GeoStrategies Inc.

LETTER REPORT
INTERIM REMEDIATION SYSTEM EVALUATION AND QUARTERLY GROUNDWATER MONITORING SECOND QUARTER 1994

at

ARCO Station 5387
20200 Hesperian Boulevard
Hayward, California

4926770-20

Prepared for

ARCO Products Company
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September 27, 1994

GeoStrategies Inc.

Mr. Michael Whelan
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Post Office Box 5811
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September 27, 1994

Subject: Interim Remediation System Evaluation and Quarterly Groundwater Monitoring Report - Second Quarter 1994 for ARCO Station 5387, 20200 Hesperian Boulevard, Hayward, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), GeoStrategies Inc. (GSI) has prepared this letter report describing the performance of the soil and groundwater remediation system and summarizing the results of the second quarter 1994 groundwater monitoring at the above-referenced site. The objectives of the quarterly monitoring are to evaluate changes in groundwater levels and changes in petroleum hydrocarbons in the shallow groundwater beneath the site. Groundwater monitoring and sampling was performed by ARCO's contractor, Integrated Wastestream Management (IWM) of Milpitas, California, and included measuring depths to groundwater, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analysis, and directing a State-certified laboratory to analyze the groundwater samples. The field work associated with operation and maintenance of the soil and groundwater interim remediation system was performed by Gettler-Ryan Inc. (G-R) of Dublin, California.

1.0 SITE BACKGROUND

The operating ARCO Station is located at the intersection of Hesperian Boulevard and West Sunset Drive in Hayward, California, as shown on the Vicinity Map, Figure 1. In August 1986, Groundwater Technology, Inc. (GTI) drilled four soil borings (SB-1 through SB-4) and installed three groundwater monitoring wells (MW-1 through MW-3) at the site.

Between October 1991 and March 1993, GSI installed three onsite groundwater monitoring wells (A-4 through A-6), four offsite groundwater monitoring wells (A-7 through A-10), two groundwater recovery wells (AR-1 and AR-2), one dual air-sparging/vapor extraction well (AS-1), one air-sparging well (AS-2), and three vapor extraction wells (AV-1 through AV-3) at the site. The wells were installed to evaluate the horizontal and vertical extent of petroleum hydrocarbons in soil and groundwater beneath the site, and to provide extraction and air sparge points for the assessment of remedial alternatives. The active gasoline underground storage tanks (USTs) are located in the southeastern portion of the site and four service islands are located in the southwestern portion of the site. The locations of the wells and other pertinent site features are shown on Figure 2, Site Plan.

GSI performed step-drawdown and constant-rate aquifer tests at the site in October 1992. These tests were performed to evaluate the feasibility of groundwater extraction and treatment as an interim remedial option. In March and August 1993, GSI performed vapor extraction and air-sparging/vapor extraction tests to determine the feasibility of air-sparging/vapor extraction as an interim remedial option.

In December 1993 and January 1994, Golden West Construction Company constructed a soil and groundwater remediation system at the site, and GSI installed seven additional air-sparging wells (AS-3 through AS-9) and one additional vapor extraction well (AV-4) to provide additional sparging and vapor extraction points for the system.

Quarterly groundwater monitoring and sampling of the site wells began in December 1991. Groundwater samples are currently analyzed for total petroleum hydrocarbons calculated as gasoline (TPH-G) and gasoline constituents benzene, toluene, ethylbenzene and xylenes (BTEX) according to Environmental Protection Agency (EPA) Methods 5030/8020/California DHS LUFT Method. Historical monitoring and sampling data are presented in Tables 1A and 2A included in Appendix A.

GSI's review of air photos and environmental files indicated that five other sites located in the immediate upgradient or crossgradient vicinity of ARCO Station 5387 are potential secondary sources of hydrocarbons detected in the soil and groundwater at the subject site. These sites

include: former Shell Service Station located at 20500 Hesperian Boulevard; former UNOCAL Service Station located at 20501 Hesperian Boulevard; former TEXACO/EXXON Service Station located at 20499 Hesperian Boulevard; Alliance Service Station located at 20450 Hesperian Boulevard; and the site located at 20372 Hesperian Boulevard which is currently occupied by Weber Auto Supply, Inc.. In June 1993, a 250-gallon gasoline UST was removed from the Weber Auto Supply, Inc. site which is located directly southeast and adjacent to the ARCO property. The location of this UST which was removed was directly upgradient to groundwater monitoring well A-4.

2.0 INTERIM REMEDIATION SYSTEM DESCRIPTION

The interim soil and groundwater remediation system began operation on February 15, 1994. The system currently utilizes vapor extraction and air-sparging. The system does not employ groundwater extraction and treatment at this time, however subsurface piping, groundwater recovery wells and stub-outs within the remediation system compound are available for future use, should groundwater extraction become necessary.

2.1 Interim Vapor Extraction/Air-Sparging Remediation System

The system consists of vapor extraction (VE) wells, air-sparging (AS) wells, associated piping, internal combustion engine (ICE) for vapor extraction and abatement, sparge blower, and control panel with alarm monitor/telemetry unit. Specifically, the system is comprised of the following components:

VE wells:	MW-1, MW-3, AV-1, AV-3, AV-4, AS-1
AS wells:	AS-1 through AS-9
IC engine:	VR Systems; Model V-3; 150 cfm , 18 in Hg
Sparge blower:	Conde Pumps; Rotary Vane Blower; Model #6; 3HP, 25 cfm, 10 psi
Control panel:	Fabricated by Gettler-Ryan

Auto-dialer: Silent Knight; Model 1410

The system operates under the Bay Area Air Quality Management District (BAAQMD) Permit to Operate No. 11813 issued on April 5, 1994, and expiring on April 5, 1995. A copy of the permit is included in Appendix B. Vapor extraction began on February 15, 1994. System operation has been limited to regular daytime working hours due to complaints from nearby residents about the noise caused by the vapor extraction equipment.

3.0 SECOND QUARTER 1994 ACTIVITIES

A summary of activities performed at the site during the second quarter 1994 is presented below:

- Performed operation and maintenance of the interim remediation system.

- Collected samples of the extracted vapor from the influent and effluent ports of the IC engine on April 15 and 29, May 6 and 18, and June 8, 1994. These vapor samples were analyzed for TPH-G and BTEX.

- Connected wells AR-1 and AR-2 to the vapor extraction line to maximize hydrocarbon recovery. Collected vapor samples from AR-1 and AR-2 on May 18, 1994. These samples were analyzed for TPH-G and BTEX.

- Ceased operation of IC engine on June 18, 1994 due to a significant decrease in hydrocarbon concentrations in extracted vapors. A cost analysis was performed to verify the cost effectiveness of implementing the next phase of the interim vapor extraction. The analysis showed savings in operational costs for implementing carbon adsorption for treatment of extracted vapors.

- Depth-to-water (DTW) measurements were obtained by IWM in groundwater monitoring wells MW-1 through MW-3, A-4 through A-8, A-10, and recovery wells AR-1 and AR-2; each well was inspected for the presence of floating product; and groundwater

samples were collected from the wells on May 3, 1994. Groundwater samples were analyzed for TPH-G and BTEX.

4.0 INTERIM REMEDIATION SYSTEM MONITORING

4.1 Interim Vapor Extraction Remediation System Monitoring and Sampling

Monitoring was performed to satisfy BAAQMD permit conditions and to provide system performance data. In order to satisfy permit conditions for monitoring for hydrocarbon concentrations, bag samples of the extracted vapors were collected from the system influent and effluent vapor streams and submitted for laboratory analysis of TPH-G and BTEX. Samples were collected on April 15 and 30, May 6 and 18, and June 8. Sample analytical results are discussed in the following section. In addition to sampling, system operating parameters such as flow rates, pressure and vacuum levels, and temperature were monitored and recorded during sampling events. The results of the monitoring activities are presented in the following section. System operation and maintenance (O&M) were also performed regularly. This included various repairs, minor modifications, and service on system components.

4.2 Interim Vapor Extraction System Performance

For the second quarter of 1994, the system operated a total of 623 hours between April 1 and June 18, making it approximately 33% operational. Operation of the system has been limited to a nominal 10 hours a day, from 8:00 am to 6:00 pm, because of complaints from nearby residents regarding the noise generated by equipment on-site. This and other performance data are summarized in Table 1, Vapor Extraction System Performance Data.

Vapor extraction wells utilized during the quarter varied as the system was tuned to optimize hydrocarbon recovery. All VE wells were active for some duration during the second quarter except MW-3. This well has produced negligible flow rates and hydrocarbon concentrations. Sparge well utilization has been limited to wells AS-1, AS-4, and AS-9. Other sparge wells have not been utilized because of the poor flow conditions in the subsurface which do not allow for adequate recovery of injected air.

Vapor extraction well status data is presented in Table 2. Air sparge well status data is presented in Table 3.

Analytical reports received for vapor samples collected from the system influent and effluent during the second quarter indicated TPH-G concentrations ranged from 56 to 410 parts per million by volume (ppmv) and from nondetectable to 34 ppmv respectively. Benzene concentrations in these samples ranged from nondetectable to 1.8 ppmv for influent vapors, and from 0.02 to 0.10 ppmv for effluent vapors (see Table 4, Laboratory Analysis Results for Air Samples). The resulting benzene emission rates were below the limits set forth in the BAAQMD Permit to Operate. Recovery rates for TPH-G have ranged from 0.01 to 0.11 pounds per hour (lbs/hr). For benzene, recovery rates did not exceed 0.001 lbs/hr. Approximately 35.12 pounds (5.85 gallons) of TPH-G were removed during the second quarter of 1994. A total of 0.089 pounds (0.013 gallons) of benzene were removed over this period. Performance data is summarized in Table 1, Vapor Extraction System Performance Data. Laboratory analytical reports, Chain-of Custody forms and field data sheets are included in Appendix C.

4.3 Interim Vapor Extraction System Destruction Efficiency

Under Condition No. 10455 of the BAAQMD's Permit to Operate No. 11813, the system must maintain destruction efficiencies of 90% for hydrocarbon concentrations less than 1000 ppmv. The 90% requirement is waived if emission rates are less than 1 lb/day and 0.02 lb/day for TPH-G and benzene respectively. The destruction efficiencies for the system during the second quarter 1994, ranged from 80% to 99% for TPH-G and 49% to 98% for Benzene. Some of the calculated efficiencies were below the 90% limit, however, emission rates of both TPH-G and benzene were below those triggering the waiver. Operation of the system during the second quarter was in compliance with the permit conditions.

5.0 SECOND QUARTER 1994 GROUNDWATER SAMPLING RESULTS

5.1. Groundwater Level Measurements and Gradient Evaluation

Depth to water-level measurements were obtained from groundwater monitoring wells MW-1 through MW-3, A-4 through A-8, A-10, and

recovery wells AR-1 and AR-2 by IWM field personnel on May 3, 1994. Groundwater monitoring well A-9 was not monitored this quarter because this well was inaccessible due to a parked car over the well. Static groundwater levels were measured from the surveyed top of the well casing or top of box (A-6) and recorded to the nearest $\pm$0.01 foot. Water-level data were referenced to Mean Sea Level (MSL) datum and used to construct the Potentiometric Map, Figure 4. Based on the May 3, 1994, water level data, shallow groundwater beneath the site flows to the west at an approximate hydraulic gradient of 0.002.

Each well was inspected for the presence of floating product. Floating product was not observed in any well this quarter, and has never been observed in any well at this site. Depth-to-groundwater and floating product observations for the current quarter are presented in Table 5 and in the IWM groundwater sampling report (Appendix D). Current and historical water-level data and floating product observations are summarized in Table 1A included in Appendix A.

5.2. Laboratory Analytical Results of Groundwater Samples

Wells MW-1 through MW-3, A-4 through A-8, A-10, AR-1 and AR-2 were purged and groundwater samples were collected from these wells on May 3, 1994, by IWM field personnel. Samples were analyzed for TPH-G and BTEX using EPA Methods 5030/8020/California DHS LUFT Method. Groundwater samples were analyzed by Columbia Analytical Services, Inc. of San Jose, California (Columbia), a California State-certified laboratory (Hazardous Waste Testing Laboratory #1426).

Current quarter chemical analytical data are presented in Table 5 and have also been added to the Historical Groundwater Quality Database presented in Table 2A in Appendix A. TPH-G concentrations were nondetectable (less than 50 ppb) in groundwater samples collected from offsite wells A-8 and A-10 and onsite wells A-6 and AR-2. TPH-G was detected in samples collected from other site wells at concentrations ranging between 130 parts per billion (ppb) and 17,000 ppb. Benzene concentrations were reported as nondetectable (less than 0.50 ppb) in groundwater samples collected from offsite wells A-8 and A-10 and onsite wells A-4 through A-6 and AR-2. Benzene was detected in samples collected from other site wells at concentrations ranging between 8.1 ppb and 1,000 ppb. The

IWM groundwater sampling report, laboratory analytical reports and the Chain-of-Custody form are presented in Appendix D. Chemical isoconcentration maps for TPH-G and benzene are presented on Figure 5 and 6, respectively.

6.0 CONCLUSIONS

The vapor extraction system began operation on February 15, 1994, and air-sparging was initiated on March 15, 1994. The vapor extraction system was 33% operational during the second quarter of 1994. System operation, which includes vapor extraction and sparging, has been limited to daytime hours.

The product recovery rate for the second quarter 1994 ranged from 0.01 to 0.11 lbs/hr. Approximately 35.12 pounds (5.85 gallons) of TPH-G and 0.089 pounds (0.013 gallons) of benzene have been recovered during the second quarter 1994.

Groundwater elevations increased an average of 0.15 feet between February and May 1994. The gradient and flow direction are consistent with the previously interpreted gradients and flow directions for this site.

Concentrations of TPH-G have remained nondetectable in well A-8; have decreased to nondetectable level in wells A-10 and AR-2; have decreased in wells A-7 and AR-1; and have not changed significantly in other sampled wells since the last quarter. Concentrations of benzene have remained nondetectable in wells A-4, A-8 and A-10; have decreased to nondetectable level in wells A-5 and AR-2; have decreased in wells MW-3 and A-7; have increased in well AR-1; and have not changed significantly in wells MW-1 and MW-2 since the last quarter. Comparison could not be made for wells A-6 and A-9 because these wells were not sampled during this (A-9) or the previous (A-6) quarter.

The presence of dissolved gasoline hydrocarbons in groundwater samples collected from groundwater monitoring well A-4, located upgradient to the existing USTs, may be due to an offsite source.

7.0 ACTIVITIES PLANNED FOR THE THIRD QUARTER 1994

- Install a skid mounted vapor extraction system and granular activated carbon vessels for the next phase of interim soil and groundwater remediation.

- Perform operation and maintenance duties for the vapor extraction/air-sparging system.

- Perform quarterly monitoring and sampling of site wells on August 17, 1994 (joint monitoring event).

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

Table 1. Vapor Extraction System Performance Data
Table 2. Vapor Extraction Wells Status
Table 3. Air Sparge Well Status
Table 4. Laboratory Analysis Results of Air Samples
Table 5. Air-sparging Start-up Data
Table 6. Current Groundwater Monitoring Data

Figure 1. Vicinity Map
Figure 2. Site Plan
Figure 3. Vapor System Process Flow Diagram
Figure 4. Potentiometric Map
Figure 5. TPH-G Isoconcentration Map
Figure 6. Benzene Isoconcentration Map

Appendix A: Historical Data Tables
Table 1A. Historical Water-Level Data
Table 2A. Historical Groundwater Quality Database
Appendix B: BAAQMD Permit to Operate
Appendix C: G-R System Monitoring Data Sheets, Laboratory Analytical Reports and Chain-of-Custody Forms for Air Samples
Appendix D: IWM Groundwater Sampling Report

TABLE 1

VAPOR EXTRACTION SYSTEM PERFORMANCE DATA

ARCO Station 5387
Hayward, California

Beginning Date	1-Apr-94	15-Apr-94	30-Apr-94	6-May-94	13-May-94	18-May-94	27-May-94	8-Jun-94
Ending Date	15-Apr-94	30-Apr-94	6-May-94	13-May-94	18-May-94	27-May-94	8-Jun-94	18-Jun-94
Down-time (days)*	9.00	11.04	4.08	4.63	3.63	5.38	8.25	6.04
Total Operation (days)	5.00	3.96	1.92	2.38	1.38	3.63	3.75	3.96
Total Operation (hours)	120	95	46	57	33	87	90	95
Operational Hours to Date	459	554	600	657	690	777	867	962
Benzene Concentrations								
Average Influent (ppmv)	ND	ND	1.8	NS	ND	NS	0.3	NS
Average Effluent (ppmv)	0.02	0.03	0.03	NS	0.10	NS	0.08	NS
TPH-G Concentrations								
Average Influent (ppmv)	180	56	350	NS	330	NS	410	NS
Average Effluent (ppmv)	ND	ND	2.1	NS	3.2	NS	34	NS
Flow Rates								
Average Influent (scfm)	25	25	30	15	17	17	17	18
Average Effluent (scfm)	68	119	43	53	84	39	35	33
Benzene Recovery Data								
Recovery Rate (lbs/hr)	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000
Recovery Rate (lbs/day)	0.000	0.000	0.016	0.020	0.000	0.000	0.001	0.001
Destruction Efficiency (%)	- - -	- - -	97.90%	94.55%	- - -	- - -	48.71%	54.37%
Product Recovered (lbs)	0.000	0.000	0.031	0.047	0.000	0.000	0.006	0.006
Product Recovered To Date (lbs)	1.352	1.352	1.382	1.430	1.430	1.430	1.435	1.441
Product Recovered To Date (gal)	0.186	0.186	0.191	0.197	0.197	0.197	0.198	0.199
TPH-G Recovery Data								
Recovery Rate (lbs/hr)	0.05	0.01	0.11	0.05	0.06	0.06	0.07	0.07
Recovery Rate (lbs/day)	1.11	0.34	2.58	1.25	1.38	1.39	1.69	1.79
Destruction Efficiency (%)	96.58%	80.40%	99.16%	97.82%	95.29%	97.82%	82.99%	84.87%
Product Recovered (lbs)	5.53	1.34	4.95	2.96	1.90	5.03	6.33	7.07
Product Recovered To Date (lbs)	111.17	112.51	117.46	120.42	122.32	127.35	133.68	140.76
Product Recovered To Date (gal)	18.53	18.75	19.58	20.07	20.39	21.23	22.28	23.46

*System does not operate on weekends.

ppmv = parts per million by volume

TPH-G = total petroleum hydrocarbons as gasoline

scfm = standard cubic feet per minute

lbs/hr = pounds per operational hour

Notes:

1. Molecular weights used in recovery calculations are 85 for TPH and 78 for benzene.
2. Densities used in recovery calculations are 6.0 lbs/gal for TPH and 7.25 lbs/gal for benzene.
3. Average Influent Flow is total flow from well field, Average Effluent Flow includes total products of combustion.

TABLE 2

VAPOR EXTRACTION WELL STATUS

ARCO Station 5387
Hayward, California

Date	4/1/94	4/15/94	4/30/94	5/6/94	5/13/94	5/18/94	5/23/94	5/24/94	5/27/94	6/8/94
AV-1										
Active	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Vacuum (in WC)	48	40	69	63	50	42	NM	NM	39	52
HC Concentration (ppm)	1500	1300	1020	350	810	1500	NM	NM	440	650
AV-3										
Active	Y	Y	Y	N	Y	Y	Y	N	N	N
Vacuum (in WC)	24	35	10	NM	8	8	NM	NM	NM	NM
HC Concentration (ppm)	100	240	0	25	180	350	NM	NM	NM	0
AV-4										
Active	Y	N	Y	Y	N	N	N	N	N	N
Vacuum (in WC)	20	NM	20	20	NM		NM	NM	NM	NM
HC Concentration (ppm)	350	470	100	100	50		NM	NM	50	140
AS-1										
Active	Y	Y	Y	N	N	N	Y	Y	Y	Y
Vacuum (in WC)	49	40	69	NM	30	NM	NM	NM	NM	NM
HC Concentration (ppm)	2250	70	50	25	50	NM	NM	NM	0	NM
MW-1										
Active	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Vacuum (in WC)	48	40	69	63	5	42	NM	NM	39	52
HC Concentration (ppm)	1700	2080	2000	750	1490	1300	NM	NM	750	850
MW-3										
Active	N	N	N	N	N	N	N	N	N	N
Vacuum (in WC)	16	NM	NM	NM	30	NM	NM	NM	NM	NM
HC Concentration (ppm)	100	30	0	50	50	NM	NM	NM	NM	NM
AR-1										
Active	N	N	N	N	N	Y	Y	Y	N	N
Vacuum (in WC)	NM	NM	NM	NM	NM	42	NM	NM	NM	NM
HC Concentration (ppm)	NM	NM	NM	NM	NM	0	NM	NM	0	NM
AR-2										
Active	N	N	N	N	N	Y	Y	Y	Y	Y
Vacuum (in WC)	NM	NM	NM	NM	NM	42	NM	NM	39	20
HC Concentration (ppm)	NM	NM	NM	NM	NM	0	NM	NM	80	270

in WC = inches of water column
HC = hydrocarbon
ppm = parts per million
Y = yes
N = no
NM = Not Measured

Note: HC Concentrations are qualitative field measurements only and are not used in any calculations

TABLE 3

AIR SPARGE WELL STATUS
ARCO Station 5387
Hayward, California

Date	5/23/94	5/24/94	5/27/94	6/8/94
Total Flow (scfm)	NM	NM	3.5	7
AS-1				
Active	Y	Y	Y	Y
Pressure (psi)	NM	NM	9.5	4.5
AS-2				
Active	N	N	N	N
Pressure (psi)	NM	NM	NM	NM
AS-3				
Active	N	N	N	N
Pressure (psi)	NM	NM	NM	NM
AS-4				
Active	Y	Y	Y	Y
Pressure (psi)	NM	NM	9.5	7
AS-5				
Active	N	N	N	N
Pressure (psi)	NM	NM	NM	NM
AS-6				
Active	N	N	N	N
Pressure (psi)	NM	NM	NM	NM
AS-7				
Active	N	N	N	N
Pressure (psi)	NM	NM	NM	NM
AS-8				
Active	N	N	N	N
Pressure (psi)	NM	NM	NM	NM
AS-9				
Active	Y	Y	Y	Y
Pressure (psi)	NM	NM	9.5	6

scfm = standard cubic feet per minute

psi = pounds per square inch

Y = yes

N = no

NM = Not Measured

TABLE 4
LABORATORY ANALYTICAL RESULTS FOR AIR SAMPLES
ARCO Station 5387
Hayward, California

SAMPLE POINT	SAMPLE DATE	TPH-G (PPMV)	BENZENE (PPMV)	TOLUENE (PPMV)	ETHYLBENZENE (PPMV)	XYLENES (PPMV)
Inf	15-Apr-94	180	<0.95	<0.8	<0.7	<0.7
Eff	15-Apr-94	<2.3	0.021	<0.016	<0.014	<0.014
Inf	29-Apr-94	56	<0.19	<0.16	<0.14	0.16
Eff	29-Apr-94	<2.3	0.034	<0.016	<0.014	<0.014
Inf	06-May-94	350	1.8	1.2	<0.14	1.1
Eff	06-May-94	2.1	0.027	0.053	<0.014	0.14
Inf	18-May-94	330	<0.19	<0.16	<0.14	5.5
Eff	18-May-94	3.2	0.10	0.045	<0.014	0.17
AR-1	18-May-94	6.0	<0.019	0.056	<0.014	0.11
AR-2	18-May-94	3.8	0.028	0.11	<0.014	0.18
Inf	08-Jun-94	410	0.30	0.64	0.67	8.5
Eff	08-Jun-94	34	0.075	0.27	0.13	1.8

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
PPMV = Parts Per Million by Volume.
Inf = Influent Sample.
Eff = Effluent Sample.

TABLE 5

CURRENT GROUNDWATER MONITORING DATA
ARCO Station 5387
Hayward, California

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	WELL ELEV. (FT)	STATIC WATER ELEV. (FT)	PRODUCT THICKNESS (FT)	DEPTH TO WATER (FT)
MW-1	03-May-94	10-May-94	1,100	110	4.5	33	14	37.26	25.68	0.00	11.58
MW-2	03-May-94	09-May-94	17,000	1,000	26	990	940	37.99	25.36	0.00	12.63
MW-3	03-May-94	10-May-94	2,300	44	<2.5	8.0	<2.5	36.80	25.44	0.00	11.36
A-4	03-May-94	09-May-94	130	<0.5	<0.5	1.1	<0.5	39.46	25.61	0.00	13.85
A-5	03-May-94	09-May-94	170	<0.5	<0.5	4.0	1.9	38.47	25.39	0.00	13.08
A-6	03-May-94	09-May-94	<50	<0.5	<0.5	<0.5	<0.5	39.07	25.41	0.00	13.66
A-7	03-May-94	10-May-94	330	8.1	<0.5	7.8	3.7	39.38	25.04	0.00	14.34
A-8	03-May-94	09-May-94	<50	<0.5	<0.5	<0.5	<0.5	36.76	25.41	0.00	11.35
A-9	03-May-94	Not sampled	---	---	---	---	---	38.19	Not monitored	---	---
A-10	03-May-94	09-May-94	<50	<0.5	<0.5	<0.5	<0.5	38.66	24.66	0.00	14.00
AR-1	03-May-94	10-May-94	620	130	1.3	48	4.3	37.46	25.43	0.00	12.03
AR-2	03-May-94	09-May-94	<50	<0.5	<0.5	<0.5	<0.5	37.98	25.38	0.00	12.60
XDUP-1 (MW-2)	03-May-94	09-May-94	16,000	1,000	28	960	930	---	---	---	---

TABLE 5

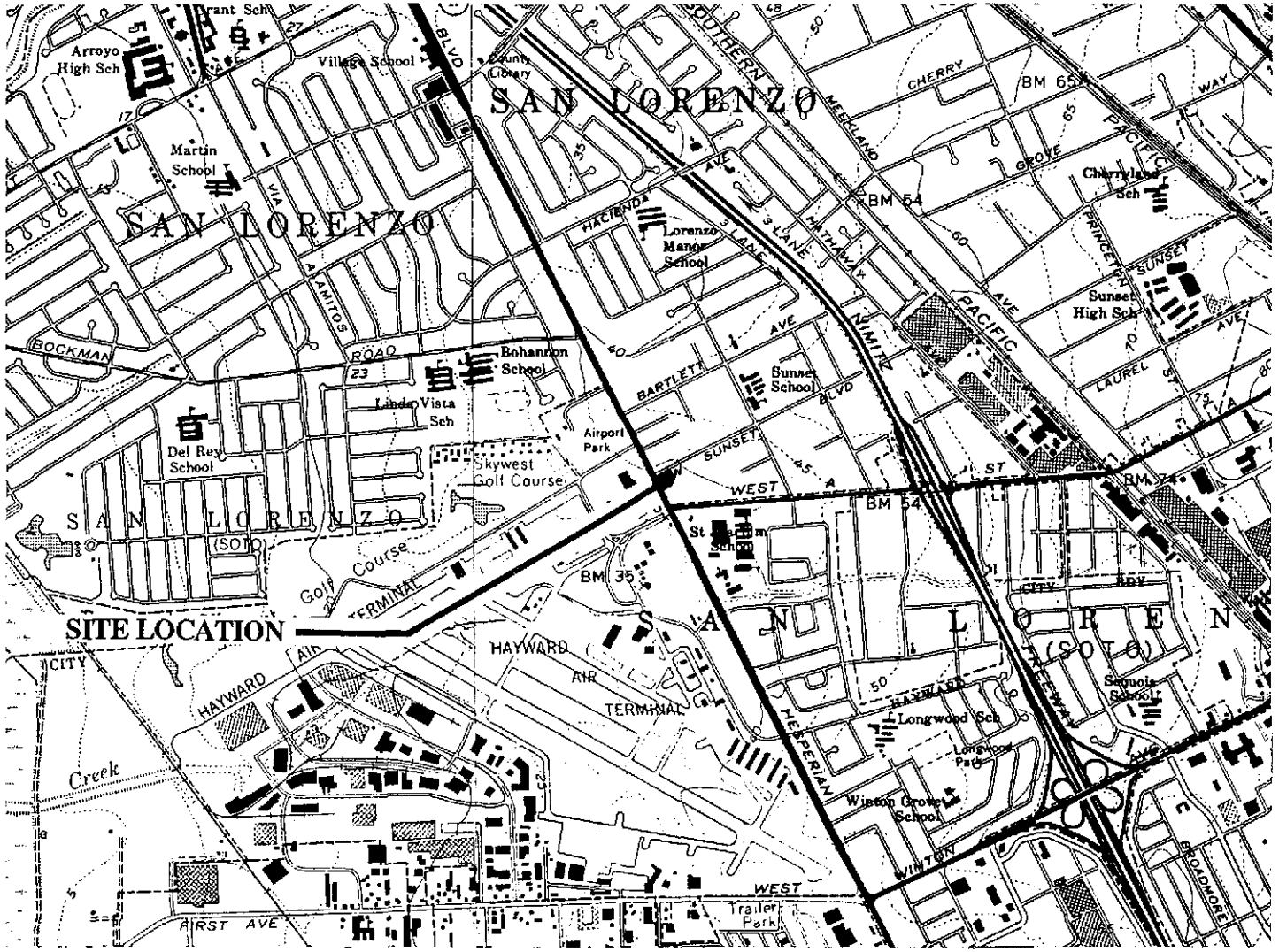
CURRENT GROUNDWATER MONITORING DATA
ARCO Station 5387
Hayward, California

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

Current CAL EPA Action Levels: Toluene 100 ppb

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

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



N

0 2000

Scale in Feet

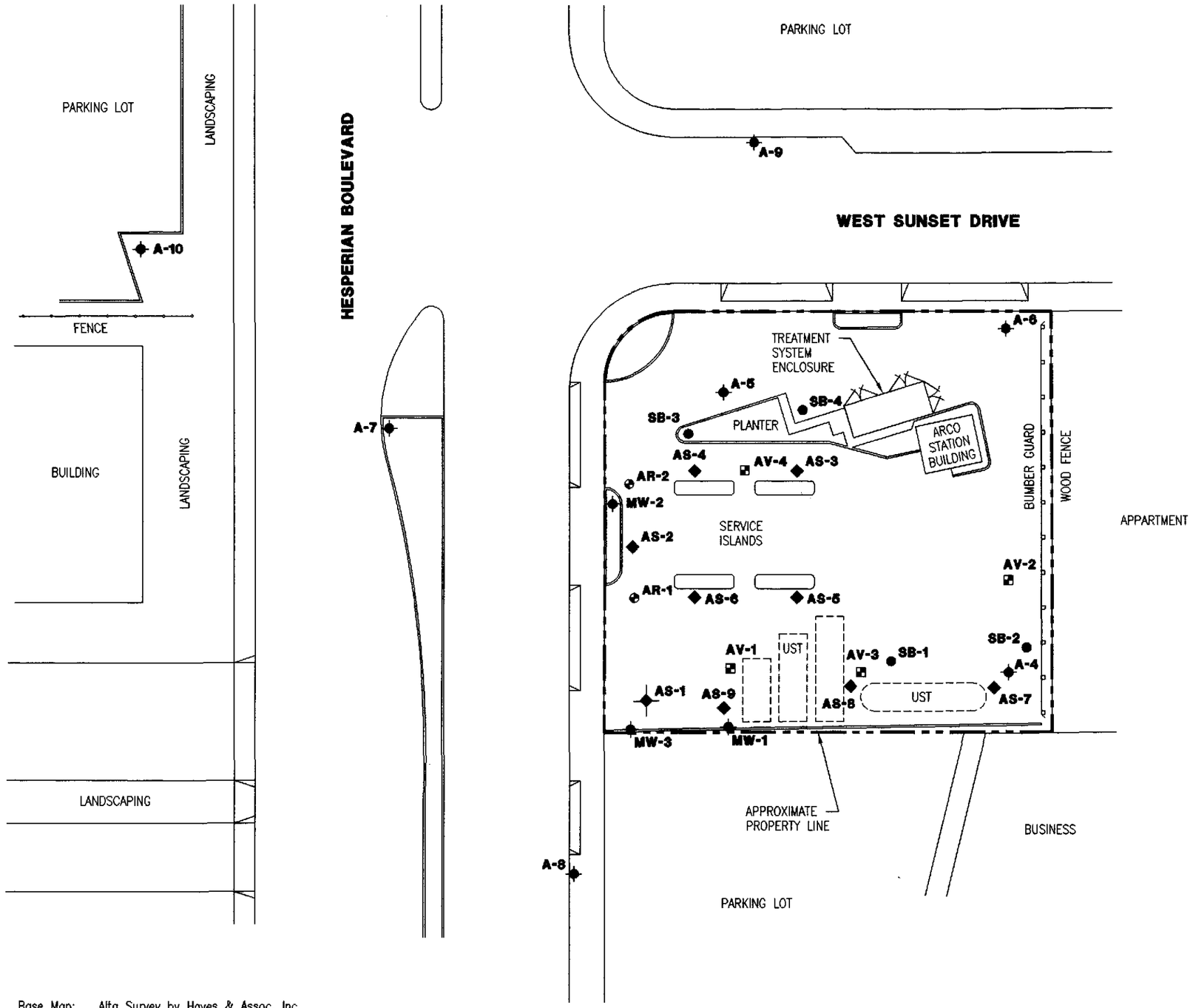
Base Map: USGS Topographic Map

GeoStrategies Inc.

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

FIGURE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
4926		11/91	



EXPLANATION

- Groundwater monitoring well
- Groundwater recovery well
- Vapor extraction well
- Air sparge/vapor extraction well
- Air sparging well
- Soil boring

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

0 40

Scale in Feet

FIGURE 2

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

REVISED DATE

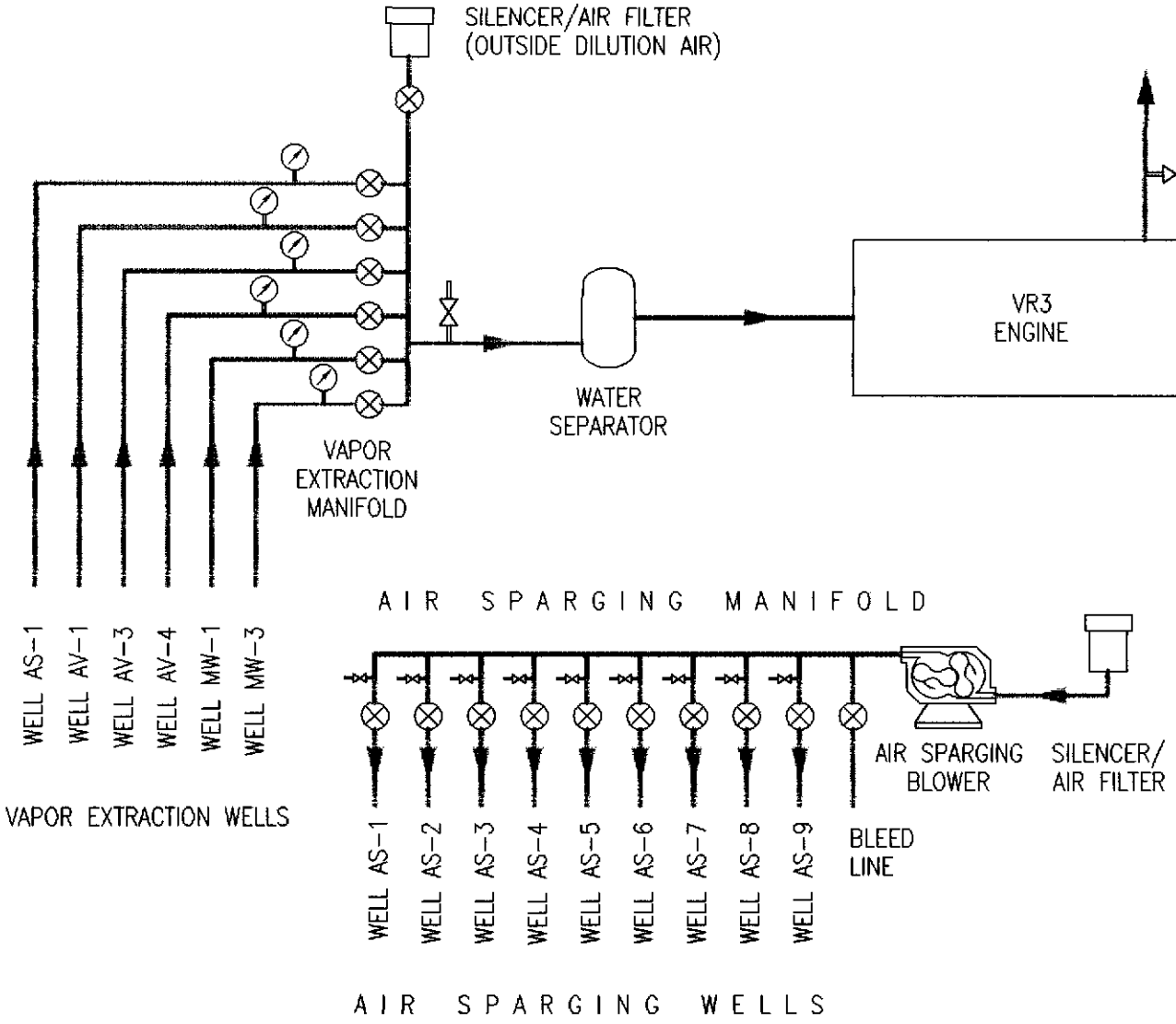
DATE 9/94

REVIEWED BY

JOB NUMBER 4926770-20

GeoStrategies Inc.

GSI

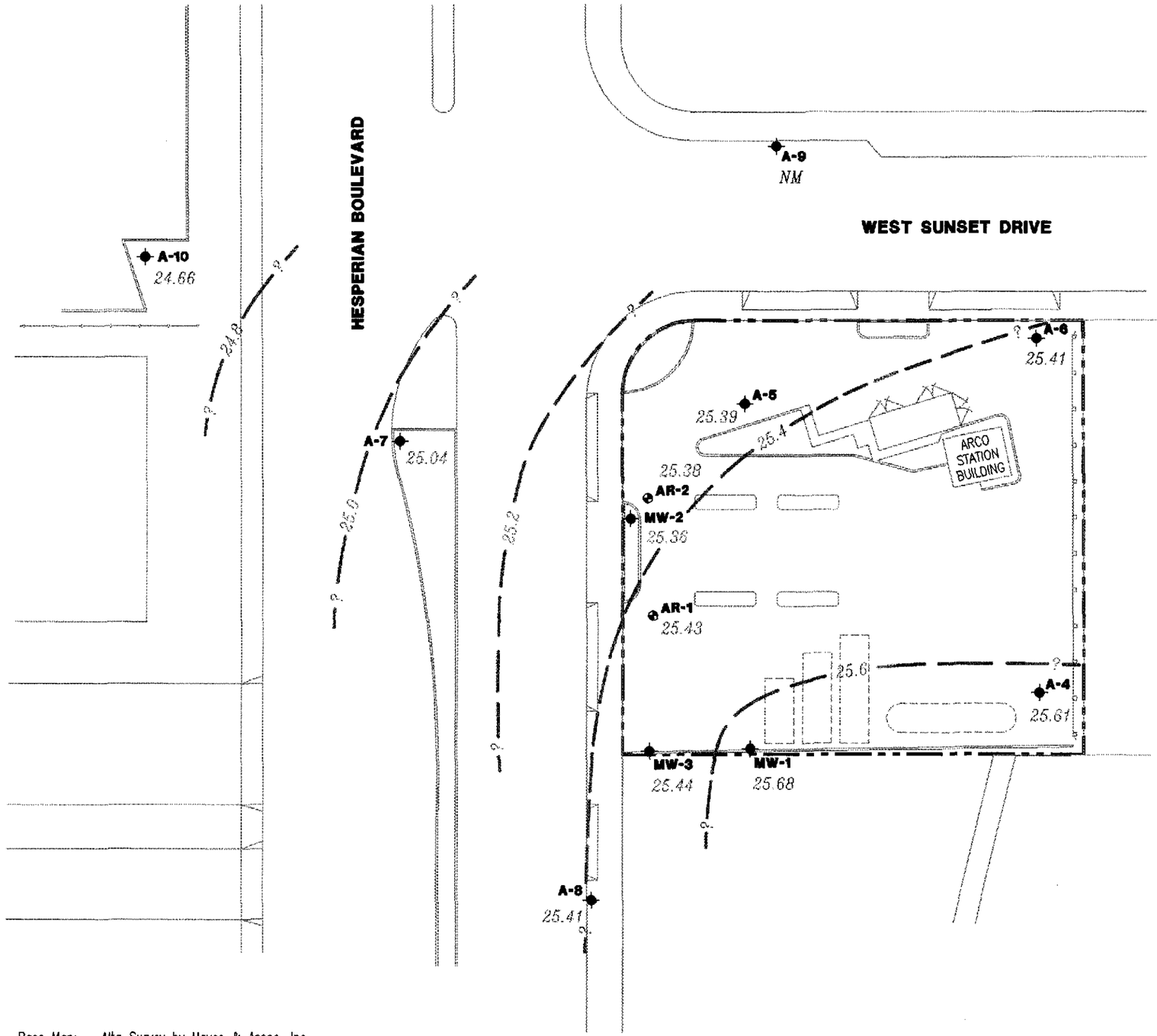


GeoStrategies Inc.

PROCESS FLOW DIAGRAM – VAPOR EXTRACTION
ARCO Service Station #5387
20200 Hesperian Boulevard
Hayward, California

FIGURE
3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
4926770-20		9/94	



EXPLANATION

- Groundwater monitoring well
- Groundwater recovery well
- 99.99 — Groundwater elevation in feet referenced to Mean Sea Level (MSL) measured on May 3, 1994
- 99.99 — Groundwater elevation contour. Approximate Gradient = 0.002
- NM — Not monitored

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

FIGURE 4

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

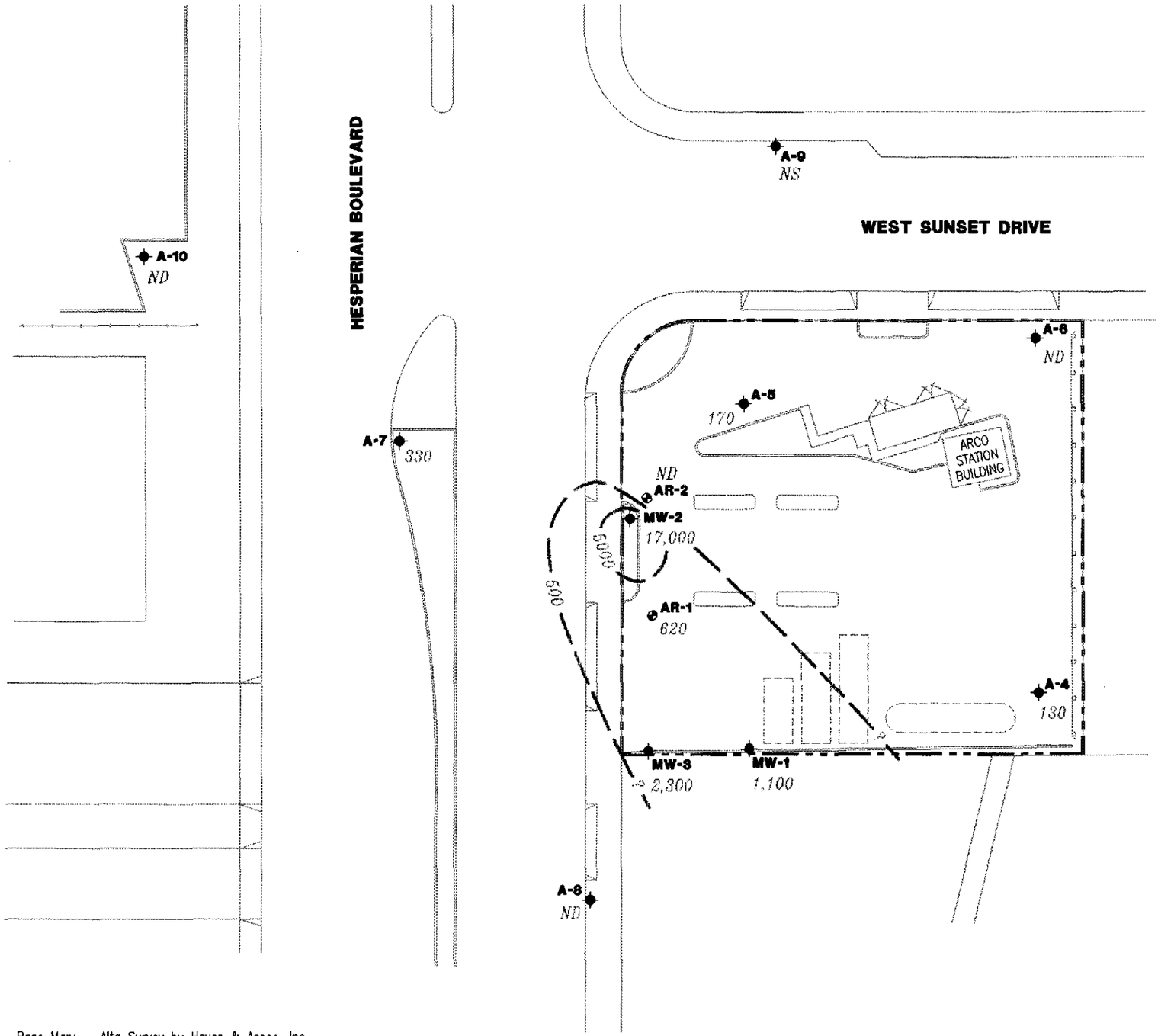
REVISED DATE

DATE 9/94

GeoStrategies Inc.

REVIEWED BY

JOB NUMBER 4926770-20



EXPLANATION

- Groundwater monitoring well
- Groundwater recovery well
- 500 — TPH–G (Total Petroleum Hydrocarbons calculated as Gasoline) concentration in ppb sampled on May 3, 1994
- 500 — TPH–G isoconcentration contour
- ND — Not Detected (See laboratory reports for detection limits)
- NS — Not Sampled

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

0 40
Scale in Feet

FIGURE 5

TPH–G ISOCONCENTRATION MAP
ARCO Service Station #5387
20200 Hesperian Boulevard
Hayward, California

REVISED DATE

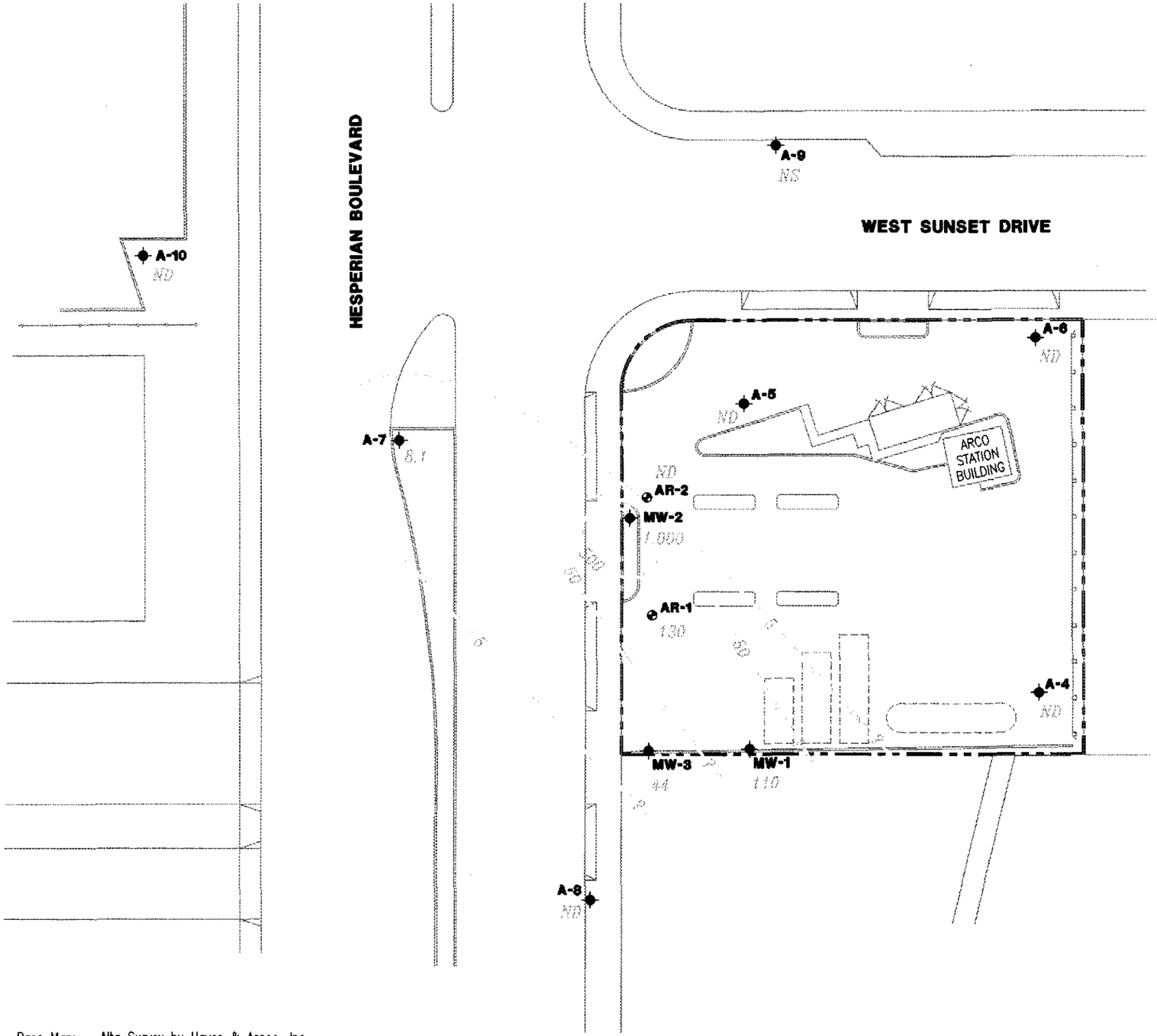
DATE 9/94

REVIEWED BY

JOB NUMBER 4926770–20

GeoStrategies Inc.

GSI



EXPLANATION

- Groundwater monitoring well
- Groundwater recovery well
- 5.00 — Benzene concentration in ppb sampled on May 3, 1994
- 5.00 — Benzene isoconcentration contour
- ND — Not Detected (See laboratory reports for detection limits)
- NS — Not Sampled

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

FIGURE 6

BENZENE ISOCONCENTRATION MAP
ARCO Service Station #5387
20200 Hesperian Boulevard
Hayward, California

REVISED DATE

DATE 9/94

REVIEWED BY

GeoStrategies Inc.

JOB NUMBER 4926770-20

TABLE 1A

HISTORICAL WATER-LEVEL DATA
ARCO Station 5387
Hayward, California

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
08-Aug-86	MW-1	11.25	38.36	27.11	0.00
24-Dec-91	MW-1	16.12	38.36	22.24	0.00
10-Mar-92	MW-1	13.34	38.36	25.02	0.00
09-Jun-92	MW-1	14.12	38.36	24.24	0.00
14-Sep-92	MW-1	15.34	38.36	23.02	0.00
12-Nov-92	MW-1	15.46	38.36	22.90	0.00
11-Feb-93	MW-1	11.95	38.36	26.41	0.00
14-Apr-93	MW-1	11.65	38.36	26.71	0.00
12-Aug-93	MW-1	12.93	38.36	25.43	0.00
26-Oct-93	MW-1	14.13	38.36	24.23	0.00
16-Feb-94	MW-1	11.86	37.26	25.40	0.00
03-May-94	MW-1	11.58	37.26	25.68	0.00
08-Aug-86	MW-2	11.62	38.58	26.96	0.00
24-Dec-91	MW-2	16.50	38.58	22.08	0.00
10-Mar-92	MW-2	13.50	38.58	25.08	0.00
09-Jun-92	MW-2	14.52	38.58	24.06	0.00
14-Sep-92	MW-2	15.78	38.58	22.80	0.00
12-Nov-92	MW-2	15.98	38.58	22.60	0.00
11-Feb-93	MW-2	12.27	38.58	26.31	0.00
14-Apr-93	MW-2	12.01	38.58	26.57	0.00
12-Aug-93	MW-2	13.81	38.58	24.77	0.00
26-Oct-93	MW-2	14.53	38.58	24.05	0.00
16-Feb-94	MW-2	12.81	37.99	25.18	0.00
03-May-94	MW-2	12.63	37.99	25.36	0.00
08-Aug-86	MW-3	10.61	37.77	27.16	0.00
24-Dec-91	MW-3	15.60	37.77	22.17	0.00
10-Mar-92	MW-3	12.90	37.77	24.87	0.00
09-Jun-92	MW-3	13.60	37.77	24.17	0.00
14-Sep-92	MW-3	14.78	37.77	22.99	0.00
12-Nov-92	MW-3	14.92	37.77	22.85	0.00
11-Feb-93	MW-3	11.65	37.77	26.12	0.00
14-Apr-93	MW-3	11.16	37.77	26.61	0.00
12-Aug-93	MW-3	12.82	37.77	24.95	0.00
26-Oct-93	MW-3	13.60	37.77	24.17	0.00

TABLE 1A

HISTORICAL WATER-LEVEL DATA
ARCO Station 5387
Hayward, California

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
16-Feb-94	MW-3	11.53	36.80	25.27	0.00
03-May-94	MW-3	11.36	36.80	25.44	0.00
24-Dec-91	A-4	17.60	39.86	22.26	0.00
10-Mar-92	A-4	14.76	39.86	25.10	0.00
09-Jun-92	A-4	15.63	39.86	24.23	0.00
14-Sep-92	A-4	16.83	39.86	23.03	0.00
12-Nov-92	A-4	16.97	39.86	22.89	0.00
11-Feb-93	A-4	13.43	39.86	26.43	0.00
14-Apr-93	A-4	13.06	39.86	26.80	0.00
12-Aug-93	A-4	14.94	39.86	24.92	0.00
26-Oct-93	A-4	15.52	39.86	24.34	0.00
16-Feb-94	A-4	14.02	39.46	25.44	0.00
03-May-94	A-4	13.85	39.46	25.61	0.00
24-Dec-91	A-5	16.85	38.94	22.09	0.00
10-Mar-92	A-5	13.83	38.94	25.11	0.00
09-Jun-92	A-5	14.91	38.94	24.03	0.00
14-Sep-92	A-5	16.14	38.94	22.80	0.00
12-Nov-92	A-5	16.35	38.94	22.59	0.00
11-Feb-93	A-5	13.21	38.94	25.73	0.00
14-Apr-93	A-5	12.97	38.94	25.97	0.00
12-Aug-93	A-5	14.12	38.94	24.82	0.00
26-Oct-93	A-5	14.72	38.94	24.22	0.00
16-Feb-94	A-5	13.20	38.47	25.27	0.00
03-May-94	A-5	13.08	38.47	25.39	0.00
24-Dec-91	A-6	16.88	39.07	22.19	0.00
10-Mar-92	A-6	13.73	39.07	25.34	0.00
09-Jun-92	A-6	14.95	39.07	24.12	0.00
14-Sep-92	A-6	16.20	39.07	22.87	0.00
12-Nov-92	A-6	16.35	39.07	22.72	0.00
11-Feb-93	A-6	13.04	39.07	26.03	0.00
14-Apr-93	A-6	12.23	39.07	26.84	0.00
12-Aug-93	A-6	14.18	39.07	24.89	0.00
26-Oct-93	A-6	14.85	39.07	24.22	0.00
16-Feb-94	A-6	Not Monitored			

TABLE 1A

HISTORICAL WATER-LEVEL DATA
ARCO Station 5387
Hayward, California

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
03-May-94	A-6	13.66	39.07	25.41	0.00
24-Dec-91	A-7	18.11	39.95	21.84	0.00
10-Mar-92	A-7	15.30	39.95	24.65	0.00
09-Jun-92	A-7	16.12	39.95	23.83	0.00
14-Sep-92	A-7	17.35	39.95	22.60	0.00
12-Nov-92	A-7	17.47	39.95	22.48	0.00
11-Feb-93	A-7	13.80	39.95	26.15	0.00
14-Apr-93	A-7	13.60	39.95	26.35	0.00
12-Aug-93	A-7	15.54	39.95	24.41	0.00
26-Oct-93	A-7	16.28	39.95	23.67	0.00
16-Feb-94	A-7	14.44	39.38	24.94	0.00
03-May-94	A-7	14.34	39.38	25.04	0.00
14-Sep-92	A-8	14.19	37.23	23.04	0.00
12-Nov-92	A-8	14.35	37.23	22.88	0.00
11-Feb-93	A-8	11.25	37.23	25.98	0.00
14-Apr-93	A-8	12.33	37.23	24.90	0.00
12-Aug-93	A-8	12.41	37.23	24.82	0.00
26-Oct-93	A-8	13.02	37.23	24.21	0.00
16-Feb-94	A-8	11.47	36.76	25.29	0.00
03-May-94	A-8	11.35	36.76	25.41	0.00
14-Sep-92	A-9	16.12	38.71	22.59	0.00
12-Nov-92	A-9	16.29	38.71	22.42	0.00
11-Feb-93	A-9	12.31	38.71	26.40	0.00
14-Apr-93	A-9	12.01	38.71	26.70	0.00
12-Aug-93	A-9	13.90	38.71	24.81	0.00
26-Oct-93	A-9	14.86	38.71	23.85	0.00
16-Feb-94	A-9	12.99	38.19	25.20	0.00
03-May-94	A-9	Not Monitored			
07-Dec-92	A-10	16.81	38.94	22.13	0.00
11-Feb-93	A-10	13.15	38.94	25.79	0.00
14-Apr-93	A-10	12.93	38.94	26.01	0.00
12-Aug-93	A-10	14.87	38.94	24.07	0.00
26-Oct-93	A-10	15.65	38.94	23.29	0.00
16-Feb-94	A-10	14.16	38.66	24.50	0.00

TABLE 1A

HISTORICAL WATER-LEVEL DATA
ARCO Station 5387
Hayward, California

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (FT)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
03-May-94	A-10	14.00	38.66	24.66	0.00
14-Sep-92	AR-1	15.21	38.11	22.90	0.00
12-Nov-92	AR-1	15.36	38.11	22.75	0.00
11-Feb-93	AR-1	12.81	38.11	25.30	0.00
14-Apr-93	AR-1	11.77	38.11	26.34	0.00
12-Aug-93	AR-1	13.55	38.11	24.56	0.00
26-Oct-93	AR-1	13.98	38.11	24.13	0.00
16-Feb-94	AR-1	12.15	37.46	25.31	0.00
03-May-94	AR-1	12.03	37.46	25.43	0.00
30-Mar-93	AR-2	11.53	38.39	26.86	0.00
14-Apr-93	AR-2	11.87	38.39	26.52	0.00
12-Aug-93	AR-2	13.59	38.39	24.80	0.00
26-Oct-93	AR-2	14.25	38.39	24.14	0.00
16-Feb-94	AR-2	12.76	37.98	25.22	0.00
03-May-94	AR-2	12.60	37.98	25.38	0.00

Notes:
1. Static water elevations referenced to Mean Sea Level (MSL). Site wells except well A-6 were resurveyed on February 1 and 22, 1994.
2. Well elevations and depth-to-water measurements were measured from the top of the well box until October 1993, and from the top of the well casing beginning February 1994, except well A-6, which was measured from the top of the well box.

TABLE 2A

HISTORICAL GROUNDWATER QUALITY DATABASE
ARCO Station 5387
Hayward, California

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
08-Aug-86	MW-1	7040	132	8.7	439	230
24-Dec-91	MW-1	2200	190	8.5	6.9	2.6
10-Mar-92	MW-1	2800	270	29	56	39
09-Jun-92	MW-1	2900	960	27	99	63
14-Sep-92	MW-1	2600	450	<5.0	45	21
12-Nov-92	MW-1	1600	310	7.2	22	8.9
11-Feb-93	MW-1	4000	510	47	200	91
14-Apr-93	MW-1	1700	260	20	100	70
12-Aug-93	MW-1	830	60	3.8	39	3.6
26-Oct-93	MW-1	8800	140	<10	41	<10
17-Feb-94	MW-1	1200	130	12	54	58
03-May-94	MW-1	1100	110	4.5	33	14
08-Aug-86	MW-2	1910	20.1	2.8	1.8	---
24-Dec-91	MW-2	23000	1500	1100	480	1400
10-Mar-92	MW-2	210000	44000	3900	1700	5800
09-Jun-92	MW-2	33000	2300	370	780	2600
14-Sep-92	MW-2	16000	3700	100	470	1000
12-Nov-92	MW-2	16000	3800	86	470	910
11-Feb-93	MW-2	27000	3500	720	1600	3800
14-Apr-93	MW-2	27000	3500	220	2200	5100
12-Aug-93	MW-2	16000	1600	27	1300	1200
26-Oct-93	MW-2	12000	1200	<25	510	330
17-Feb-94	MW-2	15000	1800	21	850	540
03-May-94	MW-2	17000	1000	26	990	940
08-Aug-86	MW-3	7450	510	549	409	1380
24-Dec-91	MW-3	6800	450	10	610	45
10-Mar-92	MW-3	11000	2500	75	400	560
09-Jun-92	MW-3	16000	2000	69	1300	2600
14-Sep-92	MW-3	14000	630	<50	1500	2400
12-Nov-92	MW-3	7400	400	<25	860	330
11-Feb-93	MW-3	8600	580	<20	710	300
14-Apr-93	MW-3	6900	300	8.8	580	99
12-Aug-93	MW-3	3400	56	<5	190	<5
26-Oct-93	MW-3	2900	42	<10	76	<10

TABLE 2A

HISTORICAL GROUNDWATER QUALITY DATABASE
ARCO Station 5387
Hayward, California

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
17-Feb-94	MW-3	3100	160	<10	36	8.6
03-May-94	MW-3	2300	44	<2.5	8.0	<2.5
24-Dec-91	A-4	1900	29	1.9	25	29
10-Mar-92	A-4	7400	37	<0.60	11	73
09-Jun-92	A-4	4500	3.2	1.5	37	16
14-Sep-92	A-4	1300	<2.5	2.5	61	6.8
12-Nov-92	A-4	610	7.2	0.98	34	0.97
11-Feb-93	A-4	740	2.4	<0.5	5.0	3.5
14-Apr-93	A-4	380	<0.5	<0.5	10	1.6
12-Aug-93	A-4	1200	0.93	<0.5	0.91	<0.5
26-Oct-93	A-4	160	<0.5	<0.5	1.0	<0.5
17-Feb-94	A-4	320	<0.5	<0.5	28	0.9
03-May-94	A-4	130	<0.5	<0.5	1.1	<0.5
24-Dec-91	A-5	1600	35	<0.30	32	52
10-Mar-92	A-5	1000	21	<1.5	43	100
09-Jun-92	A-5	680	1.6	<0.3	14	16
14-Sep-92	A-5	770	34	<2.5	51	65
12-Nov-92	A-5	520	12	0.96	29	36
11-Feb-93	A-5	150	3.0	<0.5	5.1	1.5
14-Apr-93	A-5	190	1.6	<0.5	1.5	0.97
12-Aug-93	A-5	230	5.4	<0.5	5.3	0.94
26-Oct-93	A-5	190	1.7	<0.5	5.5	2.0
17-Feb-94	A-5	340	2.8	<0.5	13	2.9
03-May-94	A-5	170	<0.5	<0.5	4.0	1.9
24-Dec-91	A-6	<30	<0.3	<0.3	<0.3	<0.3
10-Mar-92	A-6	<30	<0.3	<0.3	<0.3	<0.3
09-Jun-92	A-6	<30	<0.3	<0.3	<0.3	<0.3
14-Sep-92	A-6	<50	<0.5	<0.5	<0.5	<0.5
12-Nov-92	A-6	<50	<0.5	<0.5	<0.5	<0.5
11-Feb-93	A-6	<50	<0.5	<0.5	<0.5	<0.5
14-Apr-93	A-6	<50	<0.5	<0.5	<0.5	<0.5
12-Aug-93	A-6	<50	<0.5	<0.5	<0.5	<0.5
26-Oct-93	A-6	<50	<0.5	<0.5	<0.5	<0.5
16-Feb-94	A-6	Not Sampled				

TABLE 2A

HISTORICAL GROUNDWATER QUALITY DATABASE
ARCO Station 5387
Hayward, California

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
03-May-94	A-6	<50	<0.5	<0.5	<0.5	<0.5
24-Dec-91	A-7	10000	88	16	170	610
10-Mar-92	A-7	320	9.3	0.54	8.8	34
09-Jun-92	A-7	340	11	1.1	8.9	26
14-Sep-92	A-7	510	12	<2.0	30	51
12-Nov-92	A-7	760	17	0.83	50	73
11-Feb-93	A-7	260	20	1.0	11	21
14-Apr-93	A-7	1300	89	2.1	48	87
12-Aug-93	A-7	360	9.0	<0.50	13	9.0
26-Oct-93	A-7	99	1.7	<0.50	4.0	3.0
16-Feb-94	A-7	1300	38	<1	35	25
03-May-94	A-7	330	8.1	<0.5	7.8	3.7
14-Sep-92	A-8	<50	<0.5	<0.5	<0.5	<0.5
12-Nov-92	A-8	<50	<0.5	<0.5	<0.5	<0.5
11-Feb-93	A-8	<50	<0.5	<0.5	<0.5	<0.5
14-Apr-93	A-8	<50	<0.5	<0.5	<0.5	<0.5
12-Aug-93	A-8	<50	<0.5	<0.5	<0.5	<0.5
26-Oct-93	A-8	<50	<0.5	<0.5	<0.5	<0.5
16-Feb-94	A-8	<50	<0.5	<0.5	<0.5	<0.5
03-May-94	A-8	<50	<0.5	<0.5	<0.5	<0.5
14-Sep-92	A-9	<50	<0.5	<0.5	<0.5	<0.5
12-Nov-92	A-9	<50	<0.5	<0.5	<0.5	<0.5
11-Feb-93	A-9	<50	<0.5	<0.5	<0.5	<0.5
14-Apr-93	A-9	<50	<0.5	<0.5	<0.5	<0.5
12-Aug-93	A-9	<50	<0.5	<0.5	<0.5	<0.5
26-Oct-93	A-9	<50	<0.5	<0.5	<0.5	<0.5
16-Feb-94	A-9	<50	<0.5	<0.5	<0.5	<0.5
03-May-94	A-9	Not Sampled				
07-Dec-92	A-10	660	30	<2.5	<2.5	<2.5
11-Feb-93	A-10	210	<0.5	0.97	<0.5	<0.5
14-Apr-93	A-10	770	<0.5	3.0	0.76	1.9
12-Aug-93	A-10	390	<0.5	<0.5	<0.5	0.84
26-Oct-93	A-10	290	<0.5	<0.5	<0.5	<0.5
16-Feb-94	A-10	52	<0.5	<0.5	<0.5	<0.5

TABLE 2A

HISTORICAL GROUNDWATER QUALITY DATABASE
ARCO Station 5387
Hayward, California

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
03-May-94	A-10	<50	<0.5	<0.5	<0.5	<0.5
14-Sep-92	AR-1	820	67	<1.0	8.8	6.7
12-Nov-92	AR-1	140	66	<0.50	4.3	3.7
11-Feb-93	AR-1	360	190	<2.5	8.6	<2.5
14-Apr-93	AR-1	420	240	5.2	30	8.7
12-Aug-93	AR-1	370	150	<2	11	<2
26-Oct-93	AR-1	240	98	<2	11	<2
17-Feb-94	AR-1	4700	1100	<10	140	26
03-May-94	AR-1	620	130	1.3	48	4.3
30-Mar-93	AR-2	390	4.1	1.6	<0.5	47
14-Apr-93	AR-2	310	18	<0.5	0.67	36
12-Aug-93	AR-2	130	16	<0.5	1.7	0.57
26-Oct-93	AR-2	110	15	<0.5	1.8	<0.5
17-Feb-94	AR-2	130	2.9	<0.5	15	0.8
03-May-94	AR-2	<50	<0.5	<0.5	<0.5	<0.5

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

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

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

April 5, 1994

Arco Products Company
c/o GeoStrategies Inc.
6747 Sierra Court, Suite G
Dublin, CA 94568

Attn: ***Miguel Bordallo***

Application Number: 11813
Equipment Location:
20200 Hesperian Blvd.
San Lorenzo, CA 94580

Gentlemen:

Attached are your Permits to Operate the following:

S-10	**Soil Vapor Extraction system consisting of a Tuthill, MD-3206 5 HP vacuum blower, and ancillary equipment, abated by A-1, or A-2, A-3, and A-4 arranged in series.**
A-1	**VR Systems model V3, Internal Combustion Engine.**
A-2	**Westates VSC-2000, 2,000 lb capacity Carbon Adsorption Vessel.**
A-3	**Westates VSC-2000, 2,000 lb capacity Carbon Adsorption Vessel.**
A-4	**Westates VSC-2000, 2,000 lb capacity Carbon Adsorption Vessel.**

See Condition Number 10455.

All Permits should be posted in a clearly visible and accessible place on or near the equipment to be operated, or kept available for inspection at any time.

Operation of this equipment in violation of District Regulations or any permit conditions is subject to penalty action.

In the absence of specific permit conditions to the contrary, the throughputs, fuel and material consumptions, capacities and hours of operation described in your permit application will be considered maximum allowable limits. A new permit will be required before any increase in these parameters, or change in raw material handled may be made.

Please include your permit number with any correspondence with the District. If you have any questions on this matter, please call **Robert E. Cave - Air Quality Engineer Assistant at (415) 749-5114 or Scott A. Owen - Supervising Air Quality Engineer at (415) 749-4693.**

Very truly yours,

Milton Feldstein
Air Pollution Control Officer

by _____
Permit Services Division

JAS:REC:SAO:myl
Attachment

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

PERMIT TO OPERATE No. 11813

PLANT No. 9092

SOURCE No. 10

Arco Products Company

IS HEREBY GRANTED A PERMIT TO OPERATE THE FOLLOWING EQUIPMENT:

Soil Vapor Extraction system consisting of a Tuthill, MD-3206 5 HP vacuum blower, and ancillary equipment, abated by A-1, or A-2, A-3, and A-4 arranged in series.
A-1 VR Systems model V3, Internal Combustion Engine.
A-2 Westates VSC-2000, 2,000 lb capacity Carbon Adsorption Vessel.
A-3 Westates VSC-2000, 2,000 lb capacity Carbon Adsorption Vessel.
A-4 Westates VSC-2000, 2,000 lb capacity Carbon Adsorption Vessel.

LOCATED AT: 20200 Resperian Blvd.
San Lorenzo, CA 94580

CONDITIONS: [X] YES [ ] NO *(All permit conditions must be complied with at all times *)*

If YES, See Attached *Condition No.* 10455

MILTON FELDSTEIN
AIR POLLUTION CONTROL OFFICER

Date April 5, 1994

By _____
Permit Services Division

EXPIRATION DATE April 5, 1995

THIS PERMIT DOES NOT AUTHORIZE ANY VIOLATION OF THE RULES AND REGULATIONS OF THE BAAQMD OR THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA. THIS PERMIT IS NOT TRANSFERABLE TO ANOTHER PERSON WITHOUT APPROVAL FROM THE DISTRICT.

* *Compliance with conditions contained in this permit does not mean that the permittee is currently in compliance with District Rules and Regulations. It is the responsibility of the permittee to have knowledge of and be in compliance with all District Rules and Regulations.*

COND# 10455 ----------

1. Precursor Organic Compound (POC) emissions from Source S-10 shall be abated by either Abatement device A-1, I.C. Engine, or A-2, A-3, & A-4, three 2,000 pound activated carbon vessels arranged in series, during all periods of operation.
2. The POC destruction efficiency of Abatement devices A-1, A-2, A-3, & A-4 shall be maintained at a minimum of 98.5% by weight for inlet concentrations greater than or equal to 3000 ppmv. For inlet concentrations below 3000 ppmv and greater than or equal to 1000 ppmv, a minimum destruction efficiency of 97% shall be maintained. For inlet concentrations below 1000 ppmv, a minimum destruction efficiency of 90% shall be maintained. The minimum destruction efficiency of 90% shall be waived if total emissions from the operation are less than 1 pound per day VOC and benzene emissions are less than 0.02 pounds per day.
3. A-1 shall be properly maintained and kept in good operating condition at all times. In no event shall Benzene emissions to the atmosphere exceed 0.02 pounds per day.
4. To determine compliance with Conditions 2 and 3, for operation of A-1, the operator of this equipment shall:
   a. Analyze inlet gas stream to determine the flow rate and concentration of total POC present for each of the first three days of operation. Thereafter, the inlet gas shall be analyzed to determine the flow rate and concentration of total POC once every two weeks.
   b. Analyze exhaust gas to determine the concentration of benzene and total POC present for each of the first three days of operation. Thereafter, the exhaust gas shall be analyzed to determine the concentration of benzene and total POC once every two weeks.
   c. Calculate the benzene emission rate in pounds per day and the POC destruction efficiency based on the exhaust gas analysis and the operating exhaust flow rate. The soil vapor flow rate shall be decreased, if necessary, to demonstrate compliance with Conditions 2 and 3.
   d. Submit to the District the test results and emission calculations for the first three days of operation within one month of start-up. All source test methods used shall be subject to the prior approval of the Source Test Section of the District Technical Division.
5. The operator of this source shall maintain the following information in a District-approved log for each month of operation of A-1:
   a. days of operation
   b. inlet and exhaust flow rate
   c. inlet and exhaust sampling date
   d. analysis results
   e. calculated emissions of benzene in pounds per day.

   Such records shall be retained and made available for inspection by the District for two years following the

date the data is recorded.

6. Once influent concentrations fall below 1000 ppmv, the abatement device may be changed from A-1, I. C. Engine to A-2, A-3, & A-4, three carbon canisters arranged in series. Such changeover shall take place only after written notification of said abatement change has been received by the District. Operation of the source shall then be subject to the conditions which follow.
7. The second to last carbon vessel, A-3, shall be changed out with unspent carbon upon breakthrough, defined as the detection at the outlet of the higher of the following:
   a. 10 % of the inlet stream concentration to the carbon vessel.
   b. 10 ppmv (measured as C1).

   This shall be measured by a Flame-ionization Detector (FID) or other method approved in writing by the APCO.
8. The last carbon vessel, A-4, shall be changed out with unspent carbon upon detection of 10 ppmv (measured as C1) as measured with a Flame-ionization Detector (FID) or other method approved in writing by the APCO.
9. The limits set forth in Conditions # 7 and # 8 shall apply to non-methane hydrocarbon emissions. To determine the presence of methane in the exhaust stream, a reading shall be taken with and without a carbon filter tip fitted on the OVA-FID probe. Concentrations measured with the carbon filter tip in place shall be considered methane for the purpose of these permit conditions.
10. The operator of this source shall monitor with an OVA-FID or other method approved in writing by the APCO at the following locations:
    a. At the inlet to carbon vessel A-3.
    b. At the exhaust of A-3; the inlet to carbon vessel A-4.
    c. At the outlet of carbon vessel A-4; the carbon vessel that is last in series prior to venting to the atmosphere.
11. These monitor readings shall be recorded in a monitoring log at the time they are taken. The monitoring results shall be used to estimate the frequency of carbon change out necessary to maintain compliance with conditions number 7 and 8.
12. To maintain compliance with conditions number 7 and 8, the monitoring shall be conducted on a daily basis. The operator of this source may propose for District review, based on actual measurements taken at the site during operation of the source, that the monitoring schedule be changed based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District must be received by the applicant prior to a change to the monitoring schedule.
13. The operator of this source shall maintain the following information in a District approved log for each month of operation of A-2, A-3, and A-4:
    a. The hours of operation.
    b. Each monitor reading or analysis result for the day of operation they are taken.
    c. The number of carbon vessels removed from service.

Any exceedance of conditions number 7 and/or 8 shall be reported to the Permits Division with the log as well as the corrective action taken. In addition, an exceedance of conditions number 7 and/or 8 shall be submitted to the District Enforcement Section at the time it occurs. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well at the time of occurrence.

14. The operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this conditional Authority to Construct/Permit to Operate. All measurements, records and data required to be maintained by the applicant shall be retained for at least two years following the date the data is recorded.

15. Upon final completion of the remediation project, the operator of Source S-10 shall notify the district within two weeks of decommissioning the operation.

GSI

ICE SYSTEM MONITORING DATA SHEET

Client: Avco # 5387
Site: 20200 Hesperian San Lorenzo CA

Job#: 9929.13
Field Technician: F. Clim.
Date: 4-1-94

EXTRACTION WELL #	MW-3	AS-1	MS-1	AV-1	HW-4	AS-3
Time	14:00	←				←
Pipe ID @ Influent (in)	2"					
Differential Pressure (in WC)	N/T					
Vacuum (in WC)	16"	49"	48"	48"	20"	24"
Temperature (F)	57	57	57	56	57	57
HC Concentration (ppm)	100	2250	1700	1500	350	100
Sampled (Y/N) / ID#	N	←		←		→
INFLUENT						
Time	14:00					
Flow (cfm)	44					
Vacuum (in WC)	61"					
Temperature (F)	570F					
HC Concentration (ppm)	1260					
Sampled (Y/N) / ID#	NO					
EFFLUENT						
Pipe ID @ Effluent (in)	3"					
Differential Pressure (in WC)	~~0.5~~ 0.75					
Temperature (F)	993					
HC Concentration (ppm)	6ppm					
Sampled (Y/N) / ID#	NC					
SYSTEM						
Engine #	15					
Active on Arrival (circle one):	(Y) N		Y N		Y N	
Engine Hours	6876					
Engine RPM	1820					
Electric Meter	1015133					
Gas/Propane Meter	1015133					
Duty Cycle	38.2					
Bypass Valve	35.1					

Monitoring Device (circle one): FID PID IR

Comments: Sparging 10psi @ 5cfm
AS-1
6.5 PSI AS-4
AS-4
8.5 PSI 7.5 psi

Supplies Used:

Note: Attach status printout.

MW

GSI

ICE SYSTEM MONITORING DATA SHEET

Client: Arco
Site: [illegible] / [illegible]

Job#: 9926 [illegible]
Field Technician: [illegible]
Date: 4-17-94

AV3 [illegible]

EXTRACTION WELL #	AS1 / MW11 / [illegible]					
Time						
Pipe ID @ Influent (in)						
Differential Pressure (in WC)						
Vacuum (in WC)						
Temperature (F)						
HC Concentration (ppm)						
Sampled (Y/N) / ID#						

INFLUENT			
Time			
Flow (cfm)			
Vacuum (in WC)			
Temperature (F)			
HC Concentration (ppm)			
Sampled (Y/N) / ID#			
EFFLUENT			
Pipe ID @ Effluent (in)			
Differential Pressure (in WC)			
Temperature (F)			
HC Concentration (ppm)			
Sampled (Y/N) / ID#			
SYSTEM			
Engine #			
Active on Arrival (circle one):	Y (N)	Y N	Y N
Engine Hours	6951		
Engine RPM			
Electric Meter			
Gas/Propane Meter			
Duty Cycle			
Bypass Valve			

Monitoring Device (circle one): FID PID IR

Comments: SPARGE muffl. Cracked
Turned off Sparge

Supplies Used:

Note: Attach status printout.

Gettler - Ryan Inc. GENERAL CONTRACTORS

TAGS ☐

DAILY REPORT

FORMS ☐

COMPANY ARCO JOB NO. 9926.13

LOCATION Hesperian/Sunset DATE 4-14-94

SPH Cleaning

JOB INSTRUCTIONS:

WORK PERFORMED (CONT. ON REVERSE SIDE): Restart unit. Closed off wells MW-3 & AV-4 per miguel. Installed 1"x4" pipe nipple in sparge system to replace cracked manifold assembly. Restarted sparge system.

6961 hours, 1886 RPM -33" well vac 25 CFM flow, 2.3% CFM Propane flow.

1 Sparge @ 4cm @ 7PSI

MATERIALS: 1 - 1"x4" pipe nipple

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-07	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN Ron McCoy

GSI

ICE SYSTEM MONITORING DATA SHEET

Client: Arco 5387 | Job#: 9929
Site: 20300 Hesperian San Lorenzo CA | Field Technician: F-Chinn
Date: 4-15-94

EXTRACTION WELL #	MW-3	AS-1	MW-1	AV-4	AV-2	AV-3
Time	19:45	←			→	
Pipe ID @ Influent (in)		2"				
Differential Pressure (in WC)		0.20	0.20	0.15	0.10	0.05
Vacuum (in WC)		40"	40	40	0	35
Temperature (F)		66.4	64.6	66.8	67.3	69.2
HC Concentration (ppm)	30	70	2080	1300	490	290
Sampled (Y/N) / ID#	N				→	
INFLUENT						
Time	14:46		open MW-3 AV-4 for sparging only			
Flow (cfm)	28 cfm					
Vacuum (in WC)	40"					
Temperature (F)	68°F					
HC Concentration (ppm)	780					
Sampled (Y/N) / ID#	Yes Inf					
EFFLUENT						
Pipe ID @ Effluent (in)	17:40					
Differential Pressure (in WC)	0.6					
Temperature (F)	808.4					
HC Concentration (ppm)	20-30 ppm					
Sampled (Y/N) / ID#	Yes Eff					
SYSTEM						
Engine #	15					
Active on Arrival (circle one):	(Y) N		Y N		Y N	
Engine Hours	6996					
Engine RPM	1841					
Electric Meter	00301					
Gas/Propane Meter	Tank 1092662					
Duty Cycle	36.6					
Bypass Valve	16.7					

Monitoring Device (circle one): FID PID (IR)

Comments: Sparging 10 psi 8.8 cfm AS-1 AS-2 AS-4
MW-3 closed
AV-4 & AV-3 open 10" due to low concen

Supplies Used:

Note: Attach status printout.

GSI

ICE SYSTEM MONITORING DATA SHEET

Client: Arco 5387 Job#: 9926.70
Site: San Lorenzo Field Technician: F. Cline
Date: 4-20-94

EXTRACTION WELL #	MW-3	AS-1	MW-1	AB-1	AV-4	AV-3
Time	16:00					
Pipe ID @ Influent (in)	2"	2"	2"	2"	2"	2"
Differential Pressure (in WC)			1.8	1.4	1.7	
Vacuum (in WC)	0	69	69	69	20	10
Temperature (F)			66.7	66.6	65.6	
HC Concentration (ppm)	0	50	2000	1020	100	0
Sampled (Y/N) / ID#	on	on	on	on	on	on
INFLUENT						
Time	16:52		17:30			
Flow (cfm)	28 cfm		34 cfm			
Vacuum (in WC)	46"		57"			
Temperature (F)	670F		660F			
HC Concentration (ppm)	1120		1200			
Sampled (Y/N) / ID#	Yes A-Inf 5387		No			
EFFLUENT						
Pipe ID @ Effluent (in)	3"		3"			
Differential Pressure (in WC)	0.90		0.90			
Temperature (F)	808.2		808.2			
HC Concentration (ppm)	120ppm					
Sampled (Y/N) / ID#	Yes A-RH 5387					
SYSTEM						
Engine #	15					
Active on Arrival (circle one):	(Y) N		(Y) N		Y N	
Engine Hours	7091		7096			
Engine RPM	1800		1794			
Electric Meter	00523					
Gas/Propane Meter	1045928					
Duty Cycle	36.8					
Bypass Valve	24.1					

Monitoring Device (circle one): FID PID IR

Comments: Sparge well all closed.

Supplies Used:

Note: Attach status printout.

Gettler - Ryan Inc.

GENERAL CONTRACTORS

TAGS

DAILY REPORT

FORMS

COMPANY ARCO SS# 5387 JOB NO. 9926.70

LOCATION 20200 Hesperian / Sunset Hayward DATE 4-8-94

JOB INSTRUCTIONS: Stant V3 engine.

WORK PERFORMED (CONT. ON REVERSE SIDE): Started, warmed up engine. Set up to draw from wells. Initial vac 40" w.c. at 37 cfm flow. Opened bypass valve manually to 26%. Prior to startup, checked servicing on engine, all ok.

MATERIALS: —

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	32.08	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN Bill Thomas

GSI

ICE SYSTEM MONITORING DATA SHEET

Client: Arco #5387
Site: 20200 Hesperian San Lorenzo CA
Job#: 9926.10
Field Technician: F. Cline
Date: 5-6-94

EXTRACTION WELL #	MW-3	AS-1	MW-1	AV-1	AO-4	AV-3
Time						off
Pipe ID @ Influent (in)	2"	2"	2"	2"	2"	2"
Differential Pressure (in WC)			2.0	1.4	0.45	
Vacuum (in WC)			63	63	~~6~~ 20	
Temperature (F)			66.8	64.3	66.2	
HC Concentration (ppm)	50	25	750	350	100	25
Sampled (Y/N) / ID#	off	off	On	On	on	off
INFLUENT						
Time	16:48					
Flow (cfm)	36 cfm					
Vacuum (in WC)	60"					
Temperature (F)	65°F					
HC Concentration (ppm)	450ppm					
Sampled (Y/N) / ID#	Y - A-Inf-5387					
EFFLUENT						
Pipe ID @ Effluent (in)	2"					
Differential Pressure (in WC)	0.58					
Temperature (F)	802.2					
HC Concentration (ppm)	0ppm					
Sampled (Y/N) / ID#	Yes A-EFF-5387					
SYSTEM						
Engine #						
Active on Arrival (circle one):	(Y)	N	Y	N	Y	N
Engine Hours	7137					
Engine RPM	1789					
Electric Meter	00528					
Gas/Propane Meter	10:2321					
Duty Cycle	38.5					
Bypass Valve	22.7					

Frank - 5.10
Please fill in the highlighted blanks and return. Thank you.
Lisa

Monitoring Device (circle one): FID PID (IR)

Comments: Turned on wells MW-3, AS-1, AV-3 for 5 minutes prior to checking vapor levels. then shut Back off.

Supplies Used:

Note: Attach status printout.

Gettler - Ryan Inc.
GENERAL CONTRACTORS

TAGS ☐

DAILY REPORT

FORMS ☐

COMPANY ARCO SS # 5387 JOB NO. 9926.70

LOCATION 20300 Hesperian / Sunset Hayward DATE 5-10-94

JOB INSTRUCTIONS: Connect AR-1 and AR-2 to common (MW-3) vapor extraction line. Install valve at MW-3 to isolate well.

WORK PERFORMED (CONT. ON REVERSE SIDE): Installed fittings and hoses to connect AR-1 and AR-2 to vapor extraction line.

MATERIALS: OVER

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	24-03	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN [signature]

Gettler - Ryan Inc.
GENERAL CONTRACTORS

TAGS

DAILY REPORT

FORMS

COMPANY ARCO SS# 5387 JOB NO. 9926.70

LOCATION 20200 Hesperian / Sunset Hayward DATE 3-11-94

JOB INSTRUCTIONS: Stant V3 engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Set-up and started V3 engine All warning okay. Adjusted bypass valve to 19% flow at 26 CFM Vacuum at 32" W.C. Electric Meter reading 00533

MATERIALS: —

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-08	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN

Gettler - Ryan Inc.
GENERAL CONTRACTORS

TAGS

DAILY REPORT

FORMS

COMPANY ARCO SS# 5387 JOB NO. 9926.10

LOCATION 20200 Hesperian / Sunset Hayward DATE 5-12-94

JOB INSTRUCTIONS: Startup V3 Engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Checked servicing on V3 engine, all okay. Started unit, warmed up and set up to draw from wells. Adjusted bypass valve to 20%. Initial vacuum 32" w.c. Flow 30 CFM. Electric meter reading 00535 KWH.

MATERIALS: —

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-08	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN [signature]

Gettler - Ryan Inc.
GENERAL CONTRACTORS

TAGS

DAILY REPORT

FORMS

COMPANY ARCO 55# 5387 JOB NO. 9926.20

LOCATION 20200 Hesperian / Sunset Hayward DATE 5-13-94

JOB INSTRUCTIONS: Start V3 engine.

WORK PERFORMED (CONT. ON REVERSE SIDE): Checked engine servicing, all okay. Started engine, warmed up. Set up to draw from wells. Initial vacuum at 32" W.C. and flow at 96 CFM.

MATERIALS: —

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-08	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN

GSI

ICE SYSTEM MONITORING DATA SHEET

Client: Arco #5387
Site: 20200 Hesperian
San Lorenzo CA

Job#: 9926.70
Field Technician: F. Cline
Date: 5-13-94

EXTRACTION WELL #	MW-3	MW-5-1	MW-1	AV-1	AV-4	AV-3
Time	off	off	on	on	on → off	off → on
Pipe ID @ Influent (in)	2	2	2	2	2	2
Differential Pressure (in WC)						
Vacuum (in WC)	30	30	5	50	8	8"
Temperature (F)	NT	60.3	63.0	62.0	—	66
HC Concentration (ppm)	50	50	1490	810	50	180
(Monthly) Sampled (Y/N) / ID#						
INFLUENT Time	1800		17:30			
Flow (cfm)	41		17			
Vacuum (in WC)	67"		61			
Temperature (F)	63°		62°F			
HC Concentration (ppm)	810		1320			
Sampled (Y/N) / ID#	No		No			
EFFLUENT Pipe ID @ Effluent (in)	2 1/2		2 1/2			
Differential Pressure (in WC)	1.0		0.40			
Temperature (F)	89G		900F			
HC Concentration (ppm)	0000ppm		0010			
Sampled (Y/N) / ID#	N		No			
SYSTEM Engine #						
Active on Arrival (circle one):	(Y) N		(Y) N		Y N	
Engine Hours	7193		7194			
Engine RPM	1806		1794			
Electric Meter			00535			
Gas/Propane Meter	1059848		1059914			
Duty Cycle	37.1		38.9			
Bypass Valve	25.3		3.4			

Monitoring Device (circle one): FID PID (IR)

Comments: Shut AV-4 open AV-3

Supplies Used:

Note: Attach status printout.

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DAILY REPORT

COMPANY Arco # 5387 JOB NO. 9926.76

LOCATION 20200 Hesperian DATE 5-16-94
San Lorenzo CA

JOB INSTRUCTIONS:
Start engine Set By-Pass valve @ 16% Vacum. @ 40"

WORK PERFORMED (CONT. ON REVERSE SIDE): Returned @ 4:00 found engine down due to water trap. Vatum rose to 74" @ 14:00 hrs Filled knockout drum. & water Trap.

Pumped out drum and emptied water trap.

Restarted engine adjust By pass valve to 1.8 vacum @ 40" H_2O.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	20-16 (1½)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco # 5387 JOB NO. 7926.70

LOCATION 20200 Hesperian DATE 5-17-94
San Lorenzo CA

JOB INSTRUCTIONS:
Start engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Travel to site Start engine allow to warm up start propane & well Gas Adjust to optimize

Set Bypass @ 1.8. Well Vac rose to 29"

Returned later @ 14:00 hrs found well vac @ 34"
Bumped up Bypass to 3.8 to see what would happen
well vac jump to 40" Flow went from 16 to 18 cfm
Propane use remained unchanged.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	3016 (.)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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ICE SYSTEM MONITORING DATA SHEET

Client: Arco # 5387
Site: 20200 Hesperian
San Lorenzo CA

Job#: 9926.7C
Field Technician: F. Cline
Date: 5-18-94

EXTRACTION WELL #	MW-3	AR-1	AR-2	MW-1 (AS-1)	MW-1	AV-1	AV-4	AV-5
Time								
Pipe ID @ Influent (in)	2"	2"	2"	2"	2"	2"	2"	2"
Differential Pressure (in WC)				off	1.8	1.4	off	0.8
Vacuum (in WC)	~~off~~	42"	42"		42"	42"	—	8"
Temperature (F)	~~68°F~~	67°F	68°F		67	66	~~62~~	62
HC Concentration (ppm)	~~0ppm~~	0ppm	0ppm		1300	1300		350
Sampled (Y/N) / ID# (Monthly)	~~Yes MW-3~~	Yes AR-1	Yes AR-2					

INFLUENT	
Time	16:40
Flow (cfm)	19 cfm
Vacuum (in WC)	38"
Temperature (F)	68°F
HC Concentration (ppm)	1330 ppm
Sampled (Y/N) / ID#	Yes Inf
EFFLUENT	
Pipe ID @ Effluent (in)	2 1/2"
Differential Pressure (in WC)	6.40 " H_2O
Temperature (F)	69°
HC Concentration (ppm)	10ppm
Sampled (Y/N) / ID#	Yes Eff
SYSTEM	
Engine #	15
Active on Arrival (circle one):	(Y) N
Engine Hours	7227
Engine RPM	1803
Electric Meter	00540
Gas/Propane Meter	106482
Duty Cycle	38.1
Bypass Valve	3.9

	Y	N	Y	N
Active on Arrival (circle one):				

Monitoring Device (circle one): FID PID IR

Comments: AR-1 & AR-2 plumbed thru MW-3 TC. TEST requires shutting off a well head & allowing TC run for 5 minutes each individually Turn both on. when left.

Supplies Used:

Note: Attach status printout.

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DAILY REPORT

COMPANY Arco #5387 JOB NO. 9926.70

LOCATION 20200 Hesperian DATE 5-23-94
San Lorenzo CA

JOB INSTRUCTIONS: Start engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Travel to site duck engine
Perform leak check Oil & Coolant. Start engine
Adjust Flow
Bypass @ 9% Flow @ 16 cfm.
Start Sparge Blower on wells AS-1 AS-4 & AS-9.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-05 T	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR	F. T.	TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

COMPANY Arco #5387 JOB NO. 7926.7C

LOCATION 20200 Hesperian DATE 5-24-94

San Lorenzo CA

JOB INSTRUCTIONS: Start engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Travel to site. Check engine

Start engine. Adjust By Pass

Currently Running on AE-1, AE-2, MW-1, MW-4 ~~AS-3 AS-4~~

Flow 2 acfm Bypass @ 5%

Start sparge blower on well AS-1 AS-4 AS-9

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-05 (1)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco #5387 JOB NO. 9926.70

LOCATION 20200 ~~Hope~~ Hesperian DATE 5-25-94

San Lorenzo CA

JOB INSTRUCTIONS:

Start engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Travel to site, check engine fix leaks check oil & Coolant; Start engine Adjust engine

By pass @ 72% Flow @ 23cfm.

Start Sparge Blower on Wells AS-1 AS-4 AS-9.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	3005(1)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

E.T.

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ICE SYSTEM MONITORING DATA SHEET

Client: Arco # 5387
Job#: 9926.7C
Site: 20200 Hesperian
San Lorenzo CA
Field Technician: E Cline
Date: 5-27-94

EXTRACTION WELL #	AL-1/AL-2	~~AS-1~~ MW-3	AS-1	MW-1	AV-1	AV-4
Time						
Pipe ID @ Influent (in)	2"	2"	2"	2"	2"	2"
Differential Pressure (in WC)	1.05			0.75	0.25	
Vacuum (in WC)	51	off	off	39"	39"	off
Temperature (F)	85/85.8		69.8	85	70.0	
HC Concentration (ppm)	0/180	N/T	0	750	440	50
Sampled (Y/N) / ID#	N					

AV-3: off, N/A

INFLUENT			
Time	15:24	16:00	
Flow (cfm)	22cfm	20cfm	
Vacuum (in WC)	39"	51"	
Temperature (F)	78°F	75°F	
HC Concentration (ppm)	600	670ppm	
Sampled (Y/N) / ID#	No	No	

EFFLUENT			
Pipe ID @ Effluent (in)	2"	2"	
Differential Pressure (in WC)	0.45	0.45	
Temperature (F)	710.8	710.8	
HC Concentration (ppm)	0ppm	0ppm	
Sampled (Y/N) / ID#	~~0ppm~~ No	No	

SYSTEM			
Engine #	15	15	
Active on Arrival (circle one):	(Y) N	(Y) N	Y N
Engine Hours	7313	7314	
Engine RPM	1804	1813	
Electric Meter	00655	00655	
Gas/Propane Meter	1075115	1075210	
Duty Cycle	378	37.1	
Bypass Valve	6.8	5.5	

Monitoring Device (circle one): FID PID IR

Influent
200 All
610 MW-1 AV-1
670 MW-1 AV-1 Cracked AL-2
560 AL-1, AL-2, MW-1 AV-1

Comments: Sparging on well AS-1, 9 4 @ 9.5psi 3.5scfm
AL-1 off
Final Wells AL-2 cracked open 10" vac
AS-1 off
MW-3 off
MW-1 on
AV-1 on
AV-4 off
AV-3 off

Supplies Used:

Note: Attach status printout.

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DAILY REPORT

FORMS

COMPANY Arco #5387 JOB NO. 9926.01

LOCATION 2020 Hesperian Blvd DATE 5-18-94
San Lorenzo CA

JOB INSTRUCTIONS:
Start engine, Adjust Flow check
engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Return in afternoon to
Monitor VE System wells and sample.
Engine Effluent & Effluent

Samples to Lab in Redwood City CA

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	3005 (2)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco # 5387 JOB NO. 9926.01

LOCATION 2020 Hesperian Blvd DATE 5-27-94
San Lorenzo CA

JOB INSTRUCTIONS:
Start engine, Adjust Flow check
engine. Start Sparge. Blower

WORK PERFORMED (CONT. ON REVERSE SIDE):
Return @ end of day to monitor vapor extraction
wells etc.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	3005 (2)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco #5387 JOB NO. 9926.04

LOCATION 20200 Hesperian Blvd DATE 6-6-94
San Lorenzo CA

JOB INSTRUCTIONS:
Start engine, Adjust Flow check
engine, No sparge blower

WORK PERFORMED (CONT. ON REVERSE SIDE):
Daily Reports for May and Discussions with
Mimi regarding status & Future work schedule.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30.05 (1½)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco # 5387 JOB NO. 926.70

LOCATION 20200 Hesperian Blvd DATE 6-7-94
San Lorenzo, CA

JOB INSTRUCTIONS:

To site start engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Travel to site, check engine
Start engine allow to warm up. Bring well gas online.
Balance engine & Flow. Start sparge blow allow
to stabilize stabilize. Depart site Secure gate.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	SO-05(L)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco #5387 JOB NO. 9926-7C

LOCATION 20200 Hesperian / Sunset DATE 6-8-94
San Lorenzo CA

JOB INSTRUCTIONS:

WORK PERFORMED (CONT. ON REVERSE SIDE): Return to site. To perform monitoring.
Monitor Influent and Effluent. Sample Influent and Effluent
Monitor ~~for~~ HC levels in wells, ~~and~~ temperature and
Differential pressure in active wells and Effluent.

Deliver samples to Sequoia in Redwood City CA.

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-25 (1/2)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	X
STEAM CLEANER		CONES		HORIBA	X
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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ICE SYSTEM MONITORING DATA SHEET

Client: Arco #5387 Job#: 9926.20
Site: 20200 Hesperian Field Technician: F. Cline
San Lorenzo CA Date: 6-8-94

EXTRACTION WELL #	AE-2/AS-2	MW3/AS-1	MW-4	AV-1	AV-4	AV-3
Time						
Pipe ID @ Influent (in)	2"	2" 2"	2"	2"	2"	2"
Differential Pressure (in WC)	033 / off	off / off	0.63	0.35	off	off
Vacuum (in WC)	10"	- -	52"	52"	-	-
Temperature (F)	71.4	- -	66.8	65.2	-	-
HC Concentration (ppm)	270	- 10pm	850	650	140	0ppm
Sampled (Y/N) / ID#						
INFLUENT						
Time	16:11					
Flow (cfm)	20					
Vacuum (in WC)	57"					
Temperature (F)	77°F					
HC Concentration (ppm)	700 ppm 730ppm					
Sampled (Y/N) / ID#						
EFFLUENT						
Pipe ID @ Effluent (in)	2 1/2"					
Differential Pressure (in WC)	0.15					
Temperature (F)	732°F					
HC Concentration (ppm)	0ppm.					
Sampled (Y/N) / ID#	Yes					
SYSTEM						
Engine #	15					
Active on Arrival (circle one):	(Y) N		Y N		Y N	
Engine Hours	7904					
Engine RPM	1811					
Electric Meter						
Gas/Propane Meter	1087205					
Duty Cycle	35.8					
Bypass Valve	6.6					

Monitoring Device (circle one): FID PID (IR)

Comments: Sparge Blower Running
10psi 7scfm AS-1 4.5 psi
AS-4 6.0 psi
AS-4 70 psi

Supplies Used:

Note: Attach status printout.

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DAILY REPORT

FORMS

COMPANY ARCO SS# 5387 JOB NO. 9956.70

LOCATION 20200 Hesperian / Sunset Hayward DATE 6-8-94

JOB INSTRUCTIONS: Start V3 engine and sparge blower.

WORK PERFORMED (CONT. ON REVERSE SIDE): Checked engine servicing, all ok. Started and warmed up engine. Setup to draw from wells. Started sparge blower. Initial flow at 18 CFM @ 48" W.C.

MATERIALS: —

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	20-15	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS ☐

COMPANY ARCO SS# 3387 JOB NO. 9926.70

LOCATION 20800 Hesperian / Sunset Hayward DATE 6-9-94

JOB INSTRUCTIONS: Start V3 engine w/ sparge blower.

WORK PERFORMED (CONT. ON REVERSE SIDE): Checked engine service, all ok. Started and warmed up engine. Set up to draw from wells. Started sparge blower. Initial flow at 18 CFM @ 48" W.C.

MATERIALS: —

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	20-15	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

JOB NO. 9926.70

DATE 6-10-94

COMPANY Arco #0 5387

LOCATION 20200 Hesperian
San Lorenzo CA

JOB INSTRUCTIONS: Start engine per daily requirements.

WORK PERFORMED (CONT. ON REVERSE SIDE): Warm up engine. Shut down to change oil, filters and spark plugs.
Restart engine bring back on line & adjust check for leaks. Start sparge ~~sparge~~ Blower. Used oil to Tire works for disposal.

Engine hrs: 7344

MATERIALS: 10 quarts of SAE 30 oil, 3-PH8-Oil filters, 8-Autolite 25's spark plugs. 2 adsorbant pads. From

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	—
SPECIALTY TRUCK	3065 (2)	PAVING WACKER		OVA	—
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	—
DUMP TRUCK		CONCRETE SAWING		GASTECH	—
LOADER		SIGNS		SAMPLE PUMP	—
STEAM CLEANER		CONES		HORIBA	—
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	—
GENERATOR		TRENCH PLATES		FLOW TESTER	—

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DAILY REPORT

COMPANY ARCO SS#5387

JOB NO. 9926.70

LOCATION 20200 Hesperian / Sunset Hayward

DATE 6-13-94

JOB INSTRUCTIONS: Start V3 engine.

WORK PERFORMED (CONT. ON REVERSE SIDE): Checked servicing all ok. Started and warmed up unit. Setup up to draw from wells. Initial flow at 18 CFM vac at 47" W.C.

MATERIALS: —

SUBCONTRACTOR: —

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	20-15	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco #5387 JOB NO. 9926.70

LOCATION 20200 Hesperian DATE 6-13-94
San Lorenzo CA

JOB INSTRUCTIONS: Start engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Travel to site, Adjust engine for starting, ~~Start engine~~ Balance. Change oil, filter and Spark plugs per 750hr cycle. Move propane flow not reading on 20 printout Notified Barry for repairs meter still reading though Start engine checked for leaks added coolant from overflow Bottle. Balance Engine for running No Sparging

MATERIALS: 8 Autolite 25 spark plug 1 PH8 Fram Oil filter (8 quarts shell Rotella Oil)

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-05(1)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

COMPANY Arco # 5387 JOB NO. 7926.70

LOCATION 20200 Hesperian DATE 6-15-94
San Lorenzo CA

JOB INSTRUCTIONS: Start engine

WORK PERFORMED (CONT. ON REVERSE SIDE): Travel to site from
Morgan Hill to Start engine ~~Set~~ Check oil & and Coolant ~~Set~~ Started engine Balanced controls Depart site

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	2076 (1)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

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DAILY REPORT

FORMS

COMPANY Arco # 5387 JOB NO. 9926-70

LOCATION 20200 Hesperian DATE 6-17-94
San Lorenzo CA

JOB INSTRUCTIONS:
Start engine on 6-18-94 & 6-19-94 to
run propane out of tank for removal.

WORK PERFORMED (CONT. ON REVERSE SIDE):

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	3C-10 (½)	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN

Gettler - Ryan Inc.
GENERAL CONTRACTORS

TAGS

DAILY REPORT

FORMS

COMPANY Arco # ~~2769~~ 5357 JOB NO. 1926.70

LOCATION 20200 Hesperian DATE 6-22-94
San Lorenzo CA

JOB INSTRUCTIONS: Assist Bob Herron in Removal
of VR engine from enclosure & return to shop

WORK PERFORMED (CONT. ON REVERSE SIDE):

MATERIALS:

SUBCONTRACTOR:

EQUIPMENT

AIR COMPRESSOR		PAVING ROLLER		VR3	
SPECIALTY TRUCK	30-05	PAVING WACKER		OVA	
PIPE TRUCK & TOOLS		CONCRETE MIXER		OVM	
DUMP TRUCK		CONCRETE SAWING		GASTECH	
LOADER		SIGNS		SAMPLE PUMP	
STEAM CLEANER		CONES		HORIBA	
WATER/TRANSFER PUMP		ARROW BOARD		PETROTITE-TESTER	
GENERATOR		TRENCH PLATES		FLOW TESTER	

FOREMAN

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9406. (415) 364-9600 FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520 (510) 686-9600 FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Project: Arco, 5387-94-4B

Enclosed are the results from 2 air samples received at Sequoia Analytical on April 15,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4D91501	Air, Effl.	4/15/94	EPA 5030/8015 Mod./8020
4D91502	Air, Inf.	4/15/94	EPA 5030/8015 Mod./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

Todd Olive
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9406, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	Arco, 5387-94-4B	Sampled:	Apr 15, 1994
6747 Sierra Court, Suite J	Sample Matrix:	Air	Received:	Apr 15, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	Apr 19, 1994
Attention: Joel Coffman	First Sample #:	4D91501		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit ppmv	Sample I.D. 4D91501 Effl.	Sample I.D. 4D91502 Inf.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	2.3	N.D.	180				
Benzene	0.019	0.021	N.D.				
Toluene	0.016	N.D.	N.D.				
Ethyl Benzene	0.014	N.D.	N.D.				
Total Xylenes	0.014	N.D.	6.5				
Chromatogram Pattern:		Discrete Peak	Gas				

Quality Control Data

Report Limit Multiplication Factor:	1.0	50
Date Analyzed:	4/15/94	4/15/94
Instrument Identification:	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%) * - Coelution Confirmed	132 *	110

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:

A molecular weight of 65 was used to calculate ppmv for Purgeable Hydrocarbons.

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 940c, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco, 5387-94-4B
Matrix: Liquid
QC Sample Group: 4D91501 - 02

Reported: Apr 19, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J.Minkel	J.Minkel	J.Minkel	J.Minkel
MS/MSD Batch#:	G4D73903	G4D73903	G4D73903	G4D73903
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	4/15/94	4/15/94	4/15/94	4/15/94
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	100	110	110	107
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	0.0	9.5	9.5	3.8
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 5387-94-4R

Chain of Custody

ARCO Facility no. 5387	City (Facility) San Lorenzo	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 551-7555 / Fax no. (Consultant) 551-7888	Contract number
Consultant name GSI		Address (Consultant) 6747 Sierra Ct Suite G Dublin	

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other Air	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 VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
Eff		1			X				1740		X					94	04	915	-	01		
Inf		1			X				17:45		X								-	02		

Method of shipment: GSI

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI# 992613

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:	
Relinquished by sampler [signature]	Date 4-15-94 Time 18:45	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory [signature]	Date 4/15/94 Time 1845

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

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Project: Arco 5387-94-5

Enclosed are the results from 2 air samples received at Sequoia Analytical on April 29,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4DH2401	Air, A-Inf.-5387	4/29/94	EPA 5030/8015 Mod./8020
4DH2402	Air, A-Eff-5387	4/29/94	EPA 5030/8015 Mod./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

Todd Olive
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	Arco 5387-94-5	Sampled: Apr 29, 1994
6747 Sierra Court, Suite J	Sample Matrix:	Air	Received: Apr 29, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: May 3, 1994
Attention: Joel Coffman	First Sample #:	4DH2401	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit ppmv	Sample I.D. 4DH2401 A-Inf.-5387	Sample I.D. 4DH2402 A-Eff-5387	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	2.3	56	N.D.				
Benzene	0.019	N.D.	0.034				
Toluene	0.016	N.D.	N.D.				
Ethyl Benzene	0.014	N.D.	N.D.				
Total Xylenes	0.014	0.16	N.D.				
Chromatogram Pattern:		Gas & Non-Gas Mix, < C8	Gas				

Quality Control Data

Report Limit Multiplication Factor:	10	1.0
Date Analyzed:	4/29/94	4/29/94
Instrument Identification:	GCHP-3	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%) * - Coelution Confirmed	147 *	130

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:

A molecular weight of 65 was used to calculate ppmv for Purgeable Hydrocarbons.

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco 5387-94-5
Matrix: Liquid
QC Sample Group: 4DH2401 - 02

Reported: May 3, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD Batch#:	G4DD5806	G4DD5806	G4DD5806	G4DD5806
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	4/29/94	4/29/94	4/29/94	4/29/94
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	100	100	100	103
Matrix Spike Duplicate % Recovery:	110	100	100	100
Relative % Difference:	9.5	0.0	0.0	3.0
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 5387-94-5

Chain of Custody

ARCO Facility no. 5387	City (Facility) San Lorenzo	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 510-551-7555 Fax no. (Consultant) 551-7888	Contract number 07-073
Consultant name GSI	Address (Consultant) 6747 Sierra Ct Suite G Dublin CA		Method of shipment GSI

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 ☐	
A-INF	5387	1			Air			4-29-93	16:52		X			01							
A-EFF	5387	1			X			4-29-93	16:50		X			02							

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI # 9926.10

Lab number: 9404H24

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	4-29	18:27	Received by
Relinquished by			Received by
Relinquished by			Received by laboratory: Sequoia — Date 4/29/94 — Time 1827

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

APPC-3292 (2-91)

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 5387-94-5

Chain of Custody

ARCO Facility no. 5387	City (Facility) San Lorenzo	Project manager (Consultant) Joel Coffman	Laboratory name Stanchia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 510-551-7555	Fax no. (Consultant) 551-7888
Consultant name GSI	Address (Consultant) 6747 Sierra Ct Suite G Dublin CA		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH 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 Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
A-1.1-	5387	1			X			4-29-93	16:52		X									
A-EH	5387	1			X			4-29-93	16:50		X									

Method of shipment: GSI

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI # 9926.10

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:	
Relinquished by sampler	Date 4-29 Time 18:27	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date 4/29/94 Time 1827

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

APPC-3292 (2-91)

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9x, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Project: Arco 5387-94-4

Enclosed are the results from 2 air samples received at Sequoia Analytical on May 6,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4E37501	Air, A-INF-5387	5/6/94	EPA 5030/8015 Mod./8020
4E37502	Air, A-EFF-5387	5/6/94	EPA 5030/8015 Mod./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

Todd Olive
Project Manager

Sequoia Analytical

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1900 Bates Avenue, Suite L, Concord, CA 94520 (510) 686-9600 FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	Arco 5387-94-4	Sampled: May 6, 1994
6747 Sierra Court, Suite J	Sample Matrix:	Air	Received: May 6, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: May 10, 1994
Attention: Joel Coffman	First Sample #:	4E37501	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit ppmv	Sample I.D. 4E37501 A-INF 5387	Sample I.D. 4E37502 A-EFF 5387	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	2.3	350	2.1				
Benzene	0.019	1.8	0.027				
Toluene	0.016	1.2	0.053				
Ethyl Benzene	0.014	N.D.	N.D.				
Total Xylenes	0.014	1.1	0.14				
Chromatogram Pattern:		Gas & Non-Gas Mix, + < C8	Gas				

Quality Control Data

Report Limit Multiplication Factor:	10	1.0
Date Analyzed:	5/9/94	5/9/94
Instrument Identification:	GCHP-3	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	125	108

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:

A molecular weight of 65 was used to calculate ppmv for Purgeable Hydrocarbons.

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco 5387-94-4
Matrix: Liquid
QC Sample Group: 4E37501

Reported: May 10, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD Batch#:	G4E29703	G4E29703	G4E29703	G4E29703
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	5/9/94	5/9/94	5/9/94	5/9/94
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	99	98	99	97
Matrix Spike Duplicate % Recovery:	100	100	99	100
Relative % Difference:	1.0	2.0	0.0	3.0
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco 5387-94-4
Matrix: Liquid
QC Sample Group: 4E37502

Reported: May 10, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD Batch#:	G4E29703	G4E29703	G4E29703	G4E29703
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	5/9/94	5/9/94	5/9/94	5/9/94
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	100	100	100	100
Matrix Spike Duplicate % Recovery:	110	100	100	100
Relative % Difference:	9.5	0.0	0.0	0.0

LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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

ARCO Products Company ◆ Division of AtlanticRichfieldCompany

Task Order No. 5387-94-41

Chain of Custody

ARCO Facility no. 5387	City (Facility) San Leandro	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 551-7444	Fax no. (Consultant) 551-7888
Consultant name GSI	Address (Consultant) 6747 Sierra Ct Suite G Dublin CA 94568		Contract number 67-673

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other (Air)	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 Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
A-E11-5387		1			+			5-6-94	16:38		+				01A					
A-J11-5387		1			+			5-6-94	16:48		+				02A					

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI #
9926.70

Lab number: 9405375

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	5-6-94	18:00	Received by		
Relinquished by			Received by		
Relinquished by			Received by laboratory	Date 5/6/94	Time 1800

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

APPC-3292 (2-91)

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 5387-94.4

Chain of Custody

ARCO Facility no. 5387	City (Facility) San Leandro	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Mike Wilson	Telephone no. (ARCO)	Telephone no. (Consultant) 551-7444	Fax no. (Consultant) 551 7888
Consultant name GSI	Address (Consultant) 6747 Sierra Ct Suite G Dublin CA		Contract number 67-073

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other Air	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 ☐		
A-1	5387	1			X			5-6-94	16:38		X											
A-2	5387	1			X			5-6-94	16:48		X											

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI # 9926.7C

924

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:	
Relinquished by sampler	Date 5-6-94 Time 18:00	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date 5/6/94 Time 1800

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

APPC-3292 (2-91)

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9- , (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Project: Arco 5387-94-4B

Enclosed are the results from 4 air samples received at Sequoia Analytical on May 19,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4EB9201	Air, Inf.	5/18/94	EPA 5030/8015 Mod./8020
4EB9202	Air, Effl.	5/18/94	EPA 5030/8015 Mod./8020
4EB9203	Air, AR-1	5/18/94	EPA 5030/8015 Mod./8020
4EB9204	Air, AR-2	5/18/94	EPA 5030/8015 Mod./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

Todd Olive
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9- (415) 364-9600 FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520 (510) 686-9600 FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	Arco 5387-94-4B	Sampled:	May 18, 1994
6747 Sierra Court, Suite J	Sample Matrix:	Air	Received:	May 19, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	May 20, 1994
Attention: Joel Coffman	First Sample #:	4EB9201		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit ppmv	Sample I.D. 4EB9201 Inf.	Sample I.D. 4EB9202 Effl.	Sample I.D. 4EB9203 AR-1	Sample I.D. 4EB9204 AR-2	Sample I.D.	Sample I.D.
Purgeable Hydrocarbons	2.3	330	3.2	6.0	3.8		
Benzene	0.019	N.D.	0.10	N.D.	0.028		
Toluene	0.016	N.D.	0.045	0.056	0.11		
Ethyl Benzene	0.014	N.D.	N.D.	N.D.	N.D.		
Total Xylenes	0.014	5.5	0.17	0.11	0.18		
Chromatogram Pattern:		Non-Gas Mix, < C8	Gas	Gas	Gas		

Quality Control Data

Report Limit Multiplication Factor:	10	1.0	1.0	1.0
Date Analyzed:	5/19/94	5/19/94	5/19/94	5/19/94
Instrument Identification:	GCHP-2	GCHP-2	GCHP-3	GCHP-3
Surrogate Recovery, %: (QC Limits = 70-130%) * - Coelution Confirmed	172 *	116	107	104

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:

A molecular weight of 65 was used to calculate ppmv for Purgeable Hydrocarbons.

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9[illegible] (415) 364-9600 FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520 (510) 686-9600 FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco 5387-94-4B
Matrix: Liquid
QC Sample Group: 4EB9201 -02

Reported: May 20, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD Batch#:	G4E85003	G4E85003	G4E85003	G4E85003
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	5/19/94	5/19/94	5/19/94	5/19/94
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	110	110	110	110
Matrix Spike Duplicate % Recovery:	110	110	120	113
Relative % Difference:	0.0	0.0	8.7	2.7

LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9- (415) 364-9600 FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco 5387-94-4B
Matrix: Liquid
QC Sample Group: 4EB9203 - 04

Reported: May 20, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD Batch#:	G4E85003	G4E85003	G4E85003	G4E85003
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	5/19/94	5/19/94	5/19/94	5/19/94
Instrument I.D.#:	GCHP-3	GCHP-3	GCHP-3	GCHP-3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	100	100	110	103
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	0.0	0.0	9.5	3.0

LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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

ARCO Products Company

Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. 5387-94-4B

ARCO Facility no. 5387	City (Facility) San Lorenzo	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer ~~Ed~~ Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 551-7855	Fax no. (Consultant) 551-7888
Consultant name GSI	Address (Consultant) G747 Sierra Ct Suite J Dublin CA		Contract number 07-073

Method of shipment: GSI

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI ~~#~~ 9926.7C

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 ☐	
Inf		1			Liv			5-18-94	17:50		↓			01A							
BPS		1			↓			5-18-94	17:50		↓			02A							
AR-1		1			↓			↓	18:00		↓			03A							
AR-2		1			↓			↓	18:15		↓			04A							

Lab number: 9405892

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	5-19-94	1730	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: Date 5/19/94 Time 1730

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

APPC-3292 (2-91)

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 5387-94-4B

Chain of Custody

ARCO Facility no. 5387	City (Facility) San Lorenzo	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer ~~Kyl~~ Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 551 7855	Fax no. (Consultant) 551 7888
Consultant name GSI	Address (Consultant) 6747 Sierra Ct Suite J Dublin CA		Contract number 07073

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other Air	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 ☐		
Inf		1			↓			5-18-94	17:32		↓											
BPA		1			↓			5-18-94	17:50		↓											
AK-1		1			↓			"	18:00		↓											
AK-2		1			↓			"	18:15		↓											

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI # 9926.7C

Lab number: 1

Turnaround time

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

Condition of sample:

Temperature received:

Relinquished by sampler	Date 5-19-94	Time 1730	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory:	Date 5/19/94	Time 1730

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

APPC-3292 (2-91)

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9[illegible]3, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Project: Arco, 5387-94-4

Enclosed are the results from 2 air samples received at Sequoia Analytical on June 8,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4F46401	Air, Inf	6/8/94	EPA 5030/8015 Mod./8020
4F46402	Air, Eff	6/8/94	EPA 5030/8015 Mod./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

Todd Olive
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9[illegible]3, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies	Client Project ID:	Arco, 5387-94-4	Sampled: Jun 8, 1994
6747 Sierra Court, Suite J	Sample Matrix:	Air	Received: Jun 8, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Jun 9, 1994
Attention: Joel Coffman	First Sample #:	4F46401	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit ppmv	Sample I.D. 4F46401 Inf	Sample I.D. 4F46402 Eff
Purgeable Hydrocarbons	2.3	410	34
Benzene	0.019	0.30	0.075
Toluene	0.016	0.64	0.27
Ethyl Benzene	0.014	0.67	0.13
Total Xylenes	0.014	8.5	1.8
Chromatogram Pattern:		Gas + Non-gas mix < C8	Gas

Quality Control Data

Report Limit Multiplication Factor:	10	1.0
Date Analyzed:	6/8/94	6/8/94
Instrument Identification:	GCHP-17	GCHP-17
Surrogate Recovery, %: (QC Limits = 70-130%) *Coelution confirmed	150*	92

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

Please Note:

A molecular weight of 65 was used to calculate ppmv for Purgeable Hydrocarbons.

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9...3, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco, 5387-94-4
Matrix: Liquid
QC Sample Group: 4F46401-02

Reported: Jun 9, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD Batch#:	4F38005	4F38005	4F38005	4F38005
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	6/8/94	6/8/94	6/8/94	6/8/94
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	100	100	100	100
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	0.0	0.0	0.0	0.0
LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery Control Limits:	71-133	72-128	72-130	71-120

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

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 5387-94-4

Chain

ARCO Facility no. 5387	City (Facility) San Lorenzo	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 551-7444	Fax no. (Consultant) 551-7888
Consultant name GSI	Address (Consultant) 6747 Sierra Ct Suite G Dublin CA		Contract number 67-073

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 ☐
Inf		1			X			6-8-94	16:15		X				9406464					-01
BB		1			X			6-8-94	16:10		X									-02

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI #

9926.70

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	6-8-94	17:45	Received by
Relinquished by			Received by
Relinquished by			Received by laboratory: Date 6/8/94, Time 17:45

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

APPC 3302 (2-91)

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 5387-94-4

Chain of Custody

ARCO Facility no. 5387	City (Facility) San Lorenzo	Project manager (Consultant) Joel Coffman	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 551-7444	Fax no. (Consultant) 551-7888
Consultant name GSI	Address (Consultant) 6747 Sierra Ct Suite G Dublin CA		Contract number 67-073

Method of shipment: GSI

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 ☐		
7.1		1			X			6-8-94	16:15		X											
3PP		1			X			6-8-94	16:10		X											

Special detection Limit/reporting: Standard

Special QA/QC: Standard

Remarks: GSI # 9926.70

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:

Relinquished by sampler	Date 6-8-94	Time 17:45	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: Date 6/8/94 Time 17:45

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

APPC-3292 (2-91)

I NTEGRATED
W ASTESTREAM
M ANAGEMENT, INC.

May 20, 1994

Ms. Barbara Sieminski
GeoStrategies Inc.
6747 Sierra Court, Suite G
Dublin, CA. 94568

Dear Ms. Sieminski:

Attached are the field data sheets and analytical results for quarterly ground water sampling at ARCO Facility No. 5387 in San Lorenzo, California. Integrated Wastestream Management measured the depth to water and collected samples from wells at this site on May 3, 1994.

Sampling was carried out in accordance with the protocols described in the "Request for Bid for Quarterly Sampling at ARCO Facilities in Northern California".

Please call us if you have any questions.

Sincerely,
Integrated Wastestream Management

Tom DeLon
Project Manager

Walter H. Howe
Registered Geologist

REGISTERED GEOLOGIST
WALTER H. HOWE
No. 730
Exp. 6/'94
STATE OF CALIFORNIA

950 AMES AVENUE MILPITAS, CA. 95035 (408) 942-8955

INTEGRATED
WASTESTREAM
MANAGEMENT

A5387Q2.XLS

Summary of Ground Water Sample Analyses for ARCO Facility A-5387, San Lorenzo, California

WELL NUMBER	AR-1	AR-2	MW-1	MW-2	MW-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10
DATE SAMPLED	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94	5/3/94
DEPTH TO WATER	12.03	12.60	11.58	12.63	11.36	13.85	13.08	13.20	14.34	11.35	*	14.00
SHEEN	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
PRODUCT THICKNESS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPHg	620	ND	1,100	17,000	2,300	130	170	ND	330	ND	*	ND
BTEX												
BENZENE	130	ND	110	1,000	44	ND	ND	ND	8.1	ND	*	ND
TOLUENE	1.3	ND	4.5	26	<2.5	ND	ND	ND	ND	ND	*	ND
ETHLYBENZENE	48	ND	33	990	8	1.1	4	ND	7.8	ND	*	ND
XYLENES	4.3	ND	14	940	<2.5	ND	1.9	ND	3.7	ND	*	ND

FOOTNOTES:

Concentrations reported in ug/L (ppb).

TPHg = Total Purgeable Petroleum Hydrocarbons (USEPA Method 8015 Modified)

BTEX Distinction (USEPA Method 8020)

PCE = Tetrachloroethene (USEPA Method 8010)

* = Not sampled, well inaccessible.

DCE = cis-1, 2-Dichloroethene (USEPA Method 8010)

TCE = Trichloroethene (USEAP Method 8010)

ND = Not Detected.

NA = Not applicable.

950 AMES AVENUE MILPITAS, CA 95035 (408) 942-8955

FIELD REPORT

Depth To Water / Floating Product Survey

NEW TD's taken 5-3-94

Site Arrival Time: 1015

Site Departure Time: 1545

Weather Conditions: Sunny clear

DTW: Well Box or Well Casing (circle one)

Project No.: _____ **Location:** 20200 Hesperian blvd. **Date:** May 3, 1994

Client / Station#: arco 5387 **Field Technician:** Vince / Cisco **Day of Week:** Tuesday

DTW ORDER	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)	SHEEN (Y = YES, N = NO)	COMMENTS	MATERIALS
11	AR-1	OK	yes	OK	OK	OK	34.78	12.03	12.03	N/A	N/A	N	6"	3/2 GRADING
5	AR-2	OK	yes	OK	OK	OK	35.50	12.60+	12.60+	N/A	N/A	N	6"	2x2 GRADING
8	MW-1	OK	yes	OK	OK	OK	28.80	11.58	11.58	N/A	N/A	N	2" well undergoing excavation VES Plumbing	2x2 GRADING
12	MW-2	OK	yes	OK	OK	OK	27.09	12.63	12.63	N/A	N/A	N	2"	
10	MW-3	OK	yes	OK	OK	OK	28.39	11.36	11.36	N/A	N/A	N	2" well connected to VE's plumbing	2x2 GRADING
6	A-4	OK	yes	OK	OK	OK	35.00	13.85	13.85	N/A	N/A	N	3"	15/16
7	A-5	OK	yes	OK	OK	OK	30.08	13.08	13.08	N/A	N/A	N	3" H2O in well box	15/16
3	A-6	OK	yes	OK	OK	OK	34.94	13.20	13.20	N/A	N/A	N	3" DTW FROM TOP OF BOX = 13.60 "Well was unpaved"	15/16
9	A-7	OK	yes	none	OK	OK	35.60	14.34	14.34	N/A	N/A	N	3"	CAP only
1	A-8	OK	yes	none	OK	OK	34.14	11.35	11.35	N/A	N/A	N	2"	Lift-off
2	A-9	—	—	N/A	—	—	N/A	N/A	N/A	N/A	N/A	N/A	NO ACCESS VANCOUVER WELL	
4	A-10	OK	yes	OK	OK	OK	34.36	14.00	14.00	N/A	N/A	N	2"	15/16

PAGE 1 OF 1 DATE: 5-3-94 CLIENT/STATION #: Arco 5387 ADDRESS: 20200 Hesperian Blvd

WELL ID: A-8 TD 34.14 - DTW 11.35 x 0.17 Gal./Linear Ft. x 3 Casing Volume = 11.62 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1306 END (2400 HR) 1309
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1315 DTW: 11.4

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1307	2	7.20	0.79	73.7	CLOUDY
1308	5	7.05	0.83	72.3	CLEAR
1308	8	6.99	0.83	71.6	CLEAR
1309	12	6.91	0.84	71.4	CLEAR

Total purge:
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-4 TD 35.50 - DTW 13.85 x 0.38 Gal./Linear Ft. x 3 Casing Volume = 24.11 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1322 END (2400 HR) 1331
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1337 DTW: 13.3

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1323	3	6.87	0.83	71.1	CLEAR
1326	10	6.78	0.80	70.8	CLEAR
1328	17	6.76	0.79	70.7	CLEAR
1331	25	6.73	0.82	69.9	CLEAR

Total purge: 25
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-6 TD 34.94 - DTW 13.20 x 0.38 Gal./Linear Ft. x 3 Casing Volume = 21.78 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1343 END (2400 HR) 1352
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1355 DTW: 13.7

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1347	5	6.89	0.63	69.6	CLEAR
1349	12	6.77	0.60	69.5	CLEAR
1351	18	6.79	0.58	69.4	CLEAR
1352	25	6.75	0.58	69.3	CLEAR

Total purge: 25
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: MW-1 TD 28.80 - DTW 11.58 x 0.17 Gal./Linear Ft. x 3 Casing Volume = 8.78 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1415 END (2400 HR) 1417
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1420 DTW: 11.7

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1416	1.5	6.83	0.82	73.0	CLEAR
1419	3	6.78	0.85	71.3	CLOUDY
1417	6	6.74	0.81	70.9	CLOUDY
1417	9	6.71	0.82	70.7	CLOUDY

Total purge: 9
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

PRINT NAME: Francisco Arroyo SIGNATURE: Francisco Arroyo

CASING DIAMETER (inches): 2 3 4 6 8 12 Other:
GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other:

PAGE 2 OF 4 DATE: 5-3-94 CLIENT/STATION #: Arco 5387 ADDRESS: 20200 Hesperian Blvd. S.L.

WELL ID: A-10 TD 31.30 DTW 14.00 x 0.17 Gal./Linear Ft. x 3 Casing Volume - 10.38 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1240 END (2400 HR) 1245
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1251 DTW: 19

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1241	3	7.12	0.92	70.6	clear
1242	5	7.08	0.87	68.1	clear
1244	8	7.13	0.83	67.4	clear
1245	10.5	7.11	0.82	67.1	clear

Total purge: 10.5
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-7 TD 35.60 DTW 14.31 x 0.38 Gal./Linear Ft. x 3 Casing Volume - 24.23 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1325 END (2400 HR) 1336
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1341 DTW: 21

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1330	4	7.17	0.88	70.3	clear
1332	12	7.04	0.87	70.1	clear
1333	18	7.01	0.86	69.8	clear
1336	24	7.00	0.85	69.7	clear

Total purge: 24
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-5 TD 30.08 DTW 13.08 x 0.38 Gal./Linear Ft. x 3 Casing Volume - 19.38 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1400 END (2400 HR) 1408
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1411 DTW: 15

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1402	3	7.42	0.84	69.9	clear
1405	11	6.96	0.80	69.5	clear
1407	17	6.89	0.82	69.4	clear
1408	21	6.86	0.81	69.2	clear

Total purge: 21
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: AR-2 TD 35.50 DTW 12.60 x 1.5 Gal./Linear Ft. x 2 Casing Volume - 68.70 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1428 END (2400 HR) 1455
DATE SAMPLED: 5-3-94 TIME (2400 HR): 1459 DTW: 26

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1429	5	6.76	0.84	69.6	rust
1436	28	7.07	0.77	69.7	clear
1444	51	7.04	0.81	69.4	clear
1455	72	7.01	0.85	69.1	clear

Total purge: 72
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

PRINT NAME: Vince Valdes SIGNATURE: Vince Valdes

CASING DIAMETER (inches): 2 3 4 6 8 12 Other:
GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other:

 DATE: 5-3-94 CLIENT/STATION #: Arco 5387 ADDRESS: [illegible]

WELL ID: MW 2 TD 27.09 - DTW 12.63 X 0.17 Gal./Linear Ft. X 3 Casing Volume = 7.37 Calculated Purge

DATE PURGED: 5-3-94 START (2400 HR): 1514 END (2400 HR) 1518

DATE SAMPLED: 5-3-94 TIME (2400 HR): 1521 DTW: 14

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1515	2	6.89	0.92	70.9	cloudy
1516	6	6.75	0.87	70.5	cloudy
1518	8	6.72	0.87	70.3	cloudy

Total purge: 8

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: TD - DTW X Gal./Linear Ft. X Casing Volume = Calculated Purge

DATE PURGED: START (2400 HR): END (2400 HR)

DATE SAMPLED: TIME (2400 HR): DTW:

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge:

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: TD - DTW X Gal./Linear Ft. X Casing Volume = Calculated Purge

DATE PURGED: START (2400 HR): END (2400 HR)

DATE SAMPLED: TIME (2400 HR): DTW:

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge:

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: TD - DTW X Gal./Linear Ft. X Casing Volume = Calculated Purge

DATE PURGED: START (2400 HR): END (2400 HR)

DATE SAMPLED: TIME (2400 HR): DTW:

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge:

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

PRINT NAME: Vince Valdes SIGNATURE: Vince Valdes

CASING DIAMETER (inches):	2	3	4	6	8	12	Other:
GALLON/LINEAR FOOT:	0.17	0.38	0.66	1.5	2.6	5.8	Other:

Columbia Analytical Services INC.

May 17, 1994

Service Request No. SJ940523

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: **ARCO Facility No. 5387**

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on May 4, 1994. For your reference, these analyses have been assigned our service request number SJ940523.

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

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Carol J Klein

Keoni A. Murphy
Laboratory Manager

Steven Green for

Annelise J. Bazar
Regional QA Coordinator

KAM/drf

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	5/3/94
Project:	ARCO Facility No. 5387	**Date Received:**	5/4/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940523

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

	Sample Name:	**AR-1 (15.3)**	**AR-2 (26)**	**MW-1 (11.7)**
	Lab Code:	SJ940523-2	SJ940523-3	SJ940523-4
	Date Analyzed:	5/10/94	5/9/94	5/10/94
Analyte	**MRL**			
Benzene	0.5	130	ND	110
Toluene	0.5	1.3	ND	4.5
Ethylbenzene	0.5	48	ND	33
Total Xylenes	0.5	4.3	ND	14
TPH as Gasoline	50	620	ND	1,100

Approved By: Carol J Klein Date: 5-17-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	5/3/94
Project:	ARCO Facility No. 5387	**Date Received:**	5/4/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940523

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

		Sample Name:	**MW-2 (14)**	**MW-3 (11.4)**	**A-4 (14.3)**
		Lab Code:	SJ940523-5	SJ940523-6	SJ940523-7
		Date Analyzed:	5/9/94	5/10/94	5/9/94
Analyte	**MRL**				
Benzene	0.5		1,000	44	ND
Toluene	0.5		26	<2.5*	ND
Ethylbenzene	0.5		990	8.0	1.1
Total Xylenes	0.5		940	<2.5*	ND
TPH as Gasoline	50		17,000	2,300	130

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

Approved By: Carol J Klein Date: 5-17-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	5/3/94
Project:	ARCO Facility No. 5387	**Date Received:**	5/4/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940523

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

	Sample Name:	A-5 (15)	A-6 (13.7)	A-7 (21)
	Lab Code:	SJ940523-8	SJ940523-9	SJ940523-10
	Date Analyzed:	5/9/94	5/9/94	5/10/94
Analyte	**MRL**			
Benzene	0.5	ND	ND	8.1
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	4.0	ND	7.8
Total Xylenes	0.5	1.9	ND	3.7
TPH as Gasoline	50	170	ND	330

Approved By: Carol J Klein Date: 5-17-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	5/3/94
Project:	ARCO Facility No. 5387	**Date Received:**	5/4/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940523

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

	Sample Name:	**A-8 (11.4)**	**A-10 (19)**	**XDUP**
	Lab Code:	SJ940523-11	SJ940523-12	SJ940523-13
	Date Analyzed:	5/9/94	5/9/94	5/9/94
Analyte	**MRL**			
Benzene	0.5	ND	ND	1,000
Toluene	0.5	ND	ND	28
Ethylbenzene	0.5	ND	ND	960
Total Xylenes	0.5	ND	ND	930
TPH as Gasoline	50	ND	ND	16,000

Approved By: Carol J Klein Date: 5-17-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	5/3/94
Project:	ARCO Facility No. 5387	**Date Received:**	5/4/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940523

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

Sample Name:	**Method Blank**	**Method Blank**
Lab Code:	SJ940509-WMB	SJ940510-WMB
Date Analyzed:	5/9/94	5/10/94

Analyte	**MRL**		
Benzene	0.5	ND	ND
Toluene	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
TPH as Gasoline	50	ND	ND

Approved By: Carol J Klein Date: 5-17-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Collected:**	5/3/94
Project:	ARCO Facility No. 5387	**Date Received:**	5/4/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Date Analyzed:	5/9, 10/94
		Service Request:	SJ940523

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

Sample Name	Lab Code	Percent Recovery α,α,α-Trifluorotolulene
AR-1 (15.3)	SJ940523-2	109
AR-2 (26)	SJ940523-3	109
MW-1 (11.7)	SJ940523-4	105*
MW-2 (14)	SJ940523-5	111*
MW-3 (11.4)	SJ940523-6	114*
A-4 (14.3)	SJ940523-7	111
A-5 (15)	SJ940523-8	113
A-6 (13.7)	SJ940523-9	106
A-7 (21)	SJ940523-10	114*
A-8 (11.4)	SJ940523-11	106
A-10 (19)	SJ940523-12	115
XDUP	SJ940523-13	109*
A-8 (11.4) MS	SJ940523-11MS	116
A-8 (11.4) DMS	SJ940523-11DMS	115
Method Blank	SJ940509-WMB	104
Method Blank	SJ940510-WMB	111

CAS Acceptance Limits: 69-116

* The surrogate used for this sample was 4-Bromofluorobenzene.

Approved By: Carol J Klein Date: 5-17-94

SUR1/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Analyzed:**	5/9/94
Project:	ARCO Facility No. 5387	**Service Request:**	SJ940523

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	24.6	98	85-115
Toluene	25	24.6	98	85-115
Ethylbenzene	25	24.3	97	85-115
Total Xylenes	75	74.6	99	85-115
TPH as Gasoline	250	252	101	90-110

Approved By: Carol J Klein Date: 5-16-94

ICV24/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Collected:**	5/3/94
Project:	ARCO Facility No. 5387	**Date Received:**	5/4/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Date Analyzed:	5/9/94
		Service Request:	SJ940523

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline
EPA Method 5030/California DHS LUFT Method
Units: µg/L (ppb)

Sample Name: A-8 (11.4)
Lab Code: SJ940523-11

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
TPH as Gasoline	250	250	ND	251	252	100	101	67-121	<1

Approved By: Carol J Klein Date: 5-17-94

DMS1S/041594

 DATE: 5-3-94 CLIENT/STATION #: Chevron 5387 ADDRESS: 20200 Hesperian Blvd / S.C.

WELL ID: MW-3 TD 28.39 - DTW 11.36 x Gal./Linear Ft. 0.17 x Casing Volume 3 = Calculated Purge 8.68

DATE PURGED: 5-3-94 START (2400 HR): 1432 END (2400 HR) 1436

DATE SAMPLED: 5-3-94 TIME (2400 HR): 1440 DTW: 11.4

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1433	1.5	6.79	0.86	72.6	cloudy
1434	5	6.73	0.87	71.7	cloudy
1436	9	6.67	0.87	71.4	cloudy

Total purge: 9

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: AR-1 TD 34.78 - DTW 12.03 x Gal./Linear Ft. 1.5 x Casing Volume 3 = Calculated Purge 65.25

DATE PURGED: 5-3-94 START (2400 HR): 1454 END (2400 HR) 1517

DATE SAMPLED: 5-3-94 TIME (2400 HR): 1525 DTW: 15.3

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1456	5	6.76	0.86	71.9	clear
1505	30	6.99	0.92	70.6	clear
1510	50	6.91	0.93	70.1	clear
1517	76	6.93	0.97	69.1	clear

Total purge: 70

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: TD - DTW x Gal./Linear Ft. x Casing Volume = Calculated Purge

DATE PURGED: START (2400 HR): END (2400 HR)

DATE SAMPLED: TIME (2400 HR): DTW:

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge:

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: TD - DTW x Gal./Linear Ft. x Casing Volume = Calculated Purge

DATE PURGED: START (2400 HR): END (2400 HR)

DATE SAMPLED: TIME (2400 HR): DTW:

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge:

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

PRINT NAME: Francisco Abungan SIGNATURE: Francisco Abungan

CASING DIAMETER (inches):	2	3	4	6	8	12	Other:
GALLON/LINEAR FOOT:	0.17	0.38	0.66	1.5	2.6	5.8	Other:

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. IWM-94-5EC

Chain of Custody

ARCO Facility no. A5387	City (Facility) San Lorenzo	Project manager (Consultant) TOM DeFoe, B. Sennett	Laboratory name Columbia
ARCO engineer Mike Wayland	Telephone no. (ARCO) 415 571 2434	Telephone no. (Consultant) 408/942-8955	Fax no. (Consultant) 408/942-1499
Consultant name IWM-GSI	Address (Consultant) 950 Ames Ave. Milpitas Ca. 95035		Contract number 07077

Method of shipment: CAS COURIER

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 VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
FB-1	1	2		✓		✓	✓	5-3-94	1020		✓	✓										
AR-1	2	2		✓		✓	✓		1525		✓	✓										
AR-2	3	2		✓		✓	✓		1459		✓	✓										
MW-1	4	2		✓		✓	✓		1420		✓	✓										
MW-2	5	2		✓		✓	✓		1521		✓	✓										
MW3	6	2		✓		✓	✓		1440		✓	✓										
A-4	7	2		✓		✓	✓		1337		✓	✓										
A-5	8	2		✓		✓	✓		1411		✓	✓										
A-6	9	2		✓		✓	✓		1355		✓	✓										
A-7	10	2		✓		✓	✓		1341		✓	✓										
A-8	11	2		✓		✓	✓		1315		✓	✓										
VV																						
A-10	12	2		✓		✓	✓	5-3-94	1251		✓	✓										
XDUP	13	2		✓		✓	✓	" "	N/A		✓	✓										

Special detection Limit/reporting

Special QA/QC

Remarks: Hold on FB-1

Lab number: 5394-0523

Turnaround time

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

Condition of sample: OK		Temperature received: Cool	
Relinquished by sampler: Tina Salcido	Date 5-4-94	Time 10:00AM	Received by: Tina Austin
Relinquished by: Tina Austin	Date 5-4-94	Time 11:00	Received by: [signature] 5-4-94 11:00
Relinquished by:	Date	Time	Received by laboratory: Date: Time:

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

APPC-3292 (2-91)