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TRANSMITTAL

TO: Mr. Scott Seery
Alameda County Health Care Services
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

DATE: June 17, 1993
PROJECT NUMBER: 69013.17
SUBJECT: ARCO Station No. 2152

FROM: Erin McLucas

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1	6/17/93	Final Letter Report on First Quarter 1993 Groundwater Monitoring and Remediation Performance Evaluation for ARCO Station No. 2152, 22141 Center Street, Castro Valley, California.

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Erin McLucas, Staff Geologist

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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING AND REMEDIATION PERFORMANCE EVALUATION
First Quarter 1993
at
ARCO Station 2152
22141 Center Street
Castro Valley, California

69013.17

6/17/93

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June 17, 1993
0309MWHE
69013.17

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

Subject: Letter Report on First Quarter 1993 Groundwater Monitoring and Remediation Performance Evaluation Report for ARCO Station 2152, 22141 Center Street, Castro Valley, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) prepared this letter report which summarizes the results of the first quarter 1993 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, at the above-referenced site. Included in this report is a remediation performance evaluation of an interim vapor extraction system (VES) that has been in operation at the subject site since January 25, 1993.

The objectives of this quarterly groundwater monitoring are to evaluate changes in the groundwater flow direction and gradient, and evaluate changes in concentrations of petroleum hydrocarbons in the local groundwater associated with former gasoline-storage tanks at the site. Field work and laboratory analyses of groundwater samples during this quarter were performed under the direction of EMCON, and included measuring depths to groundwater, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Field procedures and acquisition of field data were performed under the direction of EMCON; warrant of their field data and evaluation of their field protocols are beyond RESNA's scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analyses data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site. The operating

Arco Station 2152 is located on the southwestern corner of the intersection of Grove Way and Center Street in Castro Valley, California. The site location is shown on the Site Vicinity Map, Plate 1.

The results of previous environmental investigations at the site are presented in the reports listed in the references section of this letter report. The locations of the groundwater and vadose monitoring wells and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

Depth-to-water levels (DTW) were measured by EMCON field personnel in monitoring wells MW-1, MW-2, and MW-4 on January 14, in monitoring wells MW-1, MW-2, and MW-4, and vapor extraction wells VW-2 through VW-5 on February 24, and monitoring wells MW-1 through MW-4, and VW-2 through VW-5 on March 30, 1993. Quarterly sampling was performed by EMCON field personnel on January 14, 1993. The results of EMCON's field work on the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in MW-1 through MW-4 and VW-2 through VW-5, are presented on EMCON's Field Reports and Water Sample Field Data Sheets. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations for product in the groundwater from MW-1 through MW-4 for this quarter and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. EMCON's DTW measurements were used to evaluate groundwater elevations. Evidence of product or sheen was not reported on EMCON's Field Reports during this quarter (see Appendix A). The groundwater gradients interpreted from the January, February, and March 1993 groundwater monitoring episodes are shown on the Groundwater Gradient Maps, Plates 3 through 5. For this quarter, the interpreted groundwater gradients were relatively flat (less than 0.01) with flow directions to the west-southwest and south-southwest. The groundwater elevations and gradients for this quarter are generally consistent with previously interpreted data.

Groundwater monitoring wells MW-1, MW-2 and MW-4 were purged and sampled by EMCON field personnel on January 14, 1993. EMCON's Water Sample Field Data Sheets, Field Reports, and Summary of Groundwater Monitoring Data for January 14, 1993, are included in Appendix A. The purge water was removed from the site by a licensed hazardous waste hauler.

REMEDIATION SYSTEM MONITORING

Vapor Extraction System Description

The data presented in this section covers the period from January 1, 1993 to March 1, 1993. Vapor extraction system (VES) construction was completed on January 18, 1993. System operation was initiated on January 25, 1993. The onsite VES uses a 7.5 horsepower (hp) positive displacement blower (MD-Pneumatics 4006-81) to extract petroleum hydrocarbon vapor from subsurface soils associated with the former USTs at the site. Plate 2, shows the location of the four onsite vapor extraction wells (VW-2 through VW-5) that are used to extract vapor from hydrocarbon-impacted subsurface soils by use of the 7.5 hp blower (S-1). The blower (S-1) can deliver a maximum air flow rate of 250 standard cubic feet per minute (scfm).

Extracted vapor from the blower (S-1) is directed to three 2,000 pound, series flow, granular vapor-phase activated carbon canisters (A-1, A-2 and A-3) for abatement prior to discharge to the atmosphere. System operation is regulated under the Bay Area Air Quality Management District (BAAQMD) Permit to Operate Number 8270. Sample ports are located on each individual vapor pipe from vapor extraction wells VW-2 through VW-5, prior to the pipes being manifolded and plumbed to the blower in the remediation compound. Sample ports are also located influent (prior to fresh air dilution) and effluent to the blower (S-1), and influent and effluent to each carbon canister (A-1, A-2 and A-3).

System Monitoring

The onsite VES is monitored weekly to evaluate system performance in accordance with BAAQMD permit requirements. The following measurements are recorded at every site visit: applied vacuum on each of the vapor extraction wells; average extracted air flow rates from the vapor-extraction wells (influent to the blower), prior to fresh air dilution; average extracted air flow rate effluent to the blower (S-1); temperature of the extracted vapor influent and effluent to the blower and each carbon canister; pressure of extracted vapor effluent to the blower; and extracted hydrocarbon vapor concentrations from the well field, influent and effluent to the blower and each carbon canister as measured by a photo-ionization detector (PID). In addition to these measurements, several other parameters such as the oil-level in the blower, temperature of extracted vapor from the wells, and water levels in the vapor extraction wells are also recorded every site visit for maintenance purposes.

The system was monitored on a daily basis the first ten days of system operation to evaluate carbon breakthrough rates pursuant to BAAQMD site specific permit requirements.

LABORATORY METHODS AND ANALYSES

Groundwater Samples

Under the direction of EMCON, water samples collected from the wells were analyzed by Sequoia Analytical located in Redwood City, California (Hazardous Waste Testing Laboratory Certification No. 1210). The water samples from MW-1, MW-2, and MW-4 were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using modified Environmental Protection Agency (EPA) Methods 5030/8015/8020. Concentrations of TPHg and benzene in the groundwater are shown on Plate 6, TPHg/Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analysis Reports are attached in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater.

TPHg and BTEX in wells MW-1, MW-2, and MW-4 are nondetectable this quarter, as they have been since the October 15, 1991 sampling event.

Air Samples

Air samples are collected from the well field prior to fresh air dilution once a month and every time a new well is opened. An air sample effluent to the blower and first carbon canister (A-1) are also collected monthly to evaluate carbon breakthrough rates. Air samples collected are analyzed for BTEX and TPHg using modified EPA Methods 8020/8015 by GTEL Environmental Laboratories, located in Concord, California (Hazardous Waste Testing Laboratory Certification No. 058). Enclosed in Appendix B are the Chain of Custody Records and Laboratory Analysis Reports of air samples analyzed during first quarter 1993.

RESULTS OF REMEDIATION PERFORMANCE EVALUATION

Extracted Air Flow Rates

Table 3, Onsite Vapor Extraction System Operation & Performance Data for 1993, presents operation and performance data, and results collected on the onsite VES for first quarter 1993. As indicated on Table 3, all the vapor extraction wells (VW-2 through VW-5) were

brought on line at system startup on January 25, 1993, and remained online throughout system operation. However with the exception of vapor extraction well VW-4, all other wells VW-2, VW-3 and VW-5 when brought online with the VES yielded less than 2 to 3 scfm of air flow at an applied vacuum of 5 to 6 inches of mercury (Hg), 68 to 80 inches of water column (W.C). The wells were left open during system operation from January 25, 1993, to February 25, 1993, to evaluate whether an increase in air flow can be observed from the wells. No improvement in air flow rates was recorded during first quarter 1993.

The lack of air flow through the vapor extraction wells VW-2 through VW-5 may be the result of the following: native soils may have become very wet during the recent heavy rains and thus less permeable to air flow; and rising water levels in the vapor extraction wells may have resulted in 1 to 2 feet loss of screened interval in the wells, restricting air flow.

Air Sample Results

Table 3 and Plate C1 (see Appendix C) show decreases in extracted hydrocarbon vapor concentrations for vapor extraction well VW-4 for this monitoring period. TPHg concentrations in extracted vapor from VW-4, decreased rapidly by 97 percent, from 1,300 mg/m^3 (313 parts per million by volume [ppmv]) at startup, to 37 mg/m^3, (9 ppmv) during this 26 day period (January 25, 1993 to February 25, 1993), prior to the system being shutdown. Benzene concentrations in extracted vapor ranged from less than 0.5 mg/m^3 to 22 mg/m^3 (approximately 0 to 1.7 % of gasoline). Less than detectable levels to 49 mg/m^3 [12 ppmv] of petroleum hydrocarbons were reported in air samples collected effluent to the first carbon canister. RESNA uses a molecular weight of 100 for gasoline in converting equivalent concentrations in mg/m^3 to ppmv.

Carbon Breakthrough Rates

Table 3 indicates that non-detectable hydrocarbon readings (as measured by an PID) were observed during system operation, effluent to each carbon canister A-1, A-2 and A-3 . These results demonstrate compliance with BAAQMD permit limits of less than 5 ppmv of organic effluent to the second and third carbon canister (A-2 and A-3). Carbon has not been changed out during this monitoring period.

Hydrocarbon Removal Rates

Plate C2 (see Appendix C) depicts and summarizes the cumulative gallons/pounds of hydrocarbons extracted and abated by the onsite VES during this monitoring period. Table 3 presents hydrocarbon removal rates as pounds per hour per well (s) operating, total

pounds of hydrocarbons removed for a given well (s) for a given period, and a cumulative total of pounds/gallons of hydrocarbons removed since startup. Based on analytical results for TPHg in extracted vapor and extracted air flow rates of 65 scfm to 128.5 scfm with all wells operational during this 26 day period (January 25, 1993 through February 25, 1993), an estimated maximum of 65.3 pounds (10.5 gallons) of gasoline was removed from subsurface soils.

The treatment system was down a total of 73 hours (3 days) as a result of the high temperature switch influent to the first carbon canister (A-1) being triggered at extracted hydrocarbon vapor temperatures greater than 120 degrees Fahrenheit (^{0}F). System shutdown was necessitated in accordance with manufacturer's recommendations that the influent temperature of extracted vapor to carbon not exceed 130^{0}F to prevent stripping of adsorbed organics from the carbon. The high temperature switch was reset to shut the system down at a temperature of 125^{0}F thus preventing any future shutdowns.

Hydrocarbon removal rates averaged 2.53 pounds per day (lbs/day, 0.4 gals/day). These removal rates are significantly lower than estimated hydrocarbon removal rates of 45 lbs/day [7.3 gals/day] based on the results of a vapor extraction test (VET) conducted on the site on February 15, 1991. The low removal rates may be the result of the native soils being saturated with the recent heavy rains thus rendering the soil less permeable to air flow.

RESNA therefore on February 25, 1993, temporarily shutdown the VES until such time as the groundwater table decreases and/or the vadose zone soils become less saturated, allowing greater vapor extraction air flow rates and higher TPHg concentrations to be extracted. Notification of this temporary shutdown was forwarded to governing regulatory agencies on February 19, 1993.

CONCLUSIONS

Nondetectable levels of TPHg and BTEX have been reported in all onsite monitoring wells for the last five quarters. Groundwater elevations in the monitoring wells have risen an average of about 2.2 feet since December 1992.

Performance results on the operation of the onsite VES during third quarter 1992 indicated that extracted vapor concentration from VW-4 decreased at least 97 percent within one month of operation. With the exception of vapor extraction well VW-4, all other wells VW-2, VW-3 and VW-5 when brought online with the VES yielded less than 2 to 3 scfm of air flow. Hydrocarbon removal rates averaged 2.53 lbs/day [0.4 gals/day], significantly lower than estimated removal rates of 45 lbs/day [7.3 gallons/day] based on a VET conducted at

this site in 1991. The lack of air flow and the low removal rates may be the result of the native soils being saturated with the recent heavy rains thus rendering the soil less permeable to air flow. A total of 65.3 pounds (10.5 gallons) of gasoline have been recovered from the start of the onsite VES on January 25, 1993 through February 25, 1993 (a 26 day period).

RESNA recommends that copies of this report be forwarded to:

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

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

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

Sincerely,
RESNA Industries Inc.

Erin McLucas
Staff Geologist

REGISTERED GEOLOGIST
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No. 1463
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

James L. Nelson
Certified Engineering Geologist No. 1463

Valli Varuganti
Project Engineer

Enclosures: References
Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, January 14, 1993
Plate 4, Groundwater Gradient Map, February 24, 1993
Plate 5, Groundwater Gradient Map, March 30, 1993
Plate 6, TPHg/Benzene Concentrations in Groundwater, January 14, 1993

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples
Table 3, Onsite Vapor Extraction System Operation and Performance Data for 1993

Appendix A: EMCON's Field Reports Depth to Water/Floating Product Survey Results, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain-of-Custody, and Water Sample Field Data Sheets.
Appendix B: Chain of Custody Records and Laboratory Analysis Reports of Air Samples
Appendix C: VES Performance Graphs

REFERENCES

Applied GeoSystems. May 26, 1989. Limited Environmental Site Assessment, 22141 Center Street, Castro Valley, California, AGS Report 69013-1.

Applied GeoSystems. January 18, 1990. Limited Subsurface Environmental Investigation Related to Underground Tank Removal, 22141 Center Street, Castro Valley, California, AGS Report 69013-2.

Applied GeoSystems. November 13, 1990. Environmental Subsurface Investigation at ARCO Station 2152, 22141 Center Street, Castro Valley, California, AGS Report 69013-4.

Applied GeoSystems. March 24, 1991. Letter Report, Quarterly Ground-Water Monitoring, First Quarter 1991, 22141 Center Street, Castro Valley, California, AGS Report 69013-5.

Applied GeoSystems. May 20, 1991. Letter Report, Quarterly Ground-Water Monitoring, Second Quarter 1991, 22141 Center Street, Castro Valley, California, AGS Report 69013-5.

RESNA. July 2, 1991. Supplemental Subsurface and Remedial Investigation at ARCO Station 2152, 22141 Center Street, Castro Valley, California, AGS 69013-6.

RESNA. October 8, 1991. Supplemental Subsurface and Remedial Investigation at ARCO Station 2152, 22141 Center Street, Castro Valley, California, AGS 69013-5.

RESNA. October 18, 1991. Letter Report, Quarterly Ground-Water Monitoring, Third Quarter 1991, 22141 Center Street, Castro Valley, California, AGS Report 69013-5.

RESNA. October 22, 1991. Work Plan for Additional Subsurface Investigation and Design and Permitting of Vapor Extraction System at ARCO Station 2152, 22141 Center Street, Castro Valley, California. 69013.08

RESNA. March 2, 1992. Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1991, 22141 Center Street, Castro Valley, California, 69013.09.

RESNA. May 1, 1992. Letter Report, Quarterly Groundwater Monitoring, First Quarter 1992, 22141 Center Street, Castro Valley, California, 69013.09.

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(Continued)

RESNA. July 17, 1992. Letter Report, Limited Subsurface Environmental Investigation, ARCO Station 2152, 22141 Center Street, Castro Valley, California, 69013.08

RESNA. September 22, 1992. Letter Report, Quarterly Groundwater Monitoring, Second Quarter 1992, 22141 Center Street, Castro Valley, California, 69013.09.

RESNA. December 30, 1992. Letter Report, Quarterly Groundwater Monitoring, Third Quarter 1992, 22141 Center Street, Castro Valley, California, 69013.09.

RESNA. March 9, 1993. Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1992, 22141 Center Street, Castro Valley, California, 69013.13.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2152
Castro Valley, California
(Page 1 of 4)

Date Well Measured	Depth of Well	Well Elevation	Static Water Depth	Water Elevation
MW-1				
06/25/90	58.10	217.16	49.80	167.36
09/07/90			50.00	167.16
09/26/90			50.09	167.07
12/14/90			50.44	166.72
01/08/91			50.45	166.71
02/21/91			50.51	166.65
03/19/91			50.16	167.00
04/02/91			50.14	167.02
05/02/91	57.80		49.77	167.39
06/18/91			49.75	167.41
07/08/91			49.80	167.36
08/22/91			50.08	167.08
09/18/91			50.11	167.05
10/15/91			50.30	166.86
11/13/91			50.30	166.86
12/27/91			50.28	166.88
01/18/92			50.39	166.77
02/20/92			50.16	167.00
03/13/92			49.75	167.41
04/24/92			49.18	167.98
05/15/92			49.22	167.94
06/08/92			49.3*	167.9*
07/25/92			49.42	167.74
08/23/92			49.52	167.64
09/04/92			49.71	167.45
10/19/92			49.98	167.18
11/23/92			50.10	167.06
12/18/92			50.29	166.87
01/14/93			49.81	167.35
02/24/93			48.71	168.45
03/30/93			48.02	169.14
MW-2				
06/25/90	59.20	216.50	49.04	167.46
09/07/90			49.22	167.28
09/26/90			49.32	167.18
12/14/90			49.66	166.84
01/08/91			49.72	166.78
02/21/91			49.77	166.73

See notes on Page 4 of 4.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2152
Castro Valley, California
(Page 2 of 4)

Date Well Measured	Depth of Well	Well Elevation	Static Water Depth	Water Elevation
MW-2cont.				
03/19/91			49.44	167.06
04/02/91			49.43	167.07
05/02/91	58.90		49.03	167.47
06/18/91			48.98	167.52
07/08/91			49.03	167.47
08/22/91			49.30	167.20
09/18/91			49.34	167.16
10/15/91			49.51	166.99
11/13/91			49.53	166.97
12/27/91			49.49	167.01
01/18/92			49.60	166.90
02/20/92			49.39	167.11
03/13/92			48.97	167.53
04/24/92			48.47	168.03
05/15/92			48.47	168.03
06/08/92			48.5*	168.0*
07/25/92			48.52	167.98
08/23/92			44.95	171.55
09/04/92			48.95	167.55
10/19/92			49.20	167.30
11/23/92			49.35	167.15
12/18/92			49.57	166.93
01/14/93			49.10	167.40
02/24/93			47.86	168.64
03/30/93			47.17	169.33
MW-3				
06/25/90	59.70	217.57	50.55	167.02
09/07/90			50.73	166.84
09/26/90			50.81	166.76
12/14/90			51.15	166.42
01/08/91			51.16	166.41
02/21/91			51.21	166.36
03/19/91			50.93	166.64
04/02/91			50.92	166.65
05/02/91	59.34		50.51	167.06
06/18/91			50.47	167.10
07/08/91			50.54	167.03
08/22/91			50.80	166.77
09/18/91			50.82	166.75
10/15/91			51.02	166.55

See notes on Page 4 of 4.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2152
Castro Valley, California
(Page 3 of 4)

Date Well Measured	Depth of Well	Well Elevation	Static Water Depth	Water Elevation
MW-3cont.				
11/13/91			51.03	166.54
12/27/91			51.01	166.56
01/18/92			51.15	166.42
02/20/92			50.84	166.73
03/13/92			50.39	167.18
04/24/92			49.82	167.75
05/15/92			49.90	167.67
07/25/92			50.14	167.43
08/23/92			50.12	167.45
09/04/92			50.38	167.19
10/19/92			50.71	166.86
11/23/92			50.81	166.76
12/18/92			50.50	167.07
01/14/93			Well inaccessible due to construction	
02/24/93			Well inaccessible due to construction	
03/30/93			48.82	168.75
MW-4				
06/25/90	60.30	215.18	48.06	167.12
09/07/90			48.25	166.93
09/26/90			48.35	166.83
12/14/90			48.68	166.50
01/08/91			48.70	166.48
02/21/91			48.76	166.42
03/19/91			48.44	166.74
04/02/91			48.43	166.75
05/02/91	60.00		48.04	167.14
06/18/91			48.00	167.18
07/08/91			48.04	167.14
08/22/91			48.34	166.84
09/18/91			48.35	166.83
10/15/91			48.54	166.64
11/13/91			48.56	166.62
12/27/91			48.52	166.66
01/18/92			48.68	166.50

See notes on Page 4 of 4.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2152
Castro Valley, California
(Page 4 of 4)

Date Well Measured	Depth of Well	Well Elevation	Static Water Depth	Water Elevation
MW-4cont.				
02/20/92			48.37	166.81
03/13/92			47.96	167.22
04/24/92			47.41	167.77
05/15/92			47.46	167.72
06/08/92			47.52	167.66
07/25/92			47.67	167.51
08/23/92			47.78	167.40
09/04/92			47.78	167.40
10/19/92			48.22	166.96
11/23/92			48.34	166.84
12/18/92			48.50	166.68
01/14/93			48.03	167.15
02/24/93			46.95	168.23
03/30/93			46.25	168.93
VW-2				
02/24/93	38.5	216.38	38.28	residual water
03/30/93			38.32	residual water
VW-3				
02/24/93	NR	not surveyed	NR	NR
03/30/93	38.3		38.27	residual water
VW-4				
02/24/93	26.9	not surveyed	Dry	Dry
03/30/93	26.8		Dry	Dry
VW-5				
02/24/93	37.5	not surveyed	35.22	-
03/30/93			Dry	Dry

Depth measurements in feet. Water elevation is mean sea level.
Static water level measured in feet below top of casing.
* = Depth to water measurements reported to tenth of 1 foot on EMCON's field sheets.
NR = No Record

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 2152
Castro Valley, California
(Page 1 of 2)

Well	Date	TPHg	B	T	E	X
MW-1	06/26/90	64	0.63	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	120	2.3	4.6	1.3	9.6
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30
	03/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	<50	<0.50	<0.50	<0.50	<0.50
MW-2	06/26/90	27	<0.50	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	30	0.42	0.47	<0.30	0.89
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30
	03/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	<50	<0.50	<0.50	<0.50	<0.50
MW-3	06/25/90	52	0.65	1.5	<0.50	2.0
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	67	0.69	1.5	0.65	4.7
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30
	04/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	NS	NS	NS	NS	NS
MW-4	06/25/90	<20	<0.50	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	50	1.4	2.4	0.62	4.2
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30

See notes on Page 2 of 2.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 2152
Castro Valley, California
(Page 2 of 2)

Well	Date	TPHg	B	T	E	X
MW-4	03/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	<50	<0.50	<0.50	<0.50	<0.50

Results in parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline
B:benzene T:toluene E:ethylbenzene X:total xylene isomers
NA: Not Analyzed

TABLE 3 : ONSITE VAPOR EXTRACTION SYSTEM OPERATION & PERFORMANCE DATA FOR 1993 (Page 1 of 2)
ARCO 2152, 22141 CENTER STREET, CASTRO VALLEY, CALIFORNIA

Sampling Date:	1/25	1/26	1/27	1/28	1/29	2/1	2/2	2/3	2/4	2/5	2/8	2/11	2/18	2/25*
Hrs of operation	8	24	24	24	24	24	24	24	24	15.5	7.5	48	192	156
Hrs of downtime**	-	-	-	-	-	-	-	-	-	8.5	64.5	-	-	12
Total Hrs of operation	8	32	56	80	104	128	152	176	200	215.5	223	271	463	619
Wells online (No.)	All wells VW-2 through VW-5 were open. However, < 2 cfm was observed from VW-2, VW-3 &VW-5,. >95% of flow was from VW-4.													
Applied Vacuum (in. Hg)	5	3	4	4.5	5.2	5.4	5	5	5	5.5	4	4	4	3.2
Soil Gas Flow rate, scfm	65	44	25	29	30	29	30	98	105	109.5	107	107	104	128.5
Dilution Air Flowrate, scfm	0	157	193	178	144	161	161	98	71	47.5	39	37	32	14.5
Total Flow, Effl to S-1	65	201	218	207	174	190	190	196	176	157	146	144	136	143
MONITORING DATA FOR TPH-AS-GAS*** EFFL. TO BLOWER (S-1) & INFL. & EFFL. TO CARBON (A-1, A-2, A-3) PER BAAQMD IN PPM W/A FID														
Effl. to S-1, Infl.to A-1	109	200	60	20	10	125	120	83.5	72	76.3	NS	64.9	45.5	51
Effl. to A-1, Infl to A-2	8.5	0	0	0	0	0	0	0	1.4	2	NS	0	0	0
Effl to A-2, Infl. to A-3	5	0	0	0	0	0	0	0	1.1	1.7	NS	0	0	0
Effl to A-3, Exhaust Stack	4	0	0	0	0	0	0	0	1.1	1.7	NS	0	0	0
LABORATORY ANALYSES RESULTS FOR TPH-AS-GAS IN MILLIGRAMS PER CUBIC METER (MG/M^3) :														
WellField TPHg Conc. AS-VW4-1	1100	NS	1300 A-COM-INFL	NS	NS	NS	NS	NS	NS	NS	NS	37 A-SP105	NS	NS

TABLE 3 : ONSITE VAPOR EXTRACTION SYSTEM OPERATION & PERFORMANCE DATA FOR 1993 (Page 2 of 2)
ARCO 2152, 22141 CENTER STREET, CASTRO VALLEY, CALIFORNIA

WellField Benzene Conc. AS-VW4-1	<0.5	NS	22 A-COM-INFL	NS	NS	NS	NS	NS	NS	NS	NS	<0.5 A-SP105	NS	<0.5 A-SP105
Effl to S-1, Infl to A-1 ASCOMBO-BLWREFFL	300	NS	380 A-BLOWER	NS	NS	NS	NS	NS	Ns	NS	NS	NS	NS	40 A-SP106
Effl to A-1, Infl to A-2 AS-A1-EFFL	49	NS	46 A-C18	NS	NS	NS	NS	NS	NS	NS	NS	<10 A-SP107	NS	<10 A-SP107
Effl to A-3, Exhaust Stack	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<10 A-SP109
HYDROCARBON REMOVAL RATE IN POUNDS [LBS] AND GALLONS [GALS] PER DAY AND TOTALS TO DATE:														
Remv.this period,lb	**2.1**	**4.35**	**2.9**	**3.4**	**3.5**	**3.4**	**3.5**	**11.4**	**12.3**	**8.3**	**3.9**	**0.71**	**2.8**	**2.8**
Total Cum. Remv, lbs	**2.1**	**6.4**	**9.3**	**12.7**	**16.2**	**19.6**	**23.1**	**34.5**	**46.8**	**55.1**	**59**	**59.7**	**62.5**	**65.3** lbs
Total Cum. Remv, gals	**0.35**	**1.03**	**1.5**	**2.0**	**2.6**	**3.2**	**3.7**	**5.6**	**7.5**	**8.9**	**9.5**	**9.6**	**10.0**	**10.5** gals

Notes:
NS - Not Sampled
* - System shutdown on 02/25/93 for the remainder of the spring due to low air flows from vapor wells as a result of the soils being saturated and too tight to vapor extract.
** - System down on 02/06, 02/07 due to a high temperature in extracted vapor influent to A-1
*** = TPHg readings as (FID readings without a carbon tip-FID readings with a carbon tip).
S-1 = 7.5hp blower
A-1, A-2, A-3 = 3, 1000 lb carbon canisters in series.
Total lbs of TPHg removed is : Soil gas flow (scfm) x 0.02832m^3/ft^3 x Wellfield TPHg conc.(mg/m^3) x 1lb/454,000mg x Hrs of operation x 60 min/hr.
Conversion from pounds (lbs) to gallons (gals) is based on gasoline having a density of 6.2 lbs/gal.

APPENDIX A

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

EMCON Associates
1938 Junction Avenue • San Jose, California 95131-2102 • **(408) 453-0719** • Fax (408) 453-0452

Date April 1, 1993
Project 0G70-026.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	March 1993 monthly water level survey, ARCO
	station 2152, 22141 Center Street, Castro Valley, CA

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Jim Butera

Reviewed by:

4/30/96

Robert C Porter

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-026.01 STATION ADDRESS : 22141 Center Street, Castro Valley DATE : 3-30-93

ARCO STATION # : 2152 FIELD TECHNICIAN : JW/MG DAY : ~~Mon~~ Tuesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	**MW-1**	good	yes	good	3259	good	48.02	48.02	ND	ND	58.0	Lid on Box loose.
2	**MW-2**	good	yes	good	3259	good	47.12	47.12	ND	ND	59.1	—
3	**MW-3**	good	yes	good	3259	good	48.82	48.82	ND	ND	59.6	—
4	**MW-4**	good	no	good	3259	good	46.25	46.25	ND	ND	60.2	no screws
5	**VW-2**	good	yes	no	3259	good	38.32	38.32	ND	ND	38.5	—
6	**VW-3**	good	yes	good	3259	good	38.27	38.27	ND	ND	38.3	—
7	**VW-4**	good	yes	good	3259	good	Dry	Dry	ND	ND	26.80	—
8	**VW-5**	good	yes	good	3259	good	Dry	Dry	ND	ND	37.50	—

SURVEY POINTS ARE TOP OF WELL CASINGS

EMCON
ASSOCIATES
Consultants in Wastes Management and Environmental Control

FEB 5 1993

Date February 4, 1993
Project 0G70-026.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

Copies	Description
1	Depth To Water / Floating Product Survey Results
1	Summary of Groundwater Monitoring Data
1	Certified Analytical Reports with Chain-of-Custody
4	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:
Enclosed are the data from the first quarter 1993 monitoring event at ARCO service station 2152, 22141 Center Street, Castro Valley, California. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No. 4284 Exp. INDUSTRIAL STATE OF CALIFORNIA

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-026.01 STATION ADDRESS : 22141 Center Street, Castro Valley DATE : 1-14-93

ARCO STATION # : 2152 FIELD TECHNICIAN : REICHELDERFER / GALLEGOS DAY : THURSDAY

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	**MW-1**	OK	NO*	NO	3259	OK	49.81	49.81	ND	NA	58.0	LID NEEDS 1 DIVERSIFIED WELL HEAD BOLT
2	**MW-2**	BAD	NO*	NO	3259	OK	49.10	49.10	ND	NA	59.0	TOP OF BOX FRAME IS LOOSE; NEEDS NEW BOX, SEAL, AND BOLTS
3	**MW-3**	NA									→	INACCESSABLE WELL DUE TO CONST.
4	**MW-4**	OK	NO*	NO	3259	OK	48.03	48.03	ND	NA	60.2	*LID NEEDS 2 DIVERSIFIED WELL HEAD BOLTS

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
First Quarter 1993
ARCO Service Station 2152
22141 Center Street, Castro Valley, California
micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)
MW-1(57)	01/14/93	49.81	ND.[2]	<50.	<0.5	<0.5	<0.5	<0.5
MW-2(59)	01/14/93	49.10	ND.	<50.	<0.5	<0.5	<0.5	<0.5
MW-3	01/14/93	NR.[3]	NR.	NA.[4]	NA.	NA.	NA.	NA.
MW-4(60)	01/14/93	48.03	ND.	<50.	<0.5	<0.5	<0.5	<0.5
FB-1[5]	01/14/93	NA.	NA.	<50.	<0.5	<0.5	<0.5	<0.5

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. NR. = Not recorded, due to a broken down car covering the well
4. NA. = Not applicable
5. FB. = Field blank

SEQUOIA ANALYTICAL

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

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Project: EMCGC-92-1/Arco 2152, Castro Valley

Enclosed are the results from 4 water samples received at Sequoia Analytical on January 15,1993. The requested analyses are listed below:

3012153	Water, MW-1 (57)	1/14/93	EPA 5030/8015/8020
3012154	Water, MW-2 (59)	1/14/93	EPA 5030/8015/8020
3012155	Water, MW-4 (60)	1/14/93	EPA 5030/8015/8020
3012156	Water, FB-1	1/14/93	EPA 5030/8015/8020

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

Very truly yours,

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates	Client Project ID:	EMCGC-92-1/Arco 2152, Castro Vall	Sampled:	Jan 14, 1993
1938 Junction Avenue	Sample Matrix:	Water	Received:	Jan 15, 1993
San Jose, CA 95131	Analysis Method:	EPA 5030/8015/8020	Reported:	Feb 1, 1993
Attention: Jim Butera	First Sample #:	301-2153		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 301-2153 MW-1 (57)	Sample I.D. 301-2154 MW-2 (59)	Sample I.D. 301-2155 MW-4 (60)	Sample I.D. 301-2156 FB-1
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Analyzed:	1/19/93	1/19/93	1/19/93	1/19/93
Instrument Identification:	GCHP-6	GCHP-6	GCHP-6	GCHP-6
Surrogate Recovery, %: (QC Limits = 70-130%)	82	81	83	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

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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

Emcon Associates
1938 Junction Avenue
San Jose, CA 95131
Attention: Jim Butera

Client Project ID: EMCGC-92-1/Arco 2152, Castro Valley

QC Sample Group: 3012153-6

Reported: Feb 1, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	R. Lee	R. Lee	R. Lee	R Lee
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jan 19, 1993	Jan 19, 1993	Jan 19, 1993	Jan 19, 1993
QC Sample #:	G3011499C	G3011499C	G3011499C	G3011499C
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.8	9.4	9.6	28
Matrix Spike % Recovery:	98	94	96	93
Conc. Matrix Spike Dup.:	10	10	10	30
Matrix Spike Duplicate % Recovery:	100	100	100	100
Relative % Difference:	2.0	6.2	4.1	6.9

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

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

% Recovery: $\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Conc of M.S. - Conc. of M.S.D.}}{\text{(Conc of M.S. + Conc. of M.S.D.) / 2}} \times 100$

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. EMCGC-92-1

ARCO Facility no. 2152	City (Facility) Castro Valley	Project manager (Consultant) JIM BUTERA	Laboratory name SEQUOIA
ARCO engineer Kyle Christie	Telephone no. (ARCO)	Telephone no. (Consultant) 453-0719	Fax no. (Consultant) 453-0452	Contract number 07-073
Consultant name EMCON ASSOCIATES	Address (Consultant) 1938 Junction Ave San Jose		Method of shipment courier will pick up

Sample I.D	Lab no	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH GAS EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(57)		2		X		X	HCl	1-14-93	1530		X					30	121	53				
MW-2(59)		2		X		X	HCl	↓	1453		X					↓		54				
MW-3( )		2		X		X	HCl				X	NO SAMPLE; INACCESSABLE WELL										
MW-4(60)		2		X		X	HCl	1-14-93	1450		X					30	121	55				
FD-1		2		X		X	HCl	↓	1439		X					↓		56				

Remarks: 2-40ml HCl VOA's (SEQUOIA BOTTLES)

26

Special detection Limit/reporting: Lowest possible

Special QA/QC: As normal

Lab number

Turnaround time

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

Condition of sample: good

Temperature received: COOL

Relinquished by sampler	Date 1-15-93	Time 1400	Received by
Relinquished by	Date 1/15/93	Time 1645	Received by
Relinquished by	Date	Time	Received by laboratory — Date 1/15/93 — Time 1645

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-026.01 SAMPLE ID: MW-1 (57)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 2152

SAMPLED BY: ↓ LOCATION: 22141 CENTER ST CASTRO VALLEY, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	5.31
DEPTH TO WATER (feet):	49.87	CALCULATED PURGE (gal.):	15.93
DEPTH OF WELL (feet):	58.0	ACTUAL PURGE VOL. (gal.):	16.00

DATE PURGED: 1-14-93 Start (2400 Hr) 1512 End (2400 Hr) 1524

DATE SAMPLED: 1-14-93 Start (2400 Hr) 1530 End (2400 Hr) 1532

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1516	5.50	6.73	1586	66.0	CLOUDY	LIGHT
1520	11.00	6.66	1865	67.0	↓	↓
1524	16.00	6.68	1957	67.2	↓	↓

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

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

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

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: LID NEEDS 1 DIVERSIFIED WELL HEAD BOLT

Meter Calibration: Date: 1-14-93 Time: 1425 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-4

Signature: Kevin Reichelderfer Reviewed By: JB Page 1 of 4

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-26.01 SAMPLE ID: MW-2

PURGED BY: M. Gallegos CLIENT NAME: ARCO #2152

SAMPLED BY: M Gallegos LOCATION: Castro Valley, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	6.45
DEPTH TO WATER (feet):	49.12	CALCULATED PURGE (gal.):	19.34
DEPTH OF WELL (feet):	590	ACTUAL PURGE VOL. (gal.):	19.5 20 c

DATE PURGED: 1-14-93 Start (2400 Hr) 1436 End (2400 Hr) 1447

DATE SAMPLED: 1-14-93 Start (2400 Hr) 1453 End (2400 Hr) 1455

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1441	6.5	6.28	2030	65.3	Cloudy	Light.
1444	13.0	6.65	2540	65.7	Cloudy	Light.
1447	19.5	6.60	2570	65.3	Cloudy	Light.

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

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

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

WELL INTEGRITY: Good LOCK #: 3255

REMARKS: All Samples taken

Needs new well Box top of frame is loose

Meter Calibration: Date: 1-14-93 Time: 1433 Meter Serial #: 4572 Temperature °F: 63.5

(EC 1000 945 / 1000) (DI ___) (pH 7 667 / 700) (pH 10 1017 / 1000) (pH 4 399 / ___)

Location of previous calibration: ___

Signature: M. J. Gallegos Reviewed By: JB Page 2 of 4

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-026.01
PURGED BY: K REICHELDERFER
SAMPLED BY: ↓
SAMPLE ID: MW-3
CLIENT NAME: ARCO 2152
LOCATION: 22141 CENTER ST CASTRO VALLEY, CA

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

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

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

VOLUME IN CASING (gal.): NA
CALCULATED PURGE (gal.): NA
ACTUAL PURGE VOL. (gal.): NA

DATE PURGED: 1-14-93 Start (2400 Hr) NA End (2400 Hr) NA
DATE SAMPLED: NA Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
INACCESSABLE WELL DUE TO CONSTRUCTION						
AROUND THE WELL						

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

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

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

WELL INTEGRITY: NA LOCK #: NA

REMARKS:

Meter Calibration: Date: 1-14-93 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration:

Signature: Kevin Reichelderfer Reviewed By: JB

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-026.01 | SAMPLE ID: MW-4(60)

PURGED BY: K REICHELDERFER | CLIENT NAME: ARCO 2152

SAMPLED BY: ↓ | LOCATION: 22141 CENTER ST CASTRO VALLEY, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	7.94
DEPTH TO WATER (feet):	48.04	CALCULATED PURGE (gal.):	23.83
DEPTH OF WELL (feet):	60.2	ACTUAL PURGE VOL. (gal.):	24.00

DATE PURGED: 1-14-93 Start (2400 Hr) 1423 End (2400 Hr) 1442

DATE SAMPLED: 1-14-93 Start (2400 Hr) 1450 End (2400 Hr) 1452

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1429	8.00	6.75	1748	66.1	CLOUDY	LIGHT
1435	16.00	6.76	1784	65.5	CLEAR	TRACE
1442	24.00	6.73	1795	65.1	↓	↓

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 @ 1439

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

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: # LID NEEDS 2 DIVERSIFIED WELL HEAD BOLTS

Meter Calibration: Date: 1-14-93 Time: 1425 Meter Serial #: 9203 Temperature °F: 60.9

(EC 1000 945/1000) (DI 7.03) (pH 7 6.87/7.00) (pH 10 9.79/10.00) (pH 4 3.90/—)

Location of previous calibration: ___

Signature: Kevin Reichelderfer Reviewed By: JB Page 4 of 4

APPENDIX B

CHAIN OF CUSTODY RECORDS AND LABORATORY ANALYSIS REPORTS OF AIR SAMPLES

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-02-381

February 27, 1993

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 02/12/93, under task order number 2152-92-4C.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative Michael Whelan
Work Order Number: C3-02-381

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02	03	
Client Identification		SP-107	SP-105	METHOD BLANK	
Date Sampled		02/11/93	02/11/93	--	
Date Analyzed		02/12/93	02/12/93	02/12/93	
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	<0.5	<0.5	
Toluene	0.5	<0.5	0.6	<0.5	
Ethylbenzene	0.5	<0.5	<0.5	<0.5	
Xylene, total	0.5	2	4	<0.5	
TPH as Gasoline	10	<10	37	<10	
Detection Limit Multiplier		1	1	1	
BFB surrogate, % recovery		93.1	86.5	102	

a. Test Methods for Evaluating Solid W ste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Wate Resources Control Board LUFT Manual protocols, May 1988 revision.

GTEL ENVIRONMENTAL LABORATORIES INC

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-02-381

Sample and Sample Duplicate Results

Matrix: Air

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C302380-01	02/12/93	10.6	8.28	ug/L	24.6
Toluene	C302380-01	02/12/93	33.3	25.8	ug/L	25.4
Ethylbenzene	C302380-01	02/12/93	0.523	0.399	ug/L	26.9
Xylene, total	C302380-01	02/12/93	25.8	18.8	ug/L	31.4

a. See attached table for acceptability limits.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	---	30	30	---	---	---

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Diesel	---	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	---	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	---	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	---	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	---	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	---	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	---	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	---	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	---	---	34 - 111	34 - 111
Aldrin	80 - 120	30	---	---	42 - 122	42 - 122
DDE	80 - 120	30	---	---	30 - 145	30 - 145
Dieldrin	80 - 120	30	---	---	36 - 146	36 - 146
Endrin	80 - 120	30	---	---	30 - 147	30 - 147
DDD	80 - 120	30	---	---	31 - 141	31 - 114
DDT	80 - 120	30	---	---	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	---	---	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	---	---	---	49 - 116
Anthracene	80 - 120	41.7	---	---	---	24 - 116
Chrysene	80 - 120	65.2	---	---	---	44 - 128
Benzo(a)pyrene	80 - 120	52.8	---	---	---	26 - 126
Naphthalene	80 - 120	42.3	---	---	---	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	---	---	---	---	---
Trichloroethene	---	14	24	71 - 120	62 - 137	71 - 120
Toluene	---	13	21	76 - 125	59 - 139	76 - 125
Chlorobenzene	---	13	21	75 - 130	60 - 133	75 - 130
1,1-Dichloroethene	---	14	22	61 - 145	59 - 172	61 - 145
Benzene	---	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	---	38	---
Toluene	---	34	---
Ethylbenzene	---	48	---
Xylene, total	---	34	---
Modified EPA 8015:			
Gasoline	---	---	---

[?]CO Products Company [redacted] Task Order No. [redacted] 2[?]2 [redacted] 92 [redacted] 4[?] [redacted] Chain of Custody [redacted]

Division of AtlanticRichfieldCompany

ARCO Facility no.	9013·16) 2152.
City (Facility)	CASTRO VALLEY, CA (OAKLAND struck through)
Project manager (Consultant)	VALLI VORUGANTI
Laboratory name	GTEL
ARCO engineer	MICHAEL WHELAN
Telephone no. (ARCO)	(415) 571-2441
Telephone no. (Consultant)	(408) 264 7723
Fax no. (Consultant)	(408) 264-2435
Contract number	
Consultant name	
Address (Consultant)	

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 ☐		
					Air																	
P-107	01				X			02/11	14:38		X											
P-105	02				X			02/11	14:35		X											

LIMITED PROTOCOL

BOCX

PTL 02/18/93

0211

Method of shipment: Courier

Special detection Limit/reporting: Res[…] in mg/m[…]

Special QA/QC

Remarks: Analyze w/[…] hr holding

Lab number: 381

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	Time	Received by	
Valli Voruganti	02/12	900	Susan Morse	Certified Courier 2/12/93 900
Relinquished by	**Date**	**Time**	**Received by**	
Susan Morse	2/12	1100		
Relinquished by	**Date**	**Time**	**Received by laboratory**	**Date / Time**
			Connie Blakey	2/12/93 11:15

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

APPC-3292 (2-91)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Mike Whelan
Work Order Number: C3-03-0002

March 9, 1993

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 02/26/93, under task order number 2152-92-4C.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certificate numbers 194 and 1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Mike Whelan
Work Order Number: C3-03-0002

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		A-SP105	A-SP106	A-SP107	A-SP109
Date Sampled		02/25/93	02/25/93	02/25/93	02/25/93
Date Analyzed		02/26/93	02/26/93	02/26/93	02/26/93
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	2	<0.5	<0.5
Toluene	0.5	<0.5	2	<0.5	<0.5
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5
Xylene, total	0.5	<0.5	1	<0.5	<0.5
TPH as Gasoline	10	<10	40	<10	<10
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		80.0	78.3	92.6	99.6

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

GTEL ENVIRONMENTAL LABORATORIES INC

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Mike Whelan
Work Order Number: C3-03-0002

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and
Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		022693GCE			
Client Identification		METHOD BLANK			
Date Sampled		--			
Date Analyzed		02/26/93			
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5			
Toluene	0.5	<0.5			
Ethylbenzene	0.5	<0.5			
Xylene, total	0.5	<0.5			
TPH as Gasoline	10	<10			
Detection Limit Multiplier		1			
BFB surrogate, % recovery		84.3			

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

GTEL ENVIRONMENTAL LABORATORIES, INC

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Mike Whelan
Work Order Number: C3-03-0002

QC Check Sample Results

Analyte	Source	Date of Analysis	Expected Value	Units	Recovery[a], %
Modified EPA 8020:					
Benzene	Supelco	01/13/93	50	ug/L	113
Toluene	Supelco	01/13/93	50	ug/L	112
Ethylbenzene	Supelco	01/13/93	50	ug/L	107
Xylene, total	Supelco	01/13/93	150	ug/L	110

Sample and Sample Duplicate Results

Matrix: Air

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C3030157-02	02/26/93	2.21	2.90	ug/L	27.0
Toluene	C3030157-02	02/26/93	1.50	2.25	ug/L	40
Ethylbenzene	C3030157-02	02/26/93	0.541	0.911	ug/L	50.9*
Xylene, total	C3030157-02	02/26/93	2.70	4.0	ug/L	38.8

a. See attached table for acceptability limits.
* RPD is high due to the low concentration of the target compound.

GTEL ENVIRONMENTAL LABORATORIES INC

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	---	30	30	---	---	---

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Diesel	---	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	---	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	---	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	---	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	---	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	---	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	---	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	---	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	---	---	34 - 111	34 - 111
Aldrin	80 - 120	30	---	---	42 - 122	42 - 122
DDE	80 - 120	30	---	---	30 - 145	30 - 145
Dieldrin	80 - 120	30	---	---	36 - 146	36 - 146
Endrin	80 - 120	30	---	---	30 - 147	30 - 147
DDD	80 - 120	30	---	---	31 - 141	31 - 114
DDT	80 - 120	30	---	---	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	---	---	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	---	---	---	49 - 116
Anthracene	80 - 120	41.7	---	---	---	24 - 116
Chrysene	80 - 120	65.2	---	---	---	44 - 128
Benzo(a)pyrene	80 - 120	52.8	---	---	---	26 - 126
Naphthalene	80 - 120	42.3	---	---	---	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	---	---	---	---	---
Trichloroethene	---	14	24	71 - 120	62 - 137	71 - 120
Toluene	---	13	21	76 - 125	59 - 139	76 - 125
Chlorobenzene	---	13	21	75 - 130	60 - 133	75 - 130
1,1-Dichloroethene	---	14	22	61 - 145	59 - 172	61 - 145
Benzene	---	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	---	38	---
Toluene	---	34	---
Ethylbenzene	---	48	---
Xylene, total	---	34	---
Modified EPA 8015:			
Gasoline	---	---	---

[redacted] 21 [redacted] Facility [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

CO engineer Mike Whelan | Telephone no (ARCO) (415) 571-2449 | Telephone no (Consultant) (408) 264-7723 | Fax no (Consultant) 2642435

Consultant name RETEC | Address (Consultant) 3315 ALMADEN EXPRESSWAY #34 SAN JOSE, CA 95118

GTEL

Contract number

Method of shipment

Sample I.D	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
SP105					Air			2/25/93	1330		✓											
SP106					↓				1340		✓											
SP107									1350		✓											
SP109									1400		✓											

Special detection Limit/reporting: ug/m3

Special QA/QC

C303002

Remarks

Lab number

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

Condition of sample

Relinquished by sampler — Date 2-26-93 Time 10:35

Relinquished by — Date 2-26-93 Time 11:40

Relinquished by — Date 2/26/93 Time 16:20

Temperature received

Received by

Received by — 2/26/93 14:30

Received by laboratory GTEL — Date 2/26 Time 16 20

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

PC 3292 (7 91)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(510) 825-0720 (FAX)

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-01-497

January 29, 1993

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 01/26/93 , under task order number 2152-92-4C.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-01-497

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		AS-A-1 EFFL	AS-VW4-1	ASVW3-1	ASCOMB BLOWER EFFL
Date Sampled		01/25/93	01/25/93	01/25/93	01/25/93
Date Analyzed		01/26/93	01/26/93	01/26/93	01/27/93
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	<0.5	<0.5	9
Toluene	0.5	0.6	16	0.5	6
Ethylbenzene	0.5	0.8	10	<0.5	0.9
Xylene, total	0.5	2	24	0.9	3
TPH as Gasoline	10	49	1100	12	300
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		93.3	95.9	94.8	99.7

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-01-497

Table 1 (Continued)

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		05	06		
Client Identification		AS-COMBO INF	METHOD BLANK		
Date Sampled		01/25/93	---		
Date Analyzed		01/27/93	01/26/93		
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	<0.5	<0.5		
Toluene	0.5	<0.5	<0.5		
Ethylbenzene	0.5	<0.5	<0.5		
Xylene, total	0.5	<0.5	<0.5		
TPH as Gasoline	10	<10	<10		
Detection Limit Multiplier		1	1		
BFB surrogate, % recovery		90.3	97.0		

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-01-497, C3-01-498

Sample and Sample Duplicate Results

Matrix: Air

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C301462-04	01/26/93	ND	ND	ug/L	NA
Toluene	C301462-04	01/26/93	6.11	8.46	ug/L	32.2
Ethylbenzene	C301462-04	01/26/93	ND	ND	ug/L	NA
Xylene, total	C301462-04	01/26/93	2.83	2.05	ug/L	32.0
GC-TCD:						
Methane	C301498-01	01/27/93	ND	ND	ppm-v	NA

a. See attached table for acceptability limits.
ND = Not Detected.
NA = Not Applicable.

GTEL ENVIRONMENTAL LABORATORIES, INC.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	—	30	30	—	—	—

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Diesel	—	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	—	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	—	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	—	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	—	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	—	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	—	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	—	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	—	—	34 - 111	34 - 111
Aldrin	80 - 120	30	—	—	42 - 122	42 - 122
DDE	80 - 120	30	—	—	30 - 145	30 - 145
Dieldrin	80 - 120	30	—	—	36 - 146	36 - 146
Endrin	80 - 120	30	—	—	30 - 147	30 - 147
DDD	80 - 120	30	—	—	31 - 141	31 - 114
DDT	80 - 120	30	—	—	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	—	—	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	---	---	---	49 - 116
Anthracene	80 - 120	41.7	---	---	---	24 - 116
Chrysene	80 - 120	65.2	---	---	---	44 - 128
Benzo(a)pyrene	80 - 120	52.8	---	---	---	26 - 126
Naphthalene	80 - 120	42.3	---	---	---	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	---	---	---	---	---
Trichloroethene	---	14	24	71 - 120	62 - 137	71 - 120
Toluene	---	13	21	76 - 125	59 - 139	76 - 125
Chlorobenzene	---	13	21	75 - 130	60 - 133	75 - 130
1,1-Dichloroethene	---	14	22	61 - 145	59 - 172	61 - 145
Benzene	---	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	—	38	—
Toluene	—	34	—
Ethylbenzene	—	48	—
Xylene, total	—	34	—
Modified EPA 8015:			
Gasoline	—	—	—

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(510) 825-0720 (FAX)

Client Number: RSNC4ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-01-498

January 27, 1993

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 01/26/93, under task order number 2152-92-4C.

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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Michael Whelan
Work Order Number: C3-01-498

Table 1

ANALYTICAL RESULTS

Methane in Air

Method: GC-TCD[a]

GTEL Sample Number		01	02	03	
Client Identification		AS-A-1 EFFL	AS COMB BLOWER EFFL	METHOD BLANK	
Date Sampled		01/25/93	01/25/93	--	
Date Analyzed		01/27/93	01/27/93	01/27/93	
Analyte	Detection Limit, ppm-V	Concentration, ppm-V			
Methane	20	<20	<20	<20	
Detection Limit Multiplier		1	1	1	

a. Method developed by GTEL for fixed gas analysis.

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(510) 825-0720 (FAX)

FEB 2 1993

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Mike Whelan
Work Order Number: C3-01-562

January 29, 1993

Valli Voruganti
RESNA Industries
3315 Almaden Expressway, #34
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 01/28/93, under task order number 2152-92-4C.

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Sincerely,
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen/K.P.M.

Eileen F. Bullen
Laboratory Director

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Mike Whelan
Work Order Number: C3-01-562

Table 1

ANALYTICAL RESULTS

Aromatic Volatile Organics and Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Methods 8020 and 8015[a]

GTEL Sample Number		01	02	03	04
Client Identification		A-COMB INF	A BLOWER	A-C1	METHOD BLANK
Date Sampled		01/27/93	01/27/93	01/27/93	–
Date Analyzed		01/28/93	01/28/93	01/28/93	01/28/93
Analyte	Detection Limit, mg/m^3	Concentration, mg/m^3			
Benzene	0.5	22	5	<0.5	<0.5
Toluene	0.5	32	8	<0.5	<0.5
Ethylbenzene	0.5	14	3	<0.5	<0.5
Xylene, total	0.5	57	16	1	<0.5
TPH as Gasoline	10	1300	380	46	<10
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		107	104	101	101

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

Client Number: RSN04ARC01
Facility Number: 2152
Arco Representative: Mike Whelan
Work Order Number: C3-01-562

Sample and Sample Duplicate Results

Matrix: Air

Analyte	Sample ID	Date of Analysis	Sample Results	Sample Duplicate Results	Units	RPD[a], %
Modified EPA 8020:						
Benzene	C301562-01	01/28/93	22.3	21.1	ug/L	5.5
Toluene	C301562-01	01/28/93	31.9	33.9	ug/L	6.1
Ethylbenzene	C301562-01	01/28/93	14.4	17.0	ug/L	16.6
Xylene, total	C301562-01	01/28/93	57.4	67.8	ug/L	16.6

a. See attached table for acceptability limits.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Modified EPA 8020:						
Benzene	80 - 120	30	30	55 - 129	24 - 127	70 - 147
Toluene	80 - 120	30	30	72 - 149	17 - 124	67 - 150
Ethylbenzene	80 - 120	30	30	75 - 138	19 - 129	69 - 145
Xylene, total	80 - 120	30	30	74 - 147	23 - 124	71 - 152
Modified EPA 8015:						
Gasoline	---	30	30	---	---	---

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
Diesel	---	30	30	63 - 127	58 - 144	48 - 134
EPA 8010/8020:						
Chlorobenzene	80 - 120	30	---	34 - 134	58 - 126	62 - 111
Benzene	80 - 120	30	---	66 - 118	24 - 127	58 - 127
Toluene	80 - 120	30	---	53 - 115	17 - 124	60 - 120
Ethylbenzene	80 - 120	30	---	43 - 131	19 - 129	58 - 126
Xylene, total	80 - 120	30	---	55 - 115	23 - 124	63 - 128
1,1-Dichloroethene	80 - 120	30	---	30 - 160	72 - 116	56 - 138
Trichloroethene	80 - 120	30	---	78 - 184	79 - 120	82 - 187
EPA 8080:						
Heptachlor	80 - 120	30	---	---	34 - 111	34 - 111
Aldrin	80 - 120	30	---	---	42 - 122	42 - 122
DDE	80 - 120	30	---	---	30 - 145	30 - 145
Dieldrin	80 - 120	30	---	---	36 - 146	36 - 146
Endrin	80 - 120	30	---	---	30 - 147	30 - 147
DDD	80 - 120	30	---	---	31 - 141	31 - 114
DDT	80 - 120	30	---	---	10 - 180	10 - 180
Arochlor 1260	45 - 127	30	---	---	53 - 128	53 - 128

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Water Sample RPD (%)	Duplicate Soil Sample RPD (%)	Water Matrix Spike Recovery (%)	Soil Matrix Spike Recovery (%)	Reagent Water Spike Recovery (%)
EPA 8310:						
Fluorene	80 - 120	68	—	—	—	49 - 116
Anthracene	80 - 120	41.7	—	—	—	24 - 116
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Benzo(a)pyrene	80 - 120	52.8	—	—	—	26 - 126
Naphthalene	80 - 120	42.3	—	—	—	51 - 106
EPA 8240:						
All 8240 Compounds	60 - 140	—	—	—	—	—
Trichloroethene	—	14	24	71 - 120	62 - 137	71 - 120
Toluene	—	13	21	76 - 125	59 - 139	76 - 125
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1,1-Dichloroethene	—	14	22	61 - 145	59 - 172	61 - 145
Benzene	—	11	21	76 - 127	66 - 142	76 - 127
TPH/IR:	80 - 120	20	20	70 - 130	70 - 130	70 - 130
Metals:						
Arsenic	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Barium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Cadmium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Chromium	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Iron	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Lead	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Manganese	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Mercury	90 - 110	20	20	80 - 120	80 - 120	80 - 120
Selenium	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Silver	90 - 110	20	20	80 - 120	80 - 120	90 - 110
Wet Chemistry:						
TOC	90 - 110	20	NA	90 - 110	NA	90 -110

NA = Not Applicable.

QC Acceptability Limits

Analyte	QC Check Sample Recovery (%)	Duplicate Air Sample RPD (%)	Matrix Spike Recovery (%)
Modified EPA 8020:			
Benzene	—	38	—
Toluene	—	34	—
Ethylbenzene	—	48	—
Xylene, total	—	34	—
Modified EPA 8015:			
Gasoline	—	—	—

[redacted] Petroleum Company — Division of Atlantic Richfield Company

Task Order No. 21[redacted]-[redacted]-[redacted] — Chain of Custody

ARCO Facility no. 7152	City (Facility) Castro Valley, CA	Project manager (Consultant) VAN HOMAGAN	Laboratory name GTEL
ARCO engineer Mike Whelan	Telephone no. (ARCO) (408) 264-3772	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) 264-2435
Consultant name Resnt	Address (Consultant) 3315 ALMADEN EXP. #34 SAN JOSE, CA 95118		Contract number
			Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM5520E	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 ☐	
T-GWA	NF	01			✓			1/27/93	1630		✓										
A Blank		02			✓				1635		✓										
A-C1		03			✓			↓	1640		✓										
Method Blank																					
BTEX 01/29/93																					

Special detection Limit/reporting: Report results in µg/m³

Special QA/QC

Remarks

Lab number 1562

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	1/27/93	1800	Received by
Relinquished by	1/28/93	11:32	Received by
Relinquished by	Date	Time	Received by laboratory: Corinne Balsley 1/28/93 11:35

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

APPENDIX C

VES PERFORMANCE GRAPHS

PLATE C1

VAPOR EXTRACTION SYSTEM EVALUATION
WELLFIELD TPHG CONC. FROM VW-4 VS. TIME

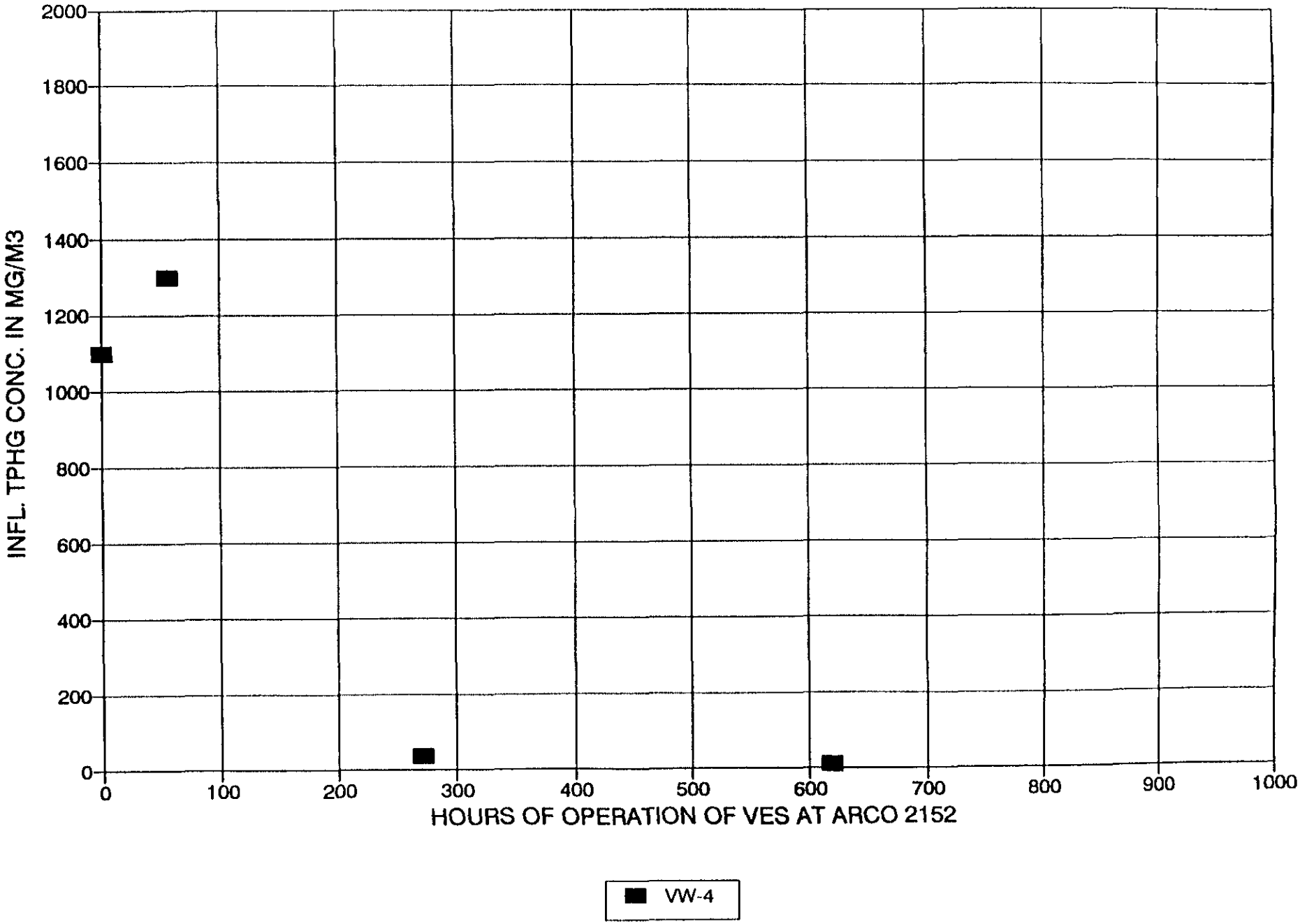

PLATE C2

VAPOR EXTRACTION SYSTEM EVALUATION
TOTAL TPHG REMOVED VS. TIME