ARCO
HAZMAT

94 MAR 14 AM 8:13

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Working To Restore Nature

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

TRANSMITTAL

Scott Seery

TO: Mr. ~~Rob Weston~~
Alameda County Health
Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

DATE: March 7, 1994
PROJECT NUMBER: 62019.04
SUBJECT: ARCO Station 2162

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 2162, 15135 Hesperian Boulevard, San Leandro, California.

THESE ARE TRANSMITTED as checked below:

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[ ] 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. 62019.04

Erin D. Krueger

Erin D. Krueger, Staff Geologist

cc: Mr. John Jang, RWQCB
Mr. Michael Whelan, ARCO
Mr. Mike Bakaldin, CSLFD

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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 2162
15135 Hesperian Boulevard
San Leandro, California

62019.04

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

March 3, 1994

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

Subject: Letter Report, Quarterly Groundwater Monitoring
Fourth Quarter 1993
ARCO Station 2162
15135 Hesperian Boulevard, San Leandro, 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 October 15, November 16, and December 16, to measure depth to water (DTW) levels and perform subjective analysis for the presence of product in groundwater in wells MW-1 through MW-4. Quarterly sampling was performed by EMCON field personnel on October 15, 1993.

product in groundwater in wells MW-1 through MW-4. Quarterly sampling was performed by EMCON field personnel on October 15, 1993.

Laboratory Analyses

Water samples were analyzed by Columbia Analytical Services, Inc., located in San Jose, California (Hazardous Waste Testing Laboratory Certification #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 rose an average of about 0.86 foot in wells MW-1 through MW-4 since the last quarter. Evidence of floating product or product sheen was not noted in any of the wells during this quarter. The average gradient during this quarter is approximately 0.01 ft/ft with a flow toward the southwest (Plates 3, 4, and 5). 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 of TPHg and BTEX have generally decreased in wells MW-1, MW-2, and MW-3; and, in well MW-4, TPHg increased, benzene decreased, and toluene, ethylbenzene, and total xylenes remained not detected. 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.
- **Initiated offsite access agreement with Pacific Bell to drill proposed wells to the northwest of the site.**
- Performed Fourth Quarter 1993 Groundwater Monitoring.

First Quarter 1994

- Upon receiving signed access agreement, drill and install proposed wells.
- Submit Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1993 to ARCO and regulatory agencies.
- Perform First Quarter 1994 Groundwater Monitoring.

Reporting Requirements

RESNA recommends that copies of this report be forwarded to:

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

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

Mr. Mike Bakaldin
City of San Leandro Fire Department
Hazardous Materials Division
835 East 14th Street
San Leandro, California 94577

RESNA
Working to Restore Nature

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

Enclosures: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, October 15, 1993
Plate 4, Groundwater Gradient Map, November 16, 1993
Plate 5, Groundwater Gradient Map, December 16, 1993
Plate 6, TPHg/Benzene Concentrations in Groundwater, October 15, 1993

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples

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, and Water Sample Field Data Sheets.

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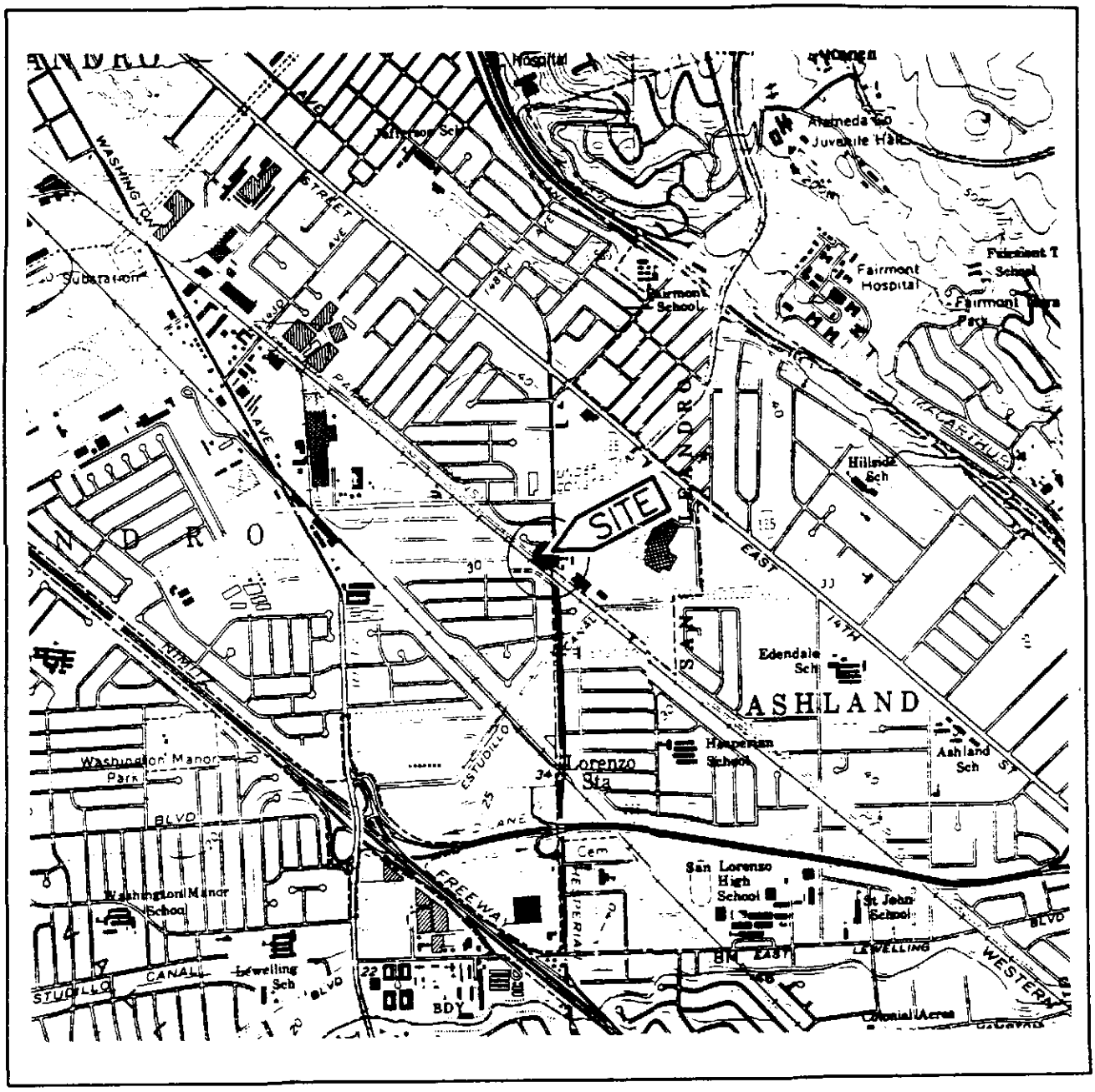
REFERENCES

RESNA. March 10, 1993. Subsurface Investigation at ARCO 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.02

RESNA. July 20, 1993. Letter Report Quarterly Groundwater Monitoring, Second Quarter 1993, at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.04



Source: U.S. Geological Survey
7.5-Minute Quadrangles
San Leandro/Hayward, California
Photorevised 1980

N

Approximate Scale

2000 1000 0 2000

feet

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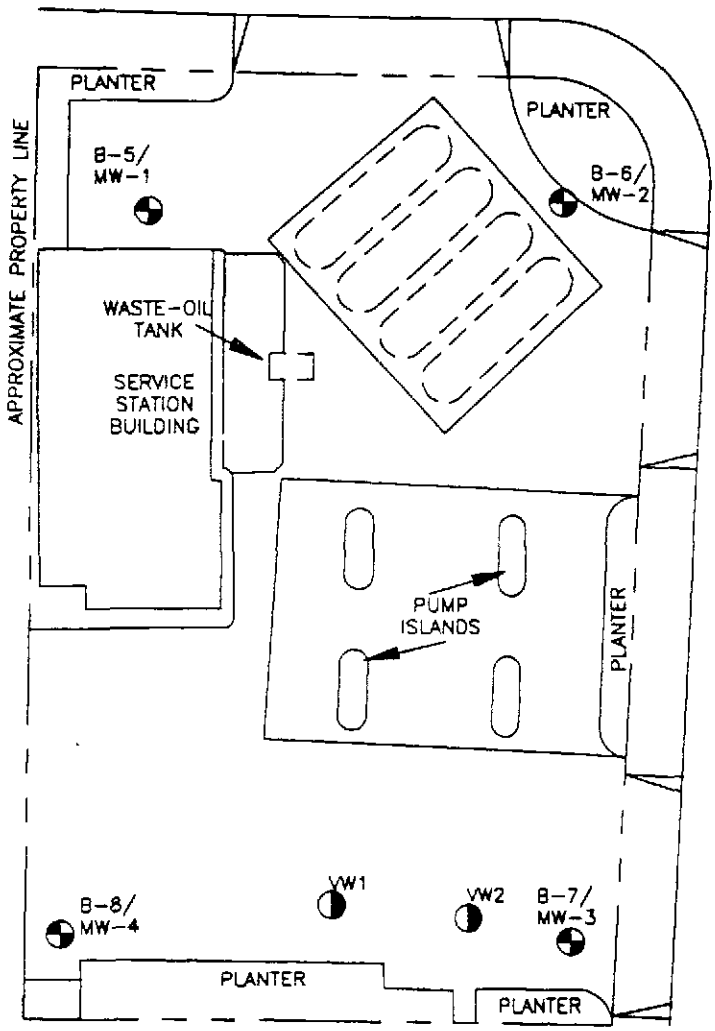
PROJECT 62019.04

SITE VICINITY MAP
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE
1

RUTH COURT



HESPERIAN BOULEVARD

EXPLANATION

B-8/
MW-4 = Monitoring well RESNA September 1992

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

= Existing underground storage tank

Approximate Scale

30 15 0 30 60

feet

Source: Modified from site plan provided by Roux Associates. and survey data from John Koch, licensed land surveyor (9/16/92)

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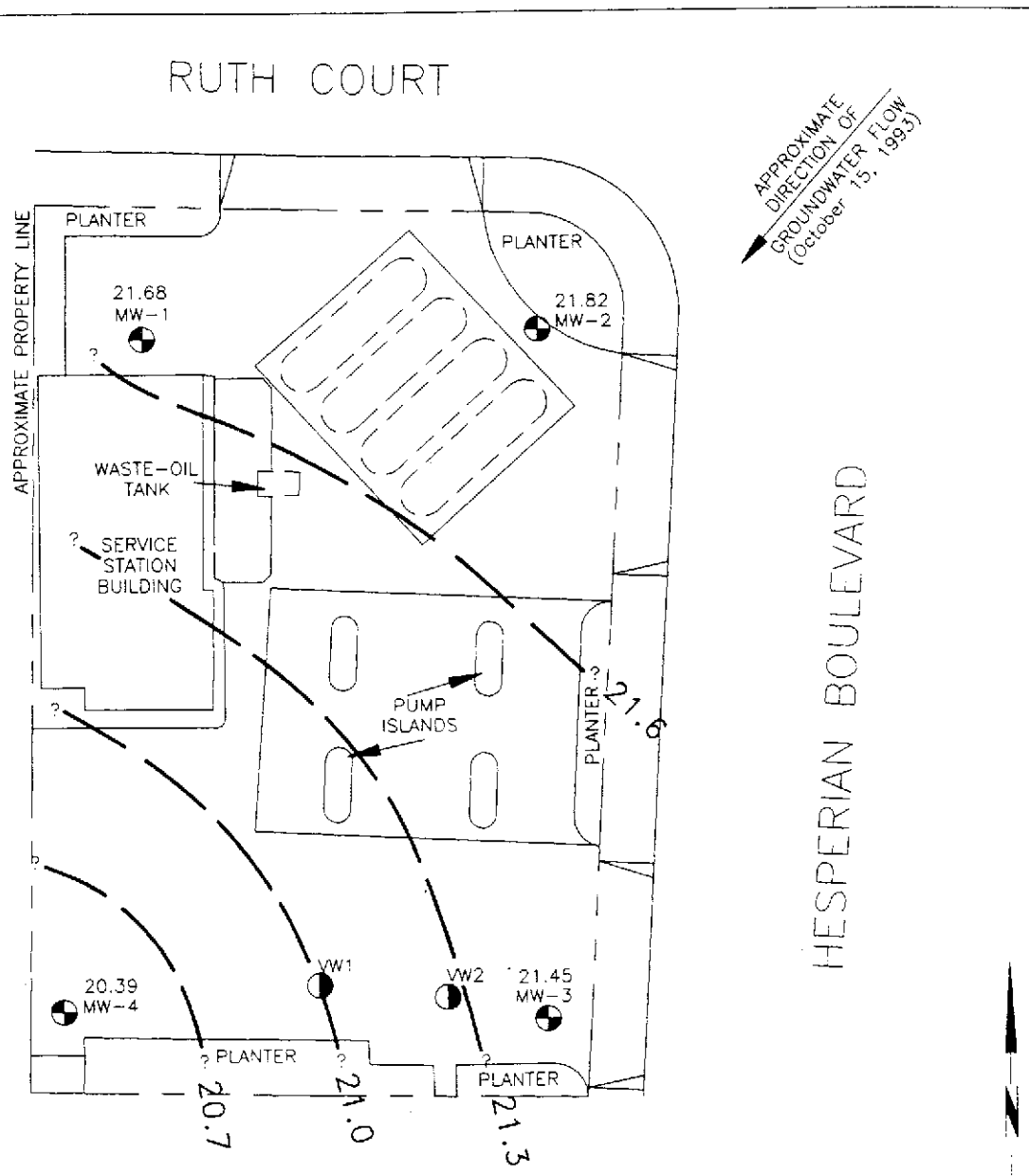
PROJECT 62019.04

GENERALIZED SITE PLAN
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE
2



EXPLANATION

MW-4 = Monitoring well (RESNA September 1992)

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

= Existing underground storage tank

21.6 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

21.82 = Elevation of groundwater in feet above MSL, October 15, 1993

Approximate Scale

30 15 0 30 60

feet

Source: Modified from site plan provided by Roux Associates, and survey data from John Koch, licensed land surveyor (9/16/92)

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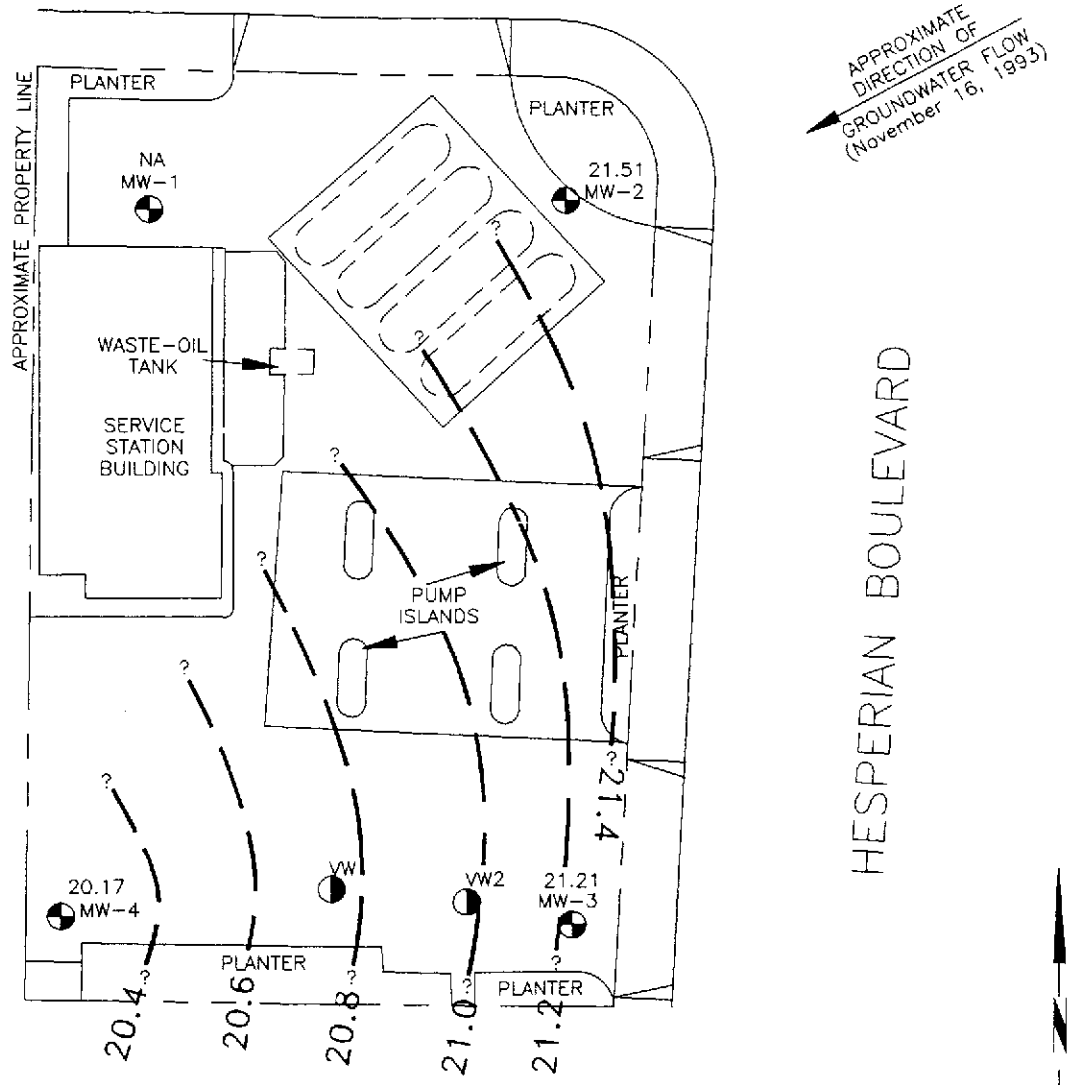
PROJECT 62019.04 62019-04

GROUNDWATER GRADIENT MAP

ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 3



EXPLANATION

MW-4 = Monitoring well (RESNA September 1992)

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

= Existing underground storage tank

21.4 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

21.51 = Elevation of groundwater in feet above MSL November 16, 1993

NA = Not accessible

Approximate Scale

30 15 0 30 60

feet

Source: Modified from site plan provided by Roux Associates. and survey data from John Koch, licensed land surveyor (9/16/92)

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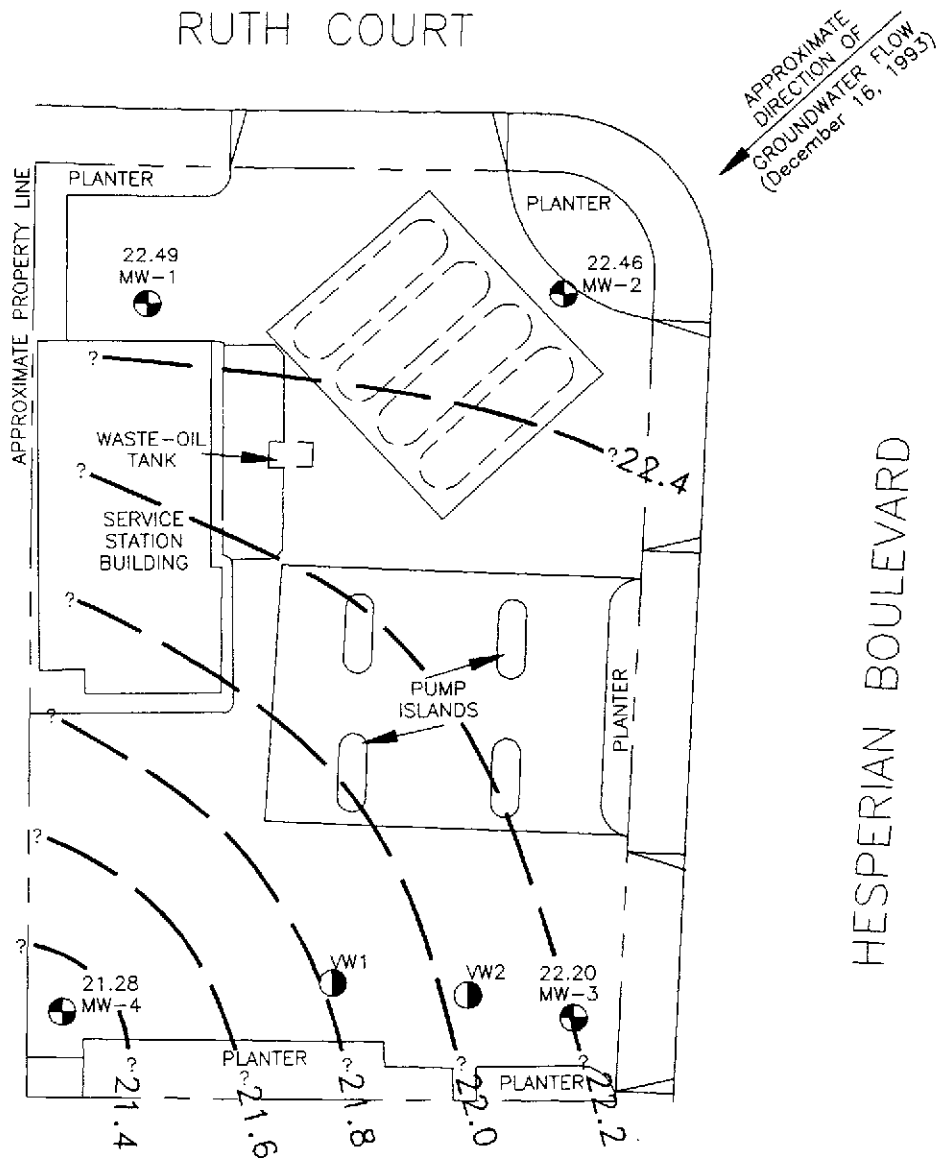
PROJECT 62019.04 62019-Q4

GROUNDWATER GRADIENT MAP
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 4



EXPLANATION

MW-4 = Monitoring well (RESNA September 1992)

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

= Existing underground storage tank

22.4 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

22.49 = Elevation of groundwater in feet above MSL December 16, 1993

Approximate Scale

30 15 0 30 60

feet

Source: Modified from site plan provided by Roux Associates. and survey data from John Koch, licensed land surveyor (9/16/92)

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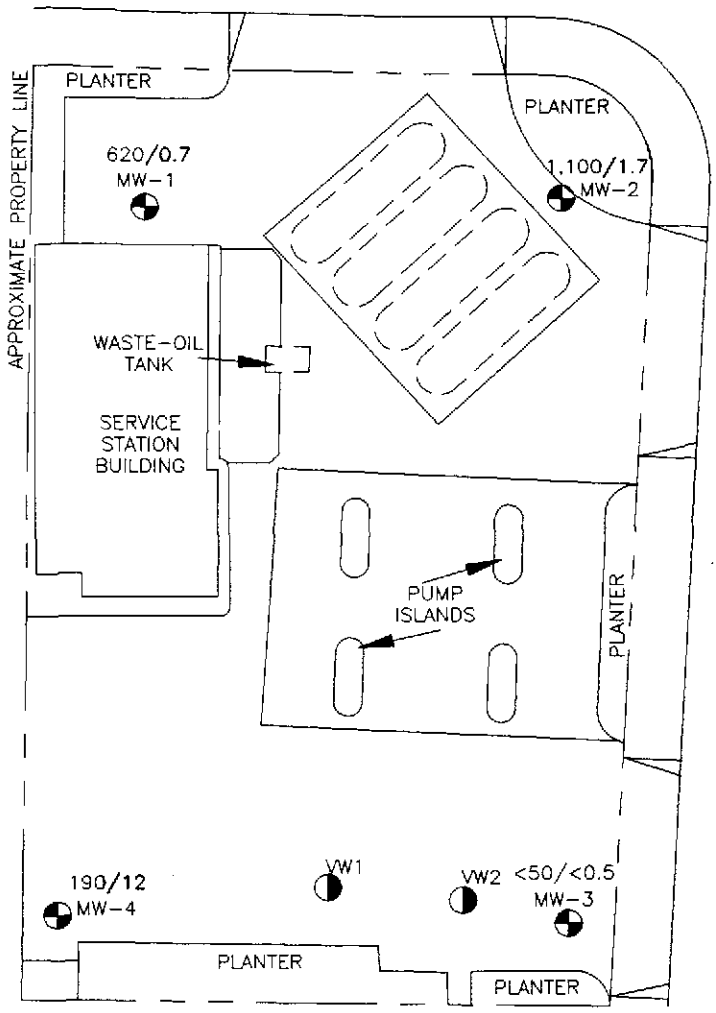
PROJECT 62019.04 62019-Q4

GROUNDWATER GRADIENT MAP

ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 5

RUTH COURT



HESPERIAN BOULEVARD

N

EXPLANATION

MW-4 = Monitoring well (RESNA September 1992)

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

= Existing underground storage tank

1,100/1.7 = Concentration of TPHg/Benzene in groundwater, in ppb, October 15, 1992

Approximate Scale

30 15 0 30 60

feet

Source: Modified from site plan provided by Roux Associates. and survey data from John Koch, licensed land surveyor (9/16/92)

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PROJECT 62019.04 62019-Q4

TPHg/BENZENE CONCENTRATIONS IN GROUNDWATER
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 6

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California
(page 1 of 2)

Well Date	Well Elevation	Depth-to- Water	Water Elevation	Floating Product
MW-1				
09/30/92	31.19	10.68	20.51	None
10/16/92		10.83	20.36	None
01/14/93		7.25	23.94	None
02/24/93		7.23	23.96	None
03/30/93		7.58	23.61	None
04/14/93		7.96	23.23	None
05/19/93		8.26	22.93	None
06/17/93		8.42	22.77	None
07/28/93		8.68	22.51	None
08/11/93		9.07	22.12	None
09/28/93		9.60	21.59	None
10/15/93		9.51	21.68	None
11/16/93		Not accessible -- car parked over well		
12/16/93		8.70	22.49	None
MW-2				
09/30/92	30.38	9.74	20.64	None
10/16/92		9.91	20.47	None
01/14/93		6.56	23.82	None
02/24/93		6.67	23.71	None
03/30/93		6.76	23.62	None
04/14/93		7.10	23.28	None
05/19/93		7.40	22.98	None
06/17/93		7.51	22.87	None
07/28/93		7.73	22.65	None
08/11/93		8.11	22.27	None
09/28/93		8.57	21.81	None
10/15/93		8.56	21.82	None
11/16/93		8.87	21.51	None
12/16/93		7.92	22.46	None
MW-3				
09/30/92	30.30	9.93	20.37	None
10/16/92		10.13	20.17	None
01/14/93		6.71	23.59	None
02/24/93		6.82	23.48	None
03/30/93		7.07	23.23	None
04/14/93		7.41	22.89	None
05/19/93		7.72	22.58	None
06/17/93		7.86	22.44	None
07/28/93		8.13	22.17	None

See notes on page 2 of 2

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California
(page 2 of 2)

Well Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-3 (cont.)				
08/11/93		8.45	21.85	None
09/28/93		8.96	21.34	None
10/15/93		8.85	21.45	None
11/16/93		9.09	21.21	None
12/16/93		8.10	22.20	None
MW-4				
09/30/92	30.39	11.15	19.24	None
10/16/92		11.33	19.06	None
01/14/93		7.49	22.90	None
02/24/93		7.57	22.82	None
03/30/93		8.06	22.33	None
04/14/93		8.48	21.91	Product entered during purge
05/19/93		7.80	22.59	None
06/17/93		8.94	21.45	None
07/28/93		9.28	21.11	None
08/11/93		9.61	20.78	None
09/28/93		10.14	20.25	None
10/15/93		10.00	20.39	None
11/16/93		10.22	20.17	None
12/16/93		9.11	21.28	None

All measurements in feet. Well elevation datum is top of casing (TOC) in feet above mean sea level (MSL). Survey datum is City of San Leandro = 1973 Adjusted National Geodetic Vertical Datum.
Depth-to-water (DTW) = measured from top of casing.
Water elevation =TOC minus DTW.
Wells surveyed by John Koch, Licensed Surveyor, on 9/16/92.

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TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

Well Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
MW-1					
09/30/92	1,100	6.2	<0.50	6.9	<0.50
10/16/92	790	3.0	0.8	5.6	2.9
01/14/93	660	1.2	<1*	15	4.6
04/14/93	310	<1*	<1*	<1*	
08/11/93	660	0.8	<0.7**	9.0	<1**
10/15/93	620	0.7	<0.5	5.9	2.2
MW-2					
09/30/92	1,000	9.6	<0.50	45	110
10/16/92	630	8.0	<1.0*	37	64
01/14/93	7,800	33	5	340	920
04/14/93	1,600	7	<5*	220	520
08/11/93	1,600	4.3	<1*	80	120
10/15/93	1,100	1.7	<1*	62	70
MW-3					
09/30/92	<50	<0.50	<0.50	<0.50	<0.50
10/16/92	<50	<0.50	<0.50	<0.50	<0.50
01/14/93	52	<0.5	<0.5	<0.5	<0.5
04/14/93	360	86	2.1	5.1	4.0
08/11/93	69	1.1	<0.5	<0.5	<0.5
10/15/93	<50	<0.5	<0.5	<0.5	<0.5
MW-4					
09/30/92	330	81	<0.50	<0.50	<0.50
10/16/92	250	44	<0.5	<0.5	0.7
01/14/93	260	29	0.6	<0.5	1.1
04/14/93		Not sampled—floating product entered well during purging			
08/11/93	150	21	<0.5	<0.5	<0.5
10/15/93	190	12	<0.5	<0.5	<0.5
MCL:	—	1	—	680	1,750
DWAL:	—	—	100	—	—

Results in micrograms per liter (μ/L) = parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline by EPA method 5030/California DHS LUFT.
BTEX: B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylene isomers; measured by EPA method 5030/8020
<: Results reported as less than the detection limit.
*: Raised method reporting limit (MRL) due to high analyte concentration requiring sample dilution.
**: Raised method reporting limit (MRL) due to matrix interference.
MCL: State Maximum Contaminant Level (DHS October 1990).
DWAL: State recommended Drinking Water Action Level (DHS October 1990).

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,
AND WATER SAMPLE FIELD DATA SHEETS

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

Date November 2, 1993
Project 0G70-055.01

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
4	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 2162, 15135 Hesperian Blvd, San Lorenzo, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-7300.

Jim Butera JB

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No. 4094 Exp. 6/30/94 INDUSTRIAL STATE OF CALIFORNIA

Robert C Porter

Robert Porter, Senior Project Engineer.

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SAN JOSE

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-055.01 STATION ADDRESS : 15135 Hesperian Blvd,San Leandro DATE : 10-15-95

ARCO STATION # : 2162 FIELD TECHNICIAN : J Williams 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	MW-3	ok	15/16	ok	3259	ok	8.85	8.85	ND	ND	15	—
2	MW-4	ok	15/16	ok	3259	ok	10.00	10.00	ND	ND	17	—
3	MW-1	ok	15/16	ok	3259	ok	9.51	9.51	ND	ND	16.0	—
4	MW-2	ok	15/16	ok	3259	ok	8.56	8.56	ND	ND	16.0	—

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
Fourth Quarter 1993
ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, 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(15)	10/15/93	9.51	ND.[2]	620.	0.7	<0.5	5.9	2.2
MW-2(15)	10/15/93	8.56	ND.	1,100.	1.7	<1.	62.	70.
MW-3(14)	10/15/93	8.85	ND.	<50.	<0.5	<0.5	<0.5	<0.5
MW-4(16)	10/15/93	10.00	ND.	190.	12.	<0.5	<0.5	<0.5

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected

Columbia Analytical Services inc.

November 1, 1993

Service Request No. SJ93-1279

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

Re: **EMCON Project No. 0G70-055.01**
ARCO Facility No. 2162

Dear Mr. Butera:

Attached are the results of the water samples submitted to our lab on October 18, 1993. For your reference, these analyses have been assigned our service request number SJ93-1279.

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

Carol Klein for
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:**	10/18/93
Project:	EMCON Project No. 0G70-055.01	**Service Request No.:**	SJ93-1279
	ARCO Facility No. 2162	**Sample Matrix:**	Water

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

Sample Name:		MW-1 (15)	MW-2 (15)	MW-3 (14)
Date Analyzed:		10/26/93	10/26/93	10/26/93
Analyte	**MRL**			
Benzene	0.5	0.7	1.7	ND
Toluene	0.5	ND	<1. *	ND
Ethylbenzene	0.5	5.9	62.	ND
Total Xylenes	0.5	2.2	70.	ND
TPH as Gasoline	50	620.	1,100.	ND

Sample Name:		MW-4 (16)	Method Blank
Date Analyzed:		10/26/93	10/26/93
Analyte	**MRL**		
Benzene	0.5	12.	ND
Toluene	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
TPH as Gasoline	50	190.	ND

* Raised MRL due to high analyte concentration requiring sample dilution.

Approved by: Kevin O'Malley Date: November 1, 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:**	10/18/93
Project:	EMCON Project No. 0G70-055.01	**Service Request No.:**	SJ93-1279
	ARCO Facility No. 2162	**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 (15)	10/26/93	111.
MW-2 (15)	10/26/93	96.
MW-3 (14)	10/26/93	91.
MW-4 (16)	10/26/93	96.
MW-4 (16) (MS)	10/26/93	100.
MW-4 (16) (DMS)	10/26/93	99.
Method Blank	10/26/93	85.
	CAS Acceptance Criteria	70-130

Approved by: _____ Date: November 1, 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. 0G70-055.01
ARCO Facility No. 2162

Date Received: 10/18/93
Service Request No.: SJ93-1279

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

Date Analyzed: 10/26/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	25.	27.2	109.	85-115
Toluene	25.	27.8	111.	85-115
Ethylbenzene	25.	27.8	111.	85-115
Total Xylenes	75.	84.8	113.	85-115
TPH as Gasoline	250.	250.	100.	90-110

Approved by: Kenneth Murphy Date: November 1, 1993

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	10/18/93
Project:	EMCON Project No. 0G70-055.01	**Service Request No.:**	SJ93-1279
	ARCO Facility No. 2162	**Sample Matrix:**	Water

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

Sample Name: MW-4 (16)
Date Analyzed: 10/26/93 *

			Spike Result		Percent Recovery		CAS Acceptance
Analyte	Spike Level	Sample Result	MS	DMS	MS	DMS	Criteria
Benzene	25.	11.9	36.7	37.4	99.	102.	76-122
Toluene	25.	ND	25.5	26.8	102.	107.	75-127
Ethylbenzene	25.	ND	25.9	27.1	104.	108.	70-135

* This sample was part of the analytical batch started on October 26, 1993. However, it was analyzed after midnight so the actual date analyzed is October 27, 1993.

Approved by: Kevin Murphy Date: November 1, 1993

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ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. EMC-93-5

ARCO Facility no. 2162	City (Facility) SAN LORENZO	Project manager (Consultant) JIM BUTERA	Laboratory name CAS
ARCO engineer KYLE CHRISTIE	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-7300	Fax no. (Consultant) 453-0452
Consultant name EMCON ASSOCIATES	Address (Consultant) 1921 RINGWOOD AVENUE SAN JOSE		Contract number 07077

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	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 ☐ Sem. VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(15)	1-2	2		X		X	HCl	10-15-93	1625		X											
MW-2(15)	3-4	2		X		X	HCl	10-15-93	1650		X											
MW-3(14)	5-6	2		X		X	HCl	10-15-93	1517		X											
MW-4(16)	7-8	2		X		X	HCl	10-15-93	1548		X											

Special detection Limit/reporting: LOWEST POSSIBLE

Special QA/QC: NORMAL

Remarks: 2-40 ml HCl

Lab number: 5593-1279

Turnaround time

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

Condition of sample: OKAY

Temperature received: COOL

	Date	Time		Date	Time
Relinquished by sampler	10-18-93	855	Received by		
Relinquished by			Received by		
Relinquished by			Received by laboratory	10/18/93	955

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

APPC-3292 (2-91)

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-055-01 SAMPLE ID: MW-1

PURGED BY: J. Williams CLIENT NAME: ARCO 2167

SAMPLED BY: J. Williams LOCATION: SAN LEANDRO

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.): 4.24

DEPTH TO WATER (feet): 9.51 CALCULATED PURGE (gal.): 12.73

DEPTH OF WELL (feet): 16.0 ACTUAL PURGE VOL. (gal.): 13

DATE PURGED: 10-15-93 Start (2400 Hr) 1613 End (2400 Hr) 1620

DATE SAMPLED: 10-15-93 Start (2400 Hr) 1622 End (2400 Hr) 1625

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1615	4.5	6.91	837	72.4	GREY	HEAVY
1618	9	6.99	848	72.6	"	"
1620	13	6.99	846	72.4	"	"

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

___ 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: SHEEN

Meter Calibration: Date: 10-15-93 Time: 1450 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: Joe Williams Reviewed By: JB Page 1 of 4

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-055-01 SAMPLE ID: MW-2

PURGED BY: J. Williams CLIENT NAME: ARCO 2162

SAMPLED BY: J. Williams LOCATION: SAN LEANDRO

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.): 4.86

DEPTH TO WATER (feet): 8.56 CALCULATED PURGE (gal.): 14.58

DEPTH OF WELL (feet): 16.0 ACTUAL PURGE VOL. (gal.): 15

DATE PURGED: 10-15-93 Start (2400 Hr) 1636 End (2400 Hr) 1648

DATE SAMPLED: 10-15-93 Start (2400 Hr) 1650 End (2400 Hr) 1653

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1641	5	7.03	808	70.4	GREY	HEAVY
1645	10	7.07	806	70.6	"	"
1648	15	6.98	808	70.8	"	"

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		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 #: 3295

REMARKS: ___

Meter Calibration: Date: 10-15-93 Time: 1450 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: Jeff Wells Reviewed By: JB Page 2 of 4

1.96

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-055-01 SAMPLE ID: MW-3

PURGED BY: J Williams CLIENT NAME: ARCO 2162

SAMPLED BY: J Williams LOCATION: SAN LEANDRO

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

DEPTH TO WATER (feet): 8.85 CALCULATED PURGE (gal.): 12.05

DEPTH OF WELL (feet): 15.0 ACTUAL PURGE VOL. (gal.): 12

DATE PURGED: 10-15-93 Start (2400 Hr) 1504 End (2400 Hr) 1512

DATE SAMPLED: 10-15-93 Start (2400 Hr) 1515 End (2400 Hr) 1517

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1506	4	6.96	810	75.9	BROWN	HEAVY
1509	8	6.98	812	74.5	"	"
1512	12	6.98	812	74.3	"	"

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	___ 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: 10-15-93 Time: 1450 Meter Serial #: 9010 Temperature °F: 72.2

(EC 1000 997 / 1000) (DI ___) (pH 7 670 / 700) (pH 10 1012 / 1000) (pH 4 4.02 / —)

Location of previous calibration: ___

Signature: Lee Walter Reviewed By: ___ Page 3 of 4

Rev. 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-055-01 SAMPLE ID: MW-4

PURGED BY: J. Williams CLIENT NAME: ARCO 2162

SAMPLED BY: J. Williams LOCATION: SAN LEANDRO

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.): 4.57

DEPTH TO WATER (feet): 10.0 CALCULATED PURGE (gal.): 13.72

DEPTH OF WELL (feet): 17.0 ACTUAL PURGE VOL. (gal.): 14

DATE PURGED: 10-15-93 Start (2400 Hr) 1533 End (2400 Hr) 1543

DATE SAMPLED: 10-15-93 Start (2400 Hr) 1545 End (2400 Hr) 1545

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1537	5	7.07	885	70.9	BROWN	HEAVY
1541	10	7.05	897	71.2	GREY	HEAVY
1543	14	7.00	898	71.7	"	"

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		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 #: 3254

REMARKS: SHEEN

Meter Calibration: Date: 10-15-93 Time: 1450 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: [signature] Reviewed By: [signature] Page 4 of 4

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

Date November 30, 1993
Project 0G70-055.01

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
	November 1993 monthly water level survey, ARCO
	2162, 15135 Hesperian Blvd., San Leandro, 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) 453-7300.

Reviewed by:

Jim Butera JB

Exp. 6/30/96

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-055.01 STATION ADDRESS : 15135 Hesperian Blvd,San Leandro DATE : November 16,1993

ARCO STATION # : 2162 FIELD TECHNICIAN : JoeWilliams/SteveHorton 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	**MW-3**	yes	15/16	na	3259	yes	9.09	9.09	ND	ND	15.0	water in box
2	**MW-4**	yes	15/16	na	3259	yes	10.22	10.22	ND	ND	17.1	water in box
3	**MW-1**	yes	15/16	na	3259	yes	NR	NR	NA	NA	NR	inoperable car parked on well
4	**MW-2**	yes	15/16	na	3259	yes	8.82	8.82	ND	ND	15.0	slight odor

SURVEY POINTS ARE TOP OF WELL CASINGS

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

Date December 22, 1993
Project 0G70-055.01

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
	December 1993 monthly water level survey, ARCO
	2162, 15135 Hesperian Blvd., San Leandro, 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) 453-7300.

Reviewed by: Jim Butera

6/30/94

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-055.01 STATION ADDRESS : 15135 Hesperian Blvd,San Leandro DATE : 12/16/93

ARCO STATION # : 2162 FIELD TECHNICIAN : Sean C. & Joe W. DAY : Thursday

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-3	YES	15/16	OK	3259	OK	8.10	8.10	ND	ND	15.0	—
2	MW-4	YES	15/16	OK	3259	OK	9.11	9.11	ND	ND	17.2	WATER IN 13
3	MW-1	YES	15/16	OK	3259	OK	8.70	8.70	ND	ND	16.0	—
4	MW-2	YES	15/16	OK	3259	OK	7.92	7.92	ND	ND	16.0	—

SURVEY POINTS ARE TOP OF WELL CASINGS