GeoStrategies Inc.

QUARTERLY MONITORING REPORT - Fourth Quarter 1993

ARCO Station 5387
20200 Hesperian Boulevard
Hayward, California

792601-17

January 14, 1994

TRANSMITTAL

TO: Ms. Juliet Shin
Alameda County Health Agency
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

DATE: January 17, 1994
PROJECT #: 7927.01
SUBJECT: Quarterly Monitoring Report - 4th Quarter 1993 for ARCO Station 5387

FROM:
Barbara Sieminski
Project Geologist
GeoStrategies, Inc.
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cc: **Mr. Joel Coffman**, GSI
Mr. Michael Whelan, ARCO Products Company
Mr. Richard Hiett, RWQCB, (Certified Mail)

GeoStrategies Inc.

Mr. Michael Whelan
ARCO Products Company
Post Office Box 5811
San Mateo, California

January 14, 1994

Subject: **QUARTERLY MONITORING REPORT - Fourth Quarter 1993**
ARCO Station 5387, 20200 Hesperian Boulevard, Hayward, California.

Mr. Whelan:

This Quarterly Monitoring Report was prepared on behalf of ARCO Products Company (ARCO) by GeoStrategies Inc. (GSI) and presents the results of the fourth quarter 1993 groundwater sampling for the above referenced site (Plate 1). Sampling data were furnished by the ARCO contractor, EMCON Associates of San Jose, California (EMCON).

SITE BACKGROUND

In August 1986, Groundwater Technology, Inc. (GTI) drilled four soil borings (SB-1 through SB-4) and three groundwater monitoring wells (MW-1 through MW-3) at the site. Between October 1991 and March 1993, GSI installed three on-site (A-4 through A-6) and four off-site (A-7 through A-10) groundwater monitoring wells, two groundwater recovery wells (AR-1 and AR-2), one air sparging/vapor extraction well (AS-1), one air sparging well (AS-2), and three vapor extraction wells (AV-1 through AV-3) at the site. The wells were installed to evaluate the horizontal and vertical extent of petroleum hydrocarbons in soil and groundwater beneath the site, and to provide extraction and air sparge points for the assessment of remedial alternatives. The active gasoline underground storage tanks (USTs) are located in the southeastern portion of the site and four service islands are located in the southwestern portion of the

site. The locations of the wells and other pertinent site features are shown on Plate 2, Site Plan.

On October 13 and 14, 1992, GSI performed step-drawdown and constant-rate aquifer tests at the site. These tests were performed to evaluate the feasibility of groundwater extraction and treatment as an interim remedial option.

On March 24, 1993, GSI performed vapor extraction and air sparging/vapor extraction tests to determine the feasibility of air sparging/vapor extraction as an interim remedial option.

In December 1993, Golden West Construction Company began installation of a soil and groundwater remediation system at the site, and GSI installed seven additional air sparging wells and one additional vapor extraction well (not shown on Plate 2) to provide additional sparging and vapor extraction points for the system. The results of drilling and system start up will be described in forthcoming reports.

Quarterly groundwater monitoring and sampling of the site wells began in December 1991. Groundwater samples are currently analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-G) and gasoline constituents Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) according to Environmental Protection Agency (EPA) Methods 5030/8015/8020.

CURRENT QUARTER SAMPLING RESULTS

Groundwater Level Measurements and Gradient Evaluation

Depth to water-level measurements were obtained by EMCON prior to sampling on October 26, 1993, from each monitoring and recovery well. Static groundwater levels were measured from the surveyed top of the well box and recorded to the nearest $\pm$0.01 foot. Water-level data were referenced to Mean Sea Level (MSL) datum and used to construct a potentiometric map of the first encountered groundwater beneath the site (Plate 3). Based on the October 26, 1993, water level data, shallow

groundwater beneath the site flows to the west at an approximate hydraulic gradient of 0.004.

Each well was inspected for the presence of floating product. Floating product was not observed in any well this quarter, and has never been observed in any well at this site. Depth-to-groundwater and floating product measurements for the current quarter are presented in Table 1 and in the EMCON groundwater sampling report (Appendix A). Current and historical water-level data and floating product measurements are summarized in Table 2.

Chemical Analyses of Groundwater Samples

Groundwater samples were collected on October 26, 1993, by EMCON. Samples were analyzed for TPH-G and BTEX using EPA Methods 5030/8015/8020. Groundwater samples were analyzed by Sequoia Analytical of Redwood City, California (Sequoia), a California State-certified laboratory (Hazardous Waste Testing Laboratory #1210).

Current quarter chemical analytical data are presented in Table 1 and have also been added to the Historical Groundwater Quality Database presented in Table 3. TPH-G was detected in samples from wells MW-1 through MW-3, A-4, A-5, A-7, A-10, AR-1 and AR-2 at concentrations ranging between 99 parts per billion (ppb) and 12,000 ppb. TPH-G was nondetectable (less than 50 ppb) in groundwater samples collected from on-site well A-6, and off-site wells A-8 and A-9. Benzene was reported in wells MW-1 through MW-3, A-5, A-7, AR-1 and AR-2 at concentrations ranging between 1.7 ppb and 1,200 ppb. Benzene concentrations were reported as nondetectable (less than 0.50 ppb) in groundwater samples collected from on-site wells A-4 and A-6, and off-site wells A-8 through A-10. The EMCON groundwater sampling report, laboratory analytical reports and the Chain-of-Custody form are presented in Appendix A. Chemical isoconcentration maps for TPH-G and benzene are presented on Plates 4 and 5, respectively.

CONCLUSIONS

Groundwater elevations decreased an average of about 3/4 feet between August and October 1993. The gradient and flow direction are consistent with the previously interpreted gradients and flow directions for this site.

Concentrations of TPH-G and benzene have remained nondetectable in wells A-6, A-8 and A-9; have increased in well MW-1; have decreased in wells A-4 and A-7; and have not changed significantly in all other wells since the last quarter.

The presence of dissolved gasoline hydrocarbons in groundwater samples collected from groundwater monitoring well A-4 located upgradient to the existing USTs, may be due to an off-site source. A 250-gallon gasoline UST was removed from the property located directly southeast and adjacent to the ARCO property. The location of this UST which was removed was directly upgradient to groundwater monitoring well A-4.

GSI's review of air photos and environmental files indicated that four other sites located in the immediate upgradient or crossgradient vicinity of the ARCO site are potential secondary sources of hydrocarbons detected in the soil and groundwater at the ARCO site. These sites include: former Shell Service Station located at 20500 Hesperian Boulevard; former UNOCAL Service Station located at 20501 Hesperian Boulevard; former TEXACO/EXXON Service Station located at 20499 Hesperian Boulevard; and Alliance Service Station located at 20450 Hesperian Boulevard.

GeoStrategies Inc.

ARCO Station 5387
QM Report
792601-17

January 14, 1994

If you have any questions, please call us at (510) 551-8777

GeoStrategies Inc. by,

Barbara Sieminski

Barbara Sieminski
Project Geologist

Gary Pischke
Senior Geologist
C.E.G. 1501

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GARY PISCHKE
No. 1501
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Table 1. Current Groundwater Monitoring Data
Table 2. Historical Water-Level Data
Table 3. Historical Groundwater Quality Database

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. TPH-G Isoconcentration Map
Plate 5. Benzene Isoconcentration Map

Appendix A: EMCON Groundwater Sampling Report

QC Review:

TABLE 1

CURRENT GROUNDWATER MONITORING DATA
ARCO Station 5387
San Lorenzo, California

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	WELL ELEV. (FT)	STATIC WATER ELEV. (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
MW-1	26-Oct-93	02-Nov-93	8,800	140	<10	41	<10	38.36	24.23	0.00	14.13
MW-2	26-Oct-93	02-Nov-93	12,000	1,200	<25	510	330	38.58	24.05	0.00	14.53
MW-3	26-Oct-93	02-Nov-93	2,900	42	<10	76	<10	37.77	24.17	0.00	13.60
A-4	26-Oct-93	02-Nov-93	160	<0.50	<0.50	1.0	<0.50	39.86	24.34	0.00	15.52
A-5	26-Oct-93	04-Nov-93	190	1.7	<0.50	5.5	2.0	38.94	24.22	0.00	14.72
A-6	26-Oct-93	04-Nov-93	<50	<0.50	<0.50	<0.50	<0.50	39.07	24.22	0.00	14.85
A-7	26-Oct-93	04-Nov-93	99	1.7	<0.50	4.0	3.0	39.95	23.67	0.00	16.28
A-8	26-Oct-93	04-Nov-93	<50	<0.50	<0.50	<0.50	<0.50	37.23	24.21	0.00	13.02
A-9	26-Oct-93	04-Nov-93	<50	<0.50	<0.50	<0.50	<0.50	38.71	23.85	0.00	14.86
A-10	26-Oct-93	02-Nov-93	290	<0.50	<0.50	<0.50	<0.50	38.94	23.29	0.00	15.65
AR-1	26-Oct-93	05-Nov-93	240	98	<2	11	<2	38.11	24.13	0.00	13.98
AR-2	26-Oct-93	02-Nov-93	110	15	<0.50	1.8	<0.50	38.39	24.14	0.00	14.25
XDUP-1 (MW-2)	26-Oct-93	04-Nov-93	9,300	1,200	<25	570	400	---	---	---	---
TB	26-Oct-93	04-Nov-93	<50	<0.50	<0.50	<0.50	<0.50	---	---	---	---

TABLE 1

CURRENT GROUNDWATER MONITORING DATA
ARCO Station 5387
San Lorenzo, California

Current Regional Water Quality Control Board Maximum Contaminant Levels:
Benzene 1.0 ppb, Xylenes 1750 ppb, Ethylbenzene 680 ppb

Current DHS Action Levels: Toluene 100 ppb

TPH-G	=	Total Petroleum Hydrocarbons calculated as Gasoline.
XDUP1	=	Duplicate sample collected from well MW-2.
PPB	=	Parts Per Billion.
TB	=	Trip Blank

Notes:
1. All data shown as <x are reported as ND (none detected).
2. Water level elevations referenced to Mean Sea Level (MSL).

TABLE 2

HISTORICAL WATER-LEVEL DATA
ARCO Station 5387
San Lorenzo, California

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
08-Aug-86	MW-1	11.25	38.36	27.11	0.00
24-Dec-91	MW-1	16.12	38.36	22.24	0.00
10-Mar-92	MW-1	13.34	38.36	25.02	0.00
09-Jun-92	MW-1	14.12	38.36	24.24	0.00
14-Sep-92	MW-1	15.34	38.36	23.02	0.00
12-Nov-92	MW-1	15.46	38.36	22.90	0.00
11-Feb-93	MW-1	11.95	38.36	26.41	0.00
14-Apr-93	MW-1	11.65	38.36	26.71	0.00
12-Aug-93	MW-1	12.93	38.36	25.43	0.00
26-Oct-93	MW-1	14.13	38.36	24.23	0.00
08-Aug-86	MW-2	11.62	38.58	26.96	0.00
24-Dec-91	MW-2	16.50	38.58	22.08	0.00
10-Mar-92	MW-2	13.50	38.58	25.08	0.00
09-Jun-92	MW-2	14.52	38.58	24.06	0.00
14-Sep-92	MW-2	15.78	38.58	22.80	0.00
12-Nov-92	MW-2	15.98	38.58	22.60	0.00
11-Feb-93	MW-2	12.27	38.58	26.31	0.00
14-Apr-93	MW-2	12.01	38.58	26.57	0.00
12-Aug-93	MW-2	13.81	38.58	24.77	0.00
26-Oct-93	MW-2	14.53	38.58	24.05	0.00
08-Aug-86	MW-3	10.61	37.77	27.16	0.00
24-Dec-91	MW-3	15.60	37.77	22.17	0.00
10-Mar-92	MW-3	12.90	37.77	24.87	0.00
09-Jun-92	MW-3	13.60	37.77	24.17	0.00
14-Sep-92	MW-3	14.78	37.77	22.99	0.00
12-Nov-92	MW-3	14.92	37.77	22.85	0.00
11-Feb-93	MW-3	11.65	37.77	26.12	0.00
14-Apr-93	MW-3	11.16	37.77	26.61	0.00
12-Aug-93	MW-3	12.82	37.77	24.95	0.00
26-Oct-93	MW-3	13.60	37.77	24.17	0.00
24-Dec-91	A-4	17.60	39.86	22.26	0.00
10-Mar-92	A-4	14.76	39.86	25.10	0.00
09-Jun-92	A-4	15.63	39.86	24.23	0.00
14-Sep-92	A-4	16.83	39.86	23.03	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA
ARCO Station 5387
San Lorenzo, California

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
12-Nov-92	A-4	16.97	39.86	22.89	0.00
11-Feb-93	A-4	13.43	39.86	26.43	0.00
14-Apr-93	A-4	13.06	39.86	26.80	0.00
12-Aug-93	A-4	14.94	39.86	24.92	0.00
26-Oct-93	A-4	15.52	39.86	24.34	0.00
24-Dec-91	A-5	16.85	38.94	22.09	0.00
10-Mar-92	A-5	13.83	38.94	25.11	0.00
09-Jun-92	A-5	14.91	38.94	24.03	0.00
14-Sep-92	A-5	16.14	38.94	22.80	0.00
12-Nov-92	A-5	16.35	38.94	22.59	0.00
11-Feb-93	A-5	13.21	38.94	25.73	0.00
14-Apr-93	A-5	12.97	38.94	25.97	0.00
12-Aug-93	A-5	14.12	38.94	24.82	0.00
26-Oct-93	A-5	14.72	38.94	24.22	0.00
24-Dec-91	A-6	16.88	39.07	22.19	0.00
10-Mar-92	A-6	13.73	39.07	25.34	0.00
09-Jun-92	A-6	14.95	39.07	24.12	0.00
14-Sep-92	A-6	16.20	39.07	22.87	0.00
12-Nov-92	A-6	16.35	39.07	22.72	0.00
11-Feb-93	A-6	13.04	39.07	26.03	0.00
14-Apr-93	A-6	12.23	39.07	26.84	0.00
12-Aug-93	A-6	14.18	39.07	24.89	0.00
26-Oct-93	A-6	14.85	39.07	24.22	0.00
24-Dec-91	A-7	18.11	39.95	21.84	0.00
10-Mar-92	A-7	15.30	39.95	24.65	0.00
09-Jun-92	A-7	16.12	39.95	23.83	0.00
14-Sep-92	A-7	17.35	39.95	22.60	0.00
12-Nov-92	A-7	17.47	39.95	22.48	0.00
11-Feb-93	A-7	13.80	39.95	26.15	0.00
14-Apr-93	A-7	13.60	39.95	26.35	0.00
12-Aug-93	A-7	15.54	39.95	24.41	0.00
26-Oct-93	A-7	16.28	39.95	23.67	0.00
14-Sep-92	A-8	14.19	37.23	23.04	0.00
12-Nov-92	A-8	14.35	37.23	22.88	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA
ARCO Station 5387
San Lorenzo, California

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
11-Feb-93	A-8	11.25	37.23	25.98	0.00
14-Apr-93	A-8	12.33	37.23	24.90	0.00
12-Aug-93	A-8	12.41	37.23	24.82	0.00
26-Oct-93	A-8	13.02	37.23	24.21	0.00
14-Sep-92	A-9	16.12	38.71	22.59	0.00
12-Nov-92	A-9	16.29	38.71	22.42	0.00
11-Feb-93	A-9	12.31	38.71	26.40	0.00
14-Apr-93	A-9	12.01	38.71	26.70	0.00
12-Aug-93	A-9	13.90	38.71	24.81	0.00
26-Oct-93	A-9	14.86	38.71	23.85	0.00
07-Dec-92	A-10	16.81	38.94	22.13	0.00
11-Feb-93	A-10	13.15	38.94	25.79	0.00
14-Apr-93	A-10	12.93	38.94	26.01	0.00
12-Aug-93	A-10	14.87	38.94	24.07	0.00
26-Oct-93	A-10	15.65	38.94	23.29	0.00
14-Sep-92	AR-1	15.21	38.11	22.90	0.00
12-Nov-92	AR-1	15.36	38.11	22.75	0.00
11-Feb-93	AR-1	12.81	38.11	25.30	0.00
14-Apr-93	AR-1	11.77	38.11	26.34	0.00
12-Aug-93	AR-1	13.55	38.11	24.56	0.00
26-Oct-93	AR-1	13.98	38.11	24.13	0.00
30-Mar-93	AR-2	11.53	38.39	26.86	0.00
14-Apr-93	AR-2	11.87	38.39	26.52	0.00
12-Aug-93	AR-2	13.59	38.39	24.80	0.00
26-Oct-93	AR-2	14.25	38.39	24.14	0.00

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

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE
ARCO Station 5387
San Lorenzo, California

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
08-Aug-86	MW-1	7040	132	8.7	439	230
24-Dec-91	MW-1	2200	190	8.5	6.9	2.6
10-Mar-92	MW-1	2800	270	29	56	39
09-Jun-92	MW-1	2900	960	27	99	63
14-Sep-92	MW-1	2600	450	<5.0	45	21
12-Nov-92	MW-1	1600	310	7.2	22	8.9
11-Feb-93	MW-1	4000	510	47	200	91
14-Apr-93	MW-1	1700	260	20	100	70
12-Aug-93	MW-1	830	60	3.8	39	3.6
26-Oct-93	MW-1	8800	140	<10	41	<10
08-Aug-86	MW-2	1910	20.1	2.8	1.8	---
24-Dec-91	MW-2	23000	1500	1100	480	1400
10-Mar-92	MW-2	210000	44000	3900	1700	5800
09-Jun-92	MW-2	33000	2300	370	780	2600
14-Sep-92	MW-2	16000	3700	100	470	1000
12-Nov-92	MW-2	16000	3800	86	470	910
11-Feb-93	MW-2	27000	3500	720	1600	3800
14-Apr-93	MW-2	27000	3500	220	2200	5100
12-Aug-93	MW-2	16000	1600	27	1300	1200
26-Oct-93	MW-2	12000	1200	<25	510	330
08-Aug-86	MW-3	7450	510	549	409	1380
24-Dec-91	MW-3	6800	450	10	610	45
10-Mar-92	MW-3	11000	2500	75	400	560
09-Jun-92	MW-3	16000	2000	69	1300	2600
14-Sep-92	MW-3	14000	630	<50	1500	2400
12-Nov-92	MW-3	7400	400	<25	860	330
11-Feb-93	MW-3	8600	580	<20	710	300
14-Apr-93	MW-3	6900	300	8.8	580	99
12-Aug-93	MW-3	3400	56	<5	190	<5
26-Oct-93	MW-3	2900	42	<10	76	<10
24-Dec-91	A-4	1900	29	1.9	25	29
10-Mar-92	A-4	7400	37	<0.60	11	73
09-Jun-92	A-4	4500	3.2	1.5	37	16
14-Sep-92	A-4	1300	<2.5	2.5	61	6.8

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE
ARCO Station 5387
San Lorenzo, California

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
12-Nov-92	A-4	610	7.2	0.98	34	0.97
11-Feb-93	A-4	740	2.4	<0.50	5.0	3.5
14-Apr-93	A-4	380	<0.50	<0.50	10	1.6
12-Aug-93	A-4	1200	0.93	<0.50	0.91	<0.50
26-Oct-93	A-4	160	<0.50	<0.50	1.0	<0.50
24-Dec-91	A-5	1600	35	<0.30	32	52
10-Mar-92	A-5	1000	21	<1.5	43	100
09-Jun-92	A-5	680	1.6	<0.30	14	16
14-Sep-92	A-5	770	34	<2.5	51	65
12-Nov-92	A-5	520	12	0.96	29	36
11-Feb-93	A-5	150	3.0	<0.50	5.1	1.5
14-Apr-93	A-5	190	1.6	<0.50	1.5	0.97
12-Aug-93	A-5	230	5.4	<0.50	5.3	0.94
26-Oct-93	A-5	190	1.7	<0.50	5.5	2.0
24-Dec-91	A-6	<30	<0.30	<0.30	<0.30	<0.30
10-Mar-92	A-6	<30	<0.30	<0.30	<0.30	<0.30
09-Jun-92	A-6	<30	<0.30	<0.30	<0.30	<0.30
14-Sep-92	A-6	<50	<0.50	<0.50	<0.50	<0.50
12-Nov-92	A-6	<50	<0.50	<0.50	<0.50	<0.50
11-Feb-93	A-6	<50	<0.50	<0.50	<0.50	<0.50
14-Apr-93	A-6	<50	<0.50	<0.50	<0.50	<0.50
12-Aug-93	A-6	<50	<0.50	<0.50	<0.50	<0.50
26-Oct-93	A-6	<50	<0.50	<0.50	<0.50	<0.50
24-Dec-91	A-7	10000	88	16	170	610
10-Mar-92	A-7	320	9.3	0.54	8.8	34
09-Jun-92	A-7	340	11	1.1	8.9	26
14-Sep-92	A-7	510	12	<2.0	30	51
12-Nov-92	A-7	760	17	0.83	50	73
11-Feb-93	A-7	260	20	1.0	11	21
14-Apr-93	A-7	1300	89	2.1	48	87
12-Aug-93	A-7	360	9.0	<0.50	13	9.0
26-Oct-93	A-7	99	1.7	<0.50	4.0	3.0
14-Sep-92	A-8	<50	<0.50	<0.50	<0.50	<0.50
12-Nov-92	A-8	<50	<0.50	<0.50	<0.50	<0.50

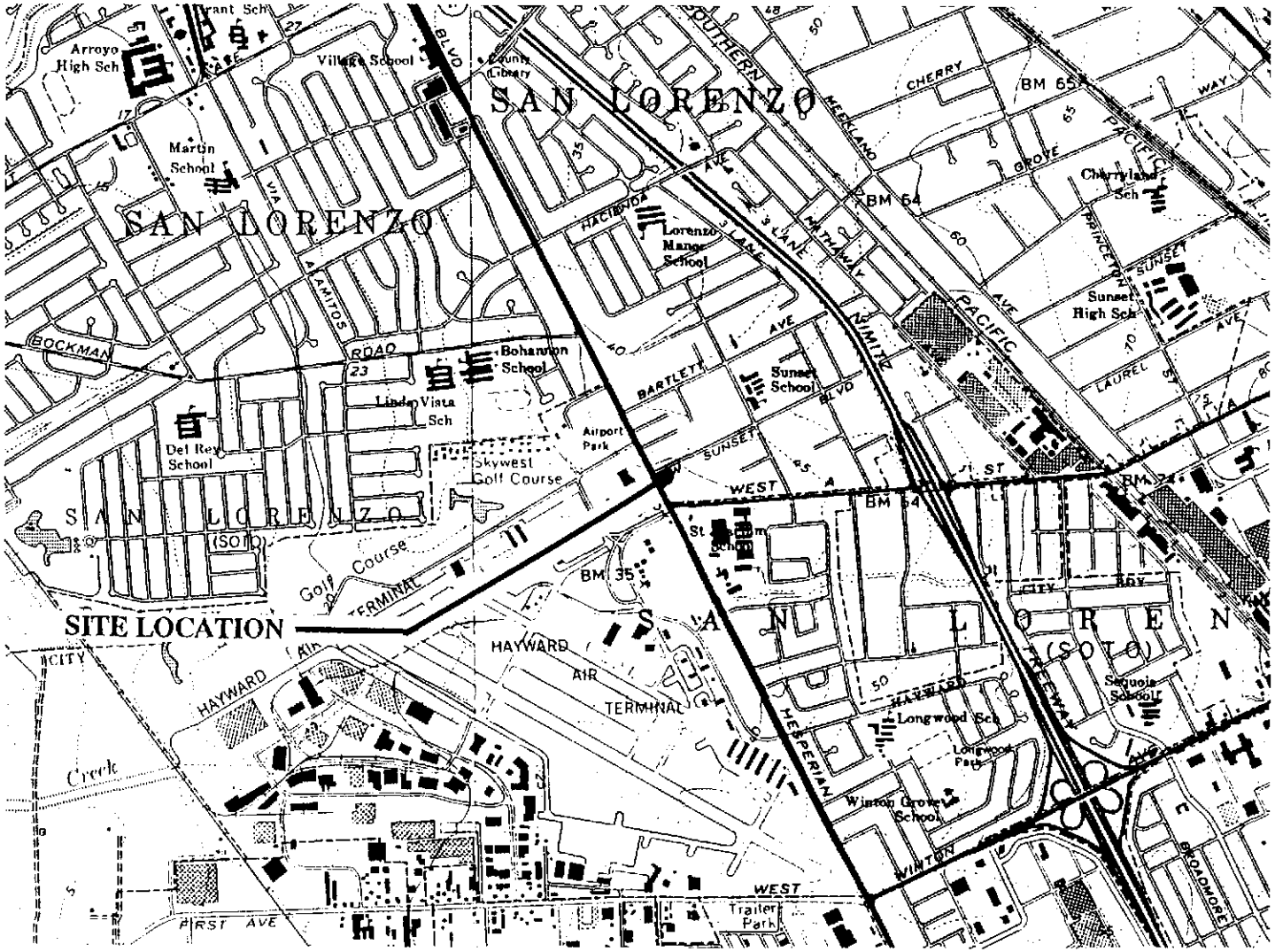
TABLE 3

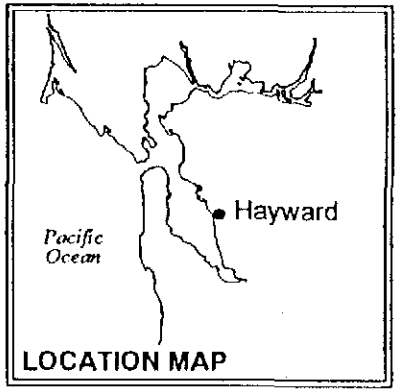
HISTORICAL GROUNDWATER QUALITY DATABASE
ARCO Station 5387
San Lorenzo, California

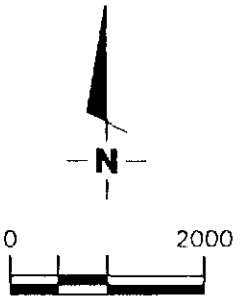
SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
11-Feb-93	A-8	<50	<0.50	<0.50	<0.50	<0.50
14-Apr-93	A-8	<50	<0.50	<0.50	<0.50	<0.50
12-Aug-93	A-8	<50	<0.50	<0.50	<0.50	<0.50
26-Oct-93	A-8	<50	<0.50	<0.50	<0.50	<0.50
14-Sep-92	A-9	<50	<0.50	<0.50	<0.50	<0.50
12-Nov-92	A-9	<50	<0.50	<0.50	<0.50	<0.50
11-Feb-93	A-9	<50	<0.50	<0.50	<0.50	<0.50
14-Apr-93	A-9	<50	<0.50	<0.50	<0.50	<0.50
12-Aug-93	A-9	<50	<0.50	<0.50	<0.50	<0.50
26-Oct-93	A-9	<50	<0.50	<0.50	<0.50	<0.50
07-Dec-92	A-10	660	30	<2.5	<2.5	<2.5
11-Feb-93	A-10	210	<0.50	0.97	<0.50	<0.50
14-Apr-93	A-10	770	<0.50	3.0	0.76	1.9
12-Aug-93	A-10	390	<0.50	<0.50	<0.50	0.84
26-oct-93	A-10	290	<0.50	<0.50	<0.50	<0.50
14-Sep-92	AR-1	820	67	<1.0	8.8	6.7
12-Nov-92	AR-1	140	66	<0.50	4.3	3.7
11-Feb-93	AR-1	360	190	<2.5	8.6	<2.5
14-Apr-93	AR-1	420	240	5.2	30	8.7
12-Aug-93	AR-1	370	150	<2	11	<2
26-Oct-93	AR-1	240	98	<2	11	<2
30-Mar-93	AR-2	390	4.1	1.6	<0.50	47
14-Apr-93	AR-2	310	18	<0.50	0.67	36
12-Aug-93	AR-2	130	16	<0.50	1.7	0.57
26-Oct-93	AR-2	110	15	<0.50	1.8	<0.50

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
PPB = Parts Per Billion.

Note: All data shown as <x are reported as ND (none detected).







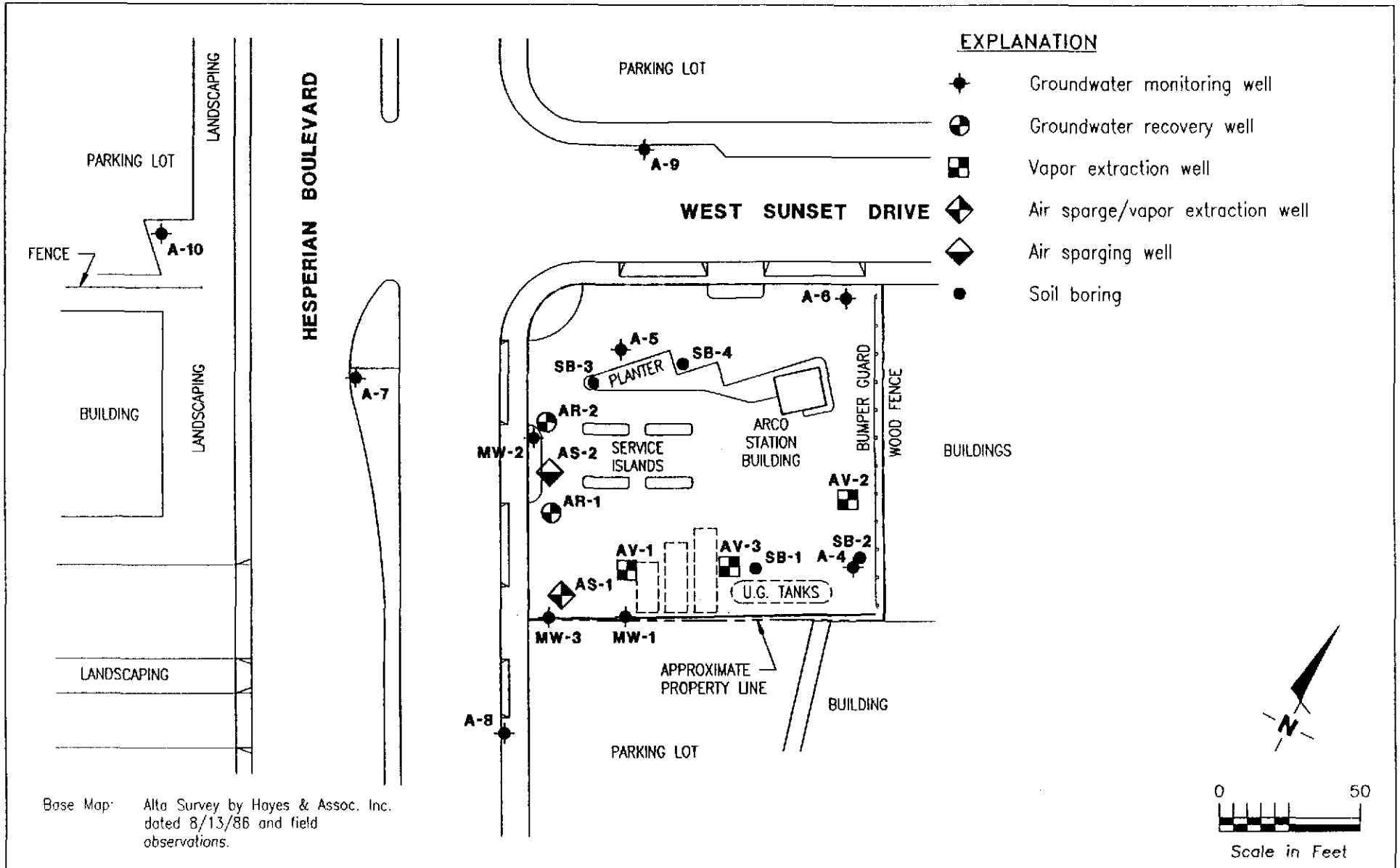
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP
ARCO Service Station #5387
20200 Hesperian Boulevard
San Lorenzo, California

PLATE **1**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7926		11/91	



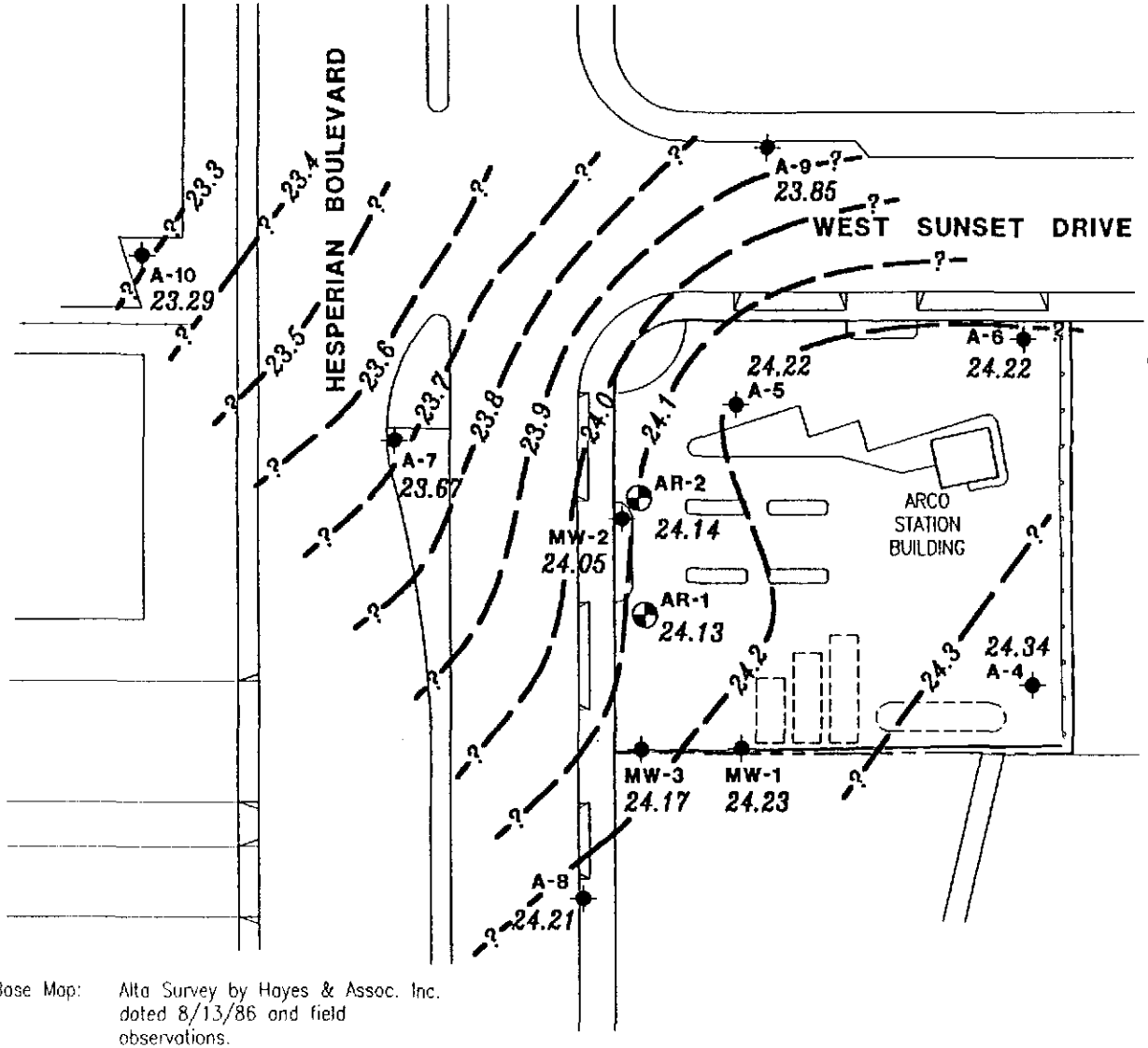
Base Map: Alta Survey by Hayes & Assoc. Inc. dated 8/13/86 and field observations.

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #5387
20200 Hesperian Boulevard
San Lorenzo, California

PLATE **2**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7926	BS	7/93	



EXPLANATION

- Groundwater monitoring well
- Groundwater recovery well
- 99.99 Groundwater elevation in feet referenced to Mean Sea Level (MSL) measured on October 26, 1993
- Groundwater elevation contour. Approximate Gradient = 0.004

NOTES: 1. Contours may be influenced by *irrigation practices and/or site construction activities.*

Approximate Groundwater Flow Direction

N

0 50

Scale in Feet

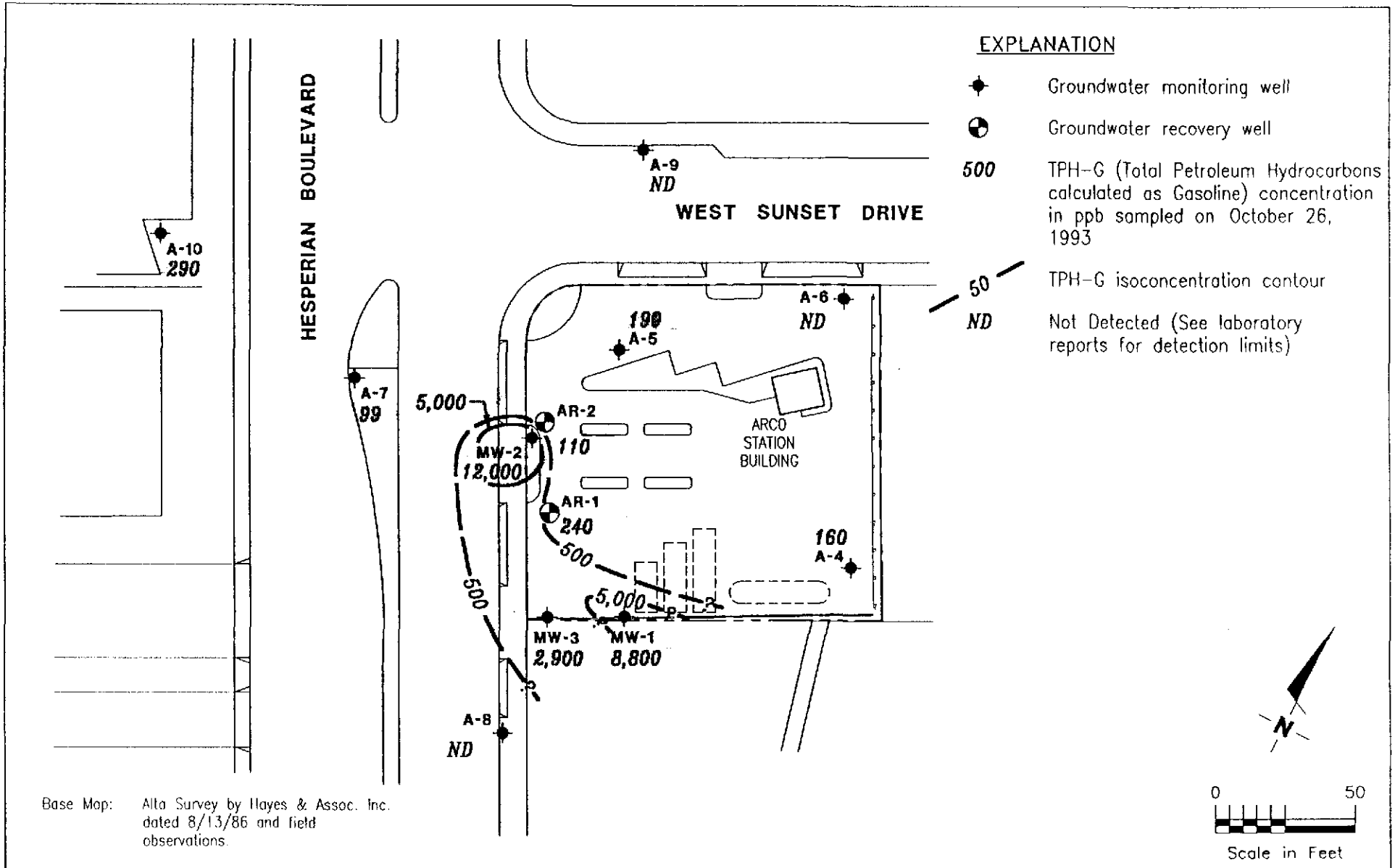
Base Map: Alta Survey by Hayes & Assoc. Inc. dated 8/13/86 and field observations.

GeoStrategies Inc.

POTENTIOMETRIC MAP
ARCO Service Station #5387
20200 Hesperian Boulevard
San Lorenzo, California

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792601-17		12/93	



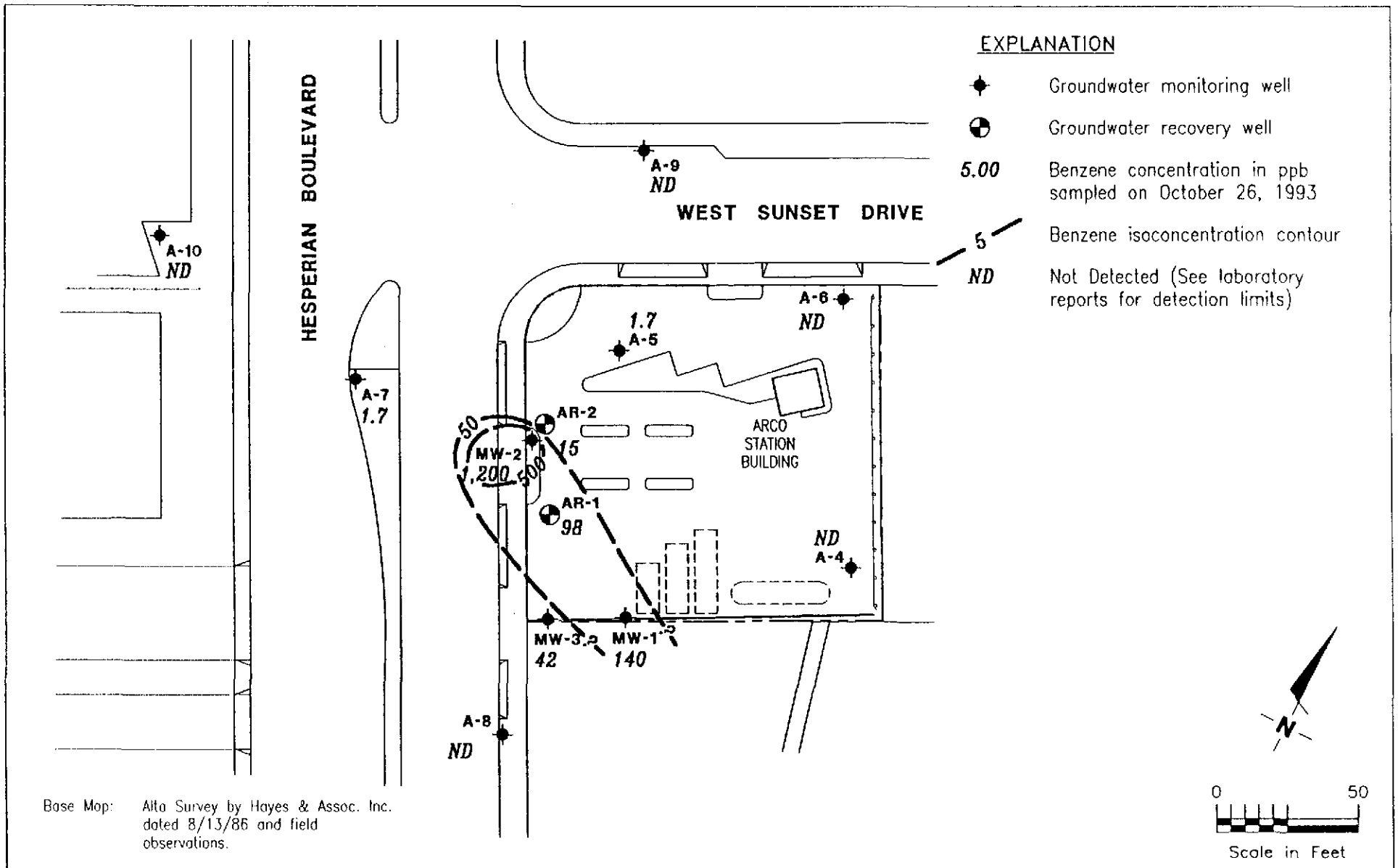
Base Map: Alta Survey by Hayes & Assoc. Inc. dated 8/13/86 and field observations.

GeoStrategies Inc.

TPH-G ISOCONCENTRATION MAP
ARCO Service Station #5387
20200 Hesperian Boulevard
San Lorenzo, California

PLATE 4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792601-17		12/93	



GeoStrategies Inc.

BENZENE ISOCONCENTRATION MAP

ARCO Service Station #5387
20200 Hesperian Boulevard
San Lorenzo, California

PLATE 5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792601-17		12/93	

EMCON Associates
[illegible] • (408) 453-7300 • [illegible]

Date November 16, 1993
Project 0G70-034.01

To:
Ms. Barbara Sieminski
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
12	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 5387, 20200 Hesperian Boulevard, San Lorenzo, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-7300.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
No: 4094
Exp. 4/30/96
INDUSTRIAL
STATE OF CALIFORNIA

Jim Butera JB

Robert Porter, Senior Project Engineer

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-034.01 STATION ADDRESS : 20200 Hesperian Blvd., Hayward DATE : 10-26-93

ARCO STATION # : 5387 FIELD TECHNICIAN : I. GRAHAM / J. WILLIAMS DAY : TUESDAY

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	A-8	OK	G-5	N/A	2268	OK	13.02	13.02	ND	NR	34.7	H2O IN BOX
2	A-9	OK	G-5	N/A	2268	OK	14.86	14.86	ND	NR	34.1	H2O IN BOX
3	A-6	OK	15/16	OK	2268	OK	14.85	14.85	ND	NR	34.7	H2O IN BOX
4	AR-2	OK	15/16	OK	2268	OK	14.25	14.25	ND	NR	35.4	STRONG ODOR
5	A-5	OK	15/16	OK	2268	OK	14.72	14.72	ND	NR	29.9	H2O IN BOX
6	A-10	OK	15/16	OK	2268	OK	15.65	15.65	ND	NR	34.2	STRONG ODOR
7	A-7	OK	15/16	OK	2268	OK	16.28	16.28	ND	NR	35.6	—
8	AR-1	OK	15/16	OK	2268	OK	13.98	13.98	ND	NR	34.7	STRONG ODOR
9	MW-1	OK	G-5	N/A	2268	OK	14.13	14.13	ND	NR	28.7	—
10	A-4	OK	15/16	OK	2268	OK	15.52	15.52	ND	NR	35.0	—
11	MW-3	OK	G-5	N/A	2268	OK	13.60	13.60	ND	NR	28.8	—
12	MW-2	OK	G-5	N/A	2268	OK	14.53	14.53	ND	NR	27.1	STRONG ODOR

SURVEY POINTS ARE TOP OF WELL BOXES

Summary of Groundwater Monitoring Data
Fourth Quarter 1993
ARCO Service Station 5387
20200 Hesperian Boulevard, San Lorenzo, 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(27)	10/26/93	14.13	ND.[2]	8,800.	140.	<10.	41.	<10.
MW-2(26)	10/26/93	14.53	ND.	12,000.	1,200.	<25.	510.	330.
MW-3(27)	10/26/93	13.60	ND.	2,900.	42.	<10.	76.	<10.
A-4(34)	10/26/93	15.52	ND.	160.	<0.5	<0.5	1.0	<0.5
A-5(28)	10/26/93	14.72	ND.	190.	1.7	<0.5	5.5	2.0
A-6(33)	10/26/93	14.85	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-7(34)	10/26/93	16.28	ND.	99.	1.7	<0.5	4.0	3.0
A-8(33)	10/26/93	13.02	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-9(33)	10/26/93	14.86	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-10(33)	10/26/93	15.65	ND.	290.	<0.5	<0.5	<0.5	<0.5
AR-1(23)	10/26/93	13.98	ND.	240.	98.	<2.	11.	<2.
AR-2(24)	10/26/93	14.25	ND.	110.	15.	<0.5	1.8	<0.5
X-Dup-1	10/26/93	NA.[3]	NA.	9,300.	1,200.	<25.	570.	400.
TB-1[4]	10/26/93	NA.	NA.	<50.	<0.5	<0.5	<0.5	<0.5

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. NA. = Not applicable
4. 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: Jim Butera

Project: EMC-95-3/Arco 5387, Hayward

Enclosed are the results from 14 water samples received at Sequoia Analytical on October 27,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3JF8201	Water, MW-1 (27)	10/26/93	EPA 5030/8015/8020
3JF8202	Water, MW-2 (26)	10/26/93	EPA 5030/8015/8020
3JF8203	Water, MW-3 (27)	10/26/93	EPA 5030/8015/8020
3JF8204	Water, AR-1 (23)	10/26/93	EPA 5030/8015/8020
3JF8205	Water, AR-2 (24)	10/26/93	EPA 5030/8015/8020
3JF8206	Water, A-4 (34)	10/26/93	EPA 5030/8015/8020
3JF8207	Water, A-5 (28)	10/26/93	EPA 5030/8015/8020
3JF8208	Water, A-6 (33)	10/26/93	EPA 5030/8015/8020
3JF8209	Water, A-7 (34)	10/26/93	EPA 5030/8015/8020
3JF8210	Water, A-8 (33)	10/26/93	EPA 5030/8015/8020
3JF8211	Water, A-9 (33)	10/26/93	EPA 5030/8015/8020
3JF8212	Water, XDUP-1	10/26/93	EPA 5030/8015/8020
3JF8213	Water, TB-1	10/26/93	EPA 5030/8015/8020
3JF8214	Water, A-10 (33)	10/26/93	EPA 5030/8015/8020

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

Very truly yours,

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	EMC-95-3/Arco 5387, Hayward	Sampled:	Oct 26, 1993
1921 Ringwood Avenue	Sample Matrix:	Water	Received:	Oct 27, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 10, 1993
Attention: Jim Butera	First Sample #:	3JF8201		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3JF8201 MW-1 (27)	Sample I.D. 3JF8202 MW-2 (26)	Sample I.D. 3JF8203 MW-3 (27)	Sample I.D. 3JF8204 AR-1 (23)	Sample I.D. 3JF8205 AR-2 (24)	Sample I.D. 3JF8206 A-4 (34)
Purgeable Hydrocarbons	50	8,800	12,000	2,900	240	110	160
Benzene	0.50	140	1,200	42	98	15	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	41	510	76	11	1.8	1.0
Total Xylenes	0.50	N.D.	330	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Gas	Gas	Gas	Gas + Discrete Peaks	Gas + Discrete Peaks	Gas + Non-gas C6 - C12

Quality Control Data

Report Limit Multiplication Factor:	20	50	20	4.0	1.0	1.0
Date Analyzed:	11/2/93	11/2/93	11/2/93	11/5/93	11/2/93	11/2/93
Instrument Identification:	GCHP-3	GCHP-3	GCHP-3	GCHP-2	GCHP-3	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	130	116	93	100	92	113

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

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	EMC-95-3/Arco 5387, Hayward	Sampled:	Oct 26, 1993
1921 Ringwood Avenue	Sample Matrix:	Water	Received:	Oct 27, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 10, 1993
Attention: Jim Butera	First Sample #:	3JF8207		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3JF8207 A-5 (28)	Sample I.D. 3JF8208 A-6 (33)	Sample I.D. 3JF8209 A-7 (34)	Sample I.D. 3JF8210 A-8 (33)	Sample I.D. 3JF8211 A-9 (33)	Sample I.D. 3JF8212 XDUP-1
Purgeable Hydrocarbons	50	190	N.D.	99	N.D.	N.D.	9,300
Benzene	0.50	1.7	N.D.	1.7	N.D.	N.D.	1,200
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	5.5	N.D.	4.0	N.D.	N.D.	570
Total Xylenes	0.50	2.0	N.D.	3.0	N.D.	N.D.	400
Chromatogram Pattern:		Gas	--	Gas	--	--	Gas

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	50
Date Analyzed:	11/4/93	11/4/93	11/4/93	11/4/93	11/4/93	11/4/93
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	94	74	74	77	81	98

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

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	EMC-95-3/Arco 5387, Hayward	Sampled:	Oct 26, 1993
1921 Ringwood Avenue	Sample Matrix:	Water	Received:	Oct 27, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 10, 1993
Attention: Jim Butera	First Sample #:	3JF8213		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3JF8213 TB-1	Sample I.D. 3JF8214 A-10 (33)
Purgeable Hydrocarbons	50	N.D.	290
Benzene	0.50	N.D.	N.D.
Toluene	0.50	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.
Chromatogram Pattern:		--	Gas + Non-gas C6 - C12

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Analyzed:	11/4/93	11/2/93
Instrument Identification:	GCHP-2	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%)	81	96

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

SEQUOIA ANALYTICAL

Eileen A. Manning
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: Jim Butera

Client Project ID: EMC-95-3/Arco 5387, Hayward
Matrix: Liquid

QC Sample Group: 3JF8201-14

Reported: Nov 10, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
MS/MSD Batch#:	3JE9102	3JE9102	3JE9102	3JE9102
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	11/2/93	11/2/93	11/2/93	11/2/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	99	100	100	100
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	1.0	0.0	0.0	3.0
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-126	72-130	71-120

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

/SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

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: Jim Butera

Client Project ID: EMC-95-3/Arco 5387, Hayward
Matrix: Liquid

QC Sample Group: 3JF8201-14

Reported: Nov 10, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
MS/MSD Batch#:	3JF1303	3JF1303	3JF1303	3JF1303
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	11/4/93	11/4/93	11/4/93	11/4/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	93	92	92	90
Matrix Spike Duplicate % Recovery:	93	93	93	93
Relative % Difference:	0.0	1.1	1.1	3.3
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
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Emcon Associates
1921 Ringwood Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: EMC-95-3/Arco 5387, Hayward
Matrix: Liquid

QC Sample Group: 3JF8201-14

Reported: Nov 10, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
MS/MSD Batch#:	3JF8208	3JF8208	3JF8208	3JF8208
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	11/5/93	11/5/93	11/5/93	11/5/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	94	89	95	90
Matrix Spike Duplicate % Recovery:	100	96	100	97
Relative % Difference:	6.2	7.6	5.1	7.5
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-126	72-130	71-120

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

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL

Eileen A. Manning
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: Jim Butera

Client Project ID: EMC-95-3/Arco 5387, Hayward
Matrix: Liquid

QC Sample Group: 3JF8201-14

Reported: Nov 10, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
MS/MSD Batch#:	3K18102	3K18102	3K18102	3K18102
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	11/9/93	11/9/93	11/9/93	11/9/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	75	76	76	73
Matrix Spike Duplicate % Recovery:	98	98	99	100
Relative % Difference:	27	25	26	31
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-3

Chain of Custody

ARCO Facility no. 5387	City (Facility) HAYWARD	Project manager (Consultant) JIM BUTERA	Laboratory name SEQUOIA
ARCO engineer Kyle Christie	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-7300	Fax no. (Consultant) 453-0452	Contract number 07-013
Consultant name EMCON	Address (Consultant) 1921 RINGWOOD Avenue San Jose		Method of shipment Courier will Pick up

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	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals / VOA / Semi	CAM Metals EPA 6010/7000 TTLC / STLC	Lead Org./DHS / Lead EPA 7420/7421		
MW-1(21)		2		X		X	HCl	10-26-93	1337		X					-01						
MW-2(26)		2							1427		X					-02						
MW-3(27)		2							1357		X					-03						
MW-1(23)		2							1352		X					-04						
MW-2(24)		2							1342		X					-05						
MW-1(31)		2							1315		X					-06						
MW-5(28)		2							1152		X					-07						
MW-6(33)		2							1127		X					-08						
MW-7(31)		2							1332		X					-09						
MW-8(33)		2							1042		X					-10						
MW-9(33)		2							1107		X					-11						
XDUP-1		2									X					-12						
TB-1		2									X					-13						
MW-4(33)		2							1307		X					-14						

Specify detection limit/reporting: Lowest possible

Special QA/QC: As Normal

Remarks: 2-40 ml VOA (SEQUOIA will provide)

Lab number: 9310182

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

Condition of sample: Good

Temperature received: Cool

Relinquished by	Date 10-27-93	Time 0800	Received by SEQ 10/27/93 1454O
Relinquished by	Date 10/27/93	Time 1625	Received by
Relinquished by	Date	Time	Received by laboratory Date 10/21/93 Time 1625

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2 5/93

EMCON ASSOCIATES

PROJECT NO: 6670-039.01 | SAMPLE ID: MW-1 (27)

PURGED BY: J. GRAHAM / J. WILLIAMS | CLIENT NAME: ARCO # 5387

SAMPLED BY: J. GRAHAM / J. WILLIAMS | LOCATION: HAYWARD, CA

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

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

CASING ELEVATION (feet/MSL):	ND	VOLUME IN CASING (gal.):	2.5
DEPTH TO WATER (feet):	14.14	CALCULATED PURGE (gal.):	7.13
DEPTH OF WELL (feet):	28.7	ACTUAL PURGE VOL. (gal.):	7.5

DATE PURGED: 10-26-93 | Start (2400 Hr): 1320 | End (2400 Hr): 1335

DATE SAMPLED: 10-26-93 | Start (2400 Hr): 1337 | End (2400 Hr): 1337

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE °F)	COLOR (visual)	TURBIDITY (visual)
1325	2.5	6.58	1204	70.5	GREY	HEAVY
1330	5.0	6.50	1204	70.1	"	"
1335	7.5	6.59	1200	69.3	"	"

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): NONE

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X 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 #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 | Time: 1315 | Meter Serial #: 9010 | Temperature °F: 80.5

(EC 1000: 960 / 1055) (DI: 4.66) (pH 7: 7.03 / 7.00) (pH 10: 10.17 / 10.06) (pH 4: 3.96 / ___)

Location of previous calibration: ___

Signature: [signature] | Reviewed By: [signature] | Page 1 of 1

Rev 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-024.01 SAMPLE ID: MW-2(26)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	2.05
DEPTH TO WATER (feet):	14.53	CALCULATED PURGE (gal.):	6.15
DEPTH OF WELL (feet):	27.1	ACTUAL PURGE VOL (gal.):	6.5

DATE PURGED: 10-26-93 Start (2400 Hr) 1410 End (2400 Hr) 1425

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1427 End (2400 Hr) 1427

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1415	2.0	6.56	1281	72.0	GREY	HEAVY
1420	4.0	6.56	1303	71.6	11	11
1425	6.5	6.53	1308	71.5	11	11

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): XDUP-2

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: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1315 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: ___ Reviewed By: ___ Page 5 of 12

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-034.01 SAMPLE ID: MW-3 (27)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR

DEPTH TO WATER (feet): 13.61

DEPTH OF WELL (feet): 28.8

VOLUME IN CASING (gal.): 2.55

CALCULATED PURGE (gal.): 7.66

ACTUAL PURGE VOL (gal.): 8.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1340 End (2400 Hr) 1355

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1357 End (2400 Hr) 1357

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1345	2.5	6.51	1160	69.8	GREY	HEAVY
1350	5.5	6.57	1161	69.9	11	11
1355	8.0	6.59	1160	69.9	11	11

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): NONE

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK LOCK #: 3268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1315 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: ___ Reviewed By: ___ Page 3 of 12

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-034.01 SAMPLE ID: AR-1 (23)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR

DEPTH TO WATER (feet): 13.98

DEPTH OF WELL (feet): 34.9

VOLUME IN CASING (gal.): 30.75

CALCULATED PURGE (gal.): 92.25

ACTUAL PURGE VOL (gal.): 93.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1335 End (2400 Hr) 1350

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1352 End (2400 Hr) 1352

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
1340	31.0	6.95	1286	72.0	CLOUDY	MODERATE
1345	62.0	6.71	1298	72.8	"	"
1350	93.0	6.67	1302	72.9	"	"

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): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X 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™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 7010 Temperature °F: ___

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

Location of previous calibration: ___

Signature: ___ Reviewed By: ___ Page 1 of 1

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-034.0' SAMPLE ID: AR-2 (2")
PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387
SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR
DEPTH TO WATER (feet): 19.26
DEPTH OF WELL (feet): 35.4

VOLUME IN CASING (gal.): 31.07
CALCULATED PURGE (gal.): 93.22
ACTUAL PURGE VOL (gal.): 93.5

DATE PURGED: 10-26-93 Start (2400 Hr) 1200 End (2400 Hr) 1240
DATE SAMPLED: 10-26-93 Start (2400 Hr) 1242 End (2400 Hr) 1242

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1205	31.0	7.03	1376	71.9	GREY	MOD/HEAVY
1220	62.5	6.93	1408	73.5	"	"
1240	93.5	6.86	1401	73.3	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X 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™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-9

Signature: ___ Reviewed By: ___ Page 5 of 12

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-024.01 SAMPLE ID: A-4 (36)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	7.14
DEPTH TO WATER (feet):	15.52	CALCULATED PURGE (gal.):	21.42
DEPTH OF WELL (feet):	35.0	ACTUAL PURGE VOL (gal.):	22.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1358 End (2400 Hr) 1313

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1315 End (2400 Hr) 1315

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1304	7.0	6.52	1167	71.5	CLOUDY	MODERATE
1309	14.5	6.50	1161	70.3	〃	〃
1313	22.0	6.51	1155	69.5	〃	〃

D. O. (ppm): NR ODOR: NO COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

- X 2" Bladder Pump
- X 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™
- X Bailer (Teflon®)
- ___ Bailer (Stainless Steel)
- ___ Submersible Pump
- ___ Dedicated
- Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-5

Signature: ___ Reviewed By: ___ Page 6 of 12

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-034.01 SAMPLE ID: A-5 (28)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR

DEPTH TO WATER (feet): 14.72

DEPTH OF WELL (feet): 29.9

VOLUME IN CASING (gal.): 5.56

CALCULATED PURGE (gal.): 16.69

ACTUAL PURGE VOL (gal.): 18.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1135 End (2400 Hr) 1150

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1152 End (2400 Hr) 1152

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1140	6.0	6.42	1259	70.6	LT. GREY	MODERATE
1145	12.0	6.38	1312	70.0	"	"
1150	18.0	6.39	1313	69.7	"	"

D. O. (ppm): NR ODOR: NO COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X 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™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-8

Signature: ___ Reviewed By: ___ Page 2 of 12

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-024.01 SAMPLE ID: A-6 (33)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR

DEPTH TO WATER (feet): 14.85

DEPTH OF WELL (feet): 34.7

VOLUME IN CASING (gal.): 7.27

CALCULATED PURGE (gal.): 21.83

ACTUAL PURGE VOL (gal.): 22.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1110 End (2400 Hr) 1125

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1127 End (2400 Hr) 1127

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1115	7.5	6.59	984	66.8	LT. GREY	MODERATE
1120	14.0	6.65	1069	66.9	"	"
1125	22.0	6.72	1102	66.9	"	LIGHT

D. O. (ppm): NR ODOR: NO COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X 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™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-8

Signature: ___ Reviewed By: ___ Page 8 of 12

Rev. 2 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-034.01 SAMPLE ID: A-7 (3Y)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	7.08
DEPTH TO WATER (feet):	16.28	CALCULATED PURGE (gal.):	21.25
DEPTH OF WELL (feet):	35.6	ACTUAL PURGE VOL (gal.):	22.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1315 End (2400 Hr) 1330

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1332 End (2400 Hr) 1332

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1320	7.0	6.59	1294	70.4	LT. GREY	MODERATE
1325	14.5	6.63	1290	70.1	"	"
1330	22.0	6.65	1300	70.4	"	"

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

COLOR (COBALT 0 - 100): NR TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X 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™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-8

Signature: ___ Reviewed By: ___ Page 9 of 12

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-034.01 SAMPLE ID: A-8 (33)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR

DEPTH TO WATER (feet): 13.02

DEPTH OF WELL (feet): 34.7 / 27.1.5

VOLUME IN CASING (gal.): 3.54

CALCULATED PURGE (gal.): 10.62

ACTUAL PURGE VOL. (gal.): 11.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1025 End (2400 Hr) 1040

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1042 End (2400 Hr) 1042

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1030	3.5	6.39	1213	73.4	BROWN	MOD/HEAVY
1035	7.5	6.27	1199	70.2	"	"
1040	11.0	6.28	1200	69.9	"	"

D. O. (ppm): NR ODOR: NO

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X 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™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: 80.1

(EC 1000 930 / 1000) (DI 4.56) (pH 7 7.08 / 7.00) (pH 10 10.02 / 10.00) (pH 4 4.01 / ___)

Location of previous calibration: ___

Signature: ___ Reviewed By: ___ Page 10 of 12

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO.: 0670-034.01 SAMPLE ID: A-9 (33)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 3.14

DEPTH TO WATER (feet): 14.86 CALCULATED PURGE (gal.): 9.5

DEPTH OF WELL (feet): 34.1 ACTUAL PURGE VOL (gal.): 9.5

DATE PURGED: 10-26-93 Start (2400 Hr) 1050 End (2400 Hr) 1105

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1107 End (2400 Hr) 1107

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1055	3.5	6.45	969	70.5	BROWN	MODERATE
1100	7.0	6.45	967	70.2	"	"
1105	9.5	6.51	998	69.9	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X Centrifugal Pump
X Submersible Pump
___ Well Wizard™
___ Bailer (Teflon®)
___ 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: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-9

Signature: [signature] Reviewed By: [signature] Page 11 of 12

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-034.01 SAMPLE ID: A-10 (33)

PURGED BY: E. GRAHAM / J. WILLIAMS CLIENT NAME: ARCO # 5387

SAMPLED BY: E. GRAHAM / J. WILLIAMS LOCATION: HAYWARD, CA.

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

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

CASING ELEVATION (feet/MSL): NR

DEPTH TO WATER (feet): 15.65

DEPTH OF WELL (feet): 34.2

VOLUME IN CASING (gal.): 3.02

CALCULATED PURGE (gal.): 9.08

ACTUAL PURGE VOL (gal.): 10.0

DATE PURGED: 10-26-93 Start (2400 Hr) 1250 End (2400 Hr) 1305

DATE SAMPLED: 10-26-93 Start (2400 Hr) 1307 End (2400 Hr) 1307

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1255	3.0	6.72	1313	71.3	BROWN	HEAVY
1300	6.5	6.72	1298	70.6	"	"
1305	10.0	6.73	1293	70.1	"	"

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

COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT

___ 2" Bladder Pump
X 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™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: OK LOCK #: 2268

REMARKS: ___

Meter Calibration: Date: 10-26-93 Time: 1015 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-8

Signature: ___ Reviewed By: ___ Page 2 of 12