ALCO
HAZMAT
94 MAR 10 AM 10:48

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

TRANSMITTAL

TO: Mr. Barney Chan
Alameda County Health
Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

DATE: March 7, 1994
PROJECT NUMBER: 69038.12
SUBJECT: ARCO Station 4494

FROM: Erin D. Krueger

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	03/03/94	Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1993 at ARCO Station 4494, 566 Hegenberger Road, Oakland, California.

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment	[ ] Approved as submitted	[ ] Resubmit ___ copies for approval
[X] As requested	[ ] Approved as noted	[ ] Submit__ copies for distribution
[ ] For approval	[ ] Return for corrections	[ ] Return ___ corrected prints
[X] For your files	[ ] Regular Mail	[X] Certified Mail

REMARKS:
Copies: 1 to RESNA project file no. 69039.12

Erin D. Krueger, Staff Geologist

cc: Mr. Michael Whelan, ARCO
Mr. Richard Hiett, RWQCB

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Fourth Quarter 1993
at
ARCO Station 4494
566 Hegenberger Road
Oakland, California

69038.12

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

March 3, 1994

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

Subject: Letter Report, Quarterly Groundwater Monitoring
Fourth Quarter 1993
ARCO Station 4494
566 Hegenberger Road, Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) presents this letter report summarizing the results of Fourth Quarter 1993 Groundwater Monitoring performed by EMCON Associates (EMCON) of San Jose, California at the above-referenced site (Plates 1 and 2). RESNA's scope of work was to interpret field and laboratory analytical data, which included evaluating trends in hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site. Evaluation and warrant of EMCON's field procedures, field data, and field protocols, is beyond RESNA's scope of work. Previous environmental work at the site is summarized in RESNA reports cited in the Reference section.

GROUNDWATER MONITORING

Field Work

EMCON field personnel were onsite November 17, 1993, to measure depth to water (DTW) levels, perform subjective analysis for the presence of product in groundwater, and perform quarterly sampling of wells MW-1 and MW-3 through MW-7. Recovery well RW-1 was not monitored because it has filled in with sediment and does not contain water.

Laboratory Analyses

Water samples were analyzed by Columbia Analytical Services, Inc., located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426) for benzene, toluene, ethylbenzene, and total xylenes (BTEX), and total petroleum hydrocarbons as gasoline (TPHg) using Environmental Protection Agency (EPA) Methods 5030/8020/California DHS LUFT Method. The Chain of Custody Records and Laboratory Analysis Reports are included in Appendix A.

Results of Groundwater Monitoring

Groundwater elevations fell an average of about 0.27 foot in wells MW-1, MW-3, and MW-4; rose an average of about 0.10 foot in wells MW-5 and MW-6; and, remained the same in well MW-7 since the last quarter. Evidence of floating product or product sheen was not noted in any of the wells during this quarter. Based on November 17, 1993, DTW data, groundwater is interpreted to flow toward the north-northwest with a gradient of approximately 0.01 ft/ft (Plate 3). Groundwater monitoring data from this and previous quarters is presented in Table 1. The results of EMCON's field work on the site, are presented in Appendix A.

The following trends in hydrocarbon concentrations have been identified since the last quarter: concentrations have remained not detected in wells MW-1, and MW-3 through MW-7 (Plate 4). Cumulative analytical results of water samples are presented in Table 2.

Previous and Future Work

Fourth Quarter 1993

- Submitted Letter Report, Quarterly Groundwater Monitoring, Third Quarter 1993 to ARCO and regulatory agencies.
- Performed Fourth Quarter 1993 Groundwater Monitoring.

First Quarter 1994

- Submit Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1993 to ARCO and regulatory agencies.
- Redevelop well RW-1 to remove accumulated sediments, and construct a 2-inch diameter well inside well RW-1.
- Perform First Quarter 1994 Groundwater Monitoring.

RESNA
Working to Restore Nature

Reporting Requirements

It is recommended that copies of this report be forwarded to:

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Mr. Richard Hiett
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

If you have any questions or comments, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.

Erin D. Krueger
Staff Geologist

James L. Nelson, C.E.G. 1463
Certified Engineering Geologist

REGISTERED GEOLOGIST
JAMES LEWIS NELSON
No. 1463
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

RESNA
Working to Restore Nature

Enclosures: References

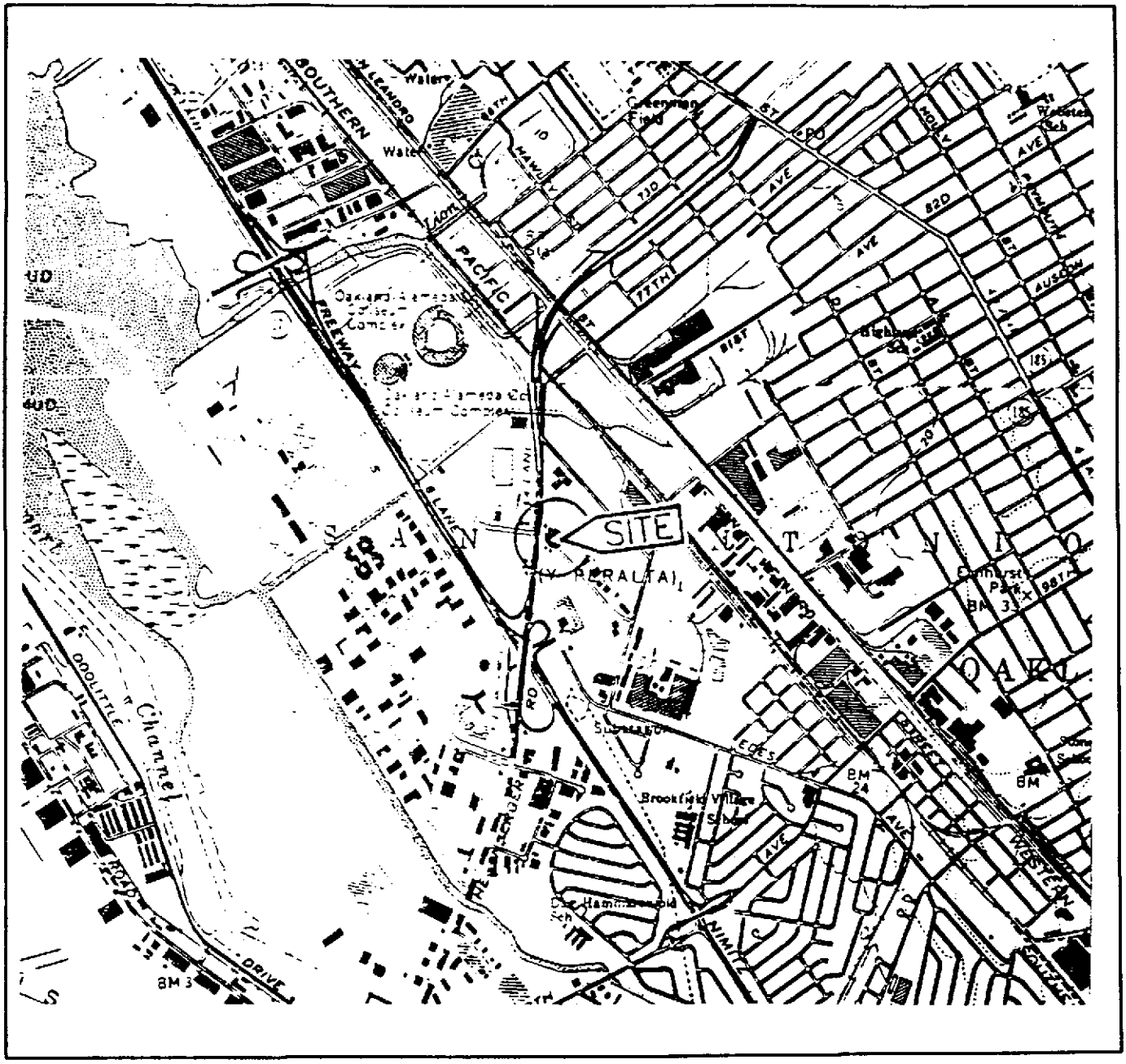
Plate 1:	Site Vicinity Map
Plate 2:	Generalized Site Plan
Plate 3:	Groundwater Gradient Map, November 17, 1993
Plate 4:	TPHg/Benzene Concentrations in Groundwater, November 17, 1993
Table 1:	Cumulative Groundwater Monitoring Data
Table 2:	Cumulative Results of Laboratory Analyses of Water Samples--TPHg, TPHd, BTEX, and TOG
Appendix A:	EMCON's Field Reports Depth to Water/Floating Product Survey Results, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain of Custody Record, and Water Sample Field Data Sheets

RESNA
Working to Restore Nature

REFERENCES

RESNA. May 17, 1993. Report of Findings Underground Gasoline-Storage Tank Removal and Replacement at ARCO Station 4494, 566 Hegenberger Road in Oakland, California. RESNA Report 69038.13.

RESNA. December 29, 1993. Letter Report on Quarterly Groundwater Monitoring, Third Quarter 1993 at ARCO Station 4494, 566 Hegenberger Road in Oakland, California. RESNA Report 69038.12.



Source: U.S. Geological Survey
7.5-Minute Quadrangle
Oakland East/San Leandro, California
Photorevised 1980

N

Approximate Scale

2000 1000 0 2000

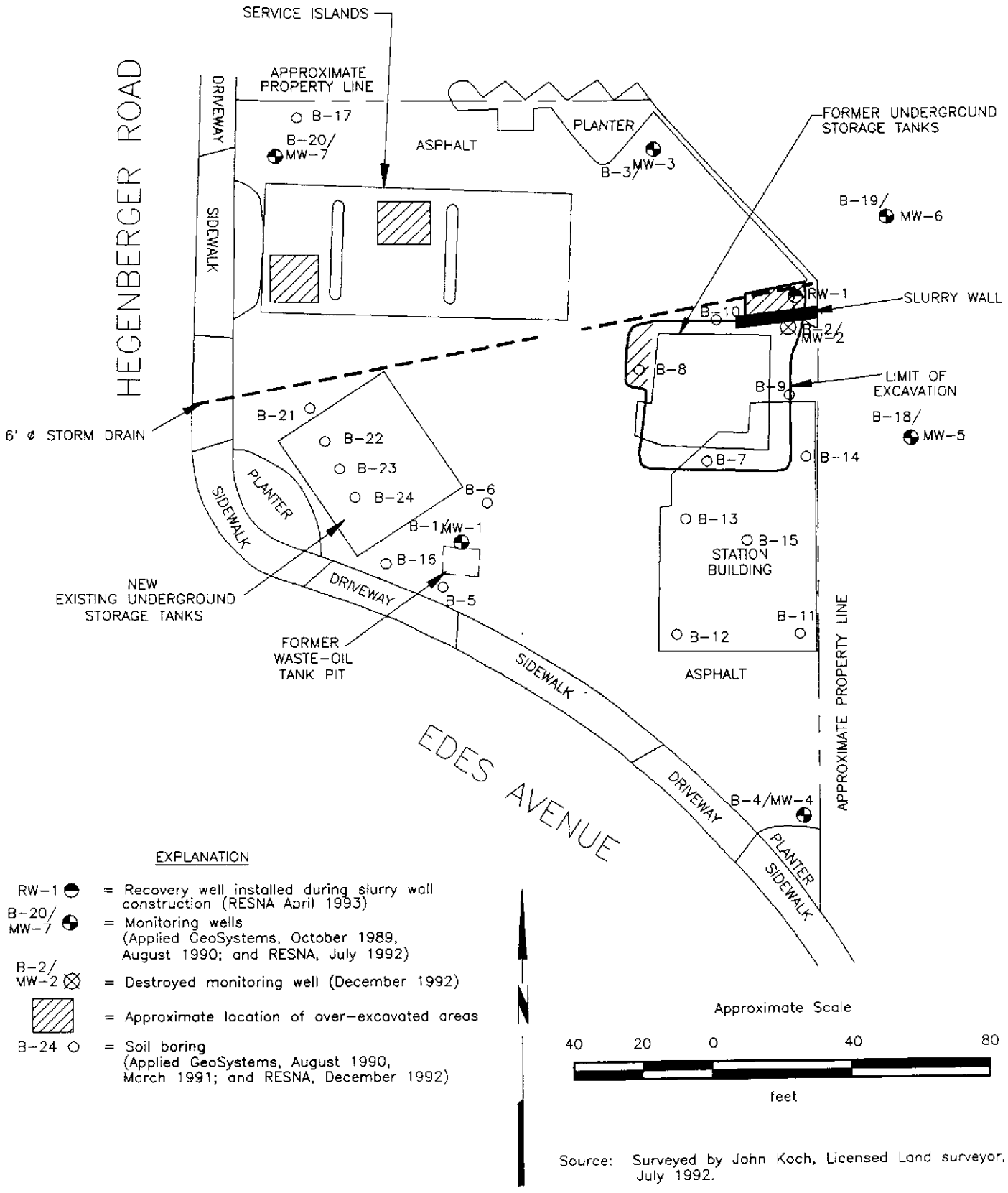
feet

RESNA
Working to Restore Nature

PROJECT 69038.12

SITE VICINITY MAP
ARCO Station 4494
566 Hegenberger Road
Oakland, California

PLATE
1

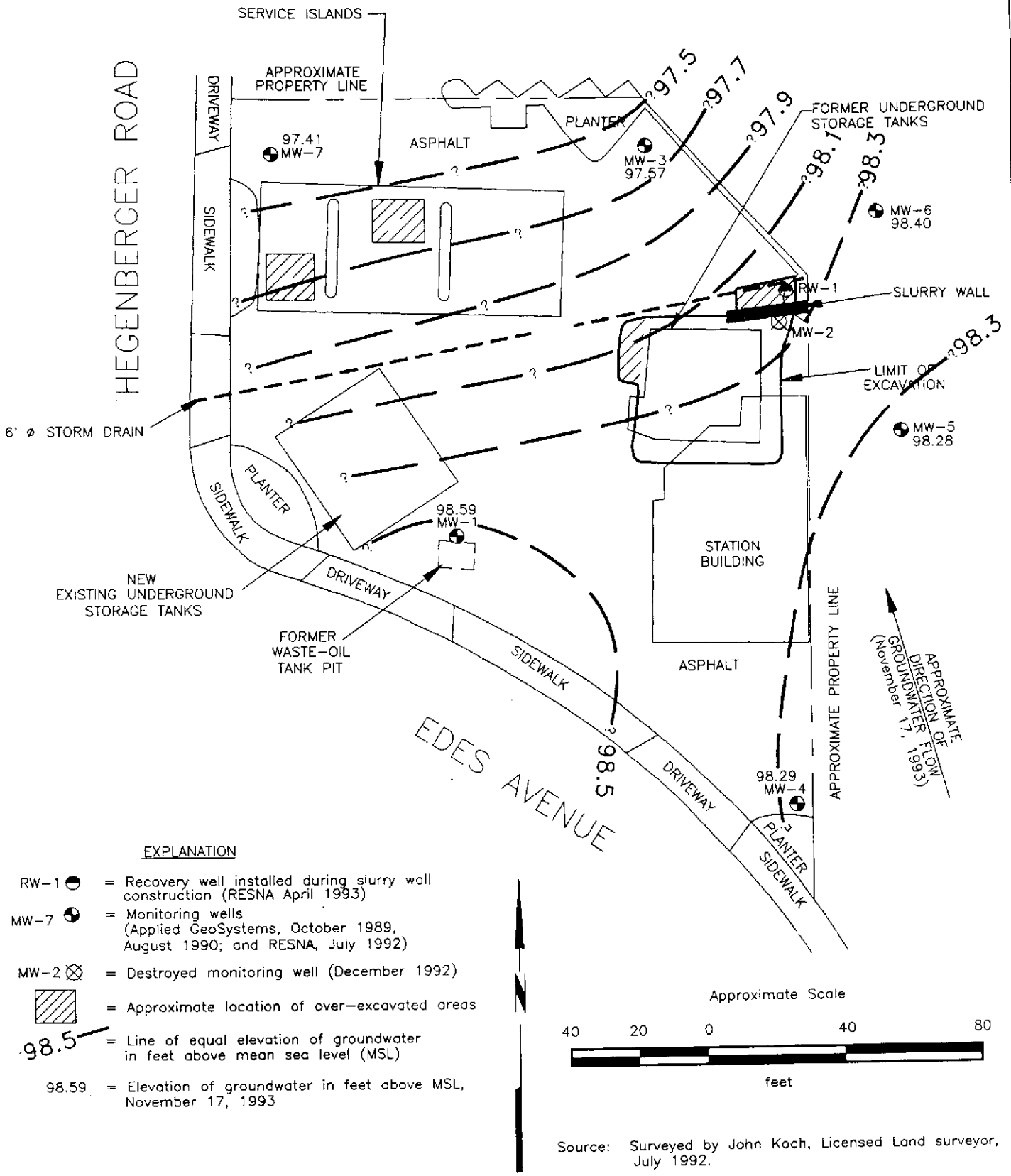


RESNA
Working to Restore Nature

PROJECT 69038.12 90381204

GENERALIZED SITE PLAN
ARCO Service Station 4494
566 Hegenberger Road
Oakland, California

PLATE 2

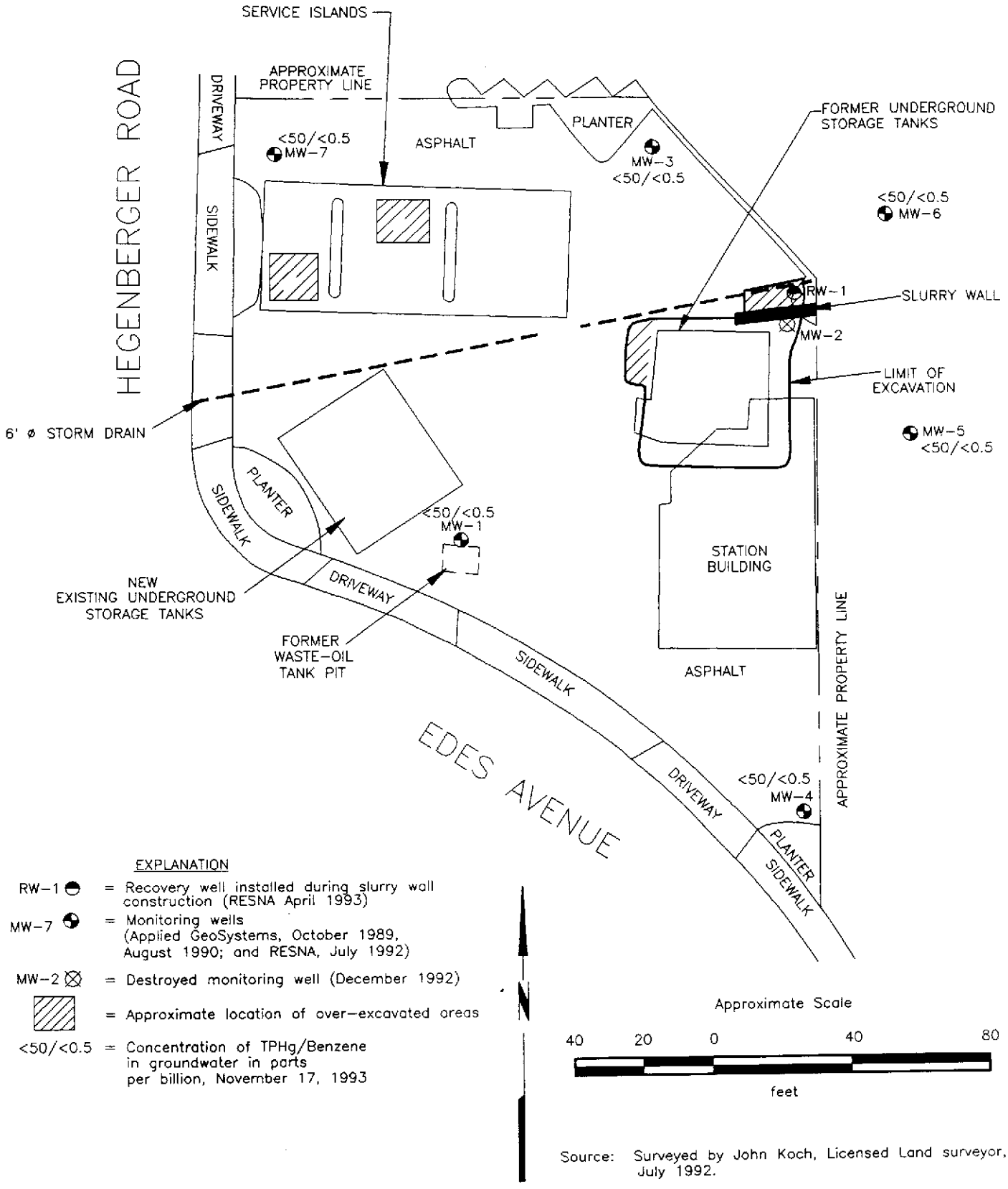


RESNA
Working to Restore Nature

PROJECT 69038.12 90381Q04

GROUNDWATER GRADIENT MAP
ARCO Service Station 4494
566 Hegenberger Road
Oakland, California

PLATE 3



Source: Surveyed by John Koch, Licensed Land surveyor, July 1992.

RESNA
Working to Restore Nature

PROJECT 69038.12 90381204

TPHg/BENZENE CONCENTRATIONS IN GROUNDWATER
ARCO Service Station 4494
566 Hegenberger Road
Oakland, California

PLATE 4

RESNA
Working to Restore Nature

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 1 of 4)

Well / Date	Elevation of Wellhead	Depth to Water	Water Elevation	Floating Product
MW-1				
06/06/90	105.31	6.65	98.66	None
08/16/90		7.00	98.31	None
08/21/90		7.05	98.26	None
09/07/90		7.24	98.07	None
11/20/90		7.46	97.85	None
11/29/90		7.40	97.91	None
12/19/90		6.99	98.32	None
01/29/91		7.23	98.08	None
02/27/91		7.45	97.86	None
03/07/91		6.96	98.35	None
03/26/91		6.02	99.29	None
05/02/91		7.04	98.27	None
06/27/91		6.71	98.60	None
07/24/91		6.91	98.40	None
08/22/91		6.85	98.46	None
09/30/91		7.04	98.27	None
10/17/91		7.22	98.09	None
11/21/91		7.17	98.14	None
12/18/91		7.46	97.85	None
01/19/92		7.44	97.87	None
02/20/92		6.25	99.06	None
03/20/92		6.40	98.91	None
04/20/92		6.88	98.43	None
05/19/92		7.10	98.21	None
06/08/92		7.22	98.09	None
07/15/92		7.92	97.39	None
08/06/92	106.10	7.29	98.81	None
10/29/92		7.34	98.76	None
11/23/92		8.15	97.95	None
08/16/93		7.23	98.87	None
11/17/93		7.51	98.59	None
MW-2				
06/06/90	105.78	9.00*	96.78*	0.92 Black Product
08/16/90		NM	NM	0.17 Black Product
08/21/90		NM	NM	0.17 Black Product
09/07/90		9.17*	96.61*	0.17 Black Product
11/20/90		9.20*	96.58*	Heavy Sheen
11/29/90		9.92*	95.86*	Heavy Sheen
12/19/90		8.95	96.83	None
01/29/91		9.01	96.77	Sheen
02/27/91		9.14	96.64	Sheen

See notes on page 4 of 4

RESNA
Working to Restore Nature

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 2 of 4)

Well Date	Elevation of Wellhead	Depth to Water	Water Elevation	Floating Product
MW-2 (cont.)				
03/07/91		8.94	96.84	Sheen
03/26/91		8.11	97.67	Sheen
05/02/91		8.72	97.06	None
06/27/91		9.20	96.58	Sheen
07/24/91		9.25	96.53	None
08/22/91		9.20	96.58	None
09/30/91		9.31	96.47	Sheen
10/17/91		9.39	96.39	Sheen
11/21/91		9.20	96.58	None
12/18/91		9.23	96.55	Sheen
01/19/92		9.96**	95.82	Skimmer
02/20/92		9.13**	96.65	Skimmer
03/20/92	105.78	9.31**	96.47	Skimmer
04/20/92		9.69	96.09	Skimmer
05/15/92		9.92	95.86	Skimmer
06/08/92		9.84	95.94	Skimmer
07/15/92		10.19	95.59	Skimmer
08/06/92	106.57	10.05	96.52	Skimmer
10/29/92		10.00	96.57	Skimmer
11/23/92		9.87	96.70	0.01
12/08/92		Well Destroyed		
MW-3				
08/16/90	105.51	8.87	96.64	None
08/21/90		8.85	96.66	None
09/07/90		8.98	96.53	None
11/20/90		9.10	96.41	None
11/29/90		9.05	96.46	None
12/19/90		8.67	96.84	None
01/29/91		8.96	96.55	None
02/27/91		8.71	96.80	None
03/07/91		8.49	97.02	None
03/26/91		7.65	97.86	None
05/02/91		8.62	96.89	None
06/27/91		8.94	96.57	None
07/24/91		8.96	96.55	None
08/22/91		8.92	96.59	None
09/30/91		9.04	96.47	None
10/17/91		9.12	96.39	None
11/21/91		8.92	96.59	None
12/18/91		8.97	96.54	None
01/19/92		8.69	96.82	None

See notes on page 4 of 4

RESNA
Working to Restore Nature

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 3 of 4)

Well Date	Elevation of Wellhead	Depth to Water	Water Elevation	Floating Product
MW-3 (cont.)				
02/20/92		7.78	97.73	None
03/20/92		8.15	97.36	None
04/20/92		8.57	96.94	None
05/15/92		8.76	96.75	None
06/08/92		8.74	96.77	None
07/15/92		9.12	96.39	None
08/06/92	106.29	8.95	97.34	None
10/29/92		8.78	97.51	None
11/23/92		9.91	96.38	None
08/16/93		8.62	97.67	None
11/17/93		8.72	97.57	None
MW-4				
08/16/90	106.61	8.16	98.45	None
08/21/90		8.22	98.39	None
09/07/90		8.39	98.22	None
11/20/90		8.57	98.04	None
11/29/90		8.53	98.08	None
12/19/90		8.13	98.48	None
01/29/91		8.66	97.95	None
02/27/91		8.44	98.17	None
03/07/91		8.18	98.43	None
03/26/91		7.56	99.05	None
05/02/91		8.25	98.36	None
06/27/91		7.75	98.86	None
07/24/91	106.61	8.12	98.49	None
08/22/91		7.98	98.63	None
09/30/91		8.26	98.35	None
10/17/91		8.42	98.19	None
11/21/91		8.65	97.96	None
12/18/91		8.77	97.84	None
01/19/92		8.42	98.19	None
02/20/92		7.60	99.01	None
03/20/92		7.61	99.00	None
04/20/92		8.15	98.46	None
05/15/92		8.34	98.27	None
06/08/92		8.40	98.21	None
07/15/92		8.72	97.89	None
08/06/92	107.40	8.52	98.09	None

See notes on page 4 of 4

RESNA
Working to Restore Nature

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 4494
Oakland, California
(Page 4 of 4)

Well / Date	Elevation of Wellhead	Depth to Water	Water Elevation	Floating Product
MW-4 (cont.)				
10/29/92		8.63	98.77	None
11/23/92		8.75	98.65	None
08/16/93		8.69	98.71	None
11/17/93		9.11	98.29	None
MW-5				
08/06/92	105.19	7.19	98.00	None
10/29/92		6.99	98.20	None
11/23/92		6.90	98.29	None
08/16/93		7.06	98.13	None
11/17/93		6.91	98.28	None
MW-6				
08/06/92	105.07	7.01	98.06	None
10/29/92		6.70	98.37	None
11/23/92		6.75	98.32	None
08/16/93		6.71	98.36	None
11/17/93		6.67	98.40	None
MW-7				
08/06/92	105.52	8.28	97.24	None
10/29/92		8.62	96.90	None
11/23/92		8.21	97.31	None
08/16/93		8.11	97.41	None
11/17/93		8.11	97.41	None
RW-1				
08/16/93	Not Surveyed	Dry	Dry	NM
11/17/93		Dry	Dry	NM

Depth measurements in feet.
* : Floating Product present in well.
** : Skimmer Installed (12/24/91)
NM : Not measured.

Elevations in feet above mean sea level (plus one hundred feet to avoid negative ground-water elevations).

RESNA
Working to Restore Nature

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES--TPHg, TPHd, BTEX, and TOG
ARCO Station 4494
Oakland, California
(Page 1 of 3)

Well / Date	TPHg (ppb)	TPHd (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	TOG (ppm)
MW-1							
06/19/90	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5,000
08/16/90	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
09/07/90	NA	NA	NA	NA	NA	NA	<5,000
11/29/90	<50	NA	<0.50	0.7	<0.50	<0.50	NA
03/07/91	<50	NA	<0.30	<0.30	<0.30	<0.50	NA
06/27/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
09/30/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
12/18/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
03/20/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
06/08/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
08/06/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
10/29/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
08/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/17/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MW-2							
06/19/90			Not sampled--product				
08/16/90			Not sampled--product				
09/07/90			Not sampled--product				
11/29/90			Not sampled--sheen				
03/07/91			Not sampled--sheen				
06/27/91			Not sampled--sheen				
09/30/91			Not sampled--sheen				
12/18/91			Not sampled--sheen				
03/20/92	48,000	NA	2,000	580	2,300	7,000	NA
06/08/92	43,000	NA	2,900	940	2,400	5,100	NA
08/06/92	78,000	NA	2,500	6,700	2,900	16,000	NA
10/29/92			Not sampled--product				
12/08/92			Well Destroyed				
MW-3							
08/16/90	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
09/07/90	NA	NA	NA	NA	NA	NA	<5,000
11/29/90	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
03/07/91	<50	NA	<0.30	<0.30	<0.30	<0.50	NA
06/27/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
09/30/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
12/18/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
03/20/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
06/08/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
08/06/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA

See notes on page 3 of 3

RESNA
Working to Restore Nature

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES--TPHg, TPHd, BTEX, and TOG
ARCO Station 4494
Oakland, California
(Page 2 of 3)

Well Date	TPHg (ppb)	TPHd (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	TOG (ppm)
MW-3 (cont.)							
10/29/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
08/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/17/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MW-4							
08/16/90	<20	NA	<0.50	<0.50	<0.50	<0.50	NA
09/07/90	NA	NA	NA	NA	NA	NA	<5,000
11/29/90	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
03/07/91	<50	NA	<0.30	<0.30	<0.30	<0.50	NA
06/27/91	<30	NA	0.75	1.1	<0.30	1.6	NA
09/30/91	<30	NA	<0.30	<0.30	<0.30	<0.30	NA
12/18/91	<30	NA	0.83	1.2	<0.30	0.58	NA
03/20/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
06/08/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
08/06/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
10/29/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
08/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/17/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MW-5							
08/06/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
10/29/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
08/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/17/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MW-6							
08/06/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
10/29/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
08/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/17/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
MW-7							
08/06/92	<50	NA	<0.50	<0.50	<0.50	<0.50	NA
10/29/92	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
08/16/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA
11/17/93	<50	NA	<0.5	<0.5	<0.5	<0.5	NA

See notes on page 3 of 3

RESNA
Working to Restore Nature

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES–TPHg, TPHd, BTEX, and TOG
ARCO Station 4494
Oakland, California
(Page 3 of 3)

Well Date	TPHg (ppb)	TPHd (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	TOG (ppm)
RW-1							
08/16/93	NS	NS	NS	NS	NS	NS	NS
11/17/93	NS	NS	NS	NS	NS	NS	NS
Jan. 1990							
MCLs	—	—	1.0	—	680	1,750	—
DWAL	—	—	—	100	—	—	—

TPHg : Total petroleum hydrocarbons as gasoline using EPA Methods 5030 and 8015.
TPHd : Total petroleum hydrocarbons as diesel using EPA Methods 3550 and 8015.
BTEX : Benzene, toluene, ethylbenzene, and total xylene isomers using EPA Method 5030 and 8020.
TOG : Total oil and grease using EPA Standard Method 503E.
NA : Not Analyzed.
NS : Not Sampled.
MCL : State Maximum Contaminant Level (October 1990).
DWAL : State Drinking Water Action Level (October 1990).

APPENDIX A

EMCON'S FIELD REPORT DEPTH TO WATER/FLOATING PRODUCT SURVEY RESULTS, SUMMARY OF GROUNDWATER MONITORING DATA, CERTIFIED ANALYTICAL REPORTS WITH CHAIN OF CUSTODY RECORD, AND WATER SAMPLE FIELD DATA SHEETS

EMCON Associates
1921 Ringwood Avenue • San Jose, California 95131-1721 • **(408) 453-7300** • Fax (408) 437-9526

Date December 9, 1993
Project 0G70-031.01

To:
Mr. John Young
RESNA
3315 Almaden Expressway, Suite 34
San Jose, California 95118

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
7	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the fourth quarter 1993 monitoring event at ARCO service station 4494, 566 Hegenberger Road, Oakland, California. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions:.(408) 453-7300.

Jim Butera

Reviewed by:

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-031.01 STATION ADDRESS : 566 Hegenberger Road, Oakland DATE : 11/17/93

ARCO STATION # : 4494 FIELD TECHNICIAN : Sean Connors DAY : Wednesday

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	MW-1	Good	Hex	Good	no	Yes	7.51	7.51	ND	ND	23 3	need new lock & well cap
2	MW-3	Good	7/16	good	3259	Yes	8.72	8.72	ND	ND	17.9	—
3	MW-4	good	15/16	good	3259	Yes	9.11	9.11	ND	ND	16.6	—
4	MW-5	good	15/16	good	3259	Yes	6.91	6.91	ND	ND	16.9	well cap & lock needs replacing
5	MW-6	Good	15/16	Good	3259	Yes	6.67	6.67	ND	ND	18.1	—
6	MW-7	Good	15/16	Good	3259	Yes	8.11	8.11	ND	ND	14.4	—
7	RW-1	Good	15/16	Good	NO	NO	Dry	Dry	ND	ND	8.00	Has 7/16 nuts on covers.

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
Fourth Quarter 1993
ARCO Service Station 4494
566 Hegenberger Road, Oakland, California
micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)
MW-1(23)	11/17/93	7.51	ND.[2]	<50	<0.5	<0.5	<0.5	<0.5
MW-3(18)	11/17/93	8.72	ND.	<50	<0.5	<0.5	<0.5	<0.5
MW-4(16)	11/17/93	9.11	ND.	<50	<0.5	<0.5	<0.5	<0.5
MW-5(16)	11/17/93	6.91	ND.	<50	<0.5	<0.5	<0.5	<0.5
MW-6(18)	11/17/93	6.67	ND.	<50	<0.5	<0.5	<0.5	<0.5
MW-7(14)	11/17/93	8.11	ND.	<50	<0.5	<0.5	<0.5	<0.5
RW-1	11/17/93	Dry.[3]	NA.[4]	NA.	NA.	NA.	NA.	NA.
FB-1[5]	11/17/93	NA.	NA.	<50	<0.5	<0.5	<0.5	<0.5

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. Dry. = Well was dry, no sample was taken
4. NA. = Not applicable
5. FB. = Field blank

Columbia Analytical Services, Inc.

December 3, 1993

Service Request No. SJ93-1415

Jim Butera
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: **EMCON Project No. 0G70-031.01**
ARCO Facility No. 4494

Dear Mr. Butera:

Attached are the results of the water samples submitted to our lab on November 17, 1993. For your reference, these analyses have been assigned our service request number SJ93-1415.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

KAM/kmh

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NR	Not Requested
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
VPH	Volatile Petroleum Hydrocarbons

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	11/17/93
Project:	EMCON Project No. 0G70-031.01	**Service Request No.:**	SJ93-1415
	ARCO Facility No. 4494	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

Sample Name:		MW-1 (23)	MW-3 (18)	MW-4 (16)
Date Analyzed:		11/24/93 *	11/24/93 *	11/24/93 *
Analyte	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

Sample Name:		MW-5 (16)	MW-6 (18)	MW-7 (14)
Date Analyzed:		11/24/93 *	11/29/93	11/24/93 *
Analyte	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

* This sample was part of the analytical batch started on November 24, 1993. However, it was analyzed after midnight so the actual date analyzed is November 25, 1993.

Approved by: Kevin A Murphy Date: December 3, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	11/17/93
Project:	EMCON Project No. 0G70-031.01	**Service Request No.:**	SJ93-1415
	ARCO Facility No. 4494	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
µg/L (ppb)

Sample Name:		FB-1	Method Blank	Method Blank
Date Analyzed:		11/24/93 *	11/24/93	11/29/93
Analyte	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

* This sample was part of the analytical batch started on November 24, 1993. However, it was analyzed after midnight so the actual date analyzed is November 25, 1993.

Approved by: Keon A Murphy Date: December 3, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	11/17/93
Project:	EMCON Project No. 0G70-031.01	**Service Request No.:**	SJ93-1415
	ARCO Facility No. 4494	**Sample Matrix:**	Water

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-1 (23)	11/24/93	79.
MW-3 (18)	11/24/93	81.
MW-4 (16)	11/24/93	78.
MW-5 (16)	11/24/93	77.
MW-6 (18)	11/29/93	84.
MW-7 (14)	11/24/93	80.
FB-1	11/24/93	85.
MS	11/24/93	92.
DMS	11/24/93	92.
Method Blank	11/24/93	77.
Method Blank	11/29/93	89.
CAS Acceptance Criteria		70-130

Approved by: Kevin A Murphy Date: December 3, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-031.01
ARCO Facility No. 4494

Date Received: 11/17/93
Service Request No.: SJ93-1415

Initial Calibration Verification
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
µg/L (ppb)

Date Analyzed: 11/24/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	25.	24.4	98.	85-115
Toluene	25.	23.7	95.	85-115
Ethylbenzene	25.	23.5	94.	85-115
Total Xylenes	75.	72.4	96.	85-115
TPH as Gasoline	250.	241.	96.	90-110

Approved by: Kevin Murphy Date: December 3, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-031.01
ARCO Facility No. 4494

Date Received: 11/17/93
Service Request No.: SJ93-1415
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
BTE
EPA Methods 5030/8020
µg/L (ppb)

Date Analyzed: 11/24/93

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria
Benzene	5,000.	540.	5,160.	4,990.	92.	89.	76-122
Toluene	5,000.	200.	4,600.	4,640.	88.	89.	75-127
Ethylbenzene	5,000.	490.	4,780.	4,780.	86.	86.	70-135

Approved by: Kevin A Murphy Date: December 3, 1993

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-5

Chain of Custody

ARCO Facility no. 4494	City (Facility) OAKLAND	Project manager (Consultant) Jim Buteva		Laboratory name CAS	
ARCO engineer Kyle Christie	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-7300	Fax no. (Consultant) 453-0452	Contract number 07077	
Consultant name EMCON		Address (Consultant) 1921 Ringwood Avenue San Jose		Method of shipment sampler will deliver	

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 GAS	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 ☐		
MW-1(23)	1-2	2		X		X	HCl	11-17-93	1319		X											
MW-3(18)	3-4	2						11-17-93	1145		X											
MW-4(16)	5-6	2						11-17-93	1224		X											
MW-5(16)	7-8	2						11-17-93	1220		X											
MW-6(18)	9-10	2						11-17-93	1135		X											
MW-7(14)	11-12	2						11-17-93	1318		X											
~~MW-(~~		2						NO Sample			X											
FB-1	13-14	2						11-17-93	1138		X											

Special detection Limit/reporting: Lowest Possible

Special QA/QC: AS normal

Remarks: 2-40 ml HCl VOA's

Lab number: SJ93-1415

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

Condition of sample: Ok		Temperature received: Cool	
Relinquished by sampler: Joe Wilbur	Date 11-17-93 Time 1450	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory: Auburn	Date 11-17-93 Time 1450

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: OG70-031.01 SAMPLE ID: MW-1(23.6)

PURGED BY: S. Connors CLIENT NAME: Arco 4494

SAMPLED BY: S. Connors LOCATION: 566 Hegenberger 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): NA VOLUME IN CASING (gal.): 10.31

DEPTH TO WATER (feet): 7.51 CALCULATED PURGE (gal.): 30.94

DEPTH OF WELL (feet): 23.3 / 15.79 ACTUAL PURGE VOL. (gal.): 20

DATE PURGED: 11/17/93 Start (2400 Hr) 12.58 End (2400 Hr) 13.09

DATE SAMPLED: 11/17/93 Start (2400 Hr) 13.15 End (2400 Hr) 13.19

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
13.04	~~20~~	7.34	6310	66.4	Clear	Light
13.09	20	6.83	>20,000	67.2	↓	↓
recharge		7.39	8050	66.2		

D. O. (ppm): NR ODOR: Slight 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 #: 3259

REMARKS: well dried at 20 gallons. well casing to high to put lock on or new cap. cap will get crushed by traffic going over it.

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

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

Location of previous calibration: MW-3

Signature: Sean M Connors Reviewed By: JB Page 1 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2 5/91

EMCON ASSOCIATES

PROJECT NO: 0G70-031.01 SAMPLE ID: MW-3 (18.9)

PURGED BY: S. Connors CLIENT NAME: Arco 4494

SAMPLED BY: S. Connors LOCATION: 566 Hegenberger 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.):	5.99
DEPTH TO WATER (feet):	8.72	CALCULATED PURGE (gal.):	17.99
DEPTH OF WELL (feet):	17.9	ACTUAL PURGE VOL (gal.):	18.0

DATE PURGED: 11/17/93 Start (2400 Hr) 11.27 End (2400 Hr) 11.36

DATE SAMPLED: 11/17/93 Start (2400 Hr) 11.39 End (2400 Hr) 11.45

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
11.30	6.0	7.37	3530	66.2	Grey	moderate
11.33	12.0	7.12	1000	64.8	Brown	moderate
11.36	18.0	7.10	1148	65.8	Brown	moderate

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 #: 3259

REMARKS: ___

Meter Calibration: Date: 11/17/93 Time: 11.10 Meter Serial #: 8912 Temperature °F: 59.5

(EC 1000 9.25/1000) (DI —) (pH 7 6.84/7.09 (pH 10 9.14/1000) (pH 4 4.36/4.00)

Location of previous calibration: ___

Signature: Sean M Connors Reviewed By: JB Page 2 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-031.01 SAMPLE ID: MW-4 (11.9 / 16.6)

PURGED BY: S. Connors CLIENT NAME: Arco 4494

SAMPLED BY: S. Connors LOCATION: 566 Hegenberger 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.):	9.89
DEPTH TO WATER (feet):	9.11	CALCULATED PURGE (gal.):	14.68
DEPTH OF WELL (feet):	16.6 (7.49)	ACTUAL PURGE VOL. (gal.):	13.00

DATE PURGED: 11/17/93 Start (2400 Hr) 12.09 End (2400 Hr) 12.13

DATE SAMPLED: 11/17/93 Start (2400 Hr) 12.19 End (2400 Hr) 12.24

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12.11	5.0	7.03	1360	63.8	Grey	Heavy
12.13	10.0	7.28	1048	65.7	Grey	Heavy
Recharge		6.98	1098	65.6	"	"

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

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 #: 3259

REMARKS: well dried at 13 gallons. Took sample.

Meter Calibration: Date: 11/17/93 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: Sean M Connors Reviewed By: JB

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-031-01 SAMPLE ID: MW-5 (6)

PURGED BY: J Williams CLIENT NAME: ARCO 4494

SAMPLED BY: J Williams LOCATION: 566 Hegenberger Rd Oakland, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	1.63
DEPTH TO WATER (feet):	6.91	CALCULATED PURGE (gal.):	4.89
DEPTH OF WELL (feet):	16.9	ACTUAL PURGE VOL. (gal.):	6

DATE PURGED: 11-17-93 Start (2400 Hr) 1209 End (2400 Hr) 1216

DATE SAMPLED: 11-17-93 Start (2400 Hr) 1219 End (2400 Hr) 1220

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1212	2	6.98	13100	67.8	GREY	HEAVY
1214	4	7.04	10650	69.0	"	"
1216	6	7.03	9600	69.0	"	"

D. O. (ppm): NR ODOR: STRONG 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: OK LOCK #: 3259

REMARKS: NEED NEW LOCKING CAP 2"

Meter Calibration: Date: 11-17-93 Time: 1118 Meter Serial #: 9010 Temperature °F: 70.0

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

Location of previous calibration: MW-6

Signature: Joe Williams Reviewed By: JB Page 4 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-031-01 SAMPLE ID: MW-6 (18)

PURGED BY: J. Williams CLIENT NAME: ARCO 4494

SAMPLED BY: J. Williams LOCATION: 566 Hesenberger Rd. Oakland Ca

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.86

DEPTH TO WATER (feet): 6.67 CALCULATED PURGE (gal.): 5.60

DEPTH OF WELL (feet): 18.1 ACTUAL PURGE VOL. (gal.): 6

DATE PURGED: 11-17-93 Start (2400 Hr) 1125 End (2400 Hr) 1130

DATE SAMPLED: 11-17-93 Start (2400 Hr) 1134 End (2400 Hr) 1135

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1127	2	6.88	6620	68.2	GREY	HEAVY
1128	4	6.94	5220	69.9	"	"
1130	6	6.92	5130	70.2	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): @ 1130 FB-1 1138

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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 11-17-93 Time: 1118 Meter Serial #: 9010 Temperature °F: @ 70.0

(EC 1000 990 / 1000) (DI ___) (pH 7 6.96 / 7.00) (pH 10 993 / 10.00) (pH 4 4.00 / —)

Location of previous calibration: ___

Signature: Joe Williams Reviewed By: JB Page 5 of 7

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-031-01 SAMPLE ID: MW-7 (14)

PURGED BY: J. Williams CLIENT NAME: ARCO 4494

SAMPLED BY: J. Williams LOCATION: 566 Hegenberger Rd Oakland, CA.

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.): 4.10

DEPTH TO WATER (feet): 8.11 1.5 CALCULATED PURGE (gal.): 12.32

DEPTH OF WELL (feet): 14.4 ACTUAL PURGE VOL. (gal.): 12.5

DATE PURGED: 11-17-93 Start (2400 Hr) 1306 End (2400 Hr) 1314

DATE SAMPLED: 11-17-93 Start (2400 Hr) 1316 End (2400 Hr) 1318

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1309	4	6.90	9746	71.6	GREY	HEAVY
1311	8	6.95	11730	71.4	"	"
1314	12	6.93	10770	71.2	"	"

D. O. (ppm): NR ODOR: None NR (COBALT 0 - 100) OR (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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 11/17/93 Time: 1118 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: Joe Williams Reviewed By: JB Page 6 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0676-031.01 SAMPLE ID: RW-1

~~PURGED~~ BY: Sean Conners CLIENT NAME: Arco 4994

SAMPLED BY: _____ LOCATION: Lieginberger Rd 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 VOLUME IN CASING (gal.): ___

DEPTH TO WATER (feet): Dry CALCULATED PURGE (gal.): ___

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

DATE PURGED: Dry 11/18/93 Start (2400 Hr) ___ End (2400 Hr) ___

DATE SAMPLED: Dry 11/18/93 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)
___	well was dry					

D. O. (ppm): NR ODOR: NR 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	___ 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: NA		Other: NA	

WELL INTEGRITY: Well was Dry LOCK #: 3259

REMARKS: _____

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

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

Location of previous calibration: ___

Signature: Sean M Conners Reviewed By: ___ Page 1 of ___