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TRANSMITTAL

TO: Mr. Michael Whelan
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DATE: February 22, 1994
PROJECT #: 7909.70
SUBJECT: Recovery System Evaluation Report - Fourth Quarter 1993 at ARCO Station 4931

FROM:
Robert D. Campbell
Project Geologist
GeoStrategies Inc.
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cc: **Ms. Susan Hugo, Alameda County Health Care Services Agency**
Mr. Richard Hiett, California Regional Water Quality Control Board

GeoStrategies Inc.

RECOVERY SYSTEM EVALUATION REPORT - FOURTH QUARTER 1993

ARCO Station 4931
731 West MacArthur Boulevard
Oakland, California

790970-24

February 22, 1994

GeoStrategies Inc.

February 22, 1994

Mr. Michael Whelan
ARCO Products Company
Post Office Box 5811
San Mateo, California 94402

Subject: Recovery System Evaluation Report, Fourth Quarter 1993 at ARCO Service Station 4931, 731 West MacArthur Boulevard in Oakland, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), GeoStrategies Inc. (GSI) has prepared this Recovery System Evaluation Report for the Fourth Quarter 1993, which evaluates the performance of the interim groundwater remediation system at the above referenced site (Plate 1) for the period from October 1993 through December 1993.

SITE BACKGROUND

There are currently twelve groundwater monitoring wells (A-2 through A-13) and three groundwater recovery wells (AR-1 through AR-3) at the site (Plate 2). These wells were installed between 1982 and 1992 by Groundwater Technology, Inc., Pacific Environmental Group, and GSI. Well A-1 was abandoned by GTI on August 23, 1983. Wells A-2 through A-10 and AR-1 through AR-3 are onsite and wells A-11, A-12, and A-13 are offsite. The interim groundwater remedial system was completed in early November 1992 and began operating on November 10, 1992.

Quarterly monitoring and sampling of site wells began in 1989. Quarterly groundwater samples were collected on October 14, 1993 from wells A-3, A-5 through A-7, and A-10 through A-13. Monthly water samples were collected from the interim groundwater remediation system influent (sample D), midpoint (between carbon canisters [sample ports B and C]),

and effluent (sample port A) during the fourth quarter 1993. The interim groundwater remediation system process flow diagram is shown on Plate 3.

EXECUTIVE SUMMARY

A summary of activities and findings associated with the 1993 fourth quarter system evaluation are presented below:

- The groundwater remediation system appears to be hydraulically controlling the groundwater flow beneath the site.

- The groundwater monitoring wells were sampled by EMCON on October 14, 1993, and were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and benzene, toluene, ethylbenzene, and total xylenes (BTEX).

- Benzene was not detected in nine of ten wells sampled during the fourth quarter of 1993.

- During the fourth quarter 1993, benzene was detected in well A-4 (1,200 parts per billion [ppb]), located between the two service islands.

- The existing interim groundwater remediation system currently consists of four recovery wells (A-9 and AR-1 through AR-3). Each well contains a pneumatic total fluids pump and a product recovery pump. Groundwater is pumped to an onsite treatment system. Any floating product which enters an extraction well is pumped to an onsite storage drum. No floating product was removed this quarter. The groundwater remedial system was activated on November 10, 1992.

- Approximately 699,990 gallons of groundwater were extracted and treated by the interim remediation system this quarter.

- GSI renewed the existing East Bay Municipal Utility District (EBMUD) discharge permit on October 20, 1993. As required in the current permit, sampling frequency was decreased from monthly to quarterly during this period. A copy of the EBMUD Wastewater Discharge Permit is attached in Appendix C.

- Monitoring well A-8 and recovery wells A-9, and AR-1 through AR-3 were sampled on December 10, 1993, and the samples were analyzed for TPH-G and benzene. Wells A-9, AR-2, and AR-3 indicated nondetectable concentrations of TPH-G (less than 50 parts per billion [ppb]) and benzene (less than 0.50 ppb), respectively. Concentrations of TPH-G (3,400 ppb and 29,000,000 ppb) were reported in wells AR-1 and A-8, respectively.

- The groundwater treatment facility consists of a separator, particulate filter, and three in-series 1,500-pound activated carbon vessels (Plate 3).

- TPH-G and benzene were reported as not detected in samples collected on October 21, 1993 from the groundwater treatment systems' midpoint (port B).

- Groundwater containing dissolved hydrocarbons was pumped through the treatment system at an average rate of six (6) gallons per minute (gpm) during the fourth quarter of 1993, and was discharged to the sanitary sewer system.

- Analytical results of the effluent samples collected on October 21, 1993 indicated nondetectable concentrations of TPH-G and benzene, and detectable concentrations of nickel (5.9 ppb) and zinc (14 ppb), respectively. These detectable concentrations of metals are within EBMUD discharge regulatory guidelines (Appendix C).

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HYDRAULIC MONITORING

Depth-to-water (DTW) level measurements were performed monthly by EMCON on wells A-2 through A-13, and wells AR-1 through AR-3 on October 14, and wells A-2 through A-7, A-10, and wells AR-1 through AR-3 on November 16 and December 16, 1993. Well A-8 was dry during the October 14, 1993 sampling event. Static groundwater levels were measured from the surveyed top of each well box and recorded to the nearest +/-0.01 foot. Groundwater elevations were calculated from Mean Seal Level (MSL) datum and are presented with DTW measurements in Table 1, Current Groundwater Data. Historical water-level data are presented in Table 2, Historical Water-Level Data. The potentiometric map (Plate 4) indicate that current pumping from recovery wells A-9, AR-1, AR-2, and AR-3 has influenced shallow groundwater flow generating a depression in groundwater beneath most of the site.

Each well was checked for the presence of floating product. Floating product was not detected in any well this quarter. Current floating product measurements are presented in Table 1 and have been added to the Historical Water-Level Data (Table 2). Current quarter monitoring data are presented in Appendix A.

The groundwater remediation system appears to be operating as designed. No modifications are recommended at this time.

QUARTERLY GROUNDWATER MONITORING

EMCON Associates (EMCON) field personnel sampled the groundwater monitoring wells A-2 through A-7, and A-10 through A-13 on October 14, 1993.

Wells A-8, A-9, and AR-1 through AR-3 were sampled on December 10, 1993 by Gettler-Ryan Inc. (G-R) field personnel to evaluate hydrocarbon concentrations within individual extraction wells. Groundwater samples collected by EMCON and G-R field personnel were preserved as required by the applicable analytical method and delivered, with Chain of Custody

Records, to Sequoia Analytical Laboratories of Redwood City, California, a State-certified laboratory (Hazardous Waste Testing Laboratory Certification #1210) for water analyses. The groundwater samples collected from monitoring wells A-2 through A-7, A-10 through A-13, A-8, A-9, and AR-1 through AR-3 were analyzed for TPH-G and BTEX by Environmental Protection Agency (EPA) Methods 5030/8015/8020. Additionally, groundwater samples from well A-2 were analyzed for oil and grease (O&G) by Standard Method (SM) 5520 and lead by EPA Method 239.2.

Analytical results of groundwater samples collected from wells A-3, A-5 through A-7, A-10 through A-13, A-9, AR-2, and AR-3 indicated nondetectable concentrations of TPH-G (less than 50 ppb) and benzene (less than 0.5 ppb), respectively. Detectable concentrations of TPH-G (350 ppb), lead (0.021 parts per million [ppm]), and nondetectable concentrations of benzene (less than 0.5 ppb) and O&G (less than 5.0 ppm) were reported in well A-2. Detectable concentrations of TPH-G (160,000 ppb) and benzene (1,200 ppb) were reported in groundwater samples collected from well A-4. Analytical results of groundwater samples collected on December 10, 1993 from wells AR-1 and A-8 indicated detectable concentrations of TPH-G (3,400 ppb and 29,000,000 ppb) and benzene (nondetectable and 16,000 ppb), respectively. Results of current analytical data are shown on Table 1. Groundwater Analytical Data and historical analytical data are presented in Table 3, Historical Groundwater Quality Database. TPH-G and benzene data are plotted on Plate 5, TPH-G/Benzene Concentration Map. The EMCON Groundwater Sampling and Monitoring Reports are included in Appendix A. The Remediation System Chain of Custodies and groundwater analytical reports are included in Appendix B.

GROUNDWATER TREATMENT SYSTEM MONITORING

Chemical Analytical Results

Samples from ports A, B, and D of the interim groundwater remediation system, collected by G-R field personnel on October 21, 1993, were

preserved as required by the applicable analytical method and delivered, with Chain of Custody Records, to Sequoia Analytical Laboratories of Redwood City, California, a State-certified laboratory (Hazardous Waste Testing Laboratory Certification #1210). The samples were analyzed for EPA Priority Pollutant Metals, halogenated volatile organics (HVOs) using EPA Methods 5030/8010, and purgeable hydrocarbons and BTEX using EPA Methods 5030/8015/8020. The groundwater remediation system analytical data is shown on Tables 4A and 4B. The chain of custody and groundwater analytical reports are included in Appendix B. GSI renewed the existing discharge permit during the fourth quarter 1993. As required in current *EBMUD Wastewater Discharge Permit (Account No. 502-62131) dated October 20, 1993*, the sampling frequency was decreased from monthly to quarterly at the subject site. The currently EBMUD Wastewater Discharge Permit is attached in Appendix C.

During the fourth quarter 1993 sampling period, analytical results of the mid-point samples (between carbon vessels [port B]) indicated nondetectable concentrations of TPH-G, benzene, and HVOs. Metals were nondetectable in all samples this quarter, with the exception of the effluent sample (A) collected on October 21, 1993 which indicated zinc at a concentration of 14 parts per billion (ppb) and detectable concentrations of nickel (5.9 ppb), respectively. Analytical results of the October 21, 1993 sampling indicate that the effluent discharge is below the parameters of the EBMUD Wastewater Discharge Permit (Appendix C).

Groundwater Recovery System Operation

Flowmeter readings from the groundwater recovery system were recorded at the time of sampling and are presented in Table 5. Groundwater was pumped through the treatment system at approximately six (6) gpm. Approximately 699,990 gallons of groundwater were recovered and treated during the fourth quarter 1993. **Approximately 0.97 pounds or 0.14 gallons of hydrocarbons have been recovered and treated since the groundwater extraction and treatment system was started in November 1992 (See Table 5).**

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DISCUSSION

The groundwater remediation system appears to be operating as designed during the fourth quarter of 1993. Nondetectable concentrations of TPH-G and benzene from nine wells sampled this quarter indicates that the groundwater recovery and treatment system is effectively capturing the dissolved phase of petroleum hydrocarbons beneath the site.

The need for modifications to the remediation system will be evaluated as additional data becomes available.

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

Sincerely,
GeoStrategies Inc.

Robert D. Campbell
Project Geologist

Gary Pischke
Senior Geologist
C.E.G. 1501

REGISTERED GEOLOGIST
GARY PISCHKE
No. 1501
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ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

TABLES

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PLATES

Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Process Flow Diagram
Plate 4. Potentiometric Map (December 16, 1993)
Plate 5. TPH-G/Benzene Concentration Map

APPENDICES

Appendix A. EMCON Groundwater Sampling and Monitoring Reports
Appendix B. Groundwater Remediation System Analytical Reports
Appendix C. EBMUD Wastewater Discharge Permit

QC Review: _____

TABLES

TABLE 1

CURRENT GROUNDWATER DATA
ARCO Station 4931

Well No.	Sample Date	Analyzed Date	TPH-G (PPB)	Benzene (PPB)	Toluene (PPB)	Ethylbenzene (PPB)	Xylenes (PPB)	TOG (PPM)	Total Lead (PPM)	Well Elev. (ft)	Depth to Water (ft)	Product Thickness (ft)	Static Water Elev. (ft)
A-2	15-Oct-93	25-Oct-93	350	<0.5	<0.5	<0.5	<0.5	<5.0	0.021	55.48	15.74	0.00	39.74
A-3	14-Oct-93	24-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	54.66	15.11	0.00	39.55
A-4	14-Oct-93	24-Oct-93	160,000	1,200	<250	4,100	950	NA	NA	54.73	15.37	0.00	39.36
A-5	14-Oct-93	24-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	54.17	14.99	0.00	39.18
A-6	14-Oct-93	24-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	55.17	12.82	0.00	42.35
A-7	14-Oct-93	24-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	54.71	12.52	0.00	42.19
A-8	14-Oct-93	----		Not Sampled		Dry				53.77	13.10	0.00	40.67
	10-Dec-93	21-Dec-93	29,000,000	16,000	12,000	19,000	99,000	NA	NA	53.77	13.96	0.83	40.50
A-9	14-Oct-93	----		Not Sampled		Pump in Well				53.04	14.11	0.00	38.93
	10-Dec-93	21-Dec-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	53.04	12.38	0.00	40.66
A-10	14-Oct-93	25-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	54.26	15.22	0.00	39.04
A-11	14-Oct-93	25-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	53.74	14.72	0.00	39.02
A-12	14-Oct-93	25-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	52.05	13.28	0.00	38.77
A-13	14-Oct-93	24-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	55.11	14.02	0.00	41.09
AR-1	14-Oct-93	----		Not Sampled		Pump in Well				54.72	---	---	---
	10-Dec-93	21-Dec-93	3,400	<25	<25	<25	250	NA	NA	54.72	13.42	0.00	41.30
AR-2	14-Oct-93	----		Not Sampled		Pump in Well				54.77	18.11	0.00	36.66
	10-Dec-93	21-Dec-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	54.77	17.17	0.00	37.60
AR-3	14-Oct-93	----		Not Sampled		Pump in Well				54.19	---	---	---
	10-Dec-93	21-Dec-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	54.19	15.33	0.00	38.86
FB-1	14-Oct-93	24-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	---	---	---	---
TB-1	15-Oct-93	22-Oct-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	---	---	---	---

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline TOG = Total Oil & Grease
PPB = Parts Per Billion; PPM = Parts Per Million; FB = Field Blank; and 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).
3. Static water levels corrected for floating product (conversion factor = 0.80).

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
20-Mar-89	A-2	3.45	55.38	51.93	0.00
24-May-89	A-2	6.80	55.38	48.58	0.00
18-Aug-89	A-2	10.82	55.38	44.56	0.00
27-Oct-89	A-2	8.25	55.38	47.13	0.00
15-Jan-90	A-2	4.87	55.38	50.51	0.00
04-Apr-90	A-2	7.03	55.38	48.35	0.00
30-Jul-90	A-2	10.01	55.38	45.37	0.00
29-Oct-90	A-2	11.60	55.38	43.78	0.00
16-Jan-91	A-2	9.43	55.38	45.95	0.00
12-Apr-91	A-2	3.65	55.38	51.73	0.00
10-Jul-91	A-2	9.57	55.38	45.81	0.00
21-Oct-91	A-2	11.54	55.38	43.84	0.00
01-Feb-92	A-2	11.20	55.38	44.18	0.00
29-Apr-92	A-2	7.18	55.38	48.20	0.00
29-Jul-92	A-2	11.81	55.48	43.67	0.00
29-Oct-92	A-2	11.91	55.48	43.57	0.00
26-Jan-93	A-2	5.06	55.48	50.42	0.00
01-Apr-93	A-2	5.15	55.48	50.33	0.00
06-Aug-93	A-2	15.33	55.48	40.15	0.00
14-Oct-93	A-2	15.74	55.48	39.74	0.00
16-Nov-93	A-2	14.61	55.48	40.87	0.00
16-Dec-93	A-2	5.80	55.48	49.68	0.00
20-Mar-89	A-3	7.51	54.48	46.97	0.00
24-May-89	A-3	10.29	54.48	44.19	0.00
18-Aug-89	A-3	11.60	54.48	42.88	0.00
27-Oct-89	A-3	10.16	54.48	44.32	0.00
15-Jan-90	A-3	8.55	54.48	45.93	0.00
04-Apr-90	A-3	10.66	54.48	43.82	0.00
30-Jul-90	A-3	11.26	54.48	43.22	0.00
29-Oct-90	A-3	11.86	54.48	42.62	0.00
16-Jan-91	A-3	11.46	54.48	43.02	0.00
12-Apr-91	A-3	9.28	54.48	45.20	0.00
10-Jul-91	A-3	11.29	54.48	43.19	0.00
21-Oct-91	A-3	11.51	54.48	42.97	0.00
02-Feb-92	A-3	N/A	54.48	-----	----
29-Apr-92	A-3	N/A	54.48	-----	----
29-Jul-92	A-3	11.59	54.66	43.07	0.00
28-Oct-92	A-3	12.00	54.66	42.66	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
26-Jan-93	A-3	9.82	54.66	44.84	0.00
01-Apr-93	A-3	10.61	54.66	44.05	0.00
06-Aug-93	A-3	14.90	54.66	39.76	0.00
14-Oct-93	A-3	15.11	54.66	39.55	0.00
16-Nov-93	A-3	14.72	54.66	39.94	0.00
16-Dec-93	A-3	13.37	54.66	41.29	0.00
21-Mar-86	A-4	-----	54.62	-----	3.50
07-Jan-88	A-4	-----	54.62	-----	0.02
20-Mar-89	A-4	8.13	54.62	46.49	0.00
24-May-89	A-4	11.40	54.62	43.22	0.00
18-Aug-89	A-4	11.91	54.62	42.72	0.01
27-Oct-89	A-4	11.37	54.62	43.26	0.01
15-Jan-90	A-4	9.74	54.62	44.89	0.01
04-Apr-90	A-4	11.19	54.62	43.43	0.00
30-Jul-90	A-4	11.71	54.62	42.92	0.01
28-Oct-90	A-4	12.21	54.62	42.43	0.03
16-Jan-91	A-4	11.89	54.62	42.74	0.01
12-Apr-91	A-4	9.54	54.62	45.08	0.00
10-Jul-91	A-4	11.55	54.62	43.07	0.00
20-Sep-91	A-4	12.12	54.62	42.50	0.00
21-Oct-91	A-4	11.76	54.62	42.88	0.03
02-Feb-92	A-4	11.18	54.62	43.46	0.02
29-Apr-92	A-4	10.78	54.62	43.86	0.02
29-Jul-92	A-4	11.74	54.73	43.02	0.04
28-Oct-92	A-4	11.93	54.73	42.82	0.03
26-Jan-93	A-4	10.59	54.73	44.17	0.04
01-Apr-93	A-4	10.17	54.73	44.58	0.02
06-Aug-93	A-4	15.12	54.73	39.61	0.03
14-Oct-93	A-4	15.37	54.73	39.36	0.00
16-Nov-93	A-4	14.86	54.73	39.87	0.00
16-Dec-93	A-4	13.41	54.73	41.32	0.00
20-Mar-89	A-5	8.09	54.15	46.06	0.00
24-May-89	A-5	11.13	54.15	43.02	0.00
18-Aug-89	A-5	11.58	54.15	42.57	0.00
27-Oct-89	A-5	10.68	54.15	43.47	0.00
15-Jan-90	A-5	9.24	54.15	44.91	0.00
04-Apr-90	A-5	10.93	54.15	43.22	0.00
30-Jul-90	A-5	11.48	54.15	42.67	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
29-Oct-90	A-5	11.77	54.15	42.38	0.00
16-Jan-91	A-5	11.36	54.15	42.79	0.00
12-Apr-91	A-5	9.64	54.15	44.51	0.00
10-Jul-91	A-5	11.30	54.15	42.85	0.00
21-Oct-91	A-5	11.48	54.15	42.67	0.00
02-Feb-92	A-5	10.73	54.15	43.42	0.00
29-Apr-92	A-5	10.58	54.15	43.57	0.00
29-Jul-92	A-5	11.46	54.17	42.71	0.00
28-Oct-92	A-5	11.55	54.17	42.62	0.00
26-Jan-93	A-5	10.32	54.17	43.85	0.00
01-Apr-93	A-5	10.36	54.17	43.81	0.00
06-Aug-93	A-5	14.82	54.17	39.35	0.00
14-Oct-93	A-5	14.99	54.17	39.18	0.00
16-Nov-93	A-5	14.47	54.17	39.70	0.00
16-Dec-93	A-5	12.94	54.17	41.23	0.00
20-Mar-89	A-6	6.43	55.13	48.70	0.00
24-May-89	A-6	9.43	55.13	45.70	0.00
18-Aug-89	A-6	10.10	55.13	45.03	0.00
27-Oct-89	A-6	9.16	55.13	45.97	0.00
15-Jan-90	A-6	8.02	55.13	47.11	0.00
04-Apr-90	A-6	9.29	55.13	45.84	0.00
30-Jul-90	A-6	9.93	55.13	45.20	0.00
29-Oct-90	A-6	10.42	55.13	44.71	0.00
16-Jan-91	A-6	10.15	55.13	44.98	0.00
12-Apr-91	A-6	8.05	55.13	47.08	0.00
10-Jul-91	A-6	10.03	55.13	45.10	0.00
21-Oct-91	A-6	10.30	55.13	44.83	0.00
02-Feb-92	A-6	9.81	55.13	45.32	0.00
29-Apr-92	A-6	N/A	55.13	-----	----
29-Jul-92	A-6	10.40	55.17	44.77	0.00
28-Oct-92	A-6	10.55	55.17	44.62	0.00
26-Jan-93	A-6	7.50	55.17	47.62	0.00
01-Apr-93	A-6	7.59	55.17	47.58	0.00
06-Aug-93	A-6	12.32	55.17	42.85	0.00
14-Oct-93	A-6	12.82	55.17	42.35	0.00
16-Nov-93	A-6	12.34	55.17	42.83	0.00
16-Dec-93	A-6	10.40	55.17	44.77	0.00
20-Mar-89	A-7	6.29	54.67	48.38	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
24-May-89	A-7	9.26	54.67	45.41	0.00
18-Aug-89	A-7	9.97	54.67	44.70	0.00
27-Oct-89	A-7	9.02	54.67	45.65	0.00
15-Jan-90	A-7	7.90	54.67	46.77	0.00
04-Apr-90	A-7	9.15	54.67	45.52	0.00
30-Jul-90	A-7	9.80	54.67	44.87	0.00
29-Oct-90	A-7	10.30	54.67	44.37	0.00
16-Jan-91	A-7	11.35	54.67	43.32	0.00
12-Apr-91	A-7	7.90	54.67	46.77	0.00
10-Jul-91	A-7	9.82	54.67	44.85	0.00
21-Oct-91	A-7	10.12	54.67	44.55	0.00
02-Feb-92	A-7	9.28	54.67	45.39	0.00
29-Apr-92	A-7	8.85	54.67	45.82	0.00
29-Jul-92	A-7	10.09	54.71	44.62	0.00
28-Oct-92	A-7	10.31	54.71	44.40	0.00
26-Jan-93	A-7	7.33	54.71	47.38	0.00
01-Apr-93	A-7	7.35	54.71	47.36	0.00
06-Aug-93	A-7	12.67	54.71	42.04	0.00
14-Oct-93	A-7	12.52	54.71	42.19	0.00
16-Nov-93	A-7	12.13	54.71	42.58	0.00
16-Dec-93	A-7	10.18	54.71	44.53	0.00
21-Mar-86	A-8	-----	53.61	-----	0.02
07-Jan-88	A-8	-----	53.61	-----	0.18
20-Mar-89	A-8	8.21	53.61	45.93	0.66
24-May-89	A-8	11.41	53.61	43.16	1.20
18-Aug-89	A-8	10.88	53.61	43.35	0.77
27-Oct-89	A-8	11.66	53.61	43.00	1.31
15-Jan-90	A-8	9.84	53.61	44.47	0.87
04-Apr-90	A-8	11.35	53.61	42.46	0.25
30-Jul-90	A-8	10.48	53.61	44.53	1.75
29-Oct-90	A-8	11.39	53.61	42.30	0.10
16-Jan-91	A-8	11.11	53.61	42.51	0.01
12-Apr-91	A-8	9.16	53.61	44.46	0.01
10-Jul-91	A-8	10.73	53.61	42.89	0.01
21-Oct-91	A-8	10.98	53.61	42 72	0.11
02-Feb-92	A-8	10.80	53.61	43.93	1.40
29-Apr-92	A-8	11.15	53.61	43.50	1.30
29-Jul-92	A-8	11.33	53.77	42.49	0.06
28-Oct-92	A-8	Dry	53.77	-----	-----

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
26-Jan-93	A-8	Dry	53.77	-----	-----
01-Apr-93	A-8	9.38	53.77	44.39	0.00
06-Aug-93	A-8	Dry	53.77	-----	-----
14-Oct-93	A-8	13.10	53.77	40.67	0.00
16-Nov-93	A-8	Dry	53.77	-----	-----
16-Dec-93	A-8	13.40	53.77	40.37	0.00
20-Mar-89	A-9	6.28	52.96	46.68	0.00
24-May-89	A-9	10.12	52.96	42.84	0.00
18-Aug-89	A-9	9.51	52.96	43.45	0.00
27-Oct-89	A-9	8.56	52.96	44.40	0.00
15-Jan-90	A-9	7.20	52.96	45.76	0.00
04-Apr-90	A-9	8.78	52.96	44.18	0.00
30-Jul-90	A-9	10.16	52.96	42.80	0.00
29-Oct-90	A-9	10.71	52.96	42.25	0.00
16-Jan-91	A-9	10.44	52.96	42.52	0.00
12-Apr-91	A-9	8.69	52.96	44.27	0.00
10-Jul-91	A-9	10.23	52.96	42.73	0.00
20-Sep-91	A-9	10.47	52.96	42.49	0.00
21-Oct-91	A-9	10.39	52.96	42.57	0.00
02-Feb-92	A-9	9.05	52.96	43.91	0.00
29-Apr-92	A-9	9.56	52.96	43.40	0.00
29-Jul-92	A-9	10.43	53.04	42.61	0.00
28-Oct-92	A-9	N/A	53.04	-----	-----
26-Jan-93	A-9	N/A	53.04	-----	-----
01-Apr-93	A-9	N/A	53.04	-----	-----
06-Aug-93	A-9	N/A	53.04	-----	-----
14-Oct-93	A-9	14.11	53.04	38.93	0.00
16-Nov-93	A-9	N/A	53.04	-----	-----
16-Dec-93	A-9	12.10	53.04	40.94	0.00
20-Mar-89	A-10	8.52	54.16	45.64	0.00
24-May-89	A-10	11.31	54.16	42.85	0.00
18-Aug-89	A-10	11.82	54.16	42.34	0.00
27-Oct-89	A-10	10.94	54.16	43.22	0.00
15-Jan-90	A-10	9.58	54.16	44.58	0.00
04-Apr-90	A-10	N/A	54.16	-----	----
30-Jul-90	A-10	11.67	54.16	42.49	0.00
29-Oct-90	A-10	12.11	54.16	42.05	0.00
16-Jan-91	A-10	11.60	54.16	42.56	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
12-Apr-91	A-10	10.04	54.16	44.12	0.00
10-Jul-91	A-10	11.55	54.16	42.61	0.00
21-Oct-91	A-10	11.79	54.16	42.37	0.00
02-Feb-92	A-10	N/A	54.16	-----	----
29-Apr-92	A-10	10.85	54.16	43.31	0.00
29-Jul-92	A-10	11.84	54.26	42.42	0.00
28-Oct-92	A-10	11.89	54.26	42.37	0.00
26-Jan-93	A-10	10.81	54.26	43.45	0.00
01-Apr-93	A-10	10.85	54.26	43.41	0.00
06-Aug-93	A-10	15.06	54.26	39.20	0.00
14-Oct-93	A-10	15.22	54.26	39.04	0.00
16-Nov-93	A-10	14.70	54.26	39.56	0.00
16-Dec-93	A-10	13.22	54.26	41.04	0.00
20-Mar-89	A-11	8.11	53.75	45.64	0.00
24-May-89	A-11	10.92	53.75	42.83	0.00
18-Aug-89	A-11	11.52	53.75	42.23	0.00
27-Oct-89	A-11	10.63	53.75	43.12	0.00
15-Jan-90	A-11	9.22	53.75	44.53	0.00
04-Apr-90	A-11	10.85	53.75	42.90	0.00
30-Jul-90	A-11	11.29	53.75	42.46	0.00
29-Oct-90	A-11	11.66	53.75	42.09	0.00
16-Jan-91	A-11	11.31	53.75	42.44	0.00
12-Apr-91	A-11	9.55	53.75	44.20	0.00
10-Jul-91	A-11	11.18	53.75	42.57	0.00
21-Oct-91	A-11	11.24	53.75	42.51	0.00
02-Feb-92	A-11	10.70	53.75	43.05	0.00
29-Apr-92	A-11	10.57	53.75	43.18	0.00
29-Jul-92	A-11	11.33	53.74	42.41	0.00
28-Oct-92	A-11	11.54	53.74	42.20	0.00
26-Jan-93	A-11	9.90	53.74	43.84	0.00
01-Apr-93	A-11	10.11	53.74	43.63	0.00
06-Aug-93	A-11	14.43	53.74	39.31	0.00
14-Oct-93	A-11	14.72	53.74	39.02	0.00
16-Nov-93	A-11		Not Monitored		
16-Dec-93	A-11		Not Monitored		
20-Mar-89	A-12	8.00	52.05	44.05	0.00
24-May-89	A-12	10.35	52.05	41.70	0.00
18-Aug-89	A-12	10.75	52.05	41.30	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
27-Oct-89	A-12	10.06	52.05	41.99	0.00
15-Jan-90	A-12	8.88	52.05	43.17	0.00
04-Apr-90	A-12	10.30	52.05	41.75	0.00
30-Jul-90	A-12	10.66	52.05	41.39	0.00
29-Oct-90	A-12	10.90	52.05	41.15	0.00
16-Jan-91	A-12	10.60	52.05	41.45	0.00
12-Apr-91	A-12	9.45	52.05	42.60	0.00
10-Jul-91	A-12	10.56	52.05	41.49	0.00
21-Oct-91	A-12	10.62	52.05	41.43	0.00
02-Feb-92	A-12	10.10	52.05	41.95	0.00
29-Apr-92	A-12	10.19	52.05	41.86	0.00
29-Jul-92	A-12	10.81	52.05	41.24	0.00
28-Oct-92	A-12	10.81	52.05	41.24	0.00
26-Jan-93	A-12	9.48	52.05	42.57	0.00
01-Apr-93	A-12	10.67	52.05	41.38	0.00
06-Aug-93	A-12	12.95	52.05	39.10	0.00
14-Oct-93	A-12	13.28	52.05	38.77	0.00
16-Nov-93	A-12		Not Monitored		
16-Dec-93	A-12		Not Monitored		
01-Jul-92	A-13	9.93	55.11	45.18	0.00
29-Jul-92	A-13	11.12	55.11	43.99	0.00
28-Oct-92	A-13	10.84	55.11	44.27	0.00
26-Jan-93	A-13	8.99	55.11	46.12	0.00
01-Apr-93	A-13	9.18	55.11	45.93	0.00
06-Aug-93	A-13	13.70	55.11	41.41	0.00
14-Oct-93	A-13	14.02	55.11	41.09	0.00
16-Nov-93	A-13		Not Monitored		
16-Dec-93	A-13		Not Monitored		
01-Jul-92	AR-1	10.27	54.72	44.45	0.00
29-Jul-92	AR-1	11.32	54.72	43.40	0.00
28-Oct-92	AR-1	N/A	54.72	-----	----
26-Jan-93	AR-1	N/A	54.72	-----	----
01-Apr-93	AR-1	N/A	54.72	-----	----
06-Aug-93	AR-1	17.42	54.72	37.30	Product on Sounder
14-Oct-93	AR-1		Well Inaccessible		
16-Nov-93	AR-1	13.76	54.72	40.96	----
16-Dec-93	AR-1	19.44	54.72	35.28	----
01-Jul-92	AR-2	11.33	54.77	43.44	0.00

TABLE 2

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
29-Jul-92	AR-2	11.90	54.77	42.87	0.00
28-Oct-92	AR-2	N/A	54.77	-----	----
26-Jan-93	AR-2	N/A	54.77	-----	----
01-Apr-93	AR-2	N/A	54.77	-----	----
06-Aug-93	AR-2	17.16	54.77	37.61	----
14-Oct-93	AR-2	18.11	54.77	36.66	----
16-Nov-93	AR-2	17.92	54.77	36.85	----
16-Dec-93	AR-2	18.02	54.77	36.75	----
01-Jul-92	AR-3	10.11	54.19	44.08	0.00
29-Jul-92	AR-3	11.55	54.19	42.64	0.00
28-Oct-92	AR-3	N/A	54.19	-----	----
26-Jan-93	AR-3	N/A	54.19	-----	----
01-Apr-93	AR-3	N/A	54.19	-----	----
06-Aug-93	AR-3	16.12	54.19	38.07	----
14-Oct-93	AR-3		Well inaccessible		
16-Nov-93	AR-3	16.38	54.19	37.81	----
16-Dec-93	AR-3		Well inaccessible		

N/A = Not Accessible.

Notes:
1. Static water elevations referenced to Mean Sea Level (MSL).
2. Static water-levels corrected for floating product (conversion factor = 0.80).
3. Wells A-3 and A-10 were not monitored on February 2, 1992 due to site construction activities.
4. Wells A-3 and A-6 were not monitored on April 29, 1992 due to site construction activities.
5. Water level data prior to March, 1989 are not available.
6. Depth-to-water from wells AR-1, AR-2, and AR-3 measured on July 1, 1992 were referenced to the top of the casing. These measurements have been adjusted to the top of well box referenced.
7. Well elevations and depth-to-water are referenced to the top of the well box.
8. Wells re-surveyed July 30, 1992.

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
21-Mar-86	A-2	31000.	----	----	----	----
07-Jan-88	A-2	12000.	920.	1500.	----	4000.
20-Mar-89	A-2	22000.	1200.	1800.	1200.	7700.
24-May-89	A-2	9000.	460.	260.	250.	2400.
18-Aug-89	A-2	14000.	900.	200.	<200.	1300.
27-Oct-89	A-2	16000.	1200.	340.	90.	3100.
15-Jan-90	A-2	9900.	1100.	460.	150.	2900.
04-Apr-90	A-2	16000.	1100.	400.	380.	3900.
30-Jul-90	A-2	16000.	1400.	340.	290.	3600.
30-Jul-90	A-2	16000	1400.	340.	290.	3600.
29-Oct-90	A-2	14000.	1100.	210.	66.	2700.
16-Jan-91	A-2	15000.	1200.	800.	190.	4600.
12-Apr-91	A-2	16000	640	290	280	2600
21-Oct-91	A-2	26000	1100	560	81	3900
02-Feb-92	A-2	11000	150	13	91	94
29-Apr-92	A-2	5400	120	16	129	19
30-Jul-92	A-2	590	10	<2.0	<2.0	9.0
29-Oct-92	A-2	77	0.56	<0.50	<0.50	0.51
26-Jan-93	A-2	390	0.87	<0.50	<0.50	4.3
01-Apr-93	A-2	16,000	<10	<10	<10	<10
06-Aug-93	A-2		Purged Dry			
14-Oct-93	A-2	350	<0.5	<0.5	<0.5	<0.5
21-Mar-86	A-3	1000.	----	----	----	----
07-Jan-88	A-3	250.	2.3	8.	----	21.
20-Mar-89	A-3	230.	1.6	<1.	3.	3.
24-May-89	A-3	170.	0.9	2.	1.	<3.
18-Aug-89	A-3	180.	0.7	1.	<1.	<3.
27-Oct-89	A-3	120.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-3	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-3	88.	1.2	2.0	0.8	4.
30-Jul-90	A-3	120.	8.3	2.9	2.3	12.
29-Oct-90	A-3	780.	10.	27.	18.	85.
16-Jan-91	A-3	69.	2.0	3.5	<0.5	9.6
12-Apr-91	A-3	<30	<0.30	<0.30	<0.30	<0.30
10-Jul-91	A-3	59	<0.30	<0.30	0.50	0.51
21-Oct-91	A-3	56	0.44	0.77	0.41	1.3
01-Feb-92	A-3		Not accessible			
29-Apr-92	A-3		Not accessible			
30-Jul-92	A-3	<50	<0.50	<0.50	<0.50	

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
28-Oct-92	A-3	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-3	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-3	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-3	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-3	<50	<0.5	<0.5	<0.5	<0.5
21-Mar-86	A-4			Floating product		
07-Jan-88	A-4			Floating product		
20-Mar-89	A-4	360000.	1500.	3700.	6500.	35000.
24-May-89	A-4	1500000.	1000.	2000.	6000.	23000.
18-Aug-89	A-4			Floating product		
27-Oct-89	A-4			Floating product		
15-Jan-90	A-4			Floating product		
04-Apr-90	A-4	40000.	680.	320.	1400.	4900.
30-Jul-90	A-4			Floating product		
29-Oct-90	A-4			Floating product		
16-Jan-91	A-4			Floating product		
12-Apr-91	A-4	1800	<60	90	650	1700
10-Jul-91	A-4	61000	2700	8500	1700	8200
20-Sep-91	A-4	N/A	1200	5300	1500	11000
01-Feb-92	A-4			Floating product		
29-Apr-92	A-4			Floating product		
29-Jul-92	A-4			Floating product		
28-Oct-92	A-4			Floating product		
26-Jan-93	A-4			Floating product		
01-Apr-93	A-4			Floating Product		
06-Aug-93	A-4			Floating Product		
14-Oct-93	A-4	160000	1200	<250	4100	950
21-Mar-86	A-5	88.	----	----	----	----
07-Jan-88	A-5	<50.	0.5	1.	----	4.
20-Mar-89	A-5	60.	0.5	1.	2.	10.
24-May-89	A-5	<50.	0.5	<1.	<1.	<3.
18-Aug-89	A-5	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-5	<50.	<0.50	<0.50	<0.50	<1.
15-Jan-90	A-5	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-5	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-5	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-5	280.	<0.5	<0.5	<0.5	<0.5
16-Jan-91	A-5	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-5	<30	<0.30	<0.30	<0.30	0.84

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
10-Jul-91	A-5	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-5	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-5	<30	1.7	<0.30	<0.30	<0.30
29-Apr-92	A-5	<30	<0.30	<0.30	<0.30	<0.30
30-Jul-92	A-5	<50	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-5	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-5	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-5	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-5	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-5	<50	<0.5	<0.5	<0.5	<0.5
21-Mar-86	A-6	<10.	----	----	----	----
07-Jan-88	A-6	390.	54.	89.	----	110.
20-Mar-89	A-6	220.	33.	21.	9.	39.
24-May-89	A-6	110.	13.	6.	3.	13.
18-Aug-89	A-6	<50.	2.1	1.	<1.	<3.
27-Oct-89	A-6	55.	3.8	1.6	1.7	6.
15-Jan-90	A-6	100.	12.	2.5	5.5	18.
04-Apr-90	A-6	100.	17.	7.1	5.5	18.
30-Jul-90	A-6	<50.	2.6	<0.5	<0.5	1.2
29-Oct-90	A-6	<50.	0.7	<0.5	<0.5	<0.5
16-Jan-91	A-6	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-6	430	24	5.1	9.4	32
10-Jul-91	A-6	<30	1.4	0.39	0.47	1.5
21-Oct-91	A-6	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-6	<30	2.0	0.40	0.58	1.7
29-Apr-92	A-6		Not accessible			
30-Jul-92	A-6	<50	0.64	<0.50	<0.50	<0.50
28-Oct-92	A-6	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-6	1600	4.8	1.2	14	46
01-Apr-93	A-6	310	4.8	0.74	3.3	8.7
06-Aug-93	A-6	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-6	<50	<0.5	<0.5	<0.5	<0.5
07-Jan-88	A-7	<50.	<0.5	1.	----	4.
20-Mar-89	A-7	<50	0.9	<1.	<1.	<3.
24-May-89	A-7	<50.	<0.5	<1.	<1	<3.
18-Aug-89	A-7	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-7	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-7	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-7	<50.	<0.5	<0.5	<0.5	<1.

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
30-Jul-90	A-7	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-7	<50.	2.7	7.6	1.1	3.0
16-Jan-91	A-7	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-7	<30	<0.30	<0.30	<0.30	0.48
10-Jul-91	A-7	<30	<0.30	0.49	<0.30	1.2
21-Oct-91	A-7	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-7	<30	<0.30	<0.30	<0.30	<0.30
29-Apr-92	A-7	<30	<0.30	<0.30	<0.30	<0.30
29-Jul-92	A-7	<50.	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-7	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-7	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-7	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-7	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-7	<50	<0.5	<0.5	<0.5	<0.5
21-Mar-86	A-8		Floating Product			
07-Jan-88	A-8		Floating Product			
20-Mar-89	A-8		Floating Product			
24-May-89	A-8		Floating Product			
18-Aug-89	A-8		Floating Product			
27-Oct-89	A-8		Floating Product			
15-Jan-90	A-8		Floating Product			
04-Apr-90	A-8		Floating Product			
30-Jul-90	A-8		Floating Product			
29-Oct-90	A-8		Floating Product			
16-Jan-91	A-8		Floating Product			
12-Apr-91	A-8		Floating Product			
10-Jul-91	A-8		Floating Product			
21-Oct-91	A-8		Floating Product			
01-Feb-92	A-8		Floating Product			
29-Apr-92	A-8		Floating Product			
29-Jul-92	A-8		Floating Product			
28-Oct-92	A-8		Not Accessible			
26-Jan-93	A-8		Not Accessible			
01-Apr-93	A-8		Not Accessible			
06-Aug-93	A-8		Dry			
14-Oct-93	A-8		Not Accessible			
10-Dec-93	A-8	29000000	16000	12000	19000	99000
07-Jan-88	A-9	300	45.	14.	----	43.
21-Mar-89	A-9	50.	2.8	1.	1.	3.

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
24-May-89	A-9	120.	26.	12.	4.	79.
18-Aug-89	A-9	14000.	400.	800.	400.	2000.
27-Oct-89	A-9	1700.	150.	36	30.	110.
15-Jan-90	A-9	860.	140	58.	38.	140.
04-Apr-90	A-9	620.	36	13.	9.4	32.
30-Jul-90	A-9	180.	77	1.6	2.1	4.2
29-Oct-90	A-9	110.	30.	3.7	4.1	8.3
16-Jan-91	A-9	<50.	15.	<0.5	<0.5	0.6
12-Apr-91	A-9	130	52	0.83	5.3	6.0
10-Jul-91	A-9	<30	7.8	<0.30	<0.30	<0.30
20-Sep-91	A-9	N/A	21	<2.0	<2.0	<2.0
21-Oct-91	A-9	240	63	0.65	5.1	1.6
01-Feb-92	A-9	320	77	0.95	11	6.5
29-Apr-92	A-9	170	52	<0.30	5.6	1.4
30-Jul-92	A-9	<50	14	<0.50	1.7	6.0
28-Oct-92	A-9		Not Accessible			
26-Jan-93	A-9		Not Accessible			
01-Apr-93	A-9		Not Accessible			
06-Aug-93	A-9		Not Accessible			
14-Oct-93	A-9		Not Accessible			
10-Dec-93	A-9	<50	<0.5	<0.5	<0.5	<0.5
07-Jan-88	A-10	<50.	0.6	11.	----	4.
20-Mar-89	A-10	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-10	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-10	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-10	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-10	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-10		Not accessible			
30-Jul-90	A-10	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-10	<50.	2.3	6.9	1.2	3.0
16-Jan-91	A-10	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-10	<30	0.67	0.55	<0.30	0.90
10-Jul-91	A-10	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-10	<30	<0.30	<0.30	<0.30	<0.30
02-Feb-92	A-10		Not accessible			
29-Apr-92	A-10	<30	<0.30	<0.30	<0.30	<0.30
29-Jul-92	A-10	<50	25	<0.50	<0.50	1.8
28-Oct-92	A-10	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-10	<50	<0.50	<0.50	<0.50	<0.50

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
01-Apr-93	A-10	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-10	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-10	<50	<0.5	<0.5	<0.5	<0.5
07-Jan-88	A-11	<50.	1.1	2.	----	5.
20-Mar-89	A-11	<50.	<0.5	<1.	<1	<3.
24-May-89	A-11	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-11	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-11	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-11	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-11	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-11	<50.	<0.5	0.6	<0.5	0.5
29-Oct-90	A-11	<50.	0.6	2.4	0.6	1.5
16-Jan-91	A-11	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-11	<30	<0.30	0.37	<0.30	<0.30
10-Jul-91	A-11	<30	0.61	0.46	<0.30	1.0
21-Oct-91	A-11	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-11	<30	<0.30	<0.30	<0.30	<0.30
29-Apr-92	A-11	<30	<0.30	<0.30	<0.30	<0.30
30-Jul-92	A-11	<50.	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-11	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-11	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-11	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-11	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-11	<50	<0.5	<0.5	<0.5	<0.5
07-Jan-88	A-12	<50.	<0.5	2.	----	<4.
20-Mar-89	A-12	<50.	<0.5	<1.	<1.	<3.
24-May-89	A-12	<50.	<0.5	<1.	<1.	<3.
18-Aug-89	A-12	<50.	<0.5	<1.	<1.	<3.
27-Oct-89	A-12	<50.	<0.5	<0.5	<0.5	<1.
15-Jan-90	A-12	<50.	<0.5	<0.5	<0.5	<1.
04-Apr-90	A-12	<50.	<0.5	<0.5	<0.5	<1.
30-Jul-90	A-12	<50.	<0.5	<0.5	<0.5	<0.5
29-Oct-90	A-12	<50.	<0.5	<0.5	<0.5	<0.5
16-Jan-91	A-12	<50.	<0.5	<0.5	<0.5	<0.5
12-Apr-91	A-12	<30	<0.30	<0.30	<0.30	<0.30
10-Jul-91	A-12	<30	<0.30	<0.30	<0.30	<0.30
21-Oct-91	A-12	<30	<0.30	<0.30	<0.30	<0.30
01-Feb-92	A-12	<30	<0.30	<0.30	<0.30	<0.30
29-Apr-92	A-12	<30	<0.30	<0.30	<0.30	<0.30

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
30-Jul-92	A-12	<50.	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-12	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-12	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-12	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-12	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-12	<50	<0.5	<0.5	<0.5	<0.5
01-Jul-92	A-13	<50	<0.50	<0.50	<0.50	<0.50
30-Jul-92	A-13	<50	<0.50	<0.50	<0.50	<0.50
28-Oct-92	A-13	<50	<0.50	<0.50	<0.50	<0.50
26-Jan-93	A-13	<50	<0.50	<0.50	<0.50	<0.50
01-Apr-93	A-13	<50	<0.50	<0.50	<0.50	<0.50
06-Aug-93	A-13	<50	<0.5	<0.5	<0.5	<0.5
14-Oct-93	A-13	<50	<0.5	<0.5	<0.5	<0.5
01-Jul-92	AR-1	2300	260	150	38	470
29-Jul-92	AR-1	1600	340	180	52	320
28-Oct-92	AR-1		Not Accessible			
26-Jan-93	AR-1		Not Accessible			
01-Apr-93	AR-1		Not Accessible			
06-Aug-93	AR-1		Not Accessible			
14-Oct-93	AR-1		Not Accessible			
10-Dec-93	AR-1	3,400	<25	<25	<25	250
01-Jul-92	AR-2	<50	<0.50	<0.50	<0.50	<0.50
29-Jul-92	AR-2	350	130	8.5	<10	<10
28-Oct-92	AR-2		Not Accessible			
26-Jan-93	AR-2		Not Accessible			
01-Apr-93	AR-2		Not Accessible			
06-Aug-93	AR-2		Not Accessible			
14-Oct-93	AR-2		Not Accessible			
10-Dec-93	AR-2	<50	<0.5	<0.5	<0.5	<0.5
01-Jul-92	AR-3	<50	1.8	0.86	<0.50	2.2
29-Jul-92	AR-3	<50	1.6	<0.50	<0.50	<0.50
28-Oct-92	AR-3		Not Accessible			
26-Jan-93	AR-3		Not Accessible			
01-Apr-93	AR-3		Not Accessible			
06-Aug-93	AR-3		Not Accessible			
14-Oct-93	AR-3		Not Accessible			
10-Dec-93	AR-3	<50	<0.5	<0.50	<0.50	<0.50

TABLE 3

HISTORICAL GROUNDWATER QUALITY DATABASE

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

Notes:
1. All data shown as <x are reported as ND (none detected)
2. Ethylbenzene & Xylenes were combined in 1986 and 1988.
3. Wells A-4 and A-9 were sampled in September, 1991 for water discharge permits for the proposed groundwater treatment system
4. Wells A-8, A-9, and AR-1 through AR-3 were not sampled on April 1, 1993 due to remediation equipment in the wells.

TABLE 4A

GROUNDWATER REMEDIAL SYSTEM
ANALYTICAL DATA - TPH-G, BTEX, AND METALS

Date	SAMPLE NO.	TPH-G	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
20-Jan-93	A	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	12	<0.2	<50	<5	<10	<5	<10
10-Feb-93	A	NA	NA	NA	NA	NA	16	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	NA	NA	NA	NA	NA	7.4	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
14-Mar-93	A	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	21	<5	<0.2	<50	<5	<10	<5	<10
	B	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	89	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	82	<5	<0.2	<50	<5	<10	<5	<10
21-Apr-93	A	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	NA	NA	NA	NA	NA	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
11-May-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
11-Jun-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
15-Jul-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	2.6	<0.5	<0.5	2.7	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	44
23-Aug-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
	D	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<50	<5	<10	<5	<10
15-Sep-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	5.0	<5	<10	<5	<10
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	5.8	<5	<10	<5	<10
	D	<50	1.3	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	5.6	<5	<10	<5	<10
21-Oct-93	A	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	5.9	<5	<10	<5	14
	B	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	7.8	<5	<10	<5	<10
	D	<50	<0.5	<0.5	<0.5	<0.5	<5	<5	<10	<10	<10	<10	<5	<0.2	<5.0	<5	<10	<5	<10

All Metals were analyzed using EPA priority pollutants.
Analytical results in parts per billion (ppb).

TPH-G = Total petroleum hydrocarbons as gasoline using EPA Methods 5030/8015, and purgeable hydrocarbons using EPA Method 8020.

Sample A = Effluent
Sample B = Midpoint
Sample D = Influent

TABLE 4A

GROUNDWATER REMEDIAL SYSTEM
ANALYTICAL DATA - TPH-G, BTEX, AND METALS

Sb	=	Antimony
Cr	=	Chromium
Cu	=	Copper
As	=	Arsenic
Be	=	Beryllium
Cd	=	Cadmium
Pb	=	Lead
Hg	=	Mercury
Ni	=	Nickel
Se	=	Selenium
Ag	=	Silver
Tl	=	Thallium
Zn	=	Zinc
NA	=	Not analyzed
<	=	Less than the detection limit

TABLE 4B

GROUNDWATER REMEDIAL SYSTEM ANALYTICAL DATA - HVOs

DATE	SAMPLE NO.	COMPOUND	RESULT
20-Jan-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	2.3
		Chloroform	1.6
		cis-1,2-Dichloroethene	3.3
		Tetrachloroethene	20
		Trichloroethene	1.1
10-Feb-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.9
		Chloroform	1.3
		cis-1,2-Dichloroethene	1.0
		Tetrachloroethene	21
14-Mar-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.9
		Chloroform	1.3
		cis-1,2-Dichloroethene	1.0
		Tetrachloroethene	21
21-Apr-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	3.5
		Chloroform	1.5
		Tetrachloroethene	11
11-May-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	2.2
		Chloroform	1.4
		cis-1,2-Dichloroethene	1.4
		Tetrachloroethene	19
11-Jun-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	cis-1,2-Dichloroethene	3.6
		Tetrachloroethene	23
		Trichloroethene	1.1
		Vinyl Chloride	2.4
15-Jul-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.9
		Chloroform	1.5
		cis-1,2-Dichloroethene	4.1
		Tetrachloroethene	32
		Trichloroethene	1.2
23-Aug-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	1.4
		Chloroform	1.3
		cis-1,2-Dichloroethene	2.6
		Tetrachloroethene	20
15-Sep-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	2.3
		Chloroform	1.6
		cis-1,2-Dichloroethene	2.7
		Tetrachloroethene	26
		Trichloroethene	0.76
21-Oct-93	A	---	<1.0 for all compounds
	B	---	<1.0 for all compounds
	D	Carbon Tetrachloride	2.2
		Chloroform	1.3
		cis-1,2-Dichloroethene	2.2
		Tetrachloroethene	22

TABLE 4B

GROUNDWATER REMEDIAL SYSTEM ANALYTICAL DATA - HVOs

Results in parts per billion (ppb).

VOCs = Volatile organic compounds by EPA Methods 5030/8010

< = Less than method detection limit.

Sample A = Effluent

Sample B = Midpoint

Sample D = Influent

Note: 1. All other compounds <1.0 ppb.

Arco Station 4931
731 W. MacArthur Blvd.
Oakland, CA

Table 5
Groundwater Treatment System Flow Data

Reading Date	Flow Meter Reading	Cumulative flow (gallons)	Average Flowrates (gal/day)	Average Flowrates (gal/min)	Laboratory Results effluent (port A) TPHg (ug/l)	Laboratory Results effluent (port A) Benzene (ug/l)	Laboratory Results influent (port D) TPHg (ug/l)	Laboratory Results influent (port D) Benzene (ug/l)	Periodic Hydrocarbon Recovery (LBS)
11/16/92	1,090	0	---	---					
11/18/92	22,690	21,600	10,800	8					0.02
11/20/92	44,920	43,830	11,115	8					0.02
12/17/92	92,210	91,120	1,751	1	<50	<0.50	92	25	0.04
1/12/93	564,680	563,590	18,172	13					0.36
2/10/93	838,640	837,550	9,447	7					0.21
2/24/93	947,220	946,130	7,756	5					0.08
3/14/93	1,086,630	1,085,540	7,745	5					0.11
4/1/93	1,129,690	1,128,600	2,392	2					0.03
4/20/93	1,193,300	1,192,210	3,348	2					0.05
4/29/93	1,259,700	1,258,610	7,378	5					0.05
6/11/93	1,614,620	1,613,530	8,254	6	<50	<0.50	<50	<0.50	0.00
6/21/93	1,722,260	1,721,170	10,764	7					0.00
6/28/93	1,809,950	1,808,860	12,527	9					0.00
7/15/93	2,013,960	2,012,870	12,001	8	<50	<0.50	<50	2.6	0.00
8/23/93	2,446,870	2,445,780	11,100	8	<50	<0.50	<50	<0.50	0.00
9/15/93	2,701,430	2,700,340	11,068	8	<50	<0.50	<50	1.3	0.00
10/21/93	3,057,050	3,055,960	9,878	7	<50	<0.50	<50	<0.50	0.00
11/30/93	3,401,420	3,400,330	8,609	6					
4th Quarter 1993		699,990	9,210	6					0.00
Total		3,400,330	8,972	6					0.97

Notes:

1) Average flowrates calculated using flowmeter readings and days between readings.

2) <x indicates concentration below laboratory detection limit x.

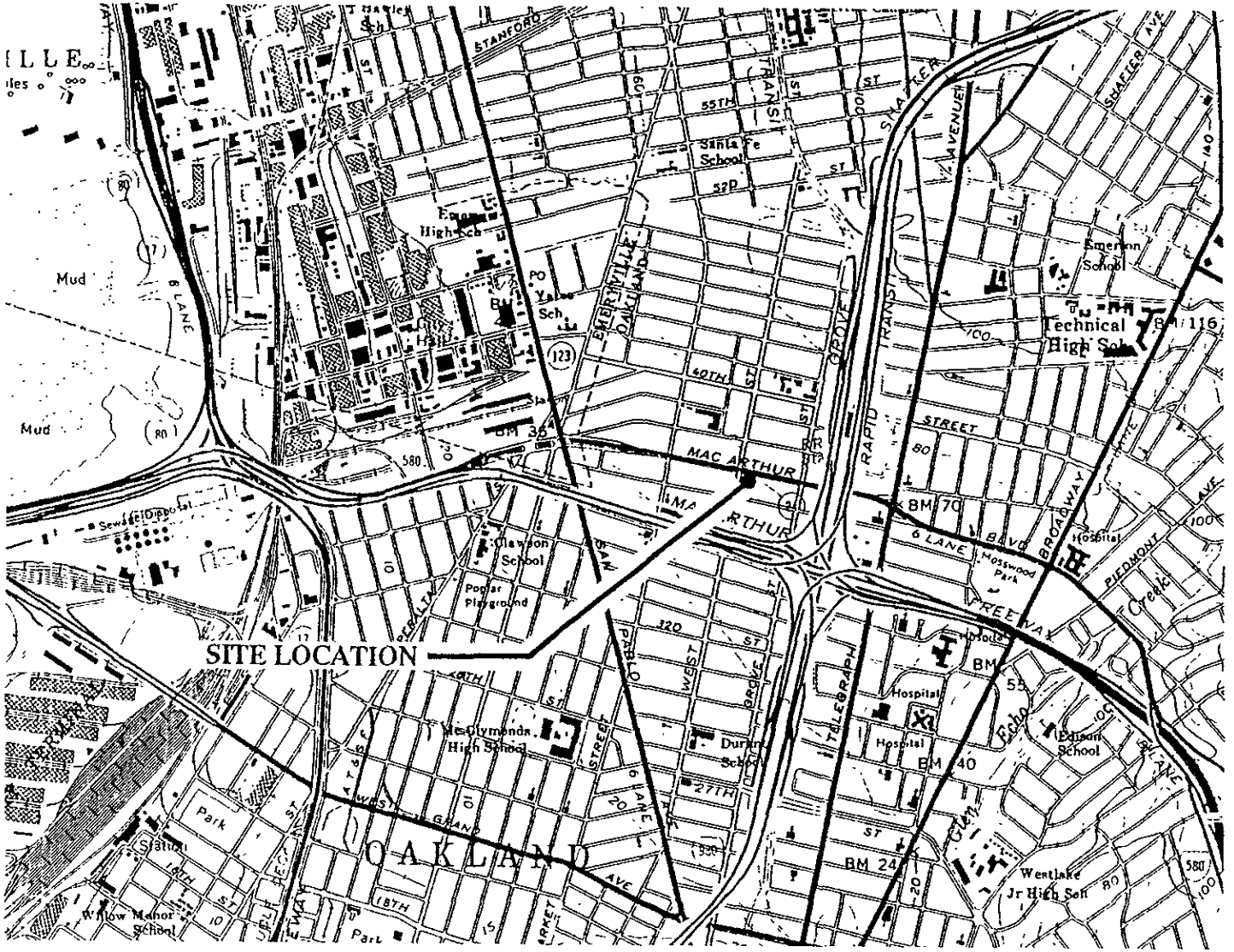
3) TPHg (Total Purgeable Hydrocarbons as gasoline) quantitated against a fresh gasoline standard.

4) Periodic Hydrocarbon Recovery calculated using influent TPHg concentrations. Zero pounds recovered is assumed when the concentration is <x.

5) ug/l = micrograms per liter.

6) Effluent concentrations reported on 12/17/92 taken between first and second carbon vessels.

ILLUSTRATIONS



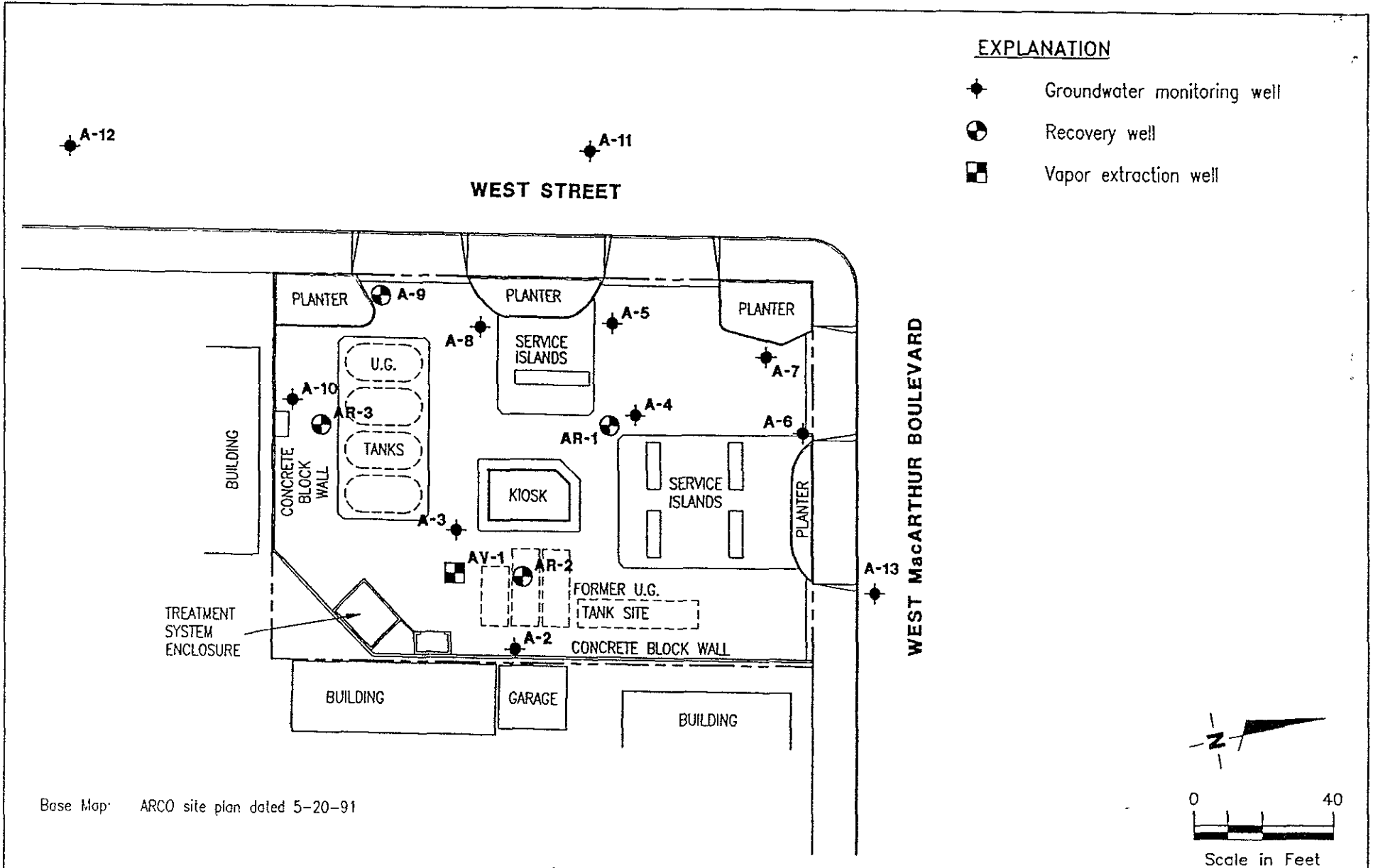
Base Map: USGS Topographic Map

GeoStrategies Inc.

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

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		9/91	



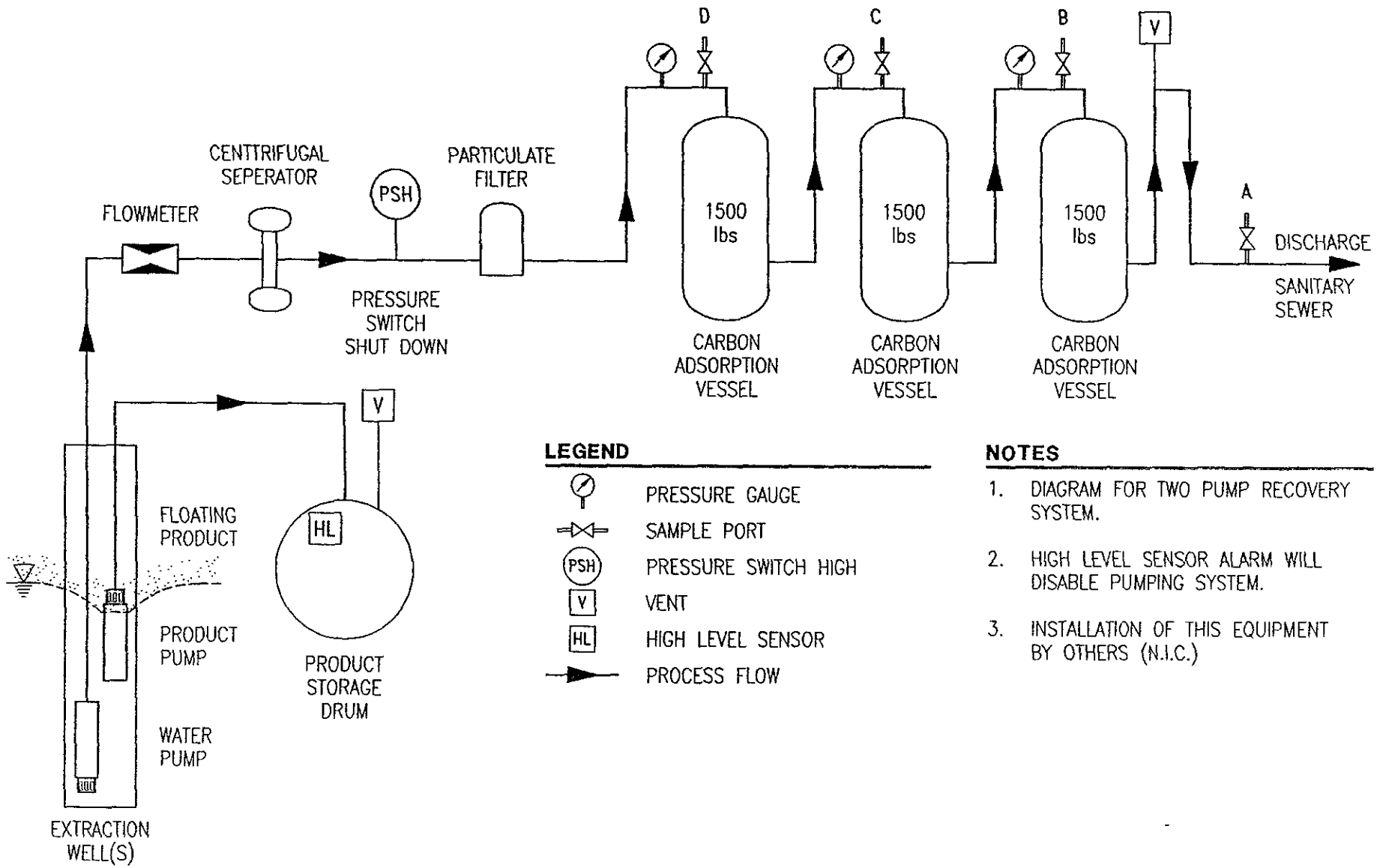
Base Map: ARCO site plan dated 5-20-91

GeoStrategies Inc.

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

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		7/93	



LEGEND

- PRESSURE GAUGE
- SAMPLE PORT
- PSH — PRESSURE SWITCH HIGH
- V — VENT
- HL — HIGH LEVEL SENSOR
- PROCESS FLOW

NOTES

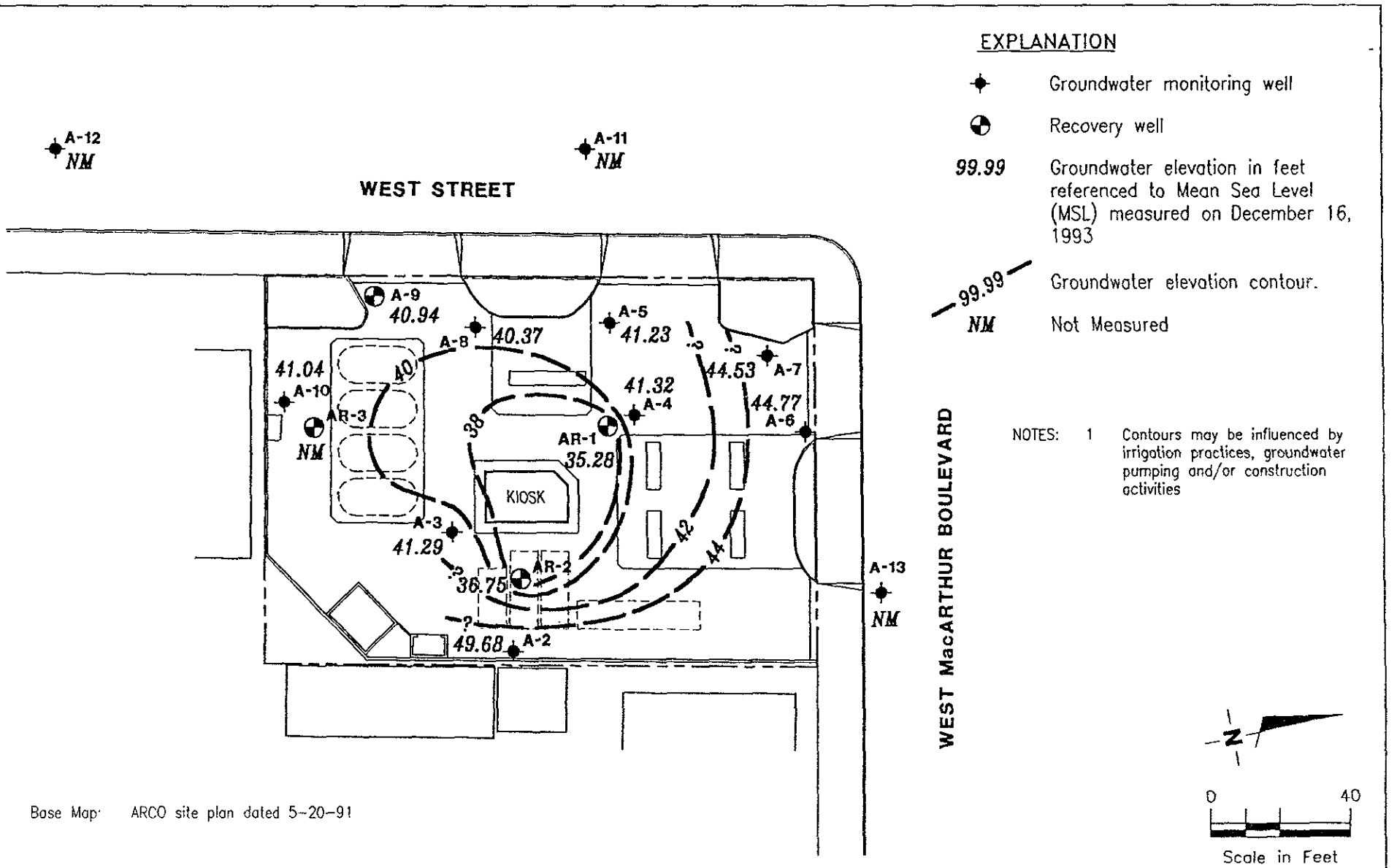
1. DIAGRAM FOR TWO PUMP RECOVERY SYSTEM.
2. HIGH LEVEL SENSOR ALARM WILL DISABLE PUMPING SYSTEM.
3. INSTALLATION OF THIS EQUIPMENT BY OTHERS (N.I.C.)

GeoStrategies Inc.

PROCESS FLOW DIAGRAM
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE **3**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7909		6/93	

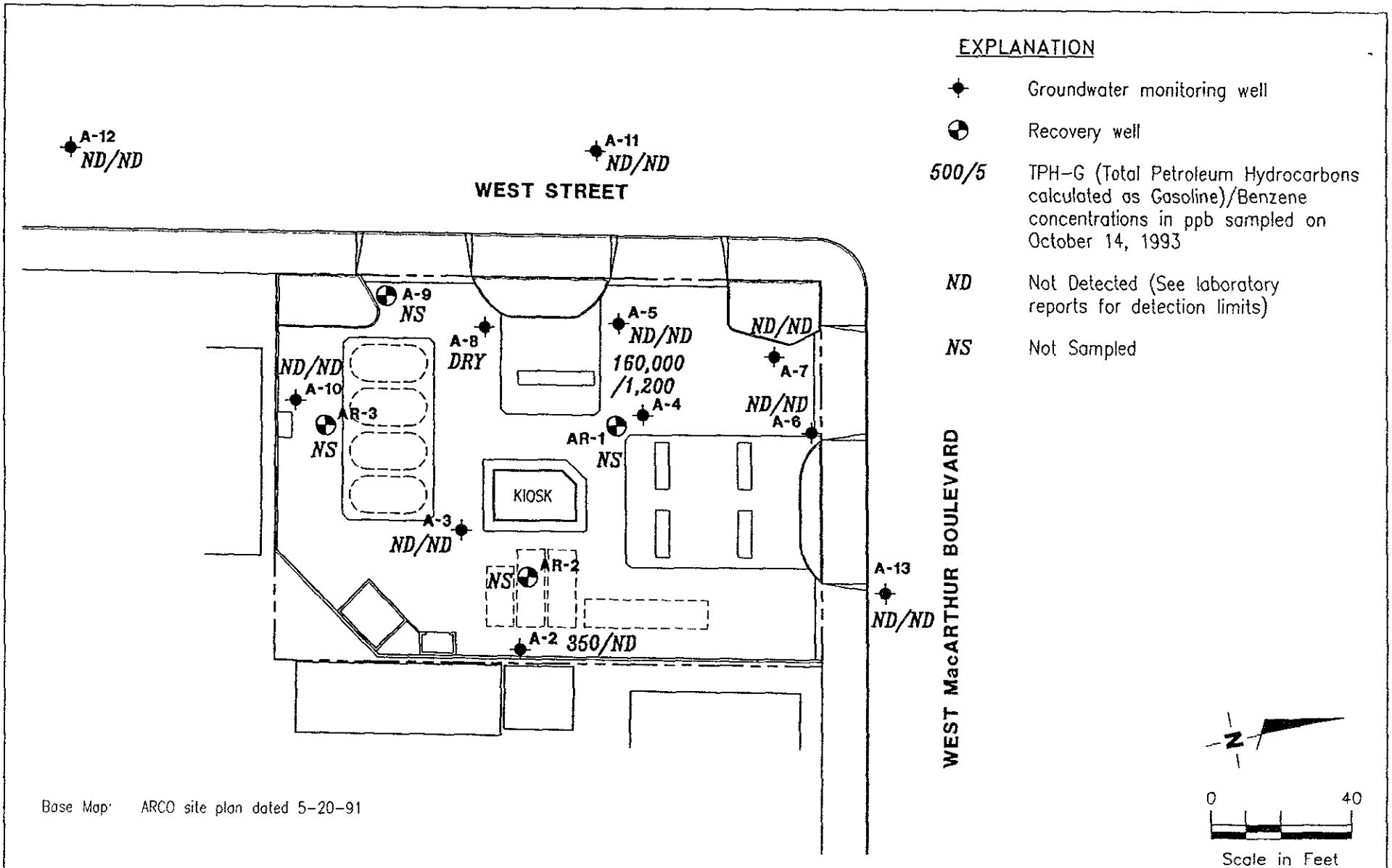


GeoStrategies Inc.

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

PLATE 4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790970-24		1/94	2/94



GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP
ARCO Service Station #4931
731 West MacArthur Boulevard
Oakland, California

PLATE 5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
790970-24		1/94	

APPENDIX A

EMCON GROUNDWATER SAMPLING AND MONITORING REPORTS

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

Date November 5, 1993
Project 0G70-032.01

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
15	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 4931, 731 West MacArthur Boulevard, Oakland, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Reviewed by: Jim Butera JB

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : October 14, 1993

ARCO STATION # : 4931 FIELD TECHNICIAN : Steve Horton/S. Connors 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	AR-1	NR	Vault	NR	None	Slip	NR	NR	NR	NR	NR	LID JAMED SHUT, CAN NOT OPEN.
2	AR-2	GOOD	Vault	NA	None	Slip	18.11	18.11	ND	ND	28.5	
3	AR-3	NR	Vault	NR	None	Slip	NR	NR	NR	NR	NR	LID JAMED SHUT CAN NOT OPEN.
4	A-8	GOOD	Vault	NA	None	Slip	13.10	13.10	ND	ND	20.0	LID difficult to open No sample port
5	A-9	GOOD	Vault	NA	None	Slip	14.11	14.11	ND	ND	38.0	Lid difficult to open No sample port
6	A-13	GOOD	G-5	NA	2357	yes	14.02	14.02	ND	ND	29.3	—
7	A-11	GOOD	G-5	NA	2357	yes	14.72	14.72	ND	ND	27.9	—
8	A-12	GOOD	G-5	NA	2357	yes	13.28	13.28	ND	ND	29.9	—
9	A-3	GOOD	G-5	NA	2357	yes	15.11	15.11	ND	ND	17.1	—
10	A-5	GOOD	G-5	NA	2357	yes	14.99	14.99	ND	ND	23.9	—
11	A-7	GOOD	G-5	NA	2357	yes	12.52	12.52	ND	ND	22.8	CRACKED G-5 Lid
12	A-10	GOOD	G-5	NA	2357	yes	15.22	15.22	ND	ND	30.1	water in box over casing
13	A-6	CRACK	G-5	NA	2357	yes	12.82	12.82	ND	ND	24.4	broken locking flip cap
14	A-2	GOOD	G-5	NA	2357	yes	15.74	15.74	ND	ND	19.8	—

SURVEY POINTS ARE TOP OF WELL BOXES

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : October 14, 1993

ARCO STATION # : 4931 FIELD TECHNICIAN : Steve Horton/S.Connors 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
15	A-4	GOOD	G-5	NA	2357	YES	15.37	15.37	ND	ND	19.9	STRONG ODOR

SURVEY POINTS ARE TOP OF WELL BOXES

Summary of Groundwater Monitoring Data
Fourth Quarter 1993
ARCO Service Station 4931
731 West MacArthur Boulevard, Oakland, California
micrograms per liter (µg/l) and milligrams per liter (mg/l)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)
AR-1	10/14/93	IW.[2]	IW.	IW.	IW.	IW.	IW.	IW.
AR-2	10/14/93	18.11	NS.[3]	NS.	NS.	NS.	NS.	NS.
AR-3	10/14/93	IW.	IW.	IW.	IW.	IW.	IW.	IW.
A-2(19)	10/15/93	15.74	ND.[4]	350	<0.5	<0.5	<0.5	<0.5
A-3(17)	10/14/93	15.11	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-4(19)	10/14/93	15.37	ND.	160,000.	1,200.	<250.	4,100.	950.
A-5(23)	10/14/93	14.99	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-6(24)	10/14/93	12.82	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-7(22)	10/14/93	12.52	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-8	10/14/93	13.10	NS.	NS.	NS.	NS.	NS.	NS.
A-9	10/14/93	14.11	NS.	NS.	NS.	NS.	NS.	NS.
A-10(29)	10/14/93	15.22	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-11(27)	10/14/93	14.72	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-12(29)	10/14/93	13.28	ND.	<50.	<0.5	<0.5	<0.5	<0.5
A-13(29)	10/14/93	14.02	ND.	<50.	<0.5	<0.5	<0.5	<0.5
XDup[5]	10/14/93	NA.[6]	NA.	NA.	NA.	NA.	NA.	NA.
FB-1[7]	10/14/93	NA.	NA.	<50.	<0.5	<0.5	<0.5	<0.5
TB-1[8]	10/15/93	NA.	NA.	<50.	<0.5	<0.5	<0.5	<0.5

1. TPH = Total petroleum hydrocarbons
2. IW. = Inaccessable well, well box could not be opened, well was not sampled
3 NS. = Not sampled, due to ground water extraction system installed in well.
4. ND. = Not detected
5 XDup = Duplicate well sample was not collected due to insufficient recharge of designated well
6. NA. = Not applicable
7. FB. = Field Blank
8. TB. = Trip Blank

Summary of Groundwater Monitoring Data
Fourth Quarter 1993
ARCO Service Station 4931
731 West MacArthur Boulevard, Oakland, California
parts per million (ppm) and milligrams per liter (mg/l)

Well ID and Sample Depth	TOG[1] (mg/l)	Total Lead (mg/l)
A-2(19)	<5.0	0.021

1. TOG = Total Oil and Greese

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-93-5/Arco 4931, Oakland

Enclosed are the results from 13 water samples received at Sequoia Analytical on October 20,1993. The requested analyses are listed below:

3JB8601	Water, A-2 (19)	10/15/93	EPA 5030/8015/8020 SM 5520 B&F (Gravimetric)
3JB8602	Water, A-3 (17)	10/14/93	EPA 5030/8015/8020
3JB8603	Water, A-4 (19)	10/14/93	EPA 5030/8015/8020
3JB8604	Water, A-5 (23)	10/14/93	EPA 5030/8015/8020
3JB8605	Water, A-6 (24)	10/14/93	EPA 5030/8015/8020
3JB8606	Water, A-7 (22)	10/14/93	EPA 5030/8015/8020
3JB8607	Water, A-10 (29)	10/14/93	EPA 5030/8015/8020
3JB8608	Water, A-11 (27)	10/14/93	EPA 5030/8015/8020
3JB8609	Water, A-12 (29)	10/14/93	EPA 5030/8015/8020
3JB8610	Water, FB-1	10/14/93	EPA 5030/8015/8020
3JB8611	Water, TB-1	10/15/93	EPA 5030/8015/8020
3JB8612	Water, A-2 (19)	10/15/93	Lead
3JB8613	Water, A-13 (29)	10/14/93	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-93-5/Arco 4931, Oakland	Sampled:	Oct 14-15, 1993
1921 Ringwood Avenue	Sample Matrix:	Water	Received:	Oct 20, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 1, 1993
Attention: Jim Butera	First Sample #:	3JB8601		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3JB8601 A-2 (19)	Sample I.D. 3JB8602 A-3 (17)	Sample I.D. 3JB8603 A-4 (19)	Sample I.D. 3JB8604 A-5 (23)	Sample I.D. 3JB8605 A-6 (24)	Sample I.D. 3JB8606 A-7 (22)
Purgeable Hydrocarbons	50	350	N.D.	160,000	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	1,200	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	4,100	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	950	N.D.	N.D.	N.D.
Chromatogram Pattern:		Non-gas C6 - C12	--	Gas	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	500	1.0	1.0	1.0
Date Analyzed:	10/25/93	10/24/93	10/24/93	10/24/93	10/24/93	10/24/93
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%) *Coelution confirmed	160*	84	124	86	84	86

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-93-5/Arco 4931, Oakland	Sampled: Oct 14-15, 1993
1921 Ringwood Avenue	Sample Matrix:	Water	Received: Oct 20, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported: Nov 1, 1993
Attention: Jim Butera	First Sample #:	3JB8607	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3JB8607 A-10 (29)	Sample I.D. 3JB8608 A-11 (27)	Sample I.D. 3JB8609 A-12 (29)	Sample I.D. 3JB8610 FB-1	Sample I.D. 3JB8611 TB-1	Sample I.D. 3JB8613 A-13 (29)
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	10/25/93	10/25/93	10/25/93	10/24/93	10/22/93	10/24/93
Instrument Identification:	GCHP-3	GCHP-3	GCHP-3	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%) *Coelution confirmed	101	100	101	80	78	82

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-93-5/Arco 4931, Oakland	Sampled:	Oct 15, 1993
1921 Ringwood Avenue	Matrix Descript:	Water	Received:	Oct 20, 1993
San Jose, CA 95131	Analysis Method:	SM 5520 B&F (Gravimetric)	Extracted:	Oct 27, 1993
Attention: Jim Butera	First Sample #:	3JB8601	Analyzed:	Oct 27, 1993
			Reported:	Nov 1, 1993

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Oil & Grease mg/L
3JB8601	A-2 (19)	N.D.

Detection Limits:	**5.0**

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

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-93-5/Arco 4931, Oakland	Sampled:	Oct 15, 1993
1921 Ringwood Avenue	Sample Descript:	Water, A-2 (19)	Received:	Oct 20, 1993
San Jose, CA 95131			Analyzed:	see below
Attention: Jim Butera	Lab Number:	3JB8612	Reported:	Nov 1, 1993

LABORATORY ANALYSIS

Analyte	Date Analyzed	Detection Limit mg/L	Sample Result mg/L
Lead	10/27/93	0.0050	0.021

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

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-93-5/Arco 4931, Oakland
1921 Ringwood Avenue	Matrix:	Water
San Jose, CA 95131		
Attention: Jim Butera	QC Sample Group: 3JB8601-13	Reported: Nov 1, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK102493	GBLK102493	GBLK102493	GBLK102493
Date Prepared:	-	-	-	-
Date Analyzed:	10/24/93	10/24/93	10/24/93	10/24/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	110	110	110	107
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3JB1001	3JB1001	3JB1001	3JB1001
Date Prepared:	-	-	-	-
Date Analyzed:	10/24/93	10/24/93	10/24/93	10/24/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	98	98	98	97
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	2.0	2.0	2.0	3.0

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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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-93-5/Arco 4931, Oakland
Matrix: Water
QC Sample Group: 3JB8601-13

Reported: Nov 1, 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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK102593	GBLK102593	GBLK102593	GBLK102593
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	10/25/93	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	100	100	100	100
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3JB8613	3JB8613	3JB8613	3JB8613
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	10/25/93	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	110	110	110	107
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	9.5	9.5	9.5	6.8

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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results

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-93-5/Arco 4931, Oakland
Matrix: Water
QC Sample Group: 3JB8601-13

Reported: Nov 1, 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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK102593	GBLK102593	GBLK102593	GBLK102593
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	10/25/93	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-3	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	100	100	100	107
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	3JB8604	3JB8604	3JB8604	3JB8604
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	10/25/93	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Matrix Spike % Recovery:	110	110	100	107
Matrix Spike Duplicate % Recovery:	100	110	99	100
Relative % Difference:	9.5	0.0	1.0	6.8

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

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

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Matrix: Water
QC Sample Group: 3JB8601-13

Reported: Nov 1, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Total Recoverable Petroleum Hydrocarbons	Lead
Method:	SM 5520 BF	EPA 239.2
Analyst:	M. Shkidt	J. Martinez
Conc. Spiked:	30	0.050
Units:	mg/L	mg/L
LCS Batch#:	BLK102793	BLK102693
Date Prepared:	10/27/93	10/26/93
Date Analyzed:	10/27/93	10/26/93
Instrument I.D.#:	N.A.	MV-1
LCS % Recovery:	83	102
Control Limits:	70-110	75-125
MS/MSD Batch #:	BLK102793	3JC9901
Date Prepared:	10/27/93	10/26/93
Date Analyzed:	10/27/93	10/26/93
Instrument I.D.#:	N.A.	MV-1
Matrix Spike % Recovery:	83	102
Matrix Spike Duplicate % Recovery:	87	101
Relative % Difference:	4.7	0.90

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

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

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ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-5

Chain of Custody

ARCO Facility no 4931	City (Facility) OAKLAND	Project manager (Consultant) JIM BUTERA	Laboratory name SEQUOIA
ARCO engineer Kyle Christie	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-0300	Fax no. (Consultant) 453-0452	Contract number
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 EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	TOTAL LEAD
A-2(19)		4		X		X	HCl	10-15-93	1256		X		X								-01
A-3(17)		2						10/14/93	14:04		X										-02
A-4(19)		2						10/14/93	15:30		X										-03
A-5(23)		2						10/14/93	14:20		X										-04
A-6(24)		2						10/14/93	14:55		X										-05
A-7(22)		2						10/14/93	14:47		X										-06
A-8( )		2								→	X		No Sample								
A-9( )		2								→	X		No Sample								
A-10(29)		2						10/14/93	15:35		X										-07
A-11(27)		2						10/14/93	13:45		X										-08
A-12(29)		2						10/14/93	13:10		X										-09
XDUP		2							→		X		WELL DRY								
FB-1		2						10/14/93	1335		X										-10
TB-1		2		↓		↓	↓	10-15-93	—		X										-11
A-2(19)		1		X		X	HNO_3	10-15-93	1256												X -12
A-13(29)		2						10/14/93	13:25		X										-13

Special detection Limit/reporting: Lowest Possible

Special QA/QC: AS NORMAL

Remarks: 2-40 ml HCl; 4-Liter HCl; 1-Liter HNO_3

Lab number: 9310B86

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

Condition of sample:

Temperature received:

	Date	Time
Relinquished by sampler	10/14/93	17:00
Relinquished by SPO	10/20/93	11:44
Relinquished by	Date	Time

	Date	Time
Received by SPO	10/20/93	10:02
Received by		
Received by laboratory	10/20/93	1144

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

APPC 3292 (2-91)

1.46

WATER SAMPLE FIELD DATA SHEET

Rev 2. 5/91

EMCON ASSOCIATES

PROJECT NO: 0620-032-01 | SAMPLE ID: A-2(19)
PURGED BY: J Williams | CLIENT NAME: ARCO 4931
SAMPLED BY: J Williams | LOCATION: OAKLAND

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	2.66
DEPTH TO WATER (feet):	15.74	CALCULATED PURGE (gal.):	2.95
DEPTH OF WELL (feet):	19.8	ACTUAL PURGE VOL. (gal.):	3

DATE PURGED: 10-14-93 Start (2400 Hr) 1242 End (2400 Hr) 1250
DATE SAMPLED: 10-15-93 Start (2400 Hr) 1250 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1246	2	6.50	480	70.7	GREY	HEAVY
	DRIED TIME 1250		3 GALLONS			
	NO RECHARGE READING NOT ENOUGH VOLUME.					

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ 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 #: 3257

REMARKS: Well dried and did not recharge. Returned to well on 10-15-93 AND TOOK 2 VOA's ½ LITER HCl and 1 HNO_3 AND WELL DRIED AGAIN. THAT WAS ALL I COULD GET. NO X-DUP.

Meter Calibration: Date: 10-14-93 Time: 1115 Meter Serial #: 9060 Temperature °F: 68.8
(EC 1000 1000 / 1000) (DI ___) (pH 7 7.04 / 7.00) (pH 10 10.01 / 10.00) (pH 4 4.04 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By JB Page 1 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-032-01 SAMPLE ID: A-3(17)

PURGED BY: J. WILLIAMS CLIENT NAME: ARCO 4981

SAMPLED BY: J. WILLIAMS LOCATION: OAKLAND

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 1.30

DEPTH TO WATER (feet): 15.20 CALCULATED PURGE (gal.): 3.92

DEPTH OF WELL (feet): 17.20 ACTUAL PURGE VOL. (gal.): 1.5

DATE PURGED: 10-14-93 Start (2400 Hr) 1352 End (2400 Hr) 1358

DATE SAMPLED: 10-14-93 Start (2400 Hr) 1404 End (2400 Hr) 1405

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1358	1.5	6.73	1021	73.9	BROWN	HEAVY
	DRIED	TIME 1358 1.5 GALLONS				
1410	Recharge	6.77	1042	71.8	GREY	HEAVY

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ 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: WATER IN BOX LOCK #: 3257

REMARKS: ___

Meter Calibration: Date: 10-14-93 Time: 1115 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-2

Signature: [signature] Reviewed By: JB Page 2 of 15

WATER SAMPLE FIELD DATA SHEET

Rev 2, 5/91

EMCON ASSOCIATES

PROJECT NO. 0670-032.01 SAMPLE ID: A-4(19)

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY Steve Horton LOCATION: Oakland, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	1.66
DEPTH TO WATER (feet):	15.37	CALCULATED PURGE (gal.):	4.98
DEPTH OF WELL (feet):	19.9	ACTUAL PURGE VOL. (gal.):	5.0

DATE PURGED: 10/14/93 Start (2400 Hr) 15:13 End (2400 Hr) 15:23

DATE SAMPLED: 10/14/93 Start (2400 Hr) 15:30 End (2400 Hr) 15:31

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
15:18	2.0	6.72	1349	71.9	Black	Heavy
15:20	3.5	6.86	1213	71.5	↓	↓
~~15:23~~	~~5.0~~	well	dryed at	4 gallons		
15:30	Recharge	6.83	1270	71.8	"	"

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	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: Good LOCK #: 2357

REMARKS: Sheen on purge water but not a measureable layer

Meter Calibration: Date: 10/14/93 Time: 12:35 Meter Serial #: 9205 Temperature °F: ___

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

Location of previous calibration: A-2

Signature [signature] Reviewed By JB Page 3 of 15

WATER SAMPLE FIELD DATA SHEET

Rev 2. 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 | SAMPLE ID: A-5(23)
PURGED BY: Steve Horton | CLIENT NAME: ARCO #4931
SAMPLED BY: Steve Horton | LOCATION: Oakland, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	3.26
DEPTH TO WATER (feet):	14.99	CALCULATED PURGE (gal.):	9.80
DEPTH OF WELL (feet):	23.9	ACTUAL PURGE VOL. (gal.):	10.0

DATE PURGED: 10/14/93 Start (2400 Hr) 14:04 End (2400 Hr) 14.19
DATE SAMPLED: 10/14/93 Start (2400 Hr) 1420 End (2400 Hr) 14.21

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1410	3.5	6.97	7.47	70.3	Dark Brown	Heavy
1412	7.0	7.13	7.24	69.2	↓	↓
1414	10.0	7.18	6.84	68.6	↓	↓

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

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

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

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 2357

REMARKS ___

Meter Calibration: Date: 10/14/93 Time: 12:35 Meter Serial #: 9205 Temperature °F: ___

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

Location of previous calibration: A-12

Signature: Steve Horton Reviewed By: JHD Page 4 of 15

Rev 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-6(24)

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton LOCATION: Oakland, CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 4.24

DEPTH TO WATER (feet): ~~11.99~~ 12.82 CALCULATED PURGE (gal.): 12.73

DEPTH OF WELL (feet): ~~23.6~~ 24.4 ACTUAL PURGE VOL. (gal.): 13.0

DATE PURGED: 10/14/93 Start (2400 Hr) 1439 End (2400 Hr) 1452

DATE SAMPLED: 10/14/93 Start (2400 Hr) 14:55 End (2400 Hr) 14:56

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1443	4.50	7.31	580	70.8	Dark Brown	Heavy
1446	9.0	7.15	564	69.6	"	"
1452	13.0	7.18	555	68.5	"	"

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

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ 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: Good LOCK #: 2357

REMARKS: ___

Meter Calibration: Date: 10/14/93 Time: 12:35 Meter Serial #: 9208 Temperature °F. ___

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

Location of previous calibration: 1-7

Signature: [signature] Reviewed By: [signature] Page 5 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2. 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032-01 SAMPLE ID: A-7

PURGED BY: J. Williams CLIENT NAME: ARCO 4931

SAMPLED BY: J. Williams LOCATION: OAKLAND

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 3.76

DEPTH TO WATER (feet): 12.52 CALCULATED PURGE (gal.): 11.30

DEPTH OF WELL (feet): 22.8 ACTUAL PURGE VOL. (gal.): 11

DATE PURGED: 10-14-93 Start (2400 Hr) 1437 End (2400 Hr) 1443

DATE SAMPLED: 10-14-93 Start (2400 Hr) 1447 End (2400 Hr) 1449

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1439	4	6.44	527	71.3	BROWN	HEAVY
1441	8	6.45	541	71.3	"	"
1443	11	6.39	567	70.9	"	"

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

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

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

WELL INTEGRITY: OK LOCK #: 3257

REMARKS: ___

Meter Calibration: Date: 10-14-93 Time: 1115 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: A-2

Signature: Joe Williams Reviewed By: JB Page 6 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2. 5/91

EMCON ASSOCIATES

PROJECT NO. 0670-037.01 SAMPLE ID: A-8

PURGED BY Steve Horton CLIENT NAME ARCO #4931

SAMPLED BY: Steve Horton LOCATION Oakland, 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.):	NR
DEPTH TO WATER (feet):	/	CALCULATED PURGE (gal.):	/
DEPTH OF WELL (feet):	/	ACTUAL PURGE VOL. (gal.):	/

DATE PURGED: 10/14/93 Start (2400 Hr) NA / End (2400 Hr) NA /

DATE SAMPLED: 10/14/93 Start (2400 Hr) / End (2400 Hr) /

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		NO	Sample Port			

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

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

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

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

WELL INTEGRITY: NA LOCK #: NA

REMARKS: ___

Meter Calibration Date: 10/14/93 Time: ___ Meter Serial #: 9209 Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 7 of 15

WATER SAMPLE FIELD DATA SHEET

Rev 2. 5/91

EMCON ASSOCIATES

PROJECT NO. 0670-037.01 SAMPLE ID: A-9

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton LOCATION: Oakland, 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.): NA

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

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

DATE PURGED: 10/14/93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: 10/14/93 Start (2400 Hr) ___ End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample Port				

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

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

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ Centrifugal Pump ___ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: ___

WELL INTEGRITY: ___ LOCK #: ___

REMARKS: ___

Meter Calibration: Date: 10/14/93 Time. ___ Meter Serial # 9209 Temperature °F. ___

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

Location of previous calibration. ___

Signature. [signature] Reviewed By [signature] Page 9 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2. 5/91

EMCON ASSOCIATES

PROJECT NO. 0670-032-01 SAMPLE ID: A-10(30)

PURGED BY: J Williams CLIENT NAME: ARCO 4931

SAMPLED BY: J Williams LOCATION: OAKLAND

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 5.45

DEPTH TO WATER (feet): 15.22 CALCULATED PURGE (gal.): 16.36

DEPTH OF WELL (feet): 30.1 ACTUAL PURGE VOL. (gal.): 17

DATE PURGED: 10-14-93 Start (2400 Hr) 1524 End (2400 Hr) 1531

DATE SAMPLED: 10-14-93 Start (2400 Hr) 1535 End (2400 Hr) 1536

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1527	6	6.51	659	69.7	BROWN	HEAVY
1529	12	6.54	661	67.1	"	"
1531	17	6.57	663	66.1	"	"

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	V Bailer (Teflon®)
V 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: WATER IN BOX LOCK #: 3257

REMARKS: ____

Meter Calibration: Date: 10-14-93 Time: 1115 Meter Serial #: 9010 Temperature °F: ____

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

Location of previous calibration: A-2

Signature: [signature] Reviewed By: [signature] Page 9 of 15

WATER SAMPLE FIELD DATA SHEET

Rev 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 SAMPLE ID: A-11 (27)

PURGED BY: Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton LOCATION: Oakland, CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 4.83

DEPTH TO WATER (feet): 14.12 CALCULATED PURGE (gal.): 14.99

DEPTH OF WELL (feet): 21.9 ACTUAL PURGE VOL. (gal.): 14.5

DATE PURGED: 10/14/93 Start (2400 Hr) 13.25 End (2400 Hr) 1334

DATE SAMPLED: 10/14/93 Start (2400 Hr) 13:45 End (2400 Hr) 13:46

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13.28	5.0	7.18	654	71.9	Dark Brown	Heavy
13.32	10.0	7.02	628	70.4	↓	↓
13.34	14.5	7.06	620	69.4	↓	↓

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

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

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

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: Good LOCK #: 2357

REMARKS: ___

Meter Calibration: Date: 10/14/93 Time: 12:35 Meter Serial #: 9209 Temperature °F: ___

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

Location of previous calibration: A-12

Signature: [signature] Reviewed By: [signature] Page 10 of 15

Rev 2. 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO. 0670-032.01 SAMPLE ID: A-12(29)

PURGED BY Steve Horton CLIENT NAME: ARCO #4931

SAMPLED BY: Steve Horton LOCATION: Oakland, CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 6.09

DEPTH TO WATER (feet): 13.25 CALCULATED PURGE (gal.): 18.28

DEPTH OF WELL (feet): 29.9 ACTUAL PURGE VOL. (gal.): 18.5

DATE PURGED: 10/14/93 Start (2400 Hr) 12:57 End (2400 Hr) 13.08

DATE SAMPLED: 10/14/93 Start (2400 Hr) 13:10 End (2400 Hr) 13:12

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13.01	6.5	6.83	630	72.0	LT Brown	Moderate
13.05	13.0	6.98	611	69.2	Brown	Heavy
13.08	18.5	6.99	612	69.1	Brown	Heavy

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

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 2357

REMARKS: ___

Meter Calibration. Date: 10/14/93 Time: 12:35 Meter Serial #: 9209 Temperature °F: 71.9

(EC 1000 11.04 / 1000) (DI ___) (pH 7 6.75 7.00) (pH 10 9.88 10.0) (pH 4 3.94 / 4.00)

Location of previous calibration: ___

Signature Steve Horton Reviewed By JB Page 11 of 15

Rev 2, 5/91

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 0670-832-01 SAMPLE ID: A-13

PURGED BY: J Williams CLIENT NAME: ARCO 4931

SAMPLED BY: J Williams LOCATION: OAKLAND

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 5.62

DEPTH TO WATER (feet): 13.94 CALCULATED PURGE (gal.): 16.86

DEPTH OF WELL (feet): 29.3 ACTUAL PURGE VOL. (gal.): 17.0

DATE PURGED: 10-14-93 Start (2400 Hr) 1317 End (2400 Hr) 1323

DATE SAMPLED: 10-14-93 Start (2400 Hr) 1325 End (2400 Hr) 1327

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1319	6	6.42	611	72.6	CLEAR	TRACE
1321	12	6.54	618	69.6	BROWN	HEAVY
1323	17	6.57	625	68.6	11	11

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 #: 3257

REMARKS: ___

Meter Calibration: Date: 10-14-93 Time: 1115 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-2

Signature: [signature] Reviewed By JWB Page 12 of 15

WATER SAMPLE FIELD DATA SHEET

Rev 2 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-032.01 | SAMPLE ID: AR-1
PURGED BY: Steve Horton | CLIENT NAME: ARCO #4931
SAMPLED BY: Steve Horton | LOCATION: Oakland, 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.):	NA
DEPTH TO WATER (feet):	/	CALCULATED PURGE (gal.):	/
DEPTH OF WELL (feet):	/	ACTUAL PURGE VOL. (gal.):	/

DATE PURGED: 10/14/93 Start (2400 Hr) NA End (2400 Hr) NA
DATE SAMPLED: 10/14/93 Start (2400 Hr) / End (2400 Hr) /

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No	Sample	Port		

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

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

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

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

WELL INTEGRITY: ___ LOCK #: ___

REMARKS: ___

Meter Calibration: Date: 10/14/93 Time: ___ Meter Serial #: 9209 Temperature °F ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 13 of 15

WATER SAMPLE FIELD DATA SHEET

Rev. 2. 5/91

EMCON ASSOCIATES

PROJECT NO. 0670-032.01 SAMPLE ID AR-2

PURGED BY: Steve Horton CLIENT NAME ARCO #4931

SAMPLED BY: Steve Horton LOCATION Oakland, 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.): NA

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

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

DATE PURGED: 10/14/93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: 10/14/93 Start (2400 Hr) ____ End (2400 Hr) ____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No	Sample Port			

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

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

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: ____ LOCK #: ____

REMARKS: ____

Meter Calibration: Date: 10/14/93 Time: ____ Meter Serial #: 9205 Temperature °F: ____

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

Location of previous calibration ____

Signature: Steve Horton Reviewed By: JB Page 14 of 15

WATER SAMPLE FIELD DATA SHEET

Rev 2. 5/9

EMCON ASSOCIATES

PROJECT NO. 0670-032.01 SAMPLE ID: AR-3

PURGED BY: Steve Horton CLIENT NAME ARCO #4931

SAMPLED BY: Steve Horton LOCATION: Oakland, 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.): NA

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

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

DATE PURGED: 10/14/93 Start (2400 Hr) NA End (2400 Hr) NA

DATE SAMPLED: 10/14/93 Start (2400 Hr) ___ End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample Port				

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

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

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™ NA	___ Dedicated	___ Well Wizard™ NA	___ Dedicated
Other: ___		Other ___	

WELL INTEGRITY: ___ LOCK #: ___

REMARKS: ___

Meter Calibration Date: 10/14/93 Time: ___ Meter Serial #: 9209 Temperature °F: ___

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

Location of previous calibration: ___

Signature: Steve Horton Reviewed By: ___ Page 15 of 15

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

Date November 30, 1993
Project 0G70-032.01

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
	November 1993 monthly water level survey, ARCO
	station 4931, 731 W. MacArthur Blvd, Oakland, CA.

For your: X Information Sent by: X Mail

Comments:

Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-7300.

Reviewed by:

Jim Butera

Robert Porter, Senior Project Engineer

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : November 16, 1993

ARCO STATION # : 4931 FIELD TECHNICIAN : Joe Williams / Steve Horton DAY : Tuesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	AR-1	good	Vault	na	None	Slip	13.76	13.76	ND	ND	30.1	lid is stuck and extremely difficult to open strong odor
2	AR-2	good	Vault	na	None	Slip	17.92	17.92	ND	ND	27.4	lid difficult to open
3	AR-3	good	Vault	na	None	Slip	16.38	16.38	ND	ND	30.0	lid is stuck and extremely difficult to open
4	A-3	good	G-5	na	2357	yes	14.72	14.72	ND	ND	17.2	water in box over TOC extremely foul odor in box
5	A-5	good	G-5	na	2357	yes	14.47	14.47	ND	ND	24.0	—
6	A-6	good	G-5	na	2357	yes	12.34	12.34	ND	ND	25.6	—
7	A-7	good	G-5	na	2357	yes	12.13	12.13	ND	ND	22.9	—
8	A-8	good	Vault	na	None	Slip	Dry	Dry	ND	ND	20.0	handle is broken on lid. Lid was stuck and was extremely difficult to open. odor
9	A-9	good	Vault	na	None	Slip	NR	NR	NR	NR	NR	handle is broken on lid. Lid is stuck and cannot be opened
10	A-10	good	G-5	na	2357	yes	14.70	14.70	ND	ND	30.2	water in box over TOC extremely foul odor in box
11	A-2	good	G-5	na	2357	yes	14.61	14.61	ND	ND	19.8	
12	A-4	good	G-5	na	2357	yes	14.86	14.86	ND	ND	19.6	strong odor sheen in bailer bailer and HMC bag product adhered to outside

SURVEY POINTS ARE TOP OF WELL BOXES

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

Date December 22, 1993
Project 0G70-032.01

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
	December 1993 monthly water level survey, ARCO
	station 4931, 731 W. MacArthur Blvd, Oakland, CA.

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-7300.

Reviewed by: Jim Butera

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4034 Exp. 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Robert Porter, Senior Project Engineer

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-032.01 STATION ADDRESS : 731 West MacArthur Blvd. Oakland, DATE : 12/16/93

ARCO STATION # : 4931 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	AR-1	YES	Vault	OK	None	Slip	19.44	19.44	ND	ND	NR	—
2	AR-2	YES	Vault	OK	None	Slip	18.02	18.02	ND	NR	NR	—
3	AR-3	NA	Vault	NA	None	Slip	NA	NA	NA	NA	NA	CAN'T Locking well
4	A-3	YES	G-5	NONE	2357	OK	13.37	13.37	ND	ND	17.1	WATER IN BOX
5	A-5	YES	G-5	NONE	2357	Metal CAP	12.94	12.94	ND	ND	24.0	—
6	A-6	YES	G-5	NONE	2357	Metal CAP	10.40	10.40	ND	ND	25.5	Metal CAP Broken
7	A-7	YES	G-5	NONE	2357	Metal CAP	10.18	10.18	ND	ND	22.8	—
8	A-8	YES	Vault	OK	None	Slip	13.40	13.40	NR	NR	N.R	HOSE IN WELL Hydraulic Probe
9	A-9	YES	Vault	OK	None	Slip	12.10	12.10	ND	ND	NR	—
10	A-10	YES	G-5	NONE	2357	Metal CAP	13.22	13.22	ND	ND	30.2	WATER IN BOX
11	A-2	YES	G-5	NONE	2357	Metal CAP	5.80	5.80	ND	ND	19.9	—
12	A-4	YES	G-5	NONE	2357	Metal CAP	13.41	13.41	ND	ND	20.4	—

SURVEY POINTS ARE TOP OF WELL BOXES

GETTLER-RYAN
GROUNDWATER EXTRACTION SYSTEM DATA SHEET

Job #: 7909

Date: 11-30-93

Customer: Arco # 4931

Address: 731 [illegible] Ave
Oakland CA

Time of Day:

Individual Well Data Well Number = >	AR-1	AR-2	AR-3	A-9	A-8	
Active On Arrival?	Yes			Yes	No	
Active On Departure?	Yes			Yes	No	
Flowrate (gpm)	1.5	2.5	1.5	2.5	product	
Product Pump Depth (ft.)	NA				stuck @ 8'	
Water Pump Depth (ft.)	25					
Bailing (product volume)	None					
Where are bailings stored?						
Sample Taken?						
Lab Analysis Type?						

Total System Data
System Description (separator, carbon, etc.): 3 Carbon Beds

Active or Down on Arrival (why?)	Yes
Active On Departure?	Yes
Anticipated Restart Date	
Hour Meter	N/A
Flowmeter (total gallons)	340,420
Flowmeter (gpm)	8.3 = 605
Filter Pressure (psig)	3 psi In, 0 psi Out
Filter Changed Out? (Y or N)	Yes
Electric Meter Reading	69761
Sample Taken ? Where?	None
Lab Analysis Type?	None

Product Tank Level (prior to bailing)- total: empty water:

Chemical Additives- name: flowrate: drum level:

Supplies Used/Needed?

Carbon Vessel Data

Sampling Points:	A	B	C	D	E	other
Pressure At Point (psig)	-	-	2	6	6	
Samples Taken? (Y or N)	N					
Lab Analysis Type (TPH-G, BTEX, etc.)						

Comments:

GETTLER-RYAN INC.
General and Environmental Contractors

RECOVERY SYSTEM
SAMPLING DATA SHEET

COMPANY Arco 4193 JOB # 9909

LOCATION _____ DATE 10-21-93

CITY Oakland CA TIME _____

SAMPLING POINT	TIME	pH	TEMP F-C	CONDUCTIVITY	ANALYSIS	COMMENTS
A	13:02	6.90	68.8	644		
B	13:04	6.80	68.9	638		
D	13:06	6.60	68.7	649		

Flowmeter Reading 3057050 Time 13:04

Did you reopen any valves closed? yes _____ no _____

COMMENTS _____

SEQUOIA ANALYTICAL

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

Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Project: 4193-93-5, Arco 4193-Oakland

Enclosed are the results from 4 water samples received at Sequoia Analytical on October 22,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3JB5801	Water, A	10/21/93	EPA 5030/8010 EPA 5030/8015/8020 Priority Pollutants
3JB5802	Water, B	10/21/93	EPA 5030/8010 EPA 5030/8015/8020 Priority Pollutants
3JB5803	Water, D	10/21/93	EPA 5030/8010 EPA 5030/8015/8020 Priority Pollutants
3JB5804	Water, Trip Blank	10/21/93	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

Nokowhat D. Herrera
Project Manager

909-A

SEQUOIA ANALYTICAL

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

Gettler Ryan/Geostrategies	Client Project ID:	4193-93-5, Arco 4193-Oakland	Sampled:	Oct 21, 1993
6747 Sierra Court, Ste J	Sample Matrix:	Water	Received:	Oct 22, 1993
Dublin, CA 94568	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 1, 1993
Attention: Matt Donohue	First Sample #:	3JB5801		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3JB5801 A	Sample I.D. 3JB5802 B	Sample I.D. 3JB5803 D	Sample I.D. 3JB5804 Trip Blank	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.		
Benzene	0.50	N.D.	N.D.	N.D.	N.D.		
Toluene	0.50	N.D.	N.D.	N.D.	N.D.		
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.		
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.		
Chromatogram Pattern:		--	--	--	--		

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Analyzed:	10/28/93	10/28/93	10/28/93	10/28/93
Instrument Identification:	GCHP-3	GCHP-3	GCHP-3	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	96	96	94	102

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID.	4193-93-5, Arco 4193-Oakland	Sampled:	Oct 21, 1993
6747 Sierra Court, Ste J	Sample Descript:	Water, A	Received:	Oct 22, 1993
Dublin, CA 94568	Analysis Method:	EPA 5030/8010	Analyzed:	Oct 25, 1993
Attention: Matt Donohue	*Lab Number:*	*3JB5801*	Reported:	Nov 1, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Nokowhat D. Herrera
Project Manager

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Gettler Ryan/Geostrategies	Client Project ID.	4193-93-5, Arco 4193-Oakland	Sampled.	Oct 21, 1993
6747 Sierra Court, Ste J	Sample Descript:	Water, B	Received.	Oct 22, 1993
Dublin, CA 94568	Analysis Method:	EPA 5030/8010	Analyzed:	Oct 26, 1993
Attention: Matt Donohue	Lab Number.	3JB5802	Reported:	Nov 1, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	N.D.
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Gettler Ryan/Geostrategies	Client Project ID:	4193-93-5, Arco 4193-Oakland	Sampled:	Oct 21, 1993
6747 Sierra Court, Ste J	Sample Descript:	Water, D	Received:	Oct 22, 1993
Dublin, CA 94568	Analysis Method:	EPA 5030/8010	Analyzed:	Oct 26, 1993
Attention: Matt Donohue	Lab Number:	3JB5803	Reported:	Nov 1, 1993

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	2.2
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	1.3
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	2.2
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	22
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

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

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Gettler Ryan/Geostrategies	Client Project ID:	4193-93-5, Arco 4193-Oakland	Sampled:	Oct 21, 1993
6747 Sierra Court, Ste J	Sample Descript:	Water, A	Received:	Oct 22, 1993
Dublin, CA 94568			Analyzed	Oct 28, 1993
Attention: Matt Donohue	Lab Number:	3JB5801	Reported:	Nov 1, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	5.9
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	14

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

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Gettler Ryan/Geostrategies	Client Project ID:	4193-93-5, Arco 4193-Oakland	Sampled: Oct 21, 1993
6747 Sierra Court, Ste J	Sample Descript:	Water, B	Received: Oct 22, 1993
Dublin, CA 94568			Analyzed: Oct 28, 1993
Attention: Matt Donohue	Lab Number:	3JB5802	Reported: Nov 1, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	7.8
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

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Gettler Ryan/Geostrategies	Client Project ID:	4193-93-5, Arco 4193-Oakland	Sampled:	Oct 21, 1993
6747 Sierra Court, Ste J	Sample Descript:	Water, D	Received:	Oct 22, 1993
Dublin, CA 94568			Analyzed:	Oct 28, 1993
Attention: Matt Donohue	Lab Number	3JB5803	Reported:	Nov 1, 1993

E.P.A. PRIORITY POLLUTANTS: METALS

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Antimony	5.0	N.D.
Arsenic	5.0	N.D.
Beryllium	10	N.D.
Cadmium	10	N.D.
Chromium	10	N.D.
Copper	10	N.D.
Lead	5.0	N.D.
Mercury	0.20	N.D.
Nickel	50	N.D.
Selenium	5.0	N.D.
Silver	10	N.D.
Thallium	5.0	N.D.
Zinc	10	N.D.

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

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Client Project ID: 4193-93-5, Arco 4193-Oakland
Matrix: Water

QC Sample Group: 3JB5801 - 03

Reported: Nov 1, 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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK102893	GBLK102893	GBLK102893	GBLK102893
Date Prepared:	10/28/93	10/28/93	10/28/93	10/28/93
Date Analyzed:	10/28/93	10/28/93	10/28/93	10/28/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	81	80	81	80
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3JD2401	G3JD2401	G3JD2401	G3JD2401
Date Prepared:	10/28/93	10/28/93	10/28/93	10/28/93
Date Analyzed:	10/28/93	10/28/93	10/28/93	10/28/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	91	91	93	90
Matrix Spike Duplicate % Recovery:	98	98	97	100
Relative % Difference:	7.4	7.4	4.2	11

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Client Project ID: 4193-93-5, Arco 4193-Oakland
Matrix: Water

QC Sample Group: 3JB5801

Reported: Nov 1, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloroethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	B. Samra	B. Samra	B. Samra
Conc. Spiked:	25	25	25
Units:	µg/L	µg/L	µg/L
LCS Batch#:	VBLK102593	VBLK102593	VBLK102593
Date Prepared:	10/25/93	10/25/93	10/25/93
Date Analyzed:	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-5	GCHP-5	GCHP-5
LCS % Recovery:	108	96	104
Control Limits:	61-145	71-120	76-127
MS/MSD Batch #:	V3JB5801	V3JB5801	V3JB5801
Date Prepared:	10/25/93	10/25/93	10/25/93
Date Analyzed:	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-5	GCHP-5	GCHP-5
Matrix Spike % Recovery:	96	84	92
Matrix Spike Duplicate % Recovery:	92	84	92
Relative % Difference:	4.2	0.0	0.0

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

Please Note

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Client Project ID. 4193-93-5, Arco 4193-Oakland
Matrix: Water

QC Sample Group: 3JB5802 - 03

Reported: Nov 1, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloroethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	B. Samra	B. Samra	B. Samra
Conc. Spiked:	25	25	25
Units:	µg/L	µg/L	µg/L
LCS Batch#:	VBLK102593	VBLK102593	VBLK102593
Date Prepared:	10/25/93	10/25/93	10/25/93
Date Analyzed:	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-5	GCHP-5	GCHP-5
LCS % Recovery:	88	92	96
Control Limits:	61-145	71-120	76-127
MS/MSD Batch #:	V3JB3301	V3JB3301	V3JB3301
Date Prepared:	10/25/93	10/25/93	10/25/93
Date Analyzed:	10/25/93	10/25/93	10/25/93
Instrument I.D.#:	GCHP-8	GCHP-8	GCHP-8
Matrix Spike % Recovery:	84	88	92
Matrix Spike Duplicate % Recovery:	92	96	100
Relative % Difference:	9.1	8.7	8.3

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Client Project ID: 4193-93-5. Arco 4193-Oakland
Matrix. Water

QC Sample Group: 3JB5801 - 03

Reported: Nov 1, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Beryllium	Cadmium	Chromium	Nickel	Mercury	Lead
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 245.1	EPA 239.2
Analyst:	M.Mistry	M.Mistry	M.Mistry	M.Mistry	A.McDonald	J.Martinez
Conc. Spiked:	1000	1000	1000	1000	2.0	10
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK102793	BLK102793	BLK102793	BLK102793	CCV102693	BLK102593
Date Prepared:	10/27/93	10/27/93	10/27/93	10/27/93	10/26/93	10/25/93
Date Analyzed:	10/28/93	10/28/93	10/28/93	10/28/93	10/26/93	10/29/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2	MPE-2	MV-1
LCS % Recovery:	100	100	99	100	90	105
Control Limits:	75-125	75-125	75-125	75-125	90-110	75-125
MS/MSD Batch #:	3JB5803	3JB5803	3JB5803	3JB5803	3JB5801	3JC2801
Date Prepared:	10/27/93	10/27/93	10/27/93	10/27/93	10/26/93	10/25/93
Date Analyzed:	10/28/93	10/28/93	10/28/93	10/28/93	10/26/93	10/29/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2	MPE-2	MV-1
Matrix Spike % Recovery:	100	100	98	98	106	22
Matrix Spike Duplicate % Recovery:	97	99	95	96	103	23
Relative % Difference:	3.0	1.0	3.1	2.1	2.9	4.4

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Client Project ID. 4193-93-5, Arco 4193-Oakland
Matrix: Water

QC Sample Group. 3JB5801 - 03

Reported: Nov 1, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Arsenic	Selenium	Nickel	Antimony	Thallium
Method:	EPA 206.2	EPA 270.2	EPA 249.2	EPA 204.2	EPA 279.2
Analyst:	W.Thant	W.Thant	S.Chin	S.Chin	F. Contreras
Conc. Spiked:	10	10	10	10	10
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	BLK102593	BLK102593	BLK102593	BLK102593	BLK102593
Date Prepared:	10/25/93	10/25/93	10/25/93	10/25/93	10/25/93
Date Analyzed:	10/28/93	10/28/93	10/27/93	10/28/93	10/27/93
Instrument I.D.#:	MTJA-3	MTJA-3	MTJA-3	MTJA-3	MTJA-1
LCS % Recovery:	105	106	96	100	95
Control Limits:	75-125	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3JC2801	3JC2801	3JC2801	3JC2801	3JC2801
Date Prepared:	10/25/93	10/25/93	10/25/93	10/27/93	10/26/93
Date Analyzed:	10/28/93	10/28/93	10/27/93	10/28/93	10/27/93
Instrument I.D.#:	MTJA-3	MTJA-3	MTJA-3	MTJA-3	MTJA-1
Matrix Spike % Recovery:	*	*	73	78	81
Matrix Spike Duplicate % Recovery:	61	68	82	29	99
Relative % Difference:	0.0	0.0	12	9.2	20

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

SEQUOIA ANALYTICAL

Nokowhat D Herrera
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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Client Project ID: 4193-93-5, Arco 4193-Oakland
Matrix: Water

QC Sample Group. 3JB5804

Reported: Nov 2, 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
Conc. Spiked:	10	10	10	30
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK102893	GBLK102893	GBLK102893	GBLK102893
Date Prepared:	10/28/93	10/28/93	10/28/93	10/28/93
Date Analyzed:	10/28/93	10/28/93	10/28/93	10/28/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	81	80	81	80
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3JD2401	G3JD2401	G3JD2401	G3JD2401
Date Prepared:	10/28/93	10/28/93	10/28/93	10/28/93
Date Analyzed:	10/28/93	10/28/93	10/28/93	10/28/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Matrix Spike % Recovery:	91	91	93	90
Matrix Spike Duplicate % Recovery:	98	98	97	100
Relative % Difference:	7.4	7.4	4.2	11

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

Nokowhat D. Herrera
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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSDs are advisory only and are not used to accept or reject batch results

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 4193-93-5

Chain of Custody

ARCO Facility no: 4193
City (Facility): Oakland
Project manager (Consultant): Joel Coffman
ARCO engineer: Mike Whelan
Telephone no. (ARCO):
Telephone no. (Consultant): 510 783 7500
Fax no (Consultant): 783-1089
Consultant name: Geraghty Ryan Inc
Address (Consultant): 2150 W. Winton Ave Hayward

Laboratory name: Sequoia
Contract number: 07-073
Method of shipment: GRC 9310B58

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 VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Priority Pollutant Metals	
D		5		X		X	X	10-21-93	13:02		X				X						X	-01
B		5		↓		X	X	↓	13:04		X				X						X	-02
D		5		↓		X	X	↓	13:06		X				X						X	-03
TB		1		↓		X	X	—	—		X											-04

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GR# 9909.20

Lab number:

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 sampler: [signature] Date: 10-22-93 Time: 10:18
Received by:

Relinquished by: Date: Time:
Received by:

Relinquished by: Date: Time:
Received by laboratory: [signature] Date: 10/22 Time: 10:18

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APPC 3292 (2-91)

GETTLER-RYAN INC.

General and Environmental Contractors

RECOVERY SYSTEM
SAMPLING DATA SHEET

COMPANY Arco #4931 JOB # 9909..

LOCATION 731 West MacArthur DATE 12-10-93

CITY Oakland CA TIME

SAMPLING POINT	TIME	pH	TEMP F-C	CONDUCTIVITY	ANALYSIS	COMMENTS
AR-1	11:00	6.27	64.8	588	Gas BTXE	
AR-2	10:50	6.59	65.4	579	↓	
AR-3	11:20	6.50	66.6	606	↓	
A-9	12:20	6.47	66.9	608	↓	
A-8	12:05	6.48	64.7	640	↓	

Samples collected from new PVC Bailers via ports in top of well Box except well A-8 which had to pull pump to sample it had approximately 0.8' of product in well. Still sampled from below product.

Flowmeter Reading ______ Time ______

Did you reopen any valves closed? yes ______ no ______

COMMENTS ______

FOREMAN [illegible]

SEQUOIA ANALYTICAL

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

Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Project: 4931-93-5, Arco 4931-Oakland

Enclosed are the results from 6 water samples received at Sequoia Analytical on December 10,1993. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
3L66501	Water, AR-1	12/10/93	EPA 5030/8015/8020
3L66502	Water, AR-2	12/10/93	EPA 5030/8015/8020
3L66503	Water, AR-3	12/10/93	EPA 5030/8015/8020
3L66504	Water, A-8	12/10/93	EPA 5030/8015/8020
3L66505	Water, A-9	12/10/93	EPA 5030/8015/8020
3L66506	Water, Trip Blank	12/10/93	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

Nokowhat D. Herrera
Project Manager

909-A

SEQUOIA ANALYTICAL

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

Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Matt Donohue

Client Project ID: 4931-93-5, Arco 4931-Oakland
Sample Matrix: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 3L66501

Sampled: Dec 10, 1993
Received: Dec 10, 1993
Reported: Dec 27, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3L66501 AR-1	Sample I.D. 3L66502 AR-2	Sample I.D. 3L66503 AR-3	Sample I.D. 3L66504 A-8	Sample I.D. 3L66505 A-9	Sample I.D. 3L66506 Trip Blank
Purgeable Hydrocarbons	50	3,400	N.D.	N.D.	29,000,000	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	16,000	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	12,000	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	19,000	N.D.	N.D.
Total Xylenes	0.50	250	N.D.	N.D.	99,000	N.D.	N.D.
Chromatogram Pattern:		Gas	--	--	Gas	--	--

Quality Control Data

Report Limit Multiplication Factor:	50	1.0	1.0	2000	1.0	1.0
Date Analyzed:	12/21/93	12/21/93	12/21/93	12/21/93	12/21/93	12/21/93
Instrument Identification:	ML #2	ML #2	ML #2	ML #2	ML #2	ML #2
Surrogate Recovery, %: (QC Limits = 70-130%)	114	85	89	122	86	102

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

SEQUOIA ANALYTICAL

Nokowhat D. Herrera
Project Manager

ARCO Products Company
Division of Atlantic Richfield Company

Task Order No. 4931 - 93 - 3

Chain of Custody

ARCO Facility no. 4931	City (Facility) Oakland	Project manager (Consultant) Joel Coffman	Laboratory name
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 551-7555	Fax no. (Consultant) 551-7888	Contract number
Consultant name Cortese Ryan Inc.	Address (Consultant) 6747 Sierra Ct. Suite J Dublin, CA			Method of shipment

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 ☐ VOA ☐ Semi ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1		2		X		X	X	12-10-93	11:00		X											
MW-2		2		"		"	"	"	10:50		X											
MW-3		2		"		"	"	"	11:20		X											
TB		1		"		"	"	"	12:05		X											
MW-4		2		"		"	"	"	12:20		X											
TB		1		"		"	"	"			X											

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

Priority Rush 1 Business Day ☐

Rush 2 Business Days ☐

Expedited 5 Business Days ☐

Standard 10 Business Days ☐

Condition of sample

Temperature received:

	Date	Time	
Relinquished by sampler	12-10-93	13:30	Received by
Relinquished by			Received by
Relinquished by			Received by laboratory

Date: 12-10-93 Time: 13:34

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

ARCO 4003 (9-91)

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT NO: 9909.70 LOCATION: 731 W. MacArthur, Oakland CA DATE: 12-10-93

CLIENT/STATION #: Arco # 4931 FIELD TECHNICIAN: F. Cline DAY OF WEEK: Friday

WELL ID	SURFACE SEAL	LID SECURE	GASKET	LOCK	EXPANDING CAP	TOTAL DEPTH (Feet)	FIRST DEPTH TO WATER (Feet)	SECOND DEPTH TO WATER (Feet)	DEPTH TO FLOATING PRODUCT (Feet)	FLOATING PRODUCT THICKNESS (Feet)	COMMENTS
MW-1	clay	clay	clay	N/A	N/A	N/A	13.42				
MW-2	"	"	"	N/A	N/A	"	17.17				
MW-3	"	"	"	"	N/A	"	15.33				
MW-4	"	"	"	"	open	"	13.96		13.13	0.83'	
MW-5	"	"	"	"	N/A	"	12.38				

APPENDIX C

EBMUD WASTEWATER DISCHARGE PERMIT

EAST BAY
MUNICIPAL UTILITY DISTRICT

MICHAEL J. WALLIS
DIRECTOR OF WASTEWATER

OCT 2 1 1993

GeoStrategies Inc

CERTIFIED MAIL
(Return Receipt Requested)
No. P790 282 903

October 20, 1993

Michael R. Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, CA 94402

Dear Mr. Whelan;

Re: Wastewater Discharge Permit (Account No. 502-62131)

Enclosed is the Wastewater Discharge Permit for your facility, effective November 2, 1993, through November 1, 1994. Please read the Permit Terms and Conditions and the attached Standard Provisions and Reporting Requirements. You are responsible for complying with all Permit conditions and requirements.

Arco Products Company shall report to the Source Control Division any changes, either permanent or temporary, to the premise or operation that significantly affect either the volume or quality of wastewater discharged or deviate from the Terms and Conditions under which this Permit is granted.

If you have any questions regarding this matter, please contact Stan Archacki of the Source Control Division at 287-0333.

Sincerely,

JOSEPH G. DAMAS, JR.
Manager of Source Control

JGD:SAA:dlp

SC3.157_123

Enclosures

cc: Matthew Donohue
GeoStrategies Inc.
2140 West Winton Avenue
Hayward, CA 94545

P.O. BOX 24055 . OAKLAND . CA 94623-1055 . (510) 287-1405
BOARD OF DIRECTORS KATHERINE McKENNEY . STUART FLASHMAN . ANDREW COHEN
JOHN A. COLEMAN . JOHN M. GIOIA . NANCY J. NADEL . KENNETH R. SIMMONS

909-M

EBMUD

WASTEWATER DISCHARGE PERMIT APPLICATION

PERMIT NUMB
502-62131

APPLICANT BUSINESS NAME

ARCO Products Company

ADDRESS OF PREMISE DISCHARGING WASTEWATER	BUSINESS MAILING ADDRESS
731 West MacArthur Boulevard (STREET ADDRESS)	P.O. Box 5811 (STREET ADDRESS)
Oakland, CA (CITY) ____ (ZIP CODE)	San Mateo, CA (CITY) 94402 (ZIP CODE)

CHIEF EXECUTIVE OFFICER

Michael R. Whelan (NAME)	Environmental Engineer (TITLE)
P.O. Box 5811 (STREET ADDRESS)	San Mateo (CITY) 94402 (ZIP CODE)

PERSON TO BE CONTACTED ABOUT THIS APPLICATION	PERSON TO BE CONTACTED IN EVENT OF EMERGENCY
Matthew E. Donohue (NAME)	Bob Herron (NAME)
Project Engineer (TITLE) (510) 352-4800 (PHONE)	(510) 783-7500 (DAY PHONE) (510) 783-7500 (NIGHT PHONE)

DOCUMENTATION TO BE RETURNED WITH THE PERMIT APPLICATION:

- ☐ PROCESS DESCRIPTION
- ☐ DESCRIPTION OF TREATMENT SYSTEM
- ☐ WATER BALANCE CALCULATIONS
- ☐ SELF-MONITORING METHOD
- ☐ WASTEWATER STRENGTH DATA BASE
- ☐ SPILL PREVENTION AND CONTAINMENT PLAN
- ☐ SCHEMATIC FLOW DIAGRAM
- ☐ A LIST OF ALL ENVIRONMENTAL PERMITS (E.G. Air, Hazardous Waste)
- ☐ BUILDING LAYOUT PLAN
- ☐ OTHER _____ (SPECIFY)

PROVISIONS

Applicant will comply with the EBMUD Wastewater Control Ordinance and all applicable rules and regulations.

Applicant will report to EBMUD, Wastewater Department any changes, permanent or temporary, to the premise or operations that significantly change the quality or volume of the wastewater discharge or deviation from the terms and conditions under which this permit is granted.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that the qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Michael R. Whelan
NAME (See certification requirements on reverse)

Michael R. Whelan
SIGNATURE

Environmental Engineer
TITLE

September 2, 1993
DATE

EBMUD

ARCO Products Company
BUSINESS NAME

Process Description

PURPOSE — The Process Description is intended to provide a description of the primary business activities and the substances which may enter into the wastewater from the business activity.

EBMUD USE
Permit Number: 502-62131

BUSINESS ACTIVITY
Groundwater Extraction System

Business Classification Code: 4950

DESCRIPTION OF PRODUCT

TYPE OF PRODUCT OR BRAND NAME	QUANTITIES (gallons) Past Calendar Year	Estimated This Year
Extracted Groundwater	563,590	3,190,000

PROCESS DESCRIPTION

PROCESS DESCRIPTION List all wastewater generating operations	CHARACTERISTICS List all substances that may be discharged to the sewer.
Example: Rinsewater from electroplating bath	Cr, Cu, Ni, Zn
Example: Washdown of milk filling area	fatty acids, milk
Carbon Treated Extracted Groundwater	None

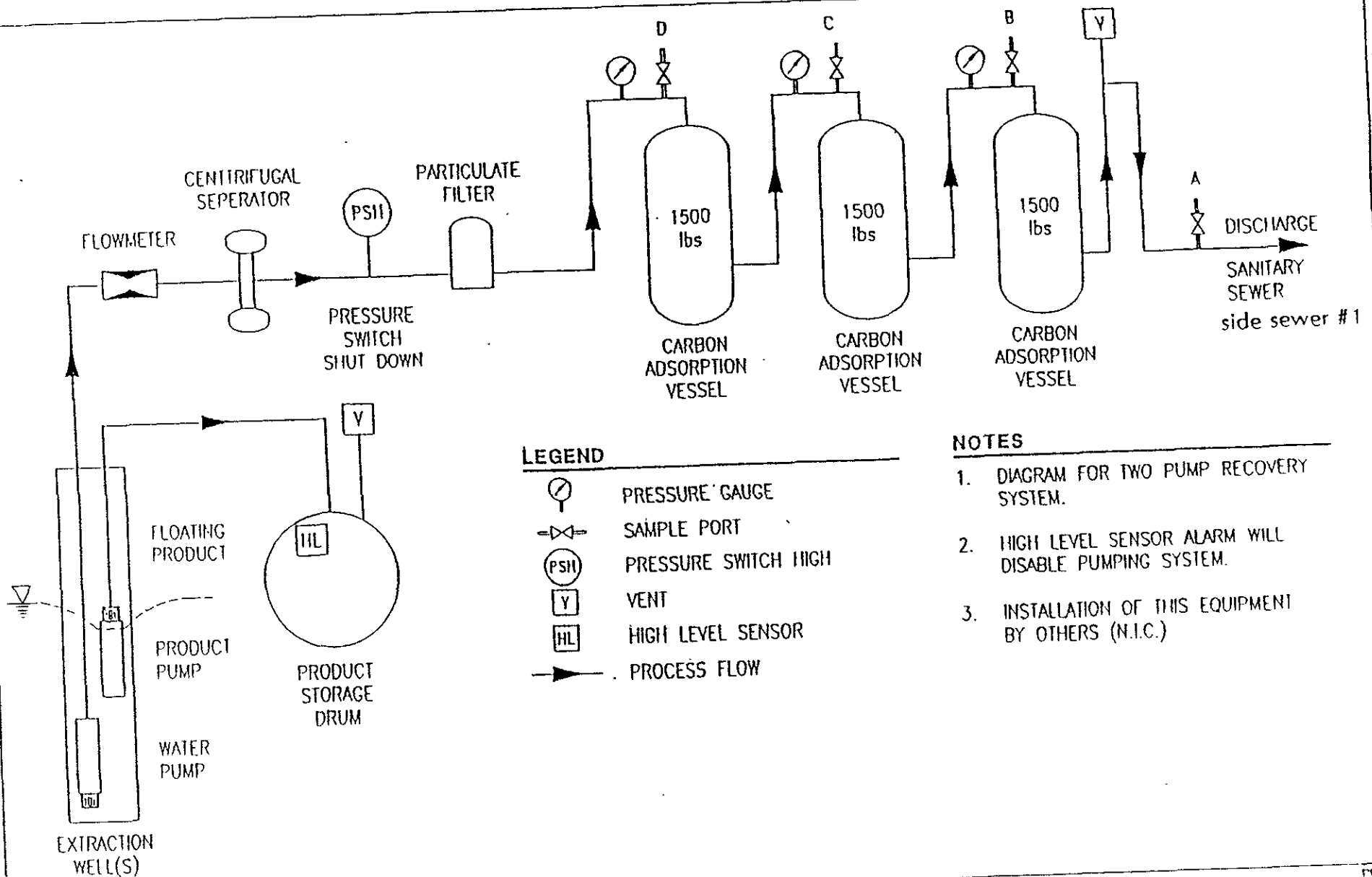
DISCHARGE PERIOD (24 hours)
a. Time of day from 12 am to 12 am
b. Days of the week 7

BATCH DISCHARGE(S) None
a. Day(s) of the week
b. Time(s) of the day
c. Volume discharged
d. Rate of discharge

OTHER WASTES — List the type and volume of liquid waste and sludges removed from the premises by means other than the community sewer.

WASTE REMOVED BY (Name, address and State Transporter ID No.)	TYPE OF WASTE (Example: alkaline cleaners, organic solvents, treatment sludge)	WASTE I.D. No.	VOLUME (lbs)(gal)/mo

SD-31 • 2/87



GeoStrategies Inc.

PROCESS FLOW DIAGRAM
ARCO Service Station #4931
731 W. MacArthur Boulevard
Oakland, California

PLATE 3

JOB NUMBER 7909

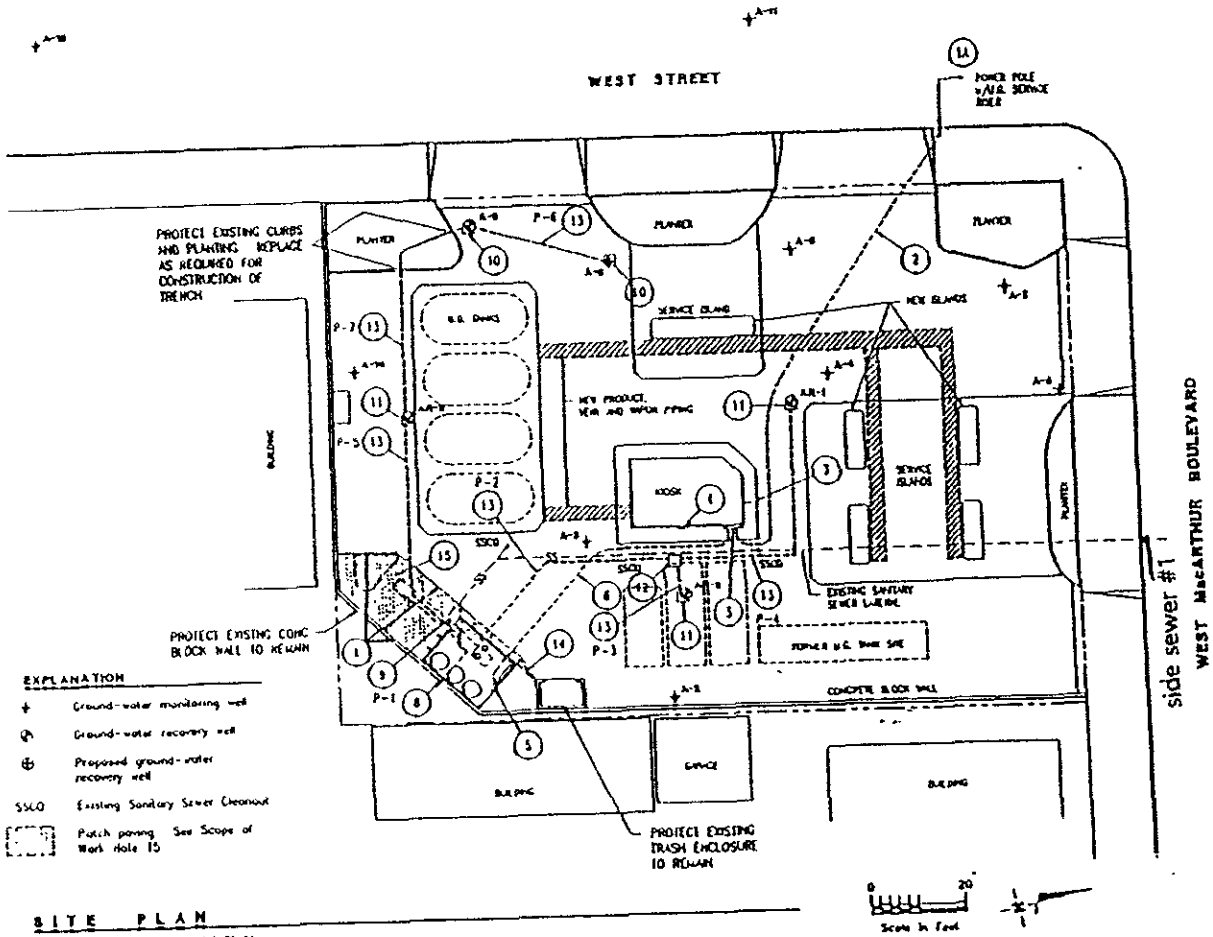
REVIEWED BY

DATE 6/93

REVISED DATE

Acct. #502-62131

Acct.#5210-62131



SITE PLAN

Base Map: ARCO site plan dated 3-20-91

1. REMOVE EXISTING RESTROOM/STORAGE BUILDING FOOTINGS CURBS ETC
1A. EXISTING POWER POLE WITH UNDERGROUND RISER (ASSUMED SERVICE POINT).
2. INSTALL NEW UNDERGROUND ELECTRIC SERVICE TO KIOSK PER P G & E REQUIREMENTS AND SPECIFICATIONS. GENERAL CONTRACTOR SHALL COORDINATE INSTALLATION OF NEW SERVICE WITH P G & E. ALL CONDUIT AND TRENCHING SHALL BE TO P G & E REQUIREMENTS
3. INSTALL NEW 400 AMP SINGLE PHASE METER AND W.P. MAIN ELECTRICAL PANEL ON EXTERIOR WALL OF KIOSK ADJACENT TO EXISTING METER AND ELECTRICAL PANEL.
4. REMOVE EXISTING ELECTRICAL METER. CONVERT EXISTING MAIN ELECTRICAL PANEL TO SUB PANEL AND CONNECT TO THE MAIN ELECTRICAL PANEL
5. INSTALL NEW 100 AMP W.P. SUB PANEL FOR TREATMENT SYSTEM EQUIPMENT. GENERAL CONTRACTOR SHALL FURNISH AND INSTALL SUB-METER BETWEEN MAIN AND THIS SUB PANEL.
6. INSTALL 3" CONDUIT AND WIRING FROM NEW MAIN ELECTRICAL PANEL TO TREATMENT SYSTEM SUB PANEL. PROVIDE CONDUIT SEALS PER N.E.C. REQUIREMENTS
7. EXISTING EMERGENCY SHUT OFF SWITCH (ESO) ON FACE OF KIOSK. REWIRE ESO TO INCLUDE SHUT DOWN OF TREATMENT SYSTEM EQUIPMENT WHEN ACTIVATED.
8. CONSTRUCT NEW TREATMENT SYSTEM ENCLOSURE AND CONTAINMENT SLAB SEE DETAILS ON SHEET 2
9. INSTALL ONE 6" DIA. SCHEDULE 40 P.V.C. EFFLUENT DISCHARGE LINE CONNECT TO EXISTING ON-SITE SANITARY SEWER LATERAL. VERIFY LOCATION OF EXISTING LATERAL IN THE FIELD. INSTALL CLEAN OUT TO GRADE AT NEW CONNECTION POINT
10. CONSTRUCT RECOVERY WELL JUNCTION BOX OVER EXISTING WELL A-8 AND A-9. SEE DETAIL A/3
11. CONSTRUCT RECOVERY WELL JUNCTION BOX OVER PROPOSED WELL VERIFY LOCATION IN THE FIELD. SEE DETAIL A/3
12. CONSTRUCT PIPING JUNCTION BOX. SEE DETAIL B/3
13. INSTALL RECOVERY SYSTEM PIPING AND ELECTRICAL CONDUITS PER RECOVERY SYSTEM PIPING SCHEDULE. PROVIDE CONDUIT SEALS ON CONDUITS PER N.E.C. REQUIREMENTS. SEE C/3 FOR TRENCHING DETAILS
14. RECONSTRUCT 6" HIGH CONCRETE PLANTER CURB AS REQUIRED
15. PATCH YARD WITH 3" MINIMUM COMPACTED DEPTH OF TYPE "B" A.C. OVER 5" MINIMUM COMPACTED DEPTH OF CLASS 2 A.B. (COMPACTED TO 95% OF MAXIMUM DENSITY PER CALTRANS STANDARD(S)) OVER COMPACTED SUBGRADE (COMPACTED TO 95% OF MAXIMUM DENSITY PER ASTM D-1557)

AS BUILT (11-92)

TREATMENT SYSTEM SITE PLAN
ARCO Service Station #4931
731 west MacArthur Boulevard
Upland, California

GeoStrategies Inc.

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO LOCAL CODES AND ORDINANCES. ALL ELECTRICAL WORK SHALL CONFORM TO THE NATIONAL ELECTRIC CODE (N.E.C.). ALL TRENCHING SHALL CONFORM TO OSHA REQUIREMENTS AND RECOMMENDATIONS
2. UNLESS NOTED OTHERWISE ALL P.V.C. PIPE SHALL BE SCHEDULE 40. CONTRACTOR SHALL PROVIDE PROPER TRANSITION FITTINGS FOR ALL PIPE CONNECTIONS
3. EXISTING BURIED PIPE AND UTILITY LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND MATERIAL PRIOR TO CONSTRUCTION
4. OPEN TRENCHES SHALL BE PLATED AT ALL TIMES WHEN WORK IS NOT IN PROGRESS
5. EDGES OF EXISTING PAVING SHALL BE NEATLY TRIMMED PRIOR TO PATCH PAVING. CONTRACTOR SHALL SAWCUT EXISTING PAVING IN NEAT STRAIGHT LINES.
6. ALL WELLS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS. CONNECTIONS BETWEEN EXTRACTION WELLS AND CONVEYANCE PIPELINES SHALL BE BASED UPON THE ACTUAL FIELD LOCATIONS OF THE WELLS
7. GENERAL CONTRACTOR SHALL FURNISH AND INSTALL PULL ROPES IN ALL 4" DIA. PIPE CHASES EXCEEDING 50 FEET IN TOTAL LENGTH
8. GENERAL CONTRACTOR SHALL VERIFY LOCATION OF PROPOSED NEW UNDERGROUND TANKS AND ADJUST TRENCH LOCATIONS AS REQUIRED TO AVOID NEW TANKS AND PIPING.
9. GENERAL CONTRACTOR SHALL INSTALL LONG RADIUS, CLEAN SWEEP, FITTINGS AT ALL CHANGES IN PIPE DIRECTION EXCEEDING 45 DEGREES.

RECOVERY SYSTEM PIPING SCHEDULE

LINE	GROUNDWATER SYSTEM PIPING	VAPOR RECOVERY SYSTEM PIPING	ELECTRICAL CONDUITS
P-1	(1) 6" Sch. 40 PVC	N/A	N/A
P-2	(2) 6" Sch. 40 PVC	(2) 2" Sch 40 PVC	(2) 1" + (2) 3/4"
P-3	(1) 6" Sch. 40 PVC	(1) 2" Sch 40 PVC	(1) 1" + (1) 3/4"
P-4	(2) 6" Sch. 40 PVC	(1) 2" Sch 40 PVC	(1) 1" + (1) 3/4"
P-5	(2) 6" Sch. 40 PVC	(2) 2" Sch 40 PVC	(2) 1" + (2) 3/4"
P-6	(1) 6" Sch. 40 PVC	(1) 2" Sch 40 PVC	(1) 1" + (1) 3/4"
P-7	(2) 6" Sch. 40 PVC	(1) 2" Sch 40 PVC	(1) 1" + (1) 3/4"

INDEX TO DRAWINGS

EBMUD

Business Name ARCO Products Company

Water Balance / Strength Summary

Permit Number 502-62131

PURPOSE: This information will enable EBMUD to evaluate the volumes, source(s) and strengths of wastewater discharged to the community sewer.

WATER USE AND DISPOSITION: Show on a separate sheet the method and calculations used to determine the quantities shown in the table.

Figures are: [X] gallons per calendar day [ ] gallons per working day Number of working days per year ____

WATER USE	WATER SUPPLY FROM:			WASTEWATER DISCHARGED TO:					
	EBMUD	OTHER (1)		SIDE SEWER (gal/day)				OTHER (2)	
	gal/day	gal/day	CODE	No.1	No. ____	No. ____	No. ____	gal/day	CODE
Sanitary									
Processes									
Boiler									
Cooling									
Washing									
Irrigation									
Product									
Stormwater									
Other (3)		8735	A	8735					
Subtotal									

EBMUD AND OTHER SUPPLY TOTAL 8735

ALL SIDE SEWERS TOTAL 8735

NOTES:

1. Enter the quantity and the appropriate code letter indicating the source: a. Well b. Creek c. Stormwater d. Reclaimed Water e. Raw Materials
2. Enter the quantity and appropriate code letter indicating the discharge point: a. Stormdrain b. Rail, Truck, Barge c. Evaporation d. Product
3. Describe Other: Groundwater extracted from the shallow aquifer and sent through a granular activated carbon remediation system to clean it up prior to discharge.

SANITARY DISCHARGE: Please use the following data from the Uniform Plumbing Code, 1985, to determine sanitary wastewater volumes.

Field service employees - 5 gallons per employee per day
Office employees - 20 gallons per employee per day
Production employees - 25 gallons per employee per day
Production employees with showers - 35 gallons per employee per day

Include the effect that seasonal and weekend staffing changes may have on determining average volumes.

AVERAGE WASTEWATER STRENGTH: Data base must be attached, average self-monitoring and EBMUD data.

	SIDE SEWER (mg/L)			
	No. 1	No. ____	No. ____	No. ____
CODF	15 mg/l			
TSS	2 mg/l			

SD-34 • 10/88

Arco Station No. 4931
Account No. 502-62131
Page No. 1

STANDARD PROVISIONS AND REPORTING REQUIREMENTS CONDITIONS

I. Arco Station No. 4931 located at 731 W.MacArthur in Oakland, shall comply with all items of the attached STANDARD PROVISIONS AND REPORTING REQUIREMENTS, 11/92 Revision.

REPORTING REQUIREMENTS

I. Arco Station No. 4931 shall monitor discharges per the schedule found in the Self-Monitoring and Reporting Requirements, Section IV, on page 3 of this permit.

II. Arco Station No. 4931 shall submit quarterly reports as follows:

Date Due	Reporting Period
January 15, 1994	November 1 through December 31, 1993
April 15, 1994	January through March 31, 1994
July 15, 1994	April 1 through June 30, 1994
October 15, 1994	July 1 through September 30, 1994

1. A summary of the treatment unit self-monitoring results, any other monitoring, and well sample results that occurred during the reporting period.

2. The estimated date that the primary carbon canister breakthrough will occur, using current loading data.

3. Copies of the Facility Inspection Log. This log must include flow totalizer readings from each sample date, maintenance activities performed, description of operational changes, visual observations of the unit for leaks or fouling and offhaul of hazardous wastes.

SD-30.7 2/91

12. WASTEWATER DISCHARGE LIMITATIONS

Arco Station No. 4931 shall not discharge wastewater from a side sewer into a community sewer if the strength of the wastewater exceeds the following:

REGULATED PARAMETER	DAILY MAXIMUM, mg/L
Arsenic	2 mg/L
Cadmium	1 mg/L
Chlorinated Hydrocarbons (Total Identifiable)	0.5 mg/L
Chromium	2 mg/L
Copper	5 mg/L
Cyanide	5 mg/L
Iron	100 mg/L
Lead	2 mg/L
Mercury	0.05 mg/L
Nickel	5 mg/L
Oil and Grease	100 mg/L
Phenolic compounds	100 mg/L
Silver	1 mg/L
Zinc	5 mg/L
pH (not less than)	5.5 S.U.
Temperature	150 °F
Benzene	0.005 mg/L
Toluene	0.012 mg/L
Ethylbenzene	0.005 mg/L
Xylenes	0.011 mg/L

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Account No. 502-62131
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SELF-MONITORING REPORTING REQUIREMENTS

I. Arco Station No. 4931 shall obtain representative samples of the wastewater discharge. The sampling shall be performed according to the frequency and methods outlined below and according to the methods and requirements found in STANDARD PROVISIONS AND REPORTING REQUIREMENTS, 11/92 Revision.

II. Self-monitoring Reports shall contain:

1. Laboratory results.
2. Chain of custody documentation.
3. Signatory requirements.

III. Sample location "A", also known as side sewer no. 1, shall be the sample tap located on the effluent side of the third carbon vessel. Sample location "B" shall be the sample tap located between the second and third carbon vessels. Sample location "D" shall be the sample tap located on the influent side of the first carbon vessel, after the flow meter. The sample location are shown on GeoStrategies, Inc. drawing; job number 7909, plate 3, dated 6/93.

IV. Sample locations "A", "B" and "D" per the following schedule:

Week of November 8, 1993.
Week of January 10, 1994.
Week of April 11, 1994.
Week of July 11, 1994.

V. Parameters to be monitored and sample types:

EPA 8020 - grab sample

VI. All samples must be obtained using containers, collection methods, preservation techniques, holding times and analytical methods set forth in 40 CFR Part 136, except for the 8000 series methods, which are found in U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Test Methods for Evaluating Solid Waste, SW-846.

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MONITORING and TESTING CHARGES

Total EBMUD Inspections Per Year: 2 @ $510.00 each = $1,020.00 /year

Total Analyses Per Year:

Parameter	Tests per year	Charge per test	Total Charge per year
EPA 624	2	$156.00	$312.00

Monitoring and Testing Charge = $1,332.00 /year
$111.00 /month

WASTEWATER DISPOSAL CHARGE

All wastewater discharged will be charged for treatment and disposal service at the unit rate measured for other carbon treated groundwater discharges.

Current unit rate: $0.31 /Ccf

Volume discharged in Ccf/month = 355 = $110.05 /month

WASTEWATER CAPACITY FEE

The capacity fee is calculated by multiplying the monthly wastewater discharge volume by the applicable fee in effect at start-up. Each month, 1/36 of the capacity fee will be charged, until the entire fee has been paid in 3 years.

Discharge volume = 264044 gallons per month
Capacity fee rate = $46.72 /Ccf-month
Capacity fee = $16,492.16 or $458.12 /month

SD-30.7 2/91

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

EBMUD

Arco Station No. 4931
Account No. 502-62131

FEES AND WASTEWATER CHARGES

The following fees and charges are due when billed by the District:

Permit Fee	$2,260.00
Monthly Monitoring Charges	$111.00
Monthly Wastewater Disposal Charge	$110.05
Monthly Wastewater Capacity Fee	$458.12
Total Monthly Charges =	$679.17

This Permit may be amended to include changes to rates and charges which may be established by the District during the term of this Permit.

AVERAGE WASTEWATER DISCHARGE *

LAST 12 MONTHS	PRECEDING 12 - 24 MONTHS
8735	N/A

* Gallons per calendar day.

AUTHORIZATION

The above named Applicant is hereby authorized to discharge wastewater to the community sewer, subject to said Applicant's compliance with EBMUD Wastewater Control Ordinance, compliance conditions, reporting requirements and billing conditions.

Effective Date: November 2, 1993

Expiration Date: November 1, 1994

Michael Gruzell 10/19/93

MANAGER WASTEWATER DEPARTMENT DATE

SD 30 2 2/81

EPA Hazardous Waste Number	Contaminant	Chemical Abstracts Service Number	Regulatory Level Mg/l
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.0[1]
D024	m-Cresol	108-39-4	200.0[1]
D025	p-Cresol	106-44-5	200.0[1]
D026	Cresol		200.0[1]
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0[2]
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

[1] If o-, m- and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.
[2] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

(2) it contains a substance listed in subsections (a)(2)(A) or (a)(2)(B) this section at a concentration in milligrams per liter of waste extract, determined using the Waste Extraction Test (WET) described in Appendix II of this chapter, which equals or exceeds its listed soluble threshold limit concentration or at a concentration in milligrams per kilogram the waste which equals or exceeds its listed total threshold limit concentration;

A) Table II – List of Inorganic Persistent and Bioaccumulative Toxic Substances and Their Soluble Threshold Limit Concentration (STLC) and Total Threshold Limit Concentration (TTLC) Values.

Substance**	STLC mg/l	TTLC Wet-Weight mg/kg
mony and/or antimony compounds	15	500
ic and/or arsenic compounds	5.0	500
stos		1.0 (as percent)
m and/or barium compounds (excluding ite)	100	10,000**
lium and/or beryllium compounds	0.75	75
ium and/or cadmium compounds	1.0	100
mium (VI) compounds	5	500
mium and/or chromium (III) compounds	5**	2,500
t and/or cobalt compounds	80	8,000
er and/or copper compounds	25	2,500
ide salts	180	18,000
and/or lead compounds	5.0	1,000
Mercury and/or mercury compounds	0.2	20
Molybdenum and/or molybdenum compounds	350	3,500
Nickel and/or nickel compounds	20	2,000
Selenium and/or selenium compounds	1.0	100
Silver and/or silver compounds	5	500
Thallium and/or thallium compounds	7.0	700
Vanadium and/or vanadium compounds	24	2,400
Zinc and/or zinc compounds	250	5,000

*STLC and TTLC values are calculated on the concentrations of the elements, not the compounds.

**If the soluble chromium, as determined by the TCLP set forth in Appendix I of chapter 18 of this division, is less than 5 mg/l, and the soluble chromium, as determined by the procedures set forth in Appendix II of chapter 11, equals or exceeds 560 mg/l and the waste is not otherwise identified as a RCRA hazardous waste pursuant to section 66261.100, then the waste is a non-RCRA hazardous waste.

*In the case of asbestos and elemental metals, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state. Asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

**Excluding barium sulfate.

(B) Table III – List of Organic Persistent and Bioaccumulative Toxic Substances and Their Soluble Threshold Limit Concentration (STLC) and Total Threshold Limit Concentration (TTLC) Values:

Substance	STLC mg/l	TTLC Wet Weight mg/kg
Aldrin	0.14	1.4
Chlordane	0.25	2.5
DDT, DDE, DDD	0.1	1.0
2,4-Dichlorophenoxyacetic acid	10	100
Dieldrin	0.8	8.0
Dioxin (2,3,7,8-TCDD)	0.001	0.01
Endrin	0.02	0.2
Heptachlor	0.47	4.7
Kepone	2.1	21
Lead compounds, organic	—	13
Lindane	0.4	4.0
Methoxychlor	10	100
Mirex	2.1	21
Pentachlorophenol	1.7	17
Polychlorinated biphenyls (PCBs)	5.0	50
Toxaphene	0.5	5
Trichloroethylene	204	2,040
2,4,5-Trichlorophenoxypropionic acid	1.0	10

(3) it has an acute oral LD_{50} less than 5,000 milligrams per kilogram;

(4) it has an acute dermal LD_{50} less than 4,300 milligrams per kilogram;

(5) it has an acute inhalation LC_{50} less than 10,000 parts per million as a gas or vapor;

(6) it has an acute aquatic 96-hour LC_{50} less than 500 milligrams per liter when measured in soft water (total hardness 40 to 48 milligrams per liter of calcium carbonate) with fathead minnows (*Pimephales promelas*), rainbow trout (*Salmo gairdneri*) or golden shiners (*Notemigonus crysoleucas*) according to procedures described in Part 800 of the "Standard Methods for the Examination of Water and Wastewater (16th Edition)," American Public Health Association, 1985 and "Static Acute Bioassay Procedures for Hazardous Waste Samples," California Department of Fish and Game, Water Pollution Control Laboratory, revised November 1988 (incorporated by reference, see section 66260.11), or by other test methods or test fish approved by the Department, using test samples prepared or meeting the conditions for testing as prescribed in subdivisions (c) and (d) of Appendix II of this chapter, and solubilized, suspended, dispersed or emulsified by the cited procedures or by other methods approved by the Department;