of previous calibration: A-1

TB - 1 6

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 7070-052.01 SAMPLE ID: A-3 (29)

PURGED BY: L. RATIT CLIENT NAME: ARCO #69

SAMPLED BY: L. RATIT LOCATION: Oakland CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 6.07

DEPTH TO WATER (feet): 13.76 CALCULATED PURGE (gal.): 30 39

DEPTH OF WELL (feet): 30.1 (16.34) ACTUAL PURGE VOL. (gal.): 30.5

DATE PURGED: 10-13-92 Start (2400 Hr) 1238 End (2400 Hr) 1254

DATE SAMPLED: 10-13-92 Start (2400 Hr) 1305 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1240	6	6.60	1003	68.6	Brown	Heavy
1244	12	6.68	995	68.7	Brown	Heavy
1248	18	6.71	993	68.6	Brown	Heavy
1251	24	6.74	990	67.9	Brown	Heavy
1254	30.5	6.75	992	68.0	Brown	Heavy

D. O. (ppm): NR ODOR: NONE NR (COBALT 0 - 100) NR (NTU 0 - 200)

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	X Bailer (Teflon®)
____ Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
X Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: good LOCK #: 2268

REMARKS: ____

Meter Calibration: Date: 10 13 92 Time: 1105 Meter Serial #: 5516 Temperature °F: ____

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

Location of previous calibration: A-1

JB

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-052.01 | SAMPLE ID: A-4(27)

PURGED BY: L.RATH | CLIENT NAME: ARCO 2169

SAMPLED BY: L.RATH | LOCATION: Oakland CA

TYPE: Ground Water X | Surface Water ___ | Treatment Effluent ___ | Other ___

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

CASING ELEVATION (feet/MSL): NR | VOLUME IN CASING (gal.): 5.70

DEPTH TO WATER (feet): 12.86 | CALCULATED PURGE (gal.): 28.53

DEPTH OF WELL (feet): 28.2 | ACTUAL PURGE VOL (gal.): 30.0

DATE PURGED: 10-13-92 | Start (2400 Hr) 1315 | End (2400 Hr) 1331

DATE SAMPLED: 10-13-92 | Start (2400 Hr) 1336 | End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1317	6	7.11	1005	69.8	grn/	Heavy
1320	12	7.25	1008	68.9	grn/	Heavy
1324	18	7.32	998	68.5	grn/	Heavy
1328	24	7.40	988	68.3	grn/	Heavy
1331	30	7.45	991	68.4	grn/	Heavy

D. O. (ppm): NR | ODOR: Slight | COLOR (COBALT 0 - 100): NR | TURBIDITY (NTU 0 - 200): NR

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good | LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-13-92 | Time: 1105 | Meter Serial #: 5516 | Temperature °F: ___

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

Location of previous calibration: A-1

Signature: [signature] | Reviewed By: JB | Page 4 of 6

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-052.01 SAMPLE ID: AR-1 (24)

PURGED BY: L RATH CLIENT NAME: ARCO 2169

SAMPLED BY: L.RATH LOCATION: Oakland CA

TYPE: Ground Water X Surface Water ____ Treatment Effluent ____ Other ____

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

CASING ELEVATION (feet/MSL): N/R VOLUME IN CASING (gal.): 21.60

DEPTH TO WATER (feet): 13.08 CALCULATED PURGE (gal.): 108.04

DEPTH OF WELL (feet): 27.8 ACTUAL PURGE VOL (gal.): 110.0

DATE PURGED: 10-13-92 Start (2400 Hr) 1350 End (2400 Hr) 1418

DATE SAMPLED: 10-13-92 Start (2400 Hr) 1420 End (2400 Hr) ____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1355	22	6.88	1000	68.5	gray	Heavy
1400	44	7.68	993	68.3	gray	Heavy
1407	66	7.74	982	68.9	gray	Heavy
1412	88	7.68	984	68.7	gray	Heavy
1418	110	7.64	988	68.9	gray	Heavy

D. O. (ppm): N/R ODOR: Slight N/R (COBALT 0 - 100) N/R (NTU 0 - 200)

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
____ 2" Bladder Pump	____ Bailer (Teflon®)	____ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	____ Bailer (PVC)	____ DDL Sampler	____ Bailer (Stainless Steel)
____ Submersible Pump	____ Bailer (Stainless Steel)	____ Dipper	____ Submersible Pump
____ Well Wizard™	____ Dedicated	____ Well Wizard™	____ Dedicated
Other: ____		Other: ____	

WELL INTEGRITY: good LOCK #: 2268

REMARKS: ____

Meter Calibration: Date: 10-13-92 Time: 1105 Meter Serial #: 5516 Temperature °F: ____

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

Location of previous calibration: A-1

Signature: ____ Reviewed By: JB Page: 5 of 6

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-052.01 SAMPLE ID: MW-2 (25)

PURGED BY: L. RATH CLIENT NAME: ARCO 2169

SAMPLED BY: L. RATH LOCATION: Oakland CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 8.72

DEPTH TO WATER (feet): 12.90 CALCULATED PURGE (gal.): 43.62

DEPTH OF WELL (feet): 26.2 ACTUAL PURGE VOL (gal.): 45.0

DATE PURGED: 10-13-92 Start (2400 Hr) 1433 End (2400 Hr) 1500

DATE SAMPLED: 10-13-92 Start (2400 Hr) 1505 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1438	9	6.29	992	68.5	Clear	Light
1442	18	6.84	1028	68.0	Brown	Heavy
1447	27	6.89	1088	67.9	Brown	Heavy
1453	36	6.85	1090	67.5	Brown	Heavy
1500	45	6.83	1087	67.6	Brown	Heavy

D. O. (ppm): NR ODOR: Slight COLOR (visual): NR (COBALT 0 - 100) TURBIDITY (visual): NR (NTU 0 - 200)

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-13-92 Time: 1105 Meter Serial #: 5516 Temperature °F: ___

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

Location of previous calibration: ___

Sample Point Reviewed By: JB Page 6 of 6