GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(510) 352-4800

April 1, 1992

County of Alameda
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Attention: Ms. Susan L. Hugo Certified Mail

Reference: ARCO Service Station #4931
731 W. MacArthur Street
Oakland, California 94611

Ms. Hugo:

As requested of ARCO Products Company, we are forwarding the Quarterly Monitoring Report dated March 31, 1992 for the above referenced location. This report presents the results of ground-water monitoring and sampling for the first quarter of 1992.

If you should have any questions or comments, please call.

Sincerely,

John F. Vargas

JFV:rcm

Enclosure

cc: Mr. Charles Carmel, ARCO Products Company
Mr. H. C. Winsor, ARCO Products Company
Mr. Eddy So, Regional Water Quality Control Board (Certified Mail)

ARCO Products Company
2000 Alameda de las Pulgas
Mailing Address: Box 5811
San Mateo, California 94402
Telephone 415 571 2400

Date : April 1, 1992

RE: ARCO Station# 4931

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached proposal or report are true and correct."

Submitted by:

Kyle A. Christie
Environmental Engineer

GeoStrategies Inc.

QUARTERLY MONITORING REPORT

ARCO Service Station No. 4931
731 West MacArthur Boulevard
Oakland, CA

790901-17

March 31, 1992

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(510) 352-4800

March 31, 1992

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

Attn: Mr. Charles Carmel

Re: QUARTERLY MONITORING REPORT
ARCO Service Station No. 4931
731 West MacArthur Boulevard
Oakland, California

Gentlemen:

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

There are currently eleven monitoring wells at the site; Wells A-2 through A-12 (Plate 2). These wells were installed between 1982 and 1987 by Groundwater Technology, Inc. and Pacific Environmental Group. Wells A-2 through A-10 are on-site and Wells A-11 and A-12 are off-site. These wells were installed to evaluate the horizontal and vertical extent of petroleum hydrocarbons in groundwater beneath the site.

CURRENT QUARTER SAMPLING RESULTS

Depth to water-level measurements were obtained in each monitoring well prior to sampling. Static ground-water levels were measured from the surveyed top of the 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 a quarterly potentiometric map (Plate 2). Shallow ground-water flow is to the southwest at an approximate hydraulic gradient of 0.015.

Each well was checked for the presence of floating product. Floating product was observed in Wells A-4 and A-8 at measured thicknesses of 0.02 and 1.40 feet, respectively. Depth to groundwater and floating product measurements are summarized in the attached EMCON Associates (EMCON) ground - water sampling report (Appendix A).

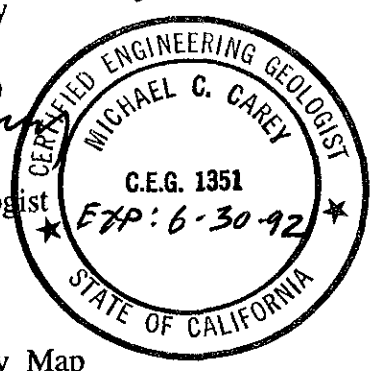
Ground-water samples were collected on February 1 and 2, 1992. Samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline), according to EPA Method 8015 (Modified) and for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020. The ground-water samples were analyzed by Sequoia Analytical (Sequoia), a California State-certified laboratory located in Redwood City, California. These data are summarized in Appendix A. Current chemical analytical data have been added to the Historical Groundwater Quality Database presented in Table 1. A chemical isoconcentration map for benzene is presented on Plate 3.

If you have any questions, please call.

GeoStrategies Inc. by,

Robert C. Mallory
Geologist

Michael C. Carey
Engineering Geologist
C.E.G. 1351



RCM/MCC/kjj

Plate 1. Vicinity Map
Plate 2. Site Plan/ Potentiometric Map
Plate 3. Benzene Isoconcentration Map

Appendix A: EMCON Ground-water Sampling Report

QC Review: _____

790901-17

TABLE 1

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
21-Mar-86	A-2	31000.	----	----	----	----
07-Jan-88	A-2	12000.	920.	1500.	----	4000.
20-Mar-89	A-2	22000.	1200.	1800.	1200.	7700.
24-May-89	A-2	9000.	460.	260.	250.	2400.
18-Aug-89	A-2	14000.	900.	200.	<200.	1300.
27-Oct-89	A-2	16000.	1200.	340.	90.	3100.
15-Jan-90	A-2	9900.	1100.	460.	150.	2900.
04-Apr-90	A-2	16000.	1100.	400.	380.	3900.
30-Jul-90	A-2	16000.	1400.	340.	290.	3600.
30-Jul-90	A-2	16000.	1400.	340.	290.	3600.
29-Oct-90	A-2	14000.	1100.	210.	66.	2700.
16-Jan-91	A-2	15000.	1200.	800.	190.	4600.
12-Apr-91	A-2	16000	640	290	280	2600
21-Oct-91	A-2	26000	1100	560	81	3900
02-Feb-92	A-2	11000	150	13	91	94
21-Mar-86	A-3	1000.	----	----	----	----
07-Jan-88	A-3	250.	2.3	8.	----	21.
20-Mar-89	A-3	230.	1.6	<1.	3.	3.
24-May-89	A-3	170.	0.9	2.	1.	<3.
18-Aug-89	A-3	180.	0.7	1.	<1.	<3.
27-Oct-89	A-3	120.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-3	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-3	88.	1.2	2.0	0.8	4.
30-Jul-90	A-3	120.	8.3	2.9	2.3	12.
29-Oct-90	A-3	780.	10.	27.	18.	85.
16-Jan-91	A-3	69.	2.0	3.5	<0.5	9.6
12-Apr-91	A-3	<30	<0.30	<0.30	<0.30	<0.30
10-Jul-91	A-3	59	<0.30	<0.30	0.50	0.51
21-Oct-91	A-3	56	0.44	0.77	0.41	1.3

TABLE 1

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
02-Feb-92	A-3	Well Inaccessible				
20-Mar-89	A-4	360000.	1500.	3700.	6500.	35000.
24-May-89	A-4	1500000.	1000.	2000.	6000.	23000.
04-Apr-90	A-4	40000.	680.	320.	1400.	4900.
12-Apr-91	A-4	1800	<60	90	650	1700
10-Jul-91	A-4	61000	2700	8500	1700	8200
20-Sep-91	A-4	N/A	1200	5300	1500	11000
02-Feb-92	A-4	Floating Product: 0.02 Feet				
21-Mar-86	A-5	88.	----	----	----	----
07-Jan-88	A-5	<50.	0.5	1.	----	4.
20-Mar-89	A-5	60.	0.5	1.	2.	10.
24-May-89	A-5	<50.	0.5	<1.	<1.	<3.
18-Aug-89	A-5	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-5	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-5	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-5	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-5	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-5	280.	<0.5	<0.5	<0.5	<0.5
16-Jan-91	A-5	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-5	<30	<0.30	<0.30	<0.30	0.84
10-Jul-91	A-5	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-5	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-5	<30	1.7	<0.30	<0.30	<0.30
21-Mar-86	A-6	<10.	----	----	----	----
21-Mar-86	A-6	<10.	----	----	----	----
07-Jan-88	A-6	390.	54.	89.	----	110.
20-Mar-89	A-6	220.	33.	21.	9.	39.
24-May-89	A-6	110.	13.	6.	3.	13.

TABLE 1

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
18-Aug-89	A-6	<50.	2.1	1.	<1.	<3.
27-Oct-89	A-6	55.	3.8	1.6	1.7	6.
15-Jan-90	A-6	100.	12.	2.5	5.5	18.
04-Apr-90	A-6	100.	17.	7.1	5.5	18.
30-Jul-90	A-6	<50.	2.6	<0.5	<0.5	1.2
29-Oct-90	A-6	<50.	0.7	<0.5	<0.5	<0.5
16-Jan-91	A-6	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-6	430	24	5.1	9.4	32
10-Jul-91	A-6	<30	1.4	0.39	0.47	1.5
21-Oct-91	A-6	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-6	<30	2.0	0.40	0.58	1.7
07-Jan-88	A-7	<50.	<0.5	1.	----	4.
20-Mar-89	A-7	<50.	0.9	<1.	<1.	<3.
24-May-89	A-7	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-7	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-7	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-7	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-7	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-7	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-7	<50.	2.7	7.6	1.1	3.0
16-Jan-91	A-7	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-7	<30	<0.30	<0.30	<0.30	0.48
10-Jul-91	A-7	<30	<0.30	0.49	<0.30	1.2
21-Oct-91	A-7	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-7	<30	<0.30	<0.30	<0.30	<0.30
07-Jan-88	A-9	300.	45.	14.	----	43.
21-Mar-89	A-9	50.	2.8	1.	1.	3.
24-May-89	A-9	120.	26.	12.	4.	79.
18-Aug-89	A-9	14000.	400.	800.	400.	2000.

TABLE 1

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
27-Oct-89	A-9	1700.	150.	36.	30.	110.
15-Jan-90	A-9	860.	140.	58.	38.	140.
04-Apr-90	A-9	620.	36.	13.	9.4	32.
30-Jul-90	A-9	180.	77.	1.6	2.1	4.2
29-Oct-90	A-9	110.	30.	3.7	4.1	8.3
16-Jan-91	A-9	<50.	15.	<0.5	<0.5	0.6
12-Apr-91	A-9	130	52	0.83	5.3	6.0
10-Jul-91	A-9	<30	7.8	<0.30	<0.30	<0.30
20-Sep-91	A-9	N/A	21	<2.0	<2.0	<2.0
21-Oct-91	A-9	240	63	0.65	5.1	1.6
01-Feb-92	A-9	320	77	0.95	11	6.5
07-Jan-88	A-10	<50.	0.6	11.	----	4.
20-Mar-89	A-10	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-10	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-10	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-10	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-10	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-10	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-10	<50.	2.3	6.9	1.2	3.0
16-Jan-91	A-10	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-10	<30	0.67	0.55	<0.30	0.90
10-Jul-91	A-10	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-10	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-10	Well Inaccessible				
07-Jan-88	A-11	<50.	1.1	2.	----	5.
20-Mar-89	A-11	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-11	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-11	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-11	<50.	<0.5	<0.5	<0.5	<1.

TABLE 1

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	ARSENIC (PPB)	LEAD (PPB)
15-Jan-90	A-11	<50.	<0.5	<0.5	<0.5	<1.		
04-Apr-90	A-11	<50.	<0.5	<0.5	<0.5	<1.		
30-Jul-90	A-11	<50.	<0.5	0.6	<0.5	0.5		
29-Oct-90	A-11	<50.	0.6	2.4	0.6	1.5		
16-Jan-91	A-11	<50.	<0.5	<0.5	<0.5	<0.5		
12-Apr-91	A-11	<30	<0.30	0.37	<0.30	<0.30		
10-Jul-91	A-11	<30	0.61	0.46	<0.30	1.0		
21-Oct-91	A-11	<30	<0.30	<0.30	<0.30	<0.30		
01-Feb-92	A-11	<30	<0.30	<0.30	<0.30	<0.30		
07-Jan-88	A-12	<50.	<0.5	2.	----	<4.		
20-Mar-89	A-12	<50.	<0.5	<1.	<1.	<3.		
24-May-89	A-12	<50.	<0.5	<1.	<1.	<3.		
18-Aug-89	A-12	<50.	<0.5	<1.	<1.	<3.		
27-Oct-89	A-12	<50.	<0.5	<0.5	<0.5	<1.		
15-Jan-90	A-12	<50.	<0.5	<0.5	<0.5	<1.		
04-Apr-90	A-12	<50.	<0.5	<0.5	<0.5	<1.		
30-Jul-90	A-12	<50.	<0.5	<0.5	<0.5	<0.5		
29-Oct-90	A-12	<50.	<0.5	<0.5	<0.5	<0.5		
16-Jan-91	A-12	<50.	<0.5	<0.5	<0.5	<0.5		
12-Apr-91	A-12	<30	<0.30	<0.30	<0.30	<0.30		
10-Jul-91	A-12	<30	<0.30	<0.30	<0.30	<0.30		
21-Oct-91	A-12	<30	<0.30	<0.30	<0.30	<0.30		
01-Feb-92	A-12	<30	<0.30	<0.30	<0.30	<0.30		

TABLE 1

HISTORICAL GROUND WATER QUALITY DATABASE

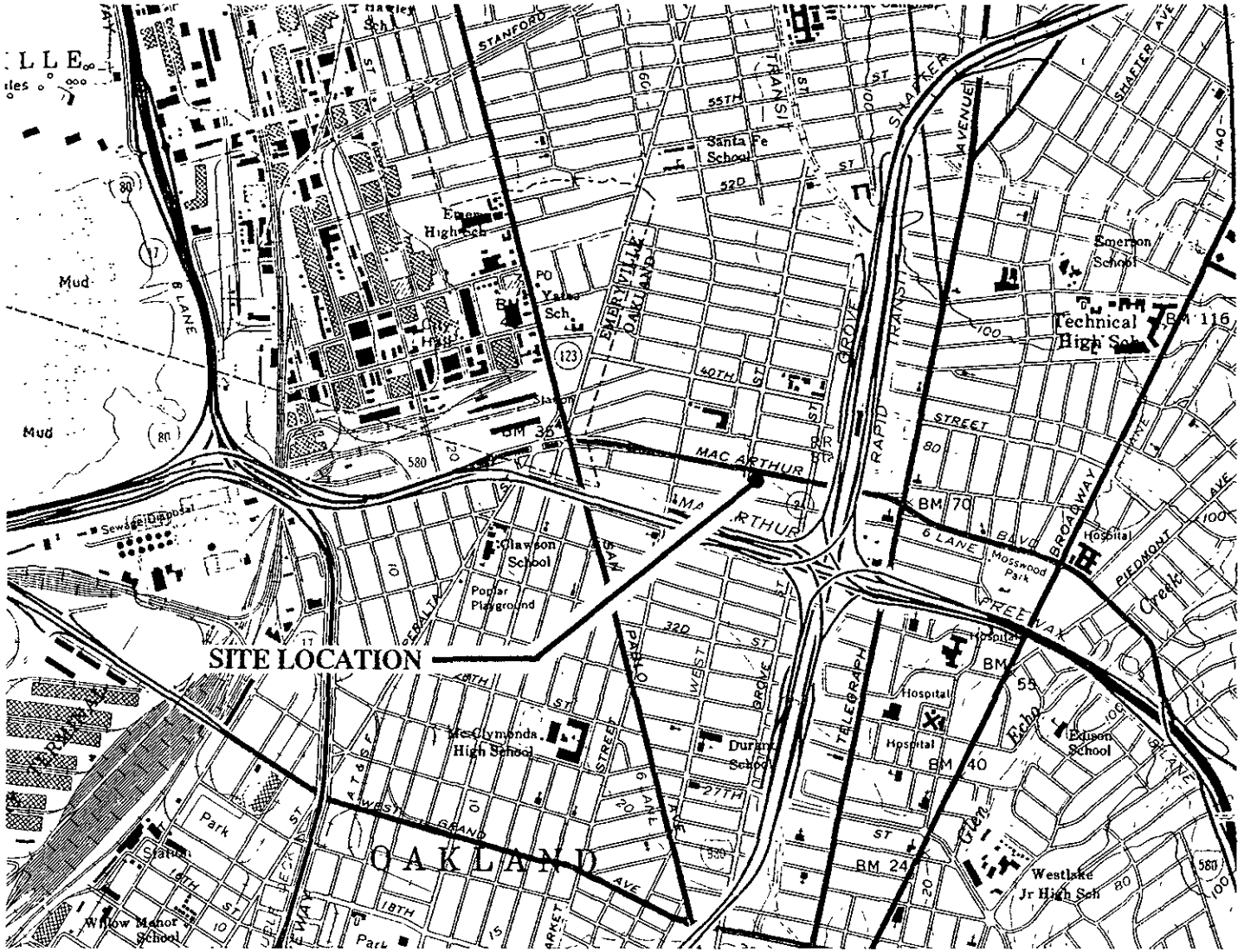
SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)

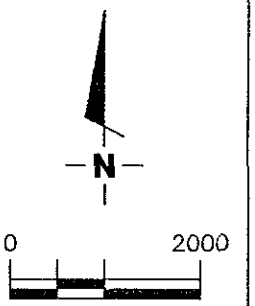
Current Regional Water Quality Control Board Mazimum Contaminant Levels
Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680.ppb

Current DHS Action Levels Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion
NOTE 1. All data shown as <X are reported as ND (none detected).
2. Ethylbenzene & Xylenes were combined in 1986 and 1988.

ILLUSTRATIONS





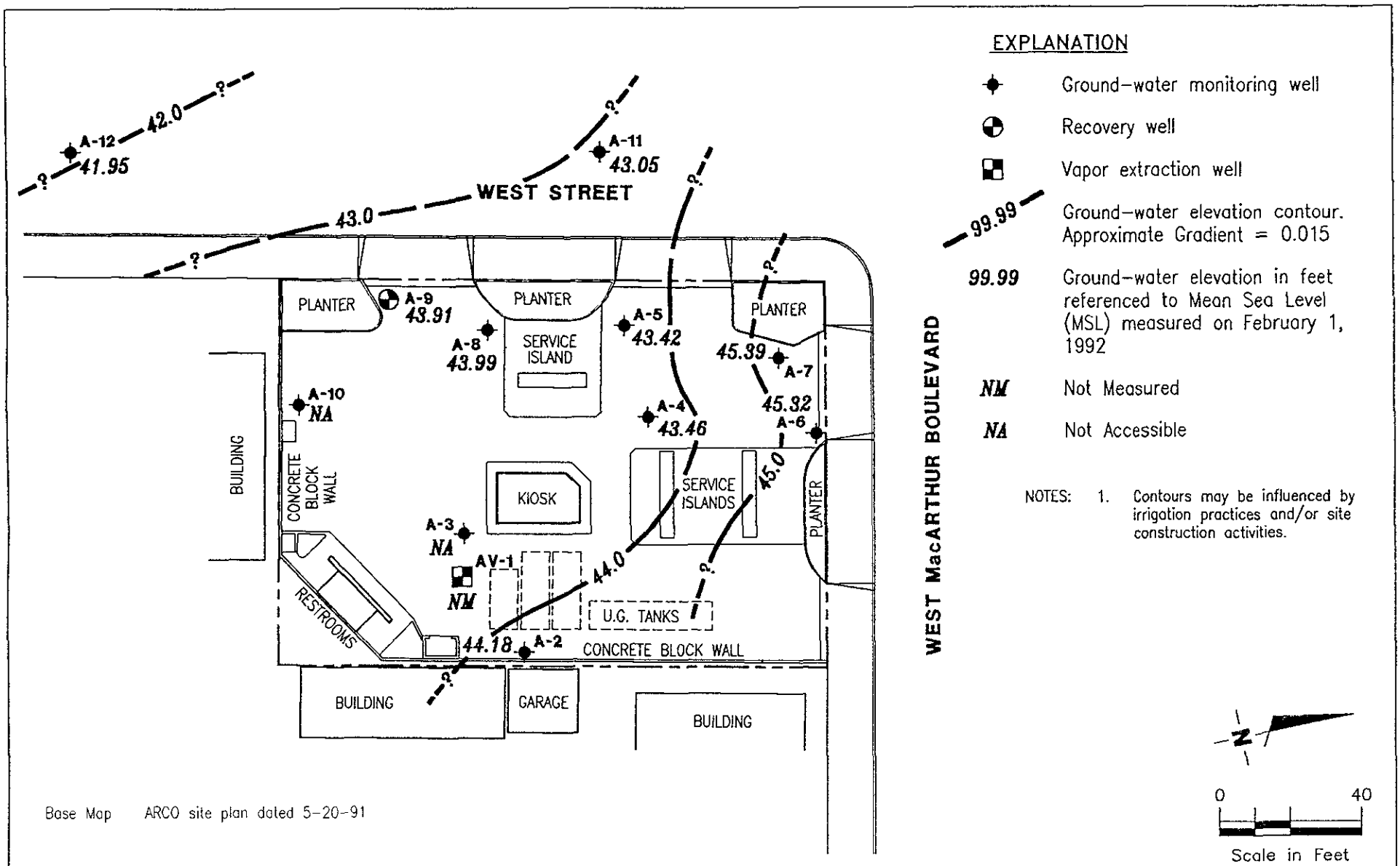
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE **1**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		9/91	

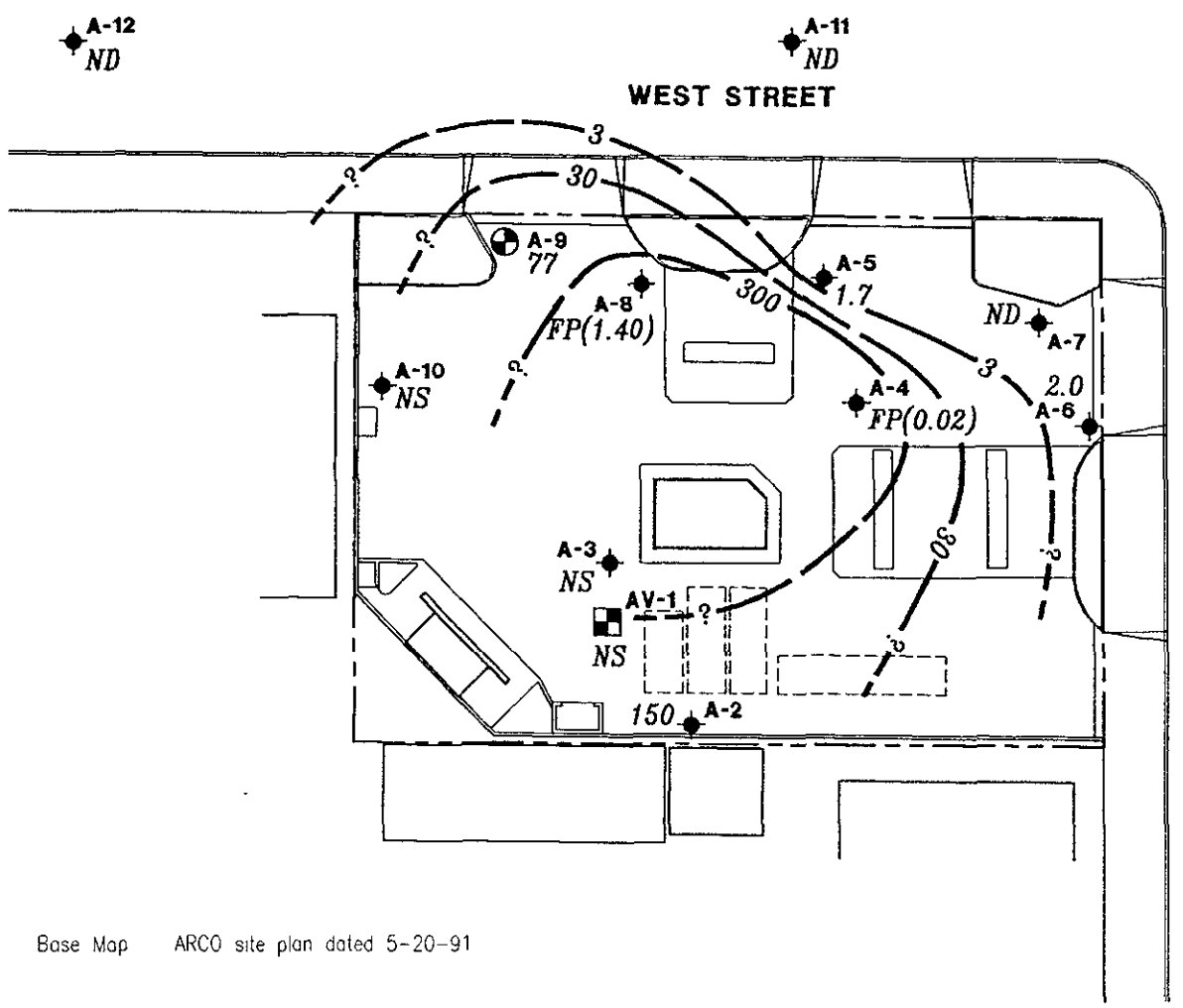


GeoStrategies Inc.

SITE PLAN/POTENTIOMETRIC MAP
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790901-17		3/92	



EXPLANATION

- Ground–water monitoring well
- Recovery well
- Vapor extraction well
- 0.05 — Benzene isoconcentration contour
- *0.05* — Benzene concentration in ppb sampled on February 1 and 2, 1992
- *ND* — Not Detected (See laboratory reports for detection limits)
- *NS* — Not Sampled
- *FP (0.01)* — Floating Product (measured thickness in feet)

N

0 40

Scale in Feet

Base Map ARCO site plan dated 5-20-91

GeoStrategies Inc.

BENZENE ISOCONCENTRATION MAP
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE **3**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790901–17		3/92	

APPENDIX A
EMCON GROUND-WATER SAMPLING REPORT

ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

Date March 3, 1992
Project G70-32.01

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
11	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the first quarter 1992 monitoring event at ARCO service station 4931, 731 West MacArthur Boulevard, Oakland, California. Please call if you have any questions: (408) 453-2266.

Mark Knuttel MK

Reviewed by:

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-32.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : 2-1-92

ARCO STATION # : 4931 FIELD TECHNICIAN : M. Kmuttel / J. Watada DAY : Saturday

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-5	ok	yes	ok	2008	yes	10.73	10.74	ND	ND	24.0	—
2	A-7	ok	yes	ok	2008	yes	9.28	9.28	ND	ND	22.63	—
3	A-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Well is buried from soil from tank pull
4	A-12	ok	yes	ok	2268	ok	10.10	10.10	ND	ND	23.95	—
5	A-11	ok	yes	ok	2008	yes ok	10.70	10.70	ND	ND	~~32.5~~ 28.0	—
6	A-6	ok	yes	ok	2008	ok	9.81	9.80	ND	ND	24.95	—
7	A-9	ok	yes	ok	2268	ok	9.05	9.05	ND	ND	38.0	→
8	A-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Well is buried from tank pull soil
9	A-2	ok	yes	ok	2008	ok	11.20	11.21	ND	ND	19.0	—
10	A-4	ok	yes	ok	yes	ok	11.18	11.18	ND	ND	19.63	.02 ft of product detected with teflon bailer
11	A-8	ok	~~yes~~	ok	2008	ok yes	10.80	10.80	9.40	1.40	20.0	1.4 ft of product detected with MMC.

Summary of Groundwater Monitoring Data
First Quarter 1992
ARCO Service Station 4931
731 West MacArthur Boulevard, 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)	Total Oil and Grease (mg/l)	Organic Lead (mg/l)
A-2(18.5)	02/02/92	11 20	ND.[2]	11,000	150	13	91	94	<5.0	<0.050
A-3	IW.[3]	IW.	IW.	IW	IW.	IW.	IW.	IW	IW.	IW
A-4	NS[4]	NS.	0.02	NS	NS.	NS.	NS	NS.	NS	NS
A-5(18)	02/01/92	10.73	ND	<30	1.7	<0.30	<0.30	<0.30	NR.[5]	NR.
A-6(15)	02/01/92	9.81	ND.	<30	2.0	0.40	0 58	1.9	NR	NR.
A-7(14)	02/01/92	9 28	ND.	<30	<0.30	<0.30	<0.30	<0.30	NR	NR.
A-8	NS.	NS.	1.40	NS.	NS.	NS.	NS	NS.	NS	NS
A-9(22)	02/01/92	9.05	ND.	320	77	0.95	11	6 5	NR	NR.
A-10	IW.	IW	IW.	IW.	IW.	IW.	IW.	IW	IW.	IW.
A-11(18)	02/01/92	10.70	ND.	<30	<0.30	<0.30	<0.30	<0.30	NR	NR.
A-12(22)	02/01/92	10.10	ND.	<30	<0.30	<0.30	<0.30	<0 30	NR.	NR.
XDup(18.5)[6]	02/02/92	NA[7]	ND.	4,900	84	17	39	58	NR	NR.
FB-1[8]	02/01/92	NA.	NA	<30	<0.30	<0.30	<0.30	<0 30	NR	NR
TB-1[9]	02/02/92	NA.	NA.	<30	<0.30	<0.30	<0.30	<0.30	NR	NR.

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. IW. = Inaccessable well
4. NS. = Not sampled; well was not sampled due to detection of floating product
5. NR. = Not reported; sample was not scheduled for analysis of the selected parameter
6. XDup(18.5). = duplicate well sample collected at well A-2
7. NA. = Not applicable
8. FB. = Field Blank
9. TB. = Trip Blank

SEQUOIA ANALYTICAL

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

Emcon Associates
1921 Ringwood Avenue
San Jose, CA 95131
Attention: Mark Knuttel

Project: EMCGC-92-1, Arco

Enclosed are the results from 11 water samples received at Sequoia Analytical on February 3,1992. The requested analyses are listed below:

2020146	Water, A-5, (18)	2/1-2/92	EPA 5030/8015/8020
2020147	Water, A-7, (14)	2/1-2/92	EPA 5030/8015/8020
2020148	Water, A-12, (22)	2/1-2/92	EPA 5030/8015/8020
2020149	Water, A-11, (18)	2/1-2/92	EPA 5030/8015/8020
2020150	Water, A-6, (15)	2/1-2/92	EPA 5030/8015/8020
2020151	Water, A-9, (22)	2/1-2/92	EPA 5030/8015/8020
2020152	Water, A-2, (18.5)	2/1-2/92	EPA 5030/8015/8020
2020153	Water, X Dup., (18.5)	2/1-2/92	EPA 5030/8015/8020
2020154	Water, FB-1	2/1-2/92	EPA 5030/8015/8020
2020155	Water, TB-1 1	2/1-2/92	EPA 5030/8015/8020
2020156	Water, A-2, (18.5)	2/1/92	California LUFT Manual, 12/87 SM 5520 B&F (Gravimetric) Hazardous Waste Bioassay

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:	EMCGC-92-1, Arco	Sampled: 2/1-2/92
1921 Ringwood Avenue	Matrix Descript:	Water	Received: Feb 3, 1992
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Analyzed: 2/6-7/92
Attention: Mark Knuttel	First Sample #:	202-0146	Amended: Feb 28, 1992

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)
202-0146	A-5, (18)	N.D.	1.7	N.D.	N.D.	N.D.
202-0147	A-7, (14)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0148	A-12, (22)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0149	A-11, (18)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0150	A-6, (15)	N.D.	2.0	0.40	0.58	1.9
202-0151	A-9, (22)	320	77	0.95	11	6.5
202-0152	A-2, (18.5)	11,000	150	13	91	94
202-0153	X Dup., (18.5)	4,900	84	17	39	58
202-0154	FB-1	N.D.	N.D.	N.D.	N.D.	N.D.
202-0155	TB-1 1	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

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:	EMCGC-92-1, Arco	Sampled:	Feb 2, 1992
1921 Ringwood Avenue	Matrix Descript:	Water	Received:	Feb 3, 1992
San Jose, CA 95131	Analysis Method:	SM 5520 B&F (Gravimetric)	Extracted:	Feb 5, 1992
Attention: Mark Knuttel	First Sample #:	202-0156	Analyzed:	Feb 6, 1992
			Amended:	Feb 28, 1992

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
202-0156	A-2, (18.5)	N.D.

Detection Limits:	5.0

Analytes reported as N.D. were not present above the stated limit of detection.

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:	EMCGC-92-1, Arco	Sampled:	Feb 1, 1992
1921 Ringwood Avenue	Sample Descript:	Water	Received:	Feb 3, 1992
San Jose, CA 95131	Analysis Method:	California LUFT Manual, 12/87		
Attention: Mark Knuttel	First Sample #:	202-0156	Analyzed:	Feb 7, 1992
			Amended:	Feb 28, 1992

ORGANIC LEAD

Sample Number	Sample Description	Sample Results mg/L
202-0156	A-2, (18.5)	N.D.

Detection Limits:	0.050

Analytes reported as N.D. were not present above the stated limit of detection.

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
1921 Ringwood Avenue
San Jose, CA 95131
Attention: Mark Knuttel

Client Project ID: EMCGC-92-1, Arco

QC Sample Group: 2020146 - 51, 53-55

Reported: Feb 19, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Laikhtman	M.Laikhtman	M.Laikhtman	M.Laikhtman
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Feb 6, 1992	Feb 6, 1992	Feb 6, 1992	Feb 6, 1992
QC Sample #:	GBLK020692	GBLK020692	GBLK020692	GBLK020692
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	10	10	10	30
Matrix Spike % Recovery:	100	100	100	100
Conc. Matrix Spike Dup.:	10	10	10	30
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	0.0	0.0	0.0	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
1921 Ringwood Avenue
San Jose, CA 95131
Attention: Mark Knuttel

Client Project ID: EMCGC-92-1, Arco

QC Sample Group: 202-0152

Reported: Feb 19, 1992

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:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Feb 7, 1992	Feb 7, 1992	Feb 7, 1992	Feb 7, 1992
QC Sample #:	BLK020792	BLK020792	BLK020792	BLK020792
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.7	9.5	9.6	29
Matrix Spike % Recovery:	97	95	96	97
Conc. Matrix Spike Dup.:	10	9.6	10	30
Matrix Spike Duplicate % Recovery:	100	96	100	100
Relative % Difference:	3.0	1.0	4.1	3.4

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
1921 Ringwood Avenue
San Jose, CA 95131
Attention: Mark Knuttel

Client Project ID: EMCGC-92-1, Arco

QC Sample Group: 202-0156

Reported: Feb 19, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Total Oil & Grease	Organic Lead
Method:	SM5520B&F	LUFT
Analyst:	A.Do	Suzanne
Reporting Units:	mg/L	mg/L
Date Analyzed:	Feb 5, 1992	Feb 7, 1992
QC Sample #:	BLK020592	202-0310
Sample Conc.:	N.D.	N.D.
Spike Conc. Added:	60	0.0060
Conc. Matrix Spike:	57	0.0054
Matrix Spike % Recovery:	95	90
Conc. Matrix Spike Dup.:	56	0.0057
Matrix Spike Duplicate % Recovery:	95	95
Relative % Difference:	0.0	5.9

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

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no 4931	City (Facility) Oakland CA	Project manager (Consultant) Mark Knuttel	Laboratory name SEQUOIA
ARCO engineer Kyle Christie	Telephone no. (ARCO) 415-571-2434	Telephone no. (Consultant) 408-453-0719	Fax no (Consultant) 408-453-0452
Consultant name EMCON ASSOCIATES	Address (Consultant) 939 JUNCTION AVE SAN JOSE, CA		Contract number

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 GAS EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐ 5520 E&F ☐	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 ☐	Organic LEAD LUFT Method	Toxicity Title 22
A-5(18)		2		X		X	HCl	2-1-92	955		X							2010146				
A-7(14)		2						2-1-92	950		X										47	
A-10( )														NO SAMPLE								
A-12(24)		2						2-1-92	1015		X										48	
A-11(18)		2						2-1-92	1120		X										49	
A-6(15)		2						2-1-92	1245		X										50	
A-9(22)		2						2-1-92	1244		X										51	
A-3													NO SAMPLE									
A-2(18.5)		2						2-1-92	1010		X										52	
A-4( )														NO SAMPLE								
A-8( )														ND SAMPLE								
XDup(18.5)		2						2-2-92	—		X										53	
FB-1		2						2-1-92	958		X										54	
TB-1		2						2-2-92	1100		X										55	
A 2(18.5)		1					H_2SO_4	2-2-92	1010				X								56	
A 2(18.5)		45					NP	2-2-92	1010												X	X

Special detection Limit/reporting: Lowest possible

Method of shipment: LAB will pick up Samples

Special QA/QC: as normal

Remarks

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: Mark Knuttel	2-3-92	1640	Received by: Kai Folla
Relinquished by: Kai Folla	2-3-92	1700	Received by: R Vega
Relinquished by:	Date	Time	Received by laboratory: Date: Time:

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: 670-32.01 SAMPLE ID: A-2

PURGED BY: J WATALA CLIENT NAME: ARCO STATION 4931

SAMPLED BY: J WATALA LOCATION: OAKLAND

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.): 5.11

DEPTH TO WATER (feet): 11.20 CALCULATED PURGE (gal.): 25-58

DEPTH OF WELL (feet): 19.00 ACTUAL PURGE VOL. (gal.): 5.50

DATE PURGED: 02-01-92 Start (2400 Hr) 1331 End (2400 Hr) 1336

DATE SAMPLED: 02-02-92 Start (2400 Hr) 1010 End (2400 Hr) 1016

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1334	5	6.78	534	65.3	GRAY	HEAVY
		DRIED WELL AT 5.5 GALLONS				
ICE	AFTER RECHARGE	6.10	554	58.0	GRAY	HEAVY

D. O. (ppm): NR ODOR: STRONG

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

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

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 #: 2008

REMARKS: DRIED WELL AT 5.50 GALLONS
WATER LEVEL: 17.50 AT 950 ON 02-02-92
FISH ~~TOXICITY~~ TOXICITY TAKEN HERE

Meter Calibration: Date: 02-02-92 Time: 945 Meter Serial #: K997K134 Temperature °F: 50.3

(EC 1000 979 / 1000) (DI 4.62) (pH 7 6.96 / 7.00) (pH 10 10.05 / 10.00) (pH 4 3.96 / —)

Location of previous calibration: A-9

Signature: J Watala Reviewed By: MK Page 1 of 11

EMCON ASSOCIATES

PROJECT NO: 670-32.01 SAMPLE ID: A-3

PURGED BY: NR CLIENT NAME: ARCO 4931

SAMPLED BY: ↓ LOCATION: Oakland

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

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

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

DEPTH TO WATER (feet): ↓ CALCULATED PURGE (gal.): ↓

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

DATE PURGED: NR Start (2400 Hr) NR End (2400 Hr) NR

DATE SAMPLED: ↓ Start (2400 Hr) ↓ End (2400 Hr) ↓

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		—	NA —			

D. O. (ppm): ___ ODOR: ___

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

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)
___ DDL Sampler ___ Bailer (Stainless Steel)
___ Dipper ___ Submersible Pump
___ Well Wizard™ ___ Dedicated
Other: ___

WELL INTEGRITY: ___ LOCK #: ___

REMARKS: well is buried under a pile dirt removed during tank pull.

No Samples collected

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

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

Location of previous calibration: ___

Signature: Mark Knuth Reviewed By: NC Page 2 of 11

EMCON ASSOCIATES

PROJECT NO: 570-32.01 | SAMPLE ID: A-4

PURGED BY: NR | CLIENT NAME: Arco 4931

SAMPLED BY: NR | LOCATION: Oakland

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

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

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

DEPTH TO WATER (feet): 11.18 | CALCULATED PURGE (gal.): ↓

DEPTH OF WELL (feet): 19.63 | ACTUAL PURGE VOL. (gal.): ↓

DATE PURGED: 2-1-92 | Start (2400 Hr) NR | End (2400 Hr) NR

DATE SAMPLED: 2-1-92 | Start (2400 Hr) ↓ | End (2400 Hr) ↓

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		NR				

D. O. (ppm): NR | ODOR: STRONG | 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

- ____ 2" Bladder Pump
- ____ Centrifugal Pump
- ____ Submersible Pump
- ____ Well Wizard™
- ____ Bailer (Teflon®)
- ____ Bailer (PVC)
- ____ Bailer (Stainless Steel)
- ____ Dedicated
- Other: NR

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good. | LOCK #: ____

REMARKS: Different lock on well, don't have the right key. Casing top screwed down to access well

0.02 ft of product detected in well with teflon bailer. No Sample taken.

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

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

Location of previous calibration: ____

Signature: Mark Knuttel | Reviewed By: MK | Page 3 of 11

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-32.01 | SAMPLE ID: A-5

PURGED BY: J WATALA | CLIENT NAME: ARCO STATION 4931

SAMPLED BY: J WATALA | LOCATION: MacArthur Blvd Oakland

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

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

CASING ELEVATION (feet/MSL): ____ | VOLUME IN CASING (gal.): 4.93

DEPTH TO WATER (feet): 10.73 | CALCULATED PURGE (gal.): 24.68

DEPTH OF WELL (feet): 24.00 | ACTUAL PURGE VOL. (gal.): 25.00

DATE PURGED: 02-01-92 | Start (2400 Hr) 925 | End (2400 Hr) 949

DATE SAMPLED: 02-01-92 | Start (2400 Hr) 955 | End (2400 Hr) 956

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
930	5	6.74	1113	65.0	BROWN	HEAVY
935	10	6.95	1016	65.2	"	"
939	15	7.05	876	64.8	"	"
944	20	7.08	818	64.7	"	"
949	25	7.11	821	64.5	"	"

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): FB-1 TAKEN HERE AT 959

PURGING EQUIPMENT

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

Other: ____

SAMPLING EQUIPMENT

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

Other: ____

WELL INTEGRITY: GOOD | LOCK #: 2008

REMARKS: ____

Meter Calibration: Date: 02-01-92 Time: 902 Meter Serial #: K9976134 Temperature °F: 54.5

(EC 1000 1011 / 1000) (DI 5.62) (pH 7 6.98 / 7.00) (pH 10 10.03 / 10.00) (pH 4 3.91 / —)

Location of previous calibration: ____

Signature: John A Watala | Reviewed By: MK | Page 4 of 11

EMCON ASSOCIATES

PROJECT NO: 670-32.01 | SAMPLE ID: A-6
PURGED BY: M. Knuttel | CLIENT NAME: Arco 4931
SAMPLED BY: M. Knuttel | LOCATION: Oakland

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

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

CASING ELEVATION (feet/MSL): NM | VOLUME IN CASING (gal.): 5.63
DEPTH TO WATER (feet): 9.81 | CALCULATED PURGE (gal.): 28.16
DEPTH OF WELL (feet): 24.95 | ACTUAL PURGE VOL. (gal.): 29.0

DATE PURGED: 2-1-92 | Start (2400 Hr) 1150 | End (2400 Hr) 1210
DATE SAMPLED: 2-1-92 | Start (2400 Hr) ✓ | End (2400 Hr) 1215

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1153	6.0	6.99	578	62.8	BROWN	HEAVY
1157	12.0	7.05	586	62.7	"	"
1202	18.0	6.95	588	62.6	"	"
1206	24.0	7.01	593	63.2	"	"
1210	29.0	7.05	584	62.2	"	"

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

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

PURGING EQUIPMENT

___ 2" Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Well Wizard™
___ Bailer (Teflon®)
✓ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated
Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump
___ DDL Sampler
___ Dipper
___ Well Wizard™
✓ Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: Good | LOCK #: 2008

REMARKS: All Samples Collected.

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

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

Location of previous calibration: A-7

Signature: Mark Knuttel | Reviewed By: MK | Page 5 of 11

EMCON ASSOCIATES

PROJECT NO: 370-32.01 | SAMPLE ID: A-7
PURGED BY: M. Knuttel | CLIENT NAME: Arco 4931
SAMPLED BY: M. Knuttel | LOCATION: Oakland

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	4.96
DEPTH TO WATER (feet):	9.28	CALCULATED PURGE (gal.):	24.8
DEPTH OF WELL (feet):	22.63	ACTUAL PURGE VOL (gal.):	25.0

DATE PURGED: 2-1-92 Start (2400 Hr) 920 End (2400 Hr) 942
DATE SAMPLED: 2-1-92 Start (2400 Hr) ___ End (2400 Hr) 950

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
927	5.0	6.41	598	60.3	Brown	heavy
930	10.0	6.57	648	64.3	"	"
933	15.0	6.76	644	65.7	"	"
936	20.0	6.81	598	66.0	"	"
942	25.0	6.86	629	67.1	"	"

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

___ 2" Bladder Pump
✓ Centrifugal Pump
___ Submersible Pump
___ Well Wizard™
___ Bailer (Teflon®)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated
Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump
___ DDL Sampler
___ Dipper
___ Well Wizard™
✓ Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: Good LOCK #: 2008

REMARKS: All samples collected. Sample water was clear.

Meter Calibration: Date: 2-1-92 Time: 9:00 Meter Serial #: M6979 Temperature °F: 53.0

(EC 1000 1035 / 1000) (DI 5.49) (pH 7 6.90 / 7.0) (pH 10 10.07 / 10.0) (pH 4 4.20 / ✓)

Location of previous calibration: ___

Signature: Mark Knuttel Reviewed By: MK Page 6 of 11

EMCON ASSOCIATES

PROJECT NO: 370-32.01 | SAMPLE ID: A-8

PURGED BY: NR | CLIENT NAME: Arco 4931

SAMPLED BY: M | LOCATION: Oakland

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

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

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

DEPTH TO WATER (feet): 9.40 | CALCULATED PURGE (gal.): ↓

DEPTH OF WELL (feet): 20.0 | ACTUAL PURGE VOL. (gal.): ↓

DATE PURGED: NR | Start (2400 Hr) NR | End (2400 Hr) NR

DATE SAMPLED: NR | Start (2400 Hr) NR | End (2400 Hr) NR

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		+				
		– NR –				
		+				

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

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

PURGING EQUIPMENT

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

Other: NR

SAMPLING EQUIPMENT

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

Other: NR

WELL INTEGRITY: Gr box cover broken into pieces. Put new one on. | LOCK #: 2008

REMARKS: Product detected with MNC 9.40 to 10.80 = 1.4 feet of product. Dropped down 1 foot teflon bailer and it came up full of product.

2-1-92 No samples collected

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

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

Location of previous calibration: ____

Signature: Mark Knuttel | Reviewed By: MK | Page 7 of 11

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-32.01 | SAMPLE ID: A-9

PURGED BY: J WATAHA | CLIENT NAME: ARCO STATION 4931

SAMPLED BY: J WATAHA | LOCATION: OAKLAND

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

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

CASING ELEVATION (feet/MSL): NR

DEPTH TO WATER (feet): 9.05

DEPTH OF WELL (feet): 38.00

VOLUME IN CASING (gal.): 42.49

CALCULATED PURGE (gal.): 212.49

ACTUAL PURGE VOL. (gal.): 213.00

DATE PURGED: 02-01-92 | Start (2400 Hr) 1158 | End (2400 Hr) 1239

DATE SAMPLED: 02-01-92 | Start (2400 Hr) 1244 | End (2400 Hr) 1245

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1210	42.5	7.12	682	65.4	CLOUDY	MODERATE
1231	85	6.64	662	66.2	clear	light
1233	127.5	6.66	668	66.2	cloudy	Mod
1235	170	6.71	665	66.0	"	light
1239	213	6.68	666	65.7	clear	"

D. O. (ppm): NR | ODOR: NONE | COLOR: NR (COBALT 0 - 100) | TURBIDITY: 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: 02-01-92 Time: 1155 Meter Serial #: K9976134 Temperature °F: 61.4

(EC 1000 1007 / 1000) (DI 5.96) (pH 7 7.04 / 7.00) (pH 10 10.03 / 10.00) (pH 4 3.88 / —)

Location of previous calibration: ___

Signature: [signature] | Reviewed By: MK | Page 8 of 11

EMCON ASSOCIATES

PROJECT NO: 070-52.01 SAMPLE ID: A-10

PURGED BY: NR CLIENT NAME: Arco 4931

SAMPLED BY: ↓ LOCATION: Oakland

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

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

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

DEPTH TO WATER (feet): ↓ CALCULATED PURGE (gal.): ↓

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

DATE PURGED: NR Start (2400 Hr) NR End (2400 Hr) NR

DATE SAMPLED: NR Start (2400 Hr) NR End (2400 Hr) NR

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
			NA			

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

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

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ Centrifugal Pump ___ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: NR

SAMPLING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: NA

WELL INTEGRITY: ___ LOCK #: ___

REMARKS: well is burned up Piles of Dirt removed during tank pull - NO Sample Collected

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

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

Location of previous calibration: ___

Signature: Mark Knuttel Reviewed By: MK Page 9 of 11

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-32.01 SAMPLE ID: A-11

PURGED BY: M. Knuttel / J. Watcha CLIENT NAME: Arco 4931

SAMPLED BY: M. Knuttel / J. Watcha LOCATION: Oakland

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

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

CASING ELEVATION (feet/MSL): NK VOLUME IN CASING (gal.): 6.44

DEPTH TO WATER (feet): 10.70 CALCULATED PURGE (gal.): 32.19

DEPTH OF WELL (feet): 28.00 ACTUAL PURGE VOL. (gal.): 32.5

DATE PURGED: 2-1-92 Start (2400 Hr) 1055 End (2400 Hr) 1113

DATE SAMPLED: 2-1-92 Start (2400 Hr) / End (2400 Hr) 1120

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1059	6.5 ✓	6.87	1094	66.4	Brown	heavy
1103	13.0	6.66	6.99	67.2	"	"
1107	19.5	6.61	6.95	66 7	"	"
1110	26.0	6.64	7001	67.3	"	"
1113	32.5	6.67	703	67.5	"	"

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

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

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

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ Centrifugal Pump ✓ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: ___

WELL INTEGRITY: Good LOCK #: 2008

REMARKS: Need Cover to block up well in street

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

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

Location of previous calibration: A-5

Signature: Mark Knuttel Reviewed By: MK Page 10 of 11

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-32.01 SAMPLE ID: A-12

PURGED BY: J. Watuka / M. Knuttel CLIENT NAME: Arco 4931

SAMPLED BY: J. Watuka / M. Knuttel LOCATION: Oakland

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 7.0

DEPTH TO WATER (feet): 10.10 CALCULATED PURGE (gal.): 35.04

DEPTH OF WELL (feet): 28.94 ACTUAL PURGE VOL. (gal.): 35.0

DATE PURGED: 2-1-92 Start (2400 Hr) 1022 End (2400 Hr) 1043

DATE SAMPLED: 2-1-92 Start (2400 Hr) ✓ End (2400 Hr) 1045

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1027	7	6.89	648	63.8	Brown	Heavy
1030	14	6.76	675	65.5	"	"
1034	21	6.74	679	65.7	"	"
1038	28	6.78	685	65.9	"	"
1043	35	6.73	687	65.8	"	"

D. O. (ppm): NR ODOR: NONE COLOR: NR (COBALT 0 - 100) TURBIDITY: 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	✓ Bailer (Teflon®)
___ 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: Water comes to blank top of well.

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

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

Location of previous calibration: A-5

Signature: Mark Knuttel Reviewed By: MK Page 11 of 11