PES Environmental, Inc.
Engineering & Environmental Services

December 29, 1995

131.0100.003

Alameda County Environmental Health Services
Hazardous Materials Division
1131 Harbor Bay Parkway
Alameda, California 94502

Attention: Ms. Susan Hugo

YEAR END SUMMARY REPORT BIOREMEDIATION PILOT STUDY AND QUARTERLY GROUNDWATER MONITORING NOVEMBER 1995 SAMPLING EVENT
EMERY BAY PLAZA
1650 65TH STREET
EMERYVILLE, CALIFORNIA

Dear Ms. Hugo:

This letter summarizes the results of a one year in-situ bioremediation pilot study and presents data collected by PES Environmental, Inc. (PES) during the November 13, 1995 quarterly groundwater monitoring. PES has been retained by Emery Bay Plaza to conduct groundwater remediation and monitoring at the subject site.

The objective of the groundwater monitoring program at this site is to: (1) evaluate the presence of hydrocarbons in groundwater; (2) provide data to assess the performance and effectiveness of the groundwater remedial program; and (3) monitor seasonal water level variations at the site. The monitoring is performed in accordance with California Regional Water Quality Control Board (RWQCB) guidelines and the approved remedial plan for this site.

BACKGROUND INFORMATION

Six monitoring wells and one extraction well were installed at the site (Plate 2) following removal of an onsite underground storage tank (UST) in July 1987 and several offsite USTs in September and October 1989. Groundwater monitoring has been conducted at this facility since November 1989. An activated carbon groundwater treatment system was installed and operated under the authority of an East Bay Municipal Utility District wastewater discharge permit (Permit # 502-45131) from December 1990 until it was discontinued on October 25, 1993, pending start of an in-situ bioremediation pilot program in December 1994. The pilot study is described in PES' March 16, 1994 letter to you titled *Proposed Monitoring Revisions,*

Passive In-Situ Bioremediation Pilot Study, Emery Bay Plaza, 1650 65th Street Property, Emeryville, California and a December 21, 1993 PES document titled *Workplan, Passive In-Situ Bioremediation Pilot Study, Emery Bay Plaza, 1650 65th Street Property, Emeryville, California.* Pilot study activities have been ongoing over the last 12 months and monitoring results are presented in this monitoring report. The present sampling is the twenty-fourth consecutive sampling event since groundwater monitoring was initiated, and the seventeenth to be conducted by PES.

On September 22, 1994, PES installed an additional monitoring well, MW-8, near the eastern boundary of the subject property. The purpose of this upgradient well is to evaluate upgradient water quality and to provide an additional upgradient point of introduction of oxygen and nutrients for the in-situ bioremediation pilot study.

GROUNDWATER MEASUREMENTS

Water-Level Measurement Procedures

Quarterly groundwater monitoring activities were conducted on November 13, 1995. Prior to sampling, the groundwater level in each of the monitoring wells was measured to a precision of 0.01 feet using an electronic water-level indicator. Prior to each measurement, the portion of the water-level indicator that was submerged in the well was cleaned with a mild detergent solution and rinsed with de-ionized water.

Water-Level Measurement Results

Water-level data were converted to water-level elevations referenced to mean sea level (MSL). A groundwater elevation map constructed from the data is presented on Plate 3. An historical summary of groundwater elevations for wells at the site is presented in Table 1.

Groundwater elevations for the November 13, 1995 monitoring wells event have decreased in all onsite monitoring wells compared with the prior quarterly monitoring event. The water-level measured in MW-8 was not used in determining groundwater contours during this sampling event because the data was not consistent with nearby water-levels in MW-2, MW-6, and MW-7. Based on measured water levels on November 13, 1995, groundwater flow direction at the site was calculated to be toward the southwest, with an approximate gradient of 0.006 to 0.03 foot per foot. This is consistent with historical groundwater flow direction and gradient.

Dissolved Oxygen Measurement Procedures

As part of the in-situ bioremediation pilot study at the subject property, dissolved oxygen measurements were collected prior to and following each oxygen and nutrient addition and during the quarterly monitoring events. Prior to purging and sampling, the total dissolved oxygen in each of the seven monitoring wells and the extraction well was measured in-situ using a YSI, Inc. dissolved oxygen meter. The equipment was calibrated according to the manufacturer's specifications before use. Prior to each measurement, the portion of the equipment submerged in the well was cleaned with a mild detergent solution and rinsed with de-ionized water. The measurements were collected from each well within the middle portion of the water column.

Oxygen Enhancement

As part of the bioremediation pilot study, an oxygen source, in the form of a solution of hydrogen peroxide (H_2O_2), and nutrients (nitrogen and phosphorous), was periodically introduced into wells EW-1, MW-2 and MW-8. The nutrient solution contained approximately 10,000 milligrams per liter (mg/L) H_2O_2, 20 mg/L nitrogen as nitrate, and 37 mg/L phosphate. On September 20, 1995, the fourth quarterly application of approximately 500 gallons of nutrient solution was introduced into the test wells. During the addition, water levels and flow rates were monitored to allow an evaluation of permeability and hydraulic effects of the nutrient addition. Dissolved oxygen measurements were made prior to and following the introduction. The data generated during the nutrient addition and dissolved oxygen measurements are summarized in Tables 3 and 4.

Dissolved Oxygen Measurement Results

Dissolved oxygen measurements are used as an indication of the effectiveness of the oxygenation achieved during the pilot study. Total dissolved oxygen concentrations measured in onsite wells during the November monitoring event ranged from 0.4 mg/L to 0.8 mg/L. Dissolved oxygen concentrations have varied in all wells since the previous measurements. Dissolved oxygen concentrations for the November 1995 monitoring event are provided in the groundwater sampling report in Appendix A. An historical summary of dissolved oxygen measurements is presented in Table 3. Concentrations of dissolved oxygen in the nutrient-amended wells declined to concentrations comparable to non-amended wells since the September 1995 nutrient addition.

GROUNDWATER SAMPLING AND ANALYTICAL TESTING

Sampling Protocol

Groundwater samples were collected on November 13, 1995 by Blaine Tech Services, Inc. (Blaine Tech). Prior to sampling, the groundwater was visually inspected to assess the presence of floating product. A minimum of three well volumes was evacuated prior to sampling using a teflon bladder pump. During pumping the discharge water was measured for pH, temperature, electrical conductivity, and turbidity. Groundwater samples were collected with a clean teflon bailer and decanted into clean 40-milliliter glass vials with teflon lined caps.

Samples were immediately labeled to designate sample number, time and date collected, and analysis requested, then stored in a chilled, thermally-insulated cooler for transport to the analytical laboratory. The information collected during the groundwater sampling and the chain of custody records are presented in a groundwater sampling report prepared by Blaine Tech, provided in Appendix A.

Analytical Program

Groundwater samples from all wells including the extraction well, were analyzed by American Environmental Network (AEN), a state-certified laboratory located in Pleasant Hill, California. Samples were analyzed for total petroleum hydrocarbons quantified as gasoline (TPH-gas), benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Test Method 8015M/8020.

Analytical Results

In general, concentrations of TPH-gas and BTEX increased slightly in the monitoring wells near the former UST relative to the previous quarterly sampling. However, this is consistent with historical trends in the fourth quarter of the year. Also, consistent with historical monitoring data, TPH-gas was detected in Wells MW-2, MW-5, MW-7, and EW-1. Detectable concentrations of BTEX were found in MW-2 and EW-1; benzene, toluene and/or total xylenes were also detected in MW-3, MW-4, MW-5, and MW-7. No TPH-gas or BTEX was detected in MW-6 and MW-8. Consistent with previous analytical results, Well MW-2, located within the backfill of the former UST excavation, exhibited the highest levels of dissolved hydrocarbons (TPH-gas and BTEX).

Analytical results for all wells, including historical monitoring results for the previous sampling events and relevant federal and state standards, are presented in Table 2. Laboratory reports and chain of custody records are provided in Appendix B. The distribution of petroleum hydrocarbons in groundwater at the site on November 13, 1995 is presented on Plate 4.

SUMMARY

Summary of Fourth Quarter Monitoring

Groundwater elevations have decreased since the August 10, 1995 sampling event. The decrease is consistent with the expected seasonal water-level decrease. As with prior monitoring events, the groundwater flow direction continues to be toward the southwest.

Concentrations of dissolved hydrocarbons have increased slightly in the monitoring wells near the former UST (MW-2 and EW-1) relative to the previous quarter. Initially high concentrations of dissolved oxygen following its addition were depleted, which is indicative of consumption of oxygen during aerobic biodegradation. The increase in chemical concentrations is likely attributable to the seasonal groundwater fluctuations. The oxygen and nutrient introduction and the chemical concentrations will continue to be monitored.

Summary of Results of In-Situ Bioremediation Pilot Study

The bioremediation pilot study has been successful in reducing concentrations of TPH and benzene by 65 to 70 percent in the nutrient amended wells. Four quarterly introductions of nutrients were followed by three consecutive declines in hydrocarbon concentrations. The fourth quarterly groundwater monitoring event indicated a slight increase in concentrations. The increase in hydrocarbon concentrations cannot be conclusively explained, however, it likely is due to the reduction in water levels. Similar rises in concentrations have been detected in wells in the fourth quarter of previous years.

Recommendations

In-situ bioremediation has been shown to effectively and significantly reduce dissolved petroleum hydrocarbon concentrations in groundwater at this site. Therefore, PES recommends that the introductions of oxygen and nutrients and associated monitoring be continued on a quarter-by-quarter basis. The introduction should be made until no significant continued progress is apparent or remedial goals have been met. At that time, case closure should be evaluated.

Quarterly groundwater monitoring has been ongoing at the site for six years. Groundwater flow and quality related to the former underground storage tank are well understood. The groundwater flow direction has consistently been to the southwest. The source of dissolved petroleum hydrocarbons onsite was an underground gasoline tank located near the southeast corner of the building.

Wells EW-1, MW-2, MW-4 and MW-8 are in the immediate vicinity of the former UST and are of value in the ongoing evaluation of groundwater quality and the progress of the remedial program. However, four other wells, MW-3, MW-5, MW-6 and MW-7 are not of value in evaluating the groundwater quality related to the former UST or the progress of the remedial program. Wells MW-3, MW-5 and MW-7 were installed along the northern and western property boundaries as part of the original site investigation and to identify potential upgradient sources. Because groundwater quality in those wells do not indicate significant upgradient or secondary onsite sources and do not provide significant information relative performance or evaluation of the ongoing remedial program, PES recommends that these wells be eliminated from the groundwater monitoring program.

Additionally, MW-6, located at the southeast corner of the building has consistently had no detectable concentrations of petroleum hydrocarbons. Because it is apparently cross-gradient of the affected area and has not shown any impact from either the former UST or the remedial program, PES recommends that this well also be eliminated from the groundwater monitoring program.

If you have any questions or comments, please do not hesitate to call either of the undersigned.

Yours very truly,

PES ENVIRONMENTAL, INC.

Jenny F. Han
Staff Geologist

Andrew A. Briefer, P. E.
Associate Engineer

Attachments:

	Table 1	Summary of Groundwater Elevations Through November 1995
	Table 2	Summary of Analytical Results for Groundwater Samples Through November 1995
	Table 3	Summary of Total Dissolved Oxygen Through November 1995
	Table 4	Summary of Nutrient Introduction Through November 1995
	Plate 1	Site Location Map
	Plate 2	Well Location Map
	Plate 3	Groundwater Elevation Contours on November 13, 1995
	Plate 4	Dissolved Hydrocarbons in Groundwater on November 13, 1995
	Appendix A	Groundwater Sampling Report
	Appendix B	Analytical Laboratory Reports

pc: Mr. Thomas Gram - P. O. Partners
Ms. Lynn Tolin - Emery Bay Plaza
Matt Dulka, Esq. - Hanson, Bridgett, Marcus, Vlahos & Rudy

QUALITY CONTROL REVIEWER

Robert S. Creps, P.E.
Principal Engineer

Table 1. **Summary of Groundwater Elevations Through November 1995**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-2	21-Feb-90	ES	15.75	11.72	4.03
	25-May-90	ES	15.75	11.83	3.92
	29-Aug-90	ES	15.75	11.72	4.03
	29-Nov-90	ES	15.75	11.99	3.76
	1-Mar-91	ES	15.79	12.87	2.92
	28-May-91	ES	15.79	12.21	3.58
	1-Aug-91	ES	15.79	NA	NA
	27-Jan-92	PES	15.79	11.78	4.01
	28-Feb-92	PES	15.79	11.70	4.09
	28-May-92	PES	15.79	11.83	3.96
	27-Aug-92	PES	15.79	12.28	3.51
	10-Nov-92	PES	15.79	12.40	3.39
	18-Feb-93	PES	15.79	12.00	3.79
	20-May-93	PES	15.79	12.00	3.79
	19-Aug-93	PES	15.79	12.11	3.68
	15-Nov-93	PES	15.79	11.64	4.15
	14-Feb-94	PES	15.79	11.45	4.34
	16-May-94	PES	15.79	11.25	4.54
	10-Aug-94	PES	15.79	11.22	4.57
	3-Nov-94	PES	15.79	11.32	4.47
	9-Feb-95	PES	15.79	10.64	5.15
	9-May-95	PES	15.79	10.60	5.19
	10-Aug-95	PES	15.79	10.98	4.81
	13-Nov-95	**PES**	**15.79**	**11.18**	**4.61**
MW-3	21-Feb-90	ES	12.45	9.18	3.27
	25-May-90	ES	12.45	9.25	3.20
	29-Aug-90	ES	12.45	9.50	2.95
	29-Nov-90	ES	12.45	9.80	2.65
	1-Mar-91	ES	12.43	9.51	2.92
	28-May-91	ES	12.43	9.03	3.40
	1-Aug-91	ES	12.43	NA	NA
	27-Jan-92	PES	12.43	9.44	2.99
	28-Feb-92	PES	12.43	8.80	3.63
	28-May-92	PES	12.43	8.80	3.63
	27-Aug-92	PES	12.43	9.18	3.25
	10-Nov-92	PES	12.43	9.44	2.99
	18-Feb-93	PES	12.43	7.59	4.84
	20-May-93	PES	12.43	8.21	4.22
	19-Aug-93	PES	12.43	8.71	3.72
	15-Nov-93	PES	12.43	9.09	3.34

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Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-3 Cont.	14-Feb-94	PES	12.43	8.84	3.59
	16-May-94	PES	12.43	8.18	4.25
	10-Aug-94	PES	12.43	8.72	3.71
	3-Nov-94	PES	12.43	8.13	4.30
	9-Feb-95	PES	12.43	6.86	5.57
	9-May-95	PES	12.43	7.16	5.27
	10-Aug-95	PES	12.43	8.00	4.43
	13-Nov-95	**PES**	**12.43**	**8.44**	**3.99**
MW-4	21-Feb-90	ES	12.24	8.63	3.61
	25-May-90	ES	12.24	8.58	3.66
	29-Aug-90	ES	12.24	8.50	3.74
	29-Nov-90	ES	12.24	8.74	3.50
	1-Mar-91	ES	12.24	8.65	3.59
	28-May-91	ES	12.24	8.57	3.67
	1-Aug-91	ES	12.24	NA	NA
	27-Jan-92	PES	12.24	8.62	3.62
	28-Feb-92	PES	12.24	8.52	3.72
	28-May-92	PES	12.94	8.35	3.89
	27-Aug-92	PES	12.24	9.00	3.24
	10-Nov-92	PES	12.24	8.85	3.39
	18-Feb-93	PES	12.24	8.17	4.07
	20-May-93	PES	12.24	8.21	4.03
	19-Aug-93	PES	12.24	8.20	4.04
	15-Nov-93	PES	12.24	8.33	3.91
	14-Feb-94	PES	12.24	8.30	3.94
	16-May-94	PES	12.24	8.20	4.04
	10-Aug-94	PES	12.24	8.14	4.10
	3-Nov-94	PES	12.24	8.30	3.94
	9-Feb-95	PES	12.24	8.11	4.13
	9-May-95	PES	12.24	7.76	4.48
	10-Aug-95	PES	12.24	7.91	4.33
	13-Nov-95	**PES**	**12.24**	**7.95**	**4.29**
MW-5	21-Feb-90	ES	12.81	6.91	5.90
	25-May-90	ES	12.81	7.58	5.23
	29-Aug-90	ES	12.81	7.75	5.06
	29-Nov-90	ES	12.81	8.17	4.64
	1-Mar-91	ES	12.82	8.11	4.71
	28-May-91	ES	12.82	7.39	5.43
	1-Aug-91	ES	12.82	NA	NA

Table 1. **Summary of Groundwater Elevations Through November 1995**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-5 Cont.	27-Jan-92	PES	12.82	7.90	4.92
	28-Feb-92	PES	12.82	7.73	5.09
	28-May-92	PES	12.82	7.18	5.64
	27-Aug-92	PES	12.82	7.54	5.28
	10-Nov-92	PES	12.82	7.90	4.92
	18-Feb-93	PES	12.82	6.58	6.24
	20-May-93	PES	12.82	6.29	6.53
	19-Aug-93	PES	12.82	6.89	5.93
	15-Nov-93	PES	12.82	7.43	5.39
	14-Feb-94	PES	12.82	7.16	5.66
	16-May-94	PES	12.82	6.50	6.32
	10-Aug-94	PES	12.82	6.98	5.84
	3-Nov-94	PES	12.82	7.36	5.46
	9-Feb-95	PES	12.82	5.68	7.14
	9-May-95	PES	12.82	5.36	7.46
	10-Aug-95	PES	12.82	6.29	6.53
	13-Nov-95	**PES**	**12.82**	**6.89**	**5.93**
MW-6	1-Mar-91	ES	12.03	8.59	3.44
	28-May-91	ES	12.03	8.35	3.68
	1-Aug-91	ES	12.03	NA	NA
	27-Jan-92	PES	12.03	8.32	3.71
	28-Feb-92	PES	12.03	8.08	3.95
	28-May-92	PES	12.03	8.04	3.99
	27-Aug-92	PES	12.03	8.48	3.55
	10-Nov-92	PES	12.03	8.52	3.51
	18-Feb-93	PES	12.03	8.14	3.89
	20-May-93	PES	12.03	8.46	3.57
	19-Aug-93	PES	12.03	8.61	3.42
	15-Nov-93	PES	12.03	8.30	3.73
	14-Feb-94	PES	12.03	8.09	3.94
	16-May-94	PES	12.03	7.82	4.21
	10-Aug-94	PES	12.03	8.46	3.57
	3-Nov-94	PES	12.03	8.16	3.87
	9-Feb-95	PES	12.03	7.66	4.37
	9-May-95	PES	12.03	8.57	3.46
	10-Aug-95	PES	12.03	7.72	4.31
	13-Nov-95	**PES**	**12.03**	**8.15**	**3.88**
MW-7	1-Mar-91	ES	12.9	7.51	5.39
	28-May-91	ES	12.9	7.07	5.83

Table 1. **Summary of Groundwater Elevations Through November 1995**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-7	1-Aug-91	ES	12.9	NA	NA
Cont.	27-Jan-92	PES	12.9	7.28	5.62
	28-Feb-92	PES	12.9	7.04	5.86
	28-May-92	PES	12.9	6.81	6.09
	27-Aug-92	PES	12.9	7.12	5.78
	10-Nov-92	PES	12.9	7.80	5.10
	18-Feb-93	PES	12.9	6.54	6.36
	20-May-93	PES	12.9	6.17	6.73
	19-Aug-93	PES	12.9	6.60	6.30
	15-Nov-93	PES	12.9	6.89	6.01
	14-Feb-94	PES	12.9	6.50	6.40
	17-May-94	PES	12.9	6.07	6.83
	10-Aug-94	PES	12.9	6.34	6.56
	3-Nov-94	PES	12.9	6.18	6.72
	9-Feb-95	PES	12.9	5.57	7.33
	9-May-95	PES	12.9	5.15	7.75
	10-Aug-95	PES	12.9	5.72	7.18
	13-Nov-95	**PES**	**12.9**	**5.98**	**6.92**
MW-8	3-Nov-94	PES	15.01	11.06	3.95
	9-Feb-95	PES	15.01	10.23	4.78
	9-Feb-95	PES	15.01	10.48	4.53
	10-Aug-95	PES	15.01	10.74	4.27
	13-Nov-95	**PES**	**15.01**	**11.02**	**3.99**

NOTES:

Ft MSL = feet above Mean Sea Level
ES = Engineering-Science, Inc.
PES = PES Environmental, Inc.
NA = Information not available at this date.

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-2	Nov-89	ES	100	NA	8.4	7.4	2.4	13	0.015 *	0.05
	Feb-90	ES	54	NA	7.8	5.6	1.6	8.4	0.032 *	0.021
	May-90	ES	40	NA	7.8	7.5	1.6	7.6	0.076 *	0.025
	Aug-90	ES	49	4.6	9	8	ND	8.9	0.040 *	0.0059
	Nov-90	ES	73	3.5	6.9	5.9	1.4	7.4	NA	NA
	Mar-91	ES	72	1.8	5.5	6.6	1	7.7	NA	NA
	May-91	ES	31	ND	8.4	4.7	1.7	6.3	NA	NA
	Aug-91	ES	47	ND	7.6	1.6	7.3	7.8	NA	NA
	29-Jan-92	PES	77.000	NA	10.000	8.700	2.000	7.600	NA	NA
	28-Feb-92	PES	70.000	NA	9.100	6.400	0.530	7.400	NA	NA
	28-May-92	PES	54.000	NA	8.000	4.800	2.400	6.200	NA	NA
	27-Aug-92	PES	47.000	NA	2.700	2.900	3.400	9.200	NA	NA
	10-Nov-92	PES	45.000	<20	6.600	4.000	2.000	5.800	<0.050	NA
	18-Feb-93	PES	14.000	NA	2.300	0.810	0.670	1.400	NA	NA
	20-May-93	PES	43.000	NA	7.300	5.200	1.500	5.500	NA	NA
	19-Aug-93	PES	45.000	NA	4.900	3.700	1.300	3.400	NA	NA
	15-Nov-93	PES	97.000	NA	6.100	1.700	1.700	4.100	NA	NA
	14-Feb-94	PES	27.000	NA	5.000	0.830	1.200	3.100	NA	NA
	16-May-94	PES	77.000	NA	6.800	1.100	1.400	3.300	NA	NA
	10-Aug-94	PES	25	NA	5.600	0.750	1.400	1.700	NA	NA
	3-Nov-94	PES	24	NA	7.200	0.500	1.500	1.600	NA	NA
	9-Feb-95	PES	12	NA	2.200	0.100	0.480	0.940	NA	NA
	9-May-95	PES	7.8	NA	1.300	0.078	0.340	0.480	NA	NA
	10-Aug-95	PES	5.3	NA	1.300	0.150	0.240	0.270	NA	NA
	13-Nov-95	**PES**	**8.5**	**NA**	**2.100**	**0.250**	**0.430**	**0.440**	**NA**	**NA**
MW-3	Nov-89	ES	0.13	NA	0.0022	ND	ND	0.003	ND	ND
	Feb-90	ES	ND	NA	0.0025	ND	ND	ND	NA	0.011
	May-90	ES	ND	ND	0.002	ND	ND	ND	ND	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-3	Aug-90	ES	ND	0.8	0.0044	0.0029	ND	0.0054	NA	NA
Cont.	Nov-90	ES	0.9	0.8	0.0034	ND	ND	ND	NA	NA
	Mar-91	ES	ND	ND	0.025	0.025	0.0053	0.32	NA	NA
	May-91	ES	ND	ND	0.0026	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	0.0019	ND	ND	ND	NA	NA
	29-Jan-92	PES	0.092	NA	0.0024	<0.0003	0.0006	<0.0003	NA	NA
	28-Feb-92	PES	0.160***	NA	0.0028	<0.0003	0.0007	0.0005	NA	NA
	28-May-92	PES	<0.050	NA	0.0025	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.370	NA	0.0040	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.240	<0.100	0.0042	<0.0003	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.140	NA	0.0018	<0.0005	<0.0005	<0.0005	NA	NA
	20-May-93	PES	0.072	NA	0.0031	<0.0005	<0.0005	<0.0005	NA	NA
	19-Aug-93	PES	<0.050	NA	0.0032	<0.0005	<0.0005	0.0007	NA	NA
	15-Nov-93	PES	0.070	NA	0.0023	0.0007	<0.0005	0.0015	NA	NA
	14-Feb-94	PES	0.120	NA	0.0053	0.0023	0.0012	0.0042	NA	NA
	16-May-94	PES	0.120	NA	0.0031	<0.0005	<0.0005	0.0017	NA	NA
	10-Aug-94	PES	0.1	NA	0.003	< 0.0005	0.0005	<0.002	NA	NA
	3-Nov-94	PES	0.1	NA	0.003	< 0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.1	NA	0.002	<0.0005	<0.0005	<0.002	NA	NA
	9-May-95	PES	0.1	NA	0.003	<0.0005	0.0005	<0.002	NA	NA
	10-Aug-95	PES	0.1	NA	0.003	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	**PES**	**<0.05**	**NA**	**0.003**	**<0.0005**	**<0.0005**	**<0.002**	**NA**	**NA**
MW-4	Nov-89	ES	0.2	NA	0.0023	ND	ND	ND	ND	ND
	Feb-90	ES	ND	NA	ND	ND	ND	ND	NA	0.006
	May-90	ES	ND	ND	0.001	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.8	0.0089	0.0071	ND	0.0094	NA	NA
	Nov-90	ES	ND	0.7	0.0027	ND	ND	ND	NA	NA
	Mar-91	ES	NA	ND	0.003	ND	ND	ND	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-4	May-91	ES	NA	ND	0.0024	ND	ND	ND	NA	NA
Cont.	Aug-91	ES	NA	ND	0.0015	ND	ND	ND	NA	NA
	29-Jan-92	PES	<0.050	NA	0.0022	0.0004	<0.0003	0.0007	NA	NA
	28-Feb-92	PES	<0.050	NA	0.0016	<0.0003	<0.0003	0.0003	NA	NA
	28-May-92	PES	<0.050	NA	0.0015	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.080	NA	0.003	<0.001	<0.0005	0.0005	NA	NA
	10-Nov-92	PES	0.180	<0.100	0.060	0.0009	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.060	NA	0.0017	<0.0005	<0.0005	<0.0005	NA	NA
	20-May-93	PES	<0.050	NA	0.0022	<0.0005	<0.0005	<0.0005	NA	NA
	19-Aug-93	PES	<0.050	NA	0.0020	0.0006	<0.0005	0.0005	NA	NA
	15-Nov-93	PES	<0.050	NA	0.0020	0.0005	<0.0005	0.0009	NA	NA
	14-Feb-94	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	16-May-94	PES	<0.050	NA	0.0017	0.0009	<0.0005	0.0011	NA	NA
	10-Aug-94	PES	<0.05	NA	0.002	<0.0005	<0.0005	<0.002	NA	NA
	3-Nov-94	PES	0.06	NA	0.002	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.06	NA	0.002	0.0006	<0.0005	<0.002	NA	NA
	9-May-95	PES	0.07	NA	0.001	<0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	0.001	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	**PES**	**<0.05**	**NA**	**0.003**	**<0.0005**	**<0.0005**	**<0.002**	**NA**	**NA**
MW-5	Nov-89	ES	ND	NA	0.074	ND	ND	0.0042	ND	ND
	Feb-90	ES	ND	NA	0.2	ND	ND	ND	NA	0.012
	May-90	ES	ND	ND	0.11	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.7	0.066	0.0022	ND	0.0038	NA	NA
	Nov-90	ES	0.6	0.9	0.069	ND	ND	ND	NA	NA
	Mar-91	ES	ND	1.1	0.066	0.0023	ND	ND	NA	NA
	May-91	ES	ND	ND	0.11	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	0.078	0.0021	ND	ND	NA	NA
	29-Jan-92	PES	0.190	NA	0.090	0.0005	<0.0003	0.0006	NA	NA

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Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-5	28-Feb-92	PES	0.230***	NA	0.110	0.0009	<0.0003	0.0005	NA	NA
Cont.	28-May-92	PES	0.130	NA	0.100	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.520	NA	0.083	0.002	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.240	<0.100	0.074	0.0010	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.190	NA	0.056	0.0006	<0.0005	<0.0005	NA	NA
	20-May-93	PES	<0.200	NA	0.056	<0.002	<0.002	<0.002	NA	NA
	19-Aug-93	PES	0.170	NA	0.050	0.0007	<0.0005	<0.0005	NA	NA
	15-Nov-93	PES	0.220	NA	0.049	0.001	<0.001	<0.001	NA	NA
	14-Feb-94	PES	0.140	NA	0.062	<0.0005	<0.0005	<0.0005	NA	NA
	16-May-94	PES	0.310	NA	0.140	0.003	<0.003	<0.003	NA	NA
	12-Aug-94	PES	0.5	NA	0.095	0.034	0.004	0.014	NA	NA
	3-Nov-94	PES	0.4	NA	0.079	0.0006	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.3	NA	0.074	0.0008	<0.0005	<0.0002	NA	NA
	9-May-95	PES	0.2	NA	0.047	0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	0.2	NA	0.046	0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	**PES**	**0.3**	**NA**	**0.048**	**0.0007**	**<0.0005**	**<0.002**	**NA**	**NA**
MW-6	May-90	ES	NA	ND	ND	ND	ND	ND	ND	ND**
	Aug-90	ES	NA	ND	NA	NA	NA	NA	NA	ND**
	Nov-90	ES	1.2	1.4	0.0012	ND	ND	ND	0.0012	NA
	Mar-91	ES	ND	ND	ND	ND	ND	ND	NA	NA
	May-91	ES	ND	ND	ND	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	ND	ND	ND	ND	NA	NA
	29-Jan-92	PES	<0.050	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-Feb-92	PES	<0.050	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-May-92	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.050***	NA	<0.0005	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	<0.050	<0.100	<0.0003	<0.0003	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA

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Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-6	20-May-93	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
Cont.	19-Aug-93	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	15-Nov-93	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	14-Feb-94	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	16-May-94	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	10-Aug-94	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	3-Nov-94	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	9-May-95	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	**PES**	**<0.05**	**NA**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.002**	**NA**	**NA**
MW-7	May-90	ES	NA	0.6	0.24	ND	ND	ND	0.24	ND**
	Aug-90	ES	ND	ND	0.081	0.0018	ND	ND	0.0844	ND**
	Nov-90	ES	ND	0.8	0.054	ND	ND	ND	0.054	NA
	Mar-91	ES	ND	ND	0.1	0.0036	ND	ND	NA	NA
	May-91	ES	ND	ND	0.12	0.0027	ND	ND	NA	NA
	Aug-91	ES	ND	ND	0.074	0.0033	ND	ND	NA	NA
	29-Jan-92	PES	0.270	NA	0.025	0.0005	<0.0003	0.0008	NA	NA
	28-Feb-92	PES	0.100***	NA	0.033	0.0007	<0.0003	0.0007	NA	NA
	28-May-92	PES	0.150	NA	0.021	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.440	NA	0.011	0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.370	<0.100	0.031	0.0012	<0.0003	0.0012	<0.0003	NA
	18-Feb-93	PES	0.270	NA	0.077	0.0013	<0.0005	0.0014	NA	NA
	20-May-93	PES	0.300	NA	0.150	0.003	<0.002	0.003	NA	NA
	19-Aug-93	PES	0.110	NA	0.040	0.0010	<0.0005	0.0011	NA	NA
	15-Nov-93	PES	0.120	NA	0.015	0.0006	<0.0005	0.0023	NA	NA
	14-Feb-94	PES	0.120	NA	0.038	<0.0005	<0.0005	<0.0005	NA	NA
	17-May-94	PES	<0.300	NA	0.061	<0.003	<0.003	<0.003	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-7	10-Aug-94	PES	0.1	NA	0.009	<0.0005	<0.0005	<0.002	NA	NA
Cont.	3-Nov-94	PES	0.1	NA	0.003	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.2	NA	0.050	0.0006	<0.0005	<0.002	NA	NA
	9-May-95	PES	0.3	NA	0.120	0.001	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	0.007	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	**PES**	**0.09**	**NA**	**0.003**	**<0.0005**	**<0.0005**	**<0.002**	**NA**	**NA**
MW-8	3-Nov-94	PES	<0.05	NA	0.001	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	9-May-95	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	**PES**	**<0.05**	**NA**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.002**	**NA**	**NA**
EW-1	May-90	ES	20	ND	7.5	4.5	1	6.3	0.068	ND**
	Aug-90	ES	NA	3.5	6	4.2	ND	4.6	0.016 *	ND**
	Nov-90	ES	47	3.1	6	3.4	1	4.7	NA	NA
	17-Dec-90	ES	NA	NA	11	7.9	2.2	10	NA	NA
	19-Dec-90	ES	NA	NA	3.7	2.5	ND	2.3	NA	NA
	21-Dec-90	ES	NA	NA	3.2	2.2	ND	1.7	NA	NA
	27-Dec-90	ES	NA	NA	2.9	2.1	0.16	1.5	NA	NA
	4-Jan-91	ES	NA	NA	3.2	2.8	ND	ND	NA	NA
	11-Jan-91	ES	NA	NA	3	2.4	0.2	1.8	NA	NA
	6-Feb-91	ES	NA	NA	0.47	0.23	0.011	0.39	NA	NA
	13-Feb-91	ES	NA	NA	1.2	0.28	ND	0.36	NA	NA
	15-Mar-91	ES	NA	NA	0.13	0.085	0.006	0.17	NA	NA
	3-Jul-91	ES	NA	NA	1.3	0.95	0.22	1.4	NA	NA
	1-Aug-91	ES	NA	NA	0.22	0.19	0.013	0.27	NA	NA
	16-Aug-91	ES	NA	NA	0.17	0.16	0.013	0.19	NA	NA
	13-Nov-91	ES	NA	NA	3.1	0.27	0.04	0.22	NA	NA
	29-Jan-92	PES	2.700	NA	0.570	0.150	0.0070	0.260	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
EW-1	26-Mar-92	PES	25.000	NA	3.600	2.600	0.530	2.600	NA	NA
Cont.	28-May-92	PES	16.000	NA	3.300	3.200	0.750	2.600	NA	NA
	29-Jun-92	PES	7.000	NA	2.200	3.100	0.270	1.400	NA	NA
	21-Jul-92	PES	1.600	NA	0.220	0.017	<0.0005	0.100	NA	NA
	27-Aug-92	PES	NS	NS	NS	NS	NS	NS	NS	NS
	23-Sep-92	PES	5.200	NA	1.100	0.590	0.100	1.000	NA	NA
	27-Oct-92	PES	1.300	NA	0.220	0.061	0.0053	0.110	NA	NA
	24-Nov-92	PES	7.100	NA	1.400	1.100	0.120	0.890	NA	NA
	18-Feb-93	PES	7.200	NA	1.400	0.930	0.210	1.000	NA	NA
	09-Mar-93	PES	4.600	NA	0.990	0.750	0.062	0.840	NA	NA
	21-Apr-93	PES	4.900	NA	0.270	0.180	0.020	0.190	NA	NA
	13-May-93	PES	2.600	NA	0.520	0.110	0.023	0.330	NA	NA
	28-Jun-93	PES	9.500	NA	1.900	0.460	0.230	1.000	NA	NA
	11-Aug-93	PES	1.300	NA	<0.002	<0.002	<0.002	0.400	NA	NA
	15-Nov-93	PES	46.000	NA	2.900	0.380	0.500	1.700	NA	NA
	14-Feb-94	PES	21.000	NA	4.500	0.860	1.000	2.800	NA	NA
	16-May-94	PES	19.000	NA	7.300	0.930	1.300	3.300	NA	NA
	10-Aug-94	PES	19	NA	4.200	0.490	1.100	1.500	NA	NA
	3-Nov-94	PES	20	NA	6.000	0.230	1.400	1.400	NA	NA
	9-Feb-95	PES	8.7	NA	1.800	0.110	0.380	0.740	NA	NA
	9-May-95	PES	6.6	NA	1.100	0.051	0.270	0.380	NA	NA
	10-Aug-95	PES	2.6	NA	0.410	0.016	0.110	0.097	NA	NA
	13-Nov-95	**PES**	**14**	**NA**	**2.900**	**0.110**	**0.550**	**0.440**	**NA**	**NA**

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005

NOTES:

* = 1,2-Dichlorethane concentration (only 1,2-Dichloroethane detected).
** = Organic Lead
*** = TPH quantified as gasoline but chromatogram pattern was not typical of gasoline.
ES = Engineering-Science, Inc.
PES = PES Environmental, Inc.
NA = Not analyzed
ND = Not detected above method detection limit.
NS = Not sampled.
<0.0005 = Not detected above indicated laboratory reporting limit.
MCL = California Maximum Contaminant level, current as of January 1991.
DAL = Department of Health Services Action Levels, current as of January 1991.
TPH = Total Petroleum Hydrocarbons

Table 3. Summary of Total Dissolved Oxygen Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-2	10-Aug-94	10:52	PES	<0.1	
	3-Nov-94	12:03	Blaine	0.2	
	29-Dec-94	9:56	PES	1.9	(1)
	29-Dec-94	17:05	PES	>20	(2)
	9-Feb-95	14:31	Blaine	0.9	
	16-Mar-95	9:45	PES	0.07	(1)
	16-Mar-95	16:05	PES	>20	(2)
	21-Mar-95	9:35	PES	0.025	
	23-Mar-95	9:45	PES	0.14	
	28-Mar-95	9:50	PES	0.12	
	6-Apr-95	11:12	Blaine	0.1	
	9-May-95	11:25	Blaine	1.3	
	20-Jun-95	10:35	PES	0	(1)
	20-Jun-95	15:23	PES	>20	(2)
	26-Jun-95	19:50	PES	0.12	
	28-Jun-95	19:47	PES	0.12	
	1-Jul-95	19:45	PES	0.45	
	3-Jul-95	19:35	PES	0.06	
	10-Aug-95	13:11	Blaine	0.7	
	20-Sep-95	9:55	PES	0.8	(1)
	23-Sep-95	13:25	PES	1.6	
	25-Sep-95	8:20	PES	2.0	
	28-Sep-95	9:51	PES	1.1	
	13-Nov-95	**11:10**	**Blaine**	**0.4**	
MW-3	10-Aug-94	10:14	PES	<0.1	
	3-Nov-94	10:03	Blaine	0.2	
	29-Dec-94	9:09	PES	2.1	(1)
	9-Feb-95	12:05	Blaine	0.8	
	16-Mar-95	15:45	PES	0.06	(1)
	21-Mar-95	10:05	PES	0.11	
	23-Mar-95	10:04	PES	0.14	
	28-Mar-95	10:05	PES	*	
	6-Apr-95	11:30	Blaine	0.05	
	9-May-95	9:48	Blaine	0.9	
	20-Jun-95	10:12	PES	0.01	(1)
	20-Jun-95	14:53	PES	0.01	(2)
	26-Jun-95	20:34	PES	0	
	10-Aug-95	11:19	Blaine	1.1	
	20-Sep-95	14:41	PES	0.6	(1)
	13-Nov-95	**9:54**	**Blaine**	**0.4**	
MW-4	10-Aug-94	10:08	PES	0.1	
	3-Nov-94	9:24	Blaine	0.1	
	29-Dec-94	10:06	PES	2	(1)
	9-Feb-95	11:41	Blaine	0.6	

Table 3. Summary of Total Dissolved Oxygen Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-4	16-Mar-95	15:30	PES	0.07	(1)
Cont.	9-May-95	9:37	Blaine	1.7	
	20-Jun-95	10:20	PES	0	(1)
	20-Jun-95	15:01	PES	0	(2)
	3-Jul-95	19:40	PES	0.07	
	10-Aug-95	11:00	Blaine	0.7	
	20-Sep-95	14:20	PES	0.6	(1)
	13-Nov-95	**9:37**	**Blaine**	**0.6**	
MW-5	10-Aug-94	10:32	PES	0.1-0.2	
	3-Nov-94	10:47	Blaine	0.4	
	29-Dec-94	9:18	PES	2.1	(1)
	9-Feb-95	12:48	Blaine	1.0	
	9-May-95	10:25	Blaine	1.8	
	20-Jun-95	10:05	PES	0	(1)
	20-Jun-95	14:43	PES	0.03	(2)
	28-Jun-95	20:10	PES	0.02	
	10-Aug-95	12:10	Blaine	0.8	
	20-Sep-95	14:55	PES	0.7	(1)
	13-Nov-95	**10:28**	**Blaine**	**0.5**	
MW-6	10-Aug-94	10:03	PES	<0.1	
	3-Nov-94	9:42	Blaine	0.4	
	29-Dec-94	9:03	PES	2.2	(1)
	9-Feb-95	11:18	Blaine	1.0	
	16-Mar-95	15:15	PES	0.1	(1)
	21-Mar-95	9:50	PES	0.1	
	9-May-95	9:17	Blaine	1.2	
	20-Jun-95	10:23	PES	0.01	(1)
	20-Jun-95	15:10	PES	0	(2)
	26-Jun-95	19:40	PES	0.20	
	28-Jun-95	19:33	PES	0.22	
	1-Jul-95	19:40	PES	0.81	
	3-Jul-95	19:10	PES	0.56	
	10-Aug-95	10:40	Blaine	1.2	
	20-Sep-95	14:30	PES	0.8	(1)
	23-Sep-95	13:30	PES	1.2	
	25-Sep-95	8:30	PES	0.9	
	28-Sep-95	10:10	PES	1.0	
	13-Nov-95	**9:13**	**Blaine**	**0.8**	
MW-7	10-Aug-94	10:37	PES	<0.1	
	3-Nov-94	10:25	Blaine	0.3	
	29-Dec-94	9:33	PES	2.2	(1)
	9-Feb-95	12:26	Blaine	0.8	
	16-Mar-95	16:00	PES	0.06	(1)
	9-May-95	10:08	Blaine	1.1	

Table 3. Summary of Total Dissolved Oxygen Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-7	3-Jul-95	19:30	PES	0.19	
Cont.	10-Aug-95	11:47	Blaine	0.9	
	20-Sep-95	10:45	PES	1.0	(1)
	13-Nov-95	**10:13**	**Blaine**	**0.6**	
MW-8	10-Aug-94	NM	PES	NM	
	3-Nov-94	11:20	Blaine	0.3	
	29-Dec-94	9:40	PES	2.1	(1)
	29-Dec-94	17:10	PES	>20	(2)
	9-Feb-95	13:40	Blaine	0.8	
	16-Mar-95	9:20	PES	0.5	(1)
	16-Mar-95	16:10	PES	>20	(2)
	21-Mar-95	9:00	PES	>20	
	23-Mar-95	9:05	PES	4.1	
	28-Mar-95	9:10	PES	>20	
	6-Apr-95	10:45	Blaine	>15	
	9-May-95	10:52	Blaine	6	
	20-Jun-95	10:00	PES	0.32	(1)
	20-Jun-95	14:33	PES	>20	(2)
	26-Jun-95	20:15	PES	>20	
	28-Jun-95	19:59	PES	>20	
	1-Jul-95	20:05	PES	>20	
	3-Jul-95	19:20	PES	>20	
	10-Aug-95	12:32	Blaine	1.0	
	20-Sep-95	10:30	PES	1.0	(1)
	23-Sep-95	13:10	PES	>15	
	25-Sep-95	8:01	PES	>15	
	28-Sep-95	9:30	PES	>15	
	13-Nov-95	**10:49**	**Blaine**	**0.4**	
EW-1	10-Aug-94	10:57	PES	<0.1	
	3-Nov-94	11:50	Blaine	0.3	
	29-Dec-94	9:52	PES	2	(1)
	29-Dec-94	17:00	PES	>20	(2)
	9-Feb-95	14:11	Blaine	1.0	
	16-Mar-95	10:00	PES	0.1	(1)
	16-Mar-95	16:00	PES	>20	(2)
	21-Mar-95	9:20	PES	>20	
	23-Mar-95	9:30	PES	>20	
	28-Mar-95	9:40	PES	0.2	
	6-Apr-95	11:05	Blaine	0.18	
	9-May-95	11:19	Blaine	1.6	
	20-Jun-95	10:30	PES	0.01	(1)
	20-Jun-95	15:17	PES	>20	(2)
	26-Jun-95	20:00	PES	>20	
	28-Jun-95	19:40	PES	>20	

Table 3. Summary of Total Dissolved Oxygen Through November 1995
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
EW-1	1-Jul-95	19:50	PES	5.68	
Cont.	3-Jul-95	19:38	PES	0.26	
	10-Aug-95	12:50	Blaine	0.6	
	20-Sep-95	9:45	PES	1.1	(1)
	23-Sep-95	13:20	PES	>15	
	25-Sep-95	8:15	PES	>15	
	28-Sep-95	9:43	PES	>15	
	13-Nov-95	**11:26**	**Blaine**	**0.5**	

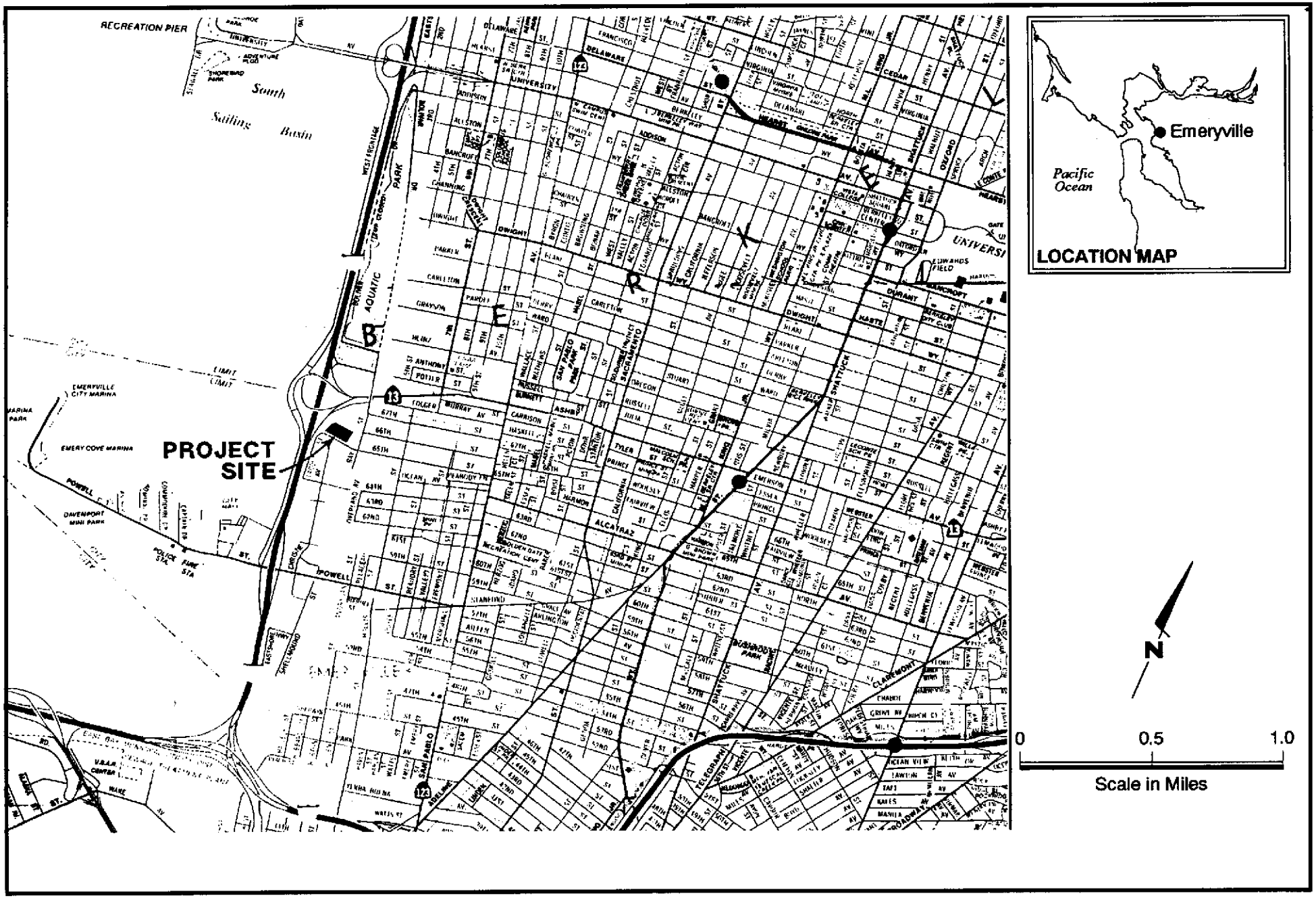
NOTES:

PES = PES Environmental, Inc.
Blaine = Blaine Technical Services
>20 = Above indicated equipment quantification maximum.
<0.1 = Below indicated equipment quantification minimum.
*YSI probe malfunctions
(1) = Measurement taken prior to nutrient introduction
(2) = Measurement taken after nutrient introduction
NM = Not measured.
mg/L = milligrams per liter

Table 4. **Summary of Nutrient Introduction Through November 1995**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Name	Date Introduced	Flow Rate (gpm)	Volume of Enriched Water Introduced (gallons)	Concentration of H_2O_2 (ppm)	Amount of O_2 Introduced (pounds)
EW-1	12/29/94	1.2 to 1.4	265	10,000	10.39
	3/16/95	3.9 to 4.1	249.5	10,000	9.78
	6/21/95	4.4 to 4.6	250	10,000	9.80
	9/20/95	4.1 to 4.3	250	10,000	9.80
MW-2	12/29/94	2.8 to 4.3	201	10,000	7.88
	3/16/95	3.9	165.5	10,000	6.49
	6/21/95	1.3 to 4.6	158.4	10,000	6.21
	9/20/95	4.2 to 4.3	178.7	10,000	7.00
MW-8	12/29/94	0.5 to 0.6	35	10,000	1.37
	3/16/95	0.21 to 0.67	80	10,000	3.14
	6/21/95	0.2 to 0.6	96	10,000	3.76
	9/20/95	0.3 to 1.7	81.3	10,000	3.19
		TOTAL	2010.4	**TOTAL**	78.79

Notes:
gpm = gallons per minute
ppm = parts per million
Approximately 20 ppm of nitrogen as nitrate and 37 ppm of phosphate was present in solution.

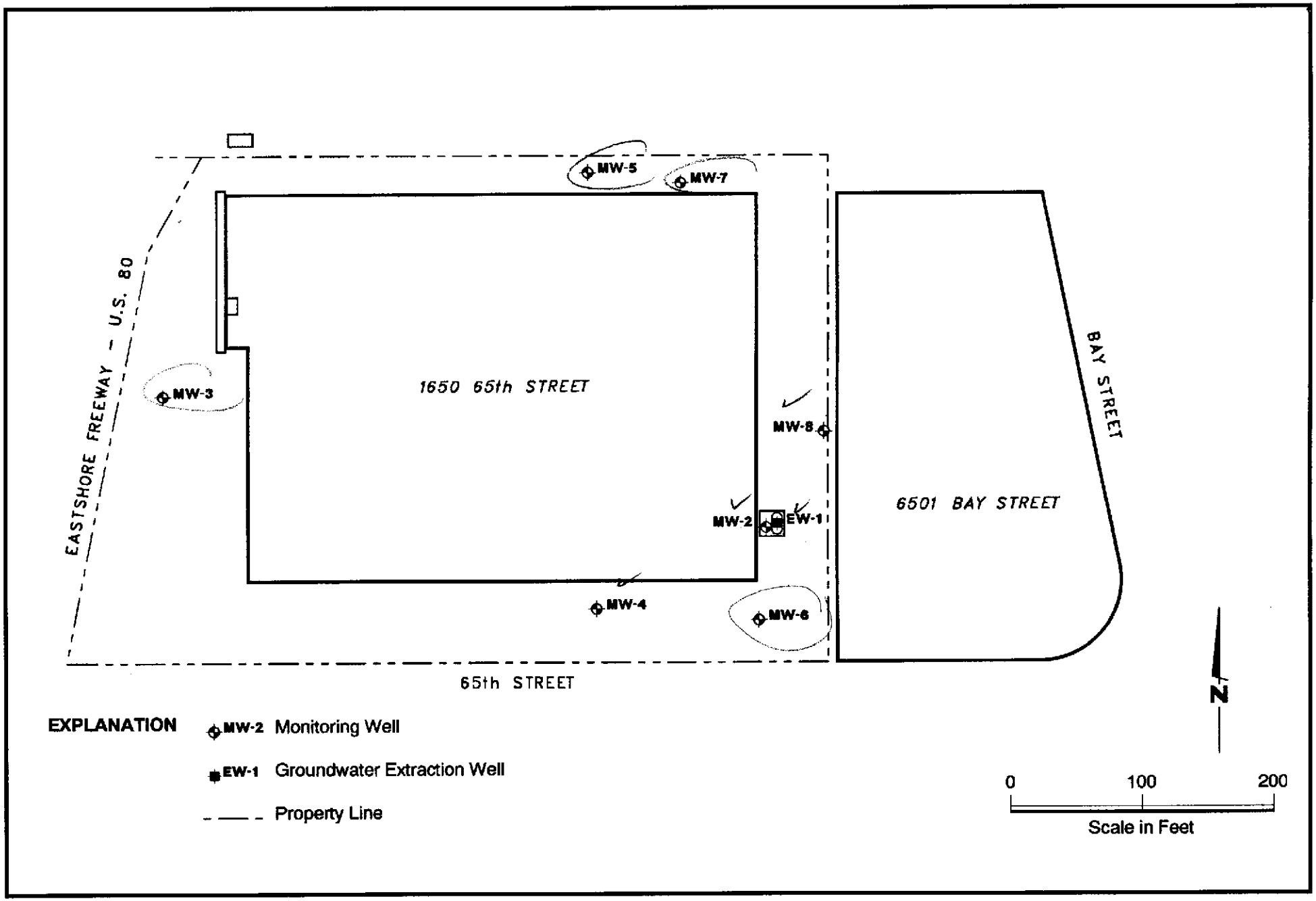


PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
1650 65th Street
Emeryville, California

PLATE
1

131.0100.003	131010V1.CDR		12/95
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

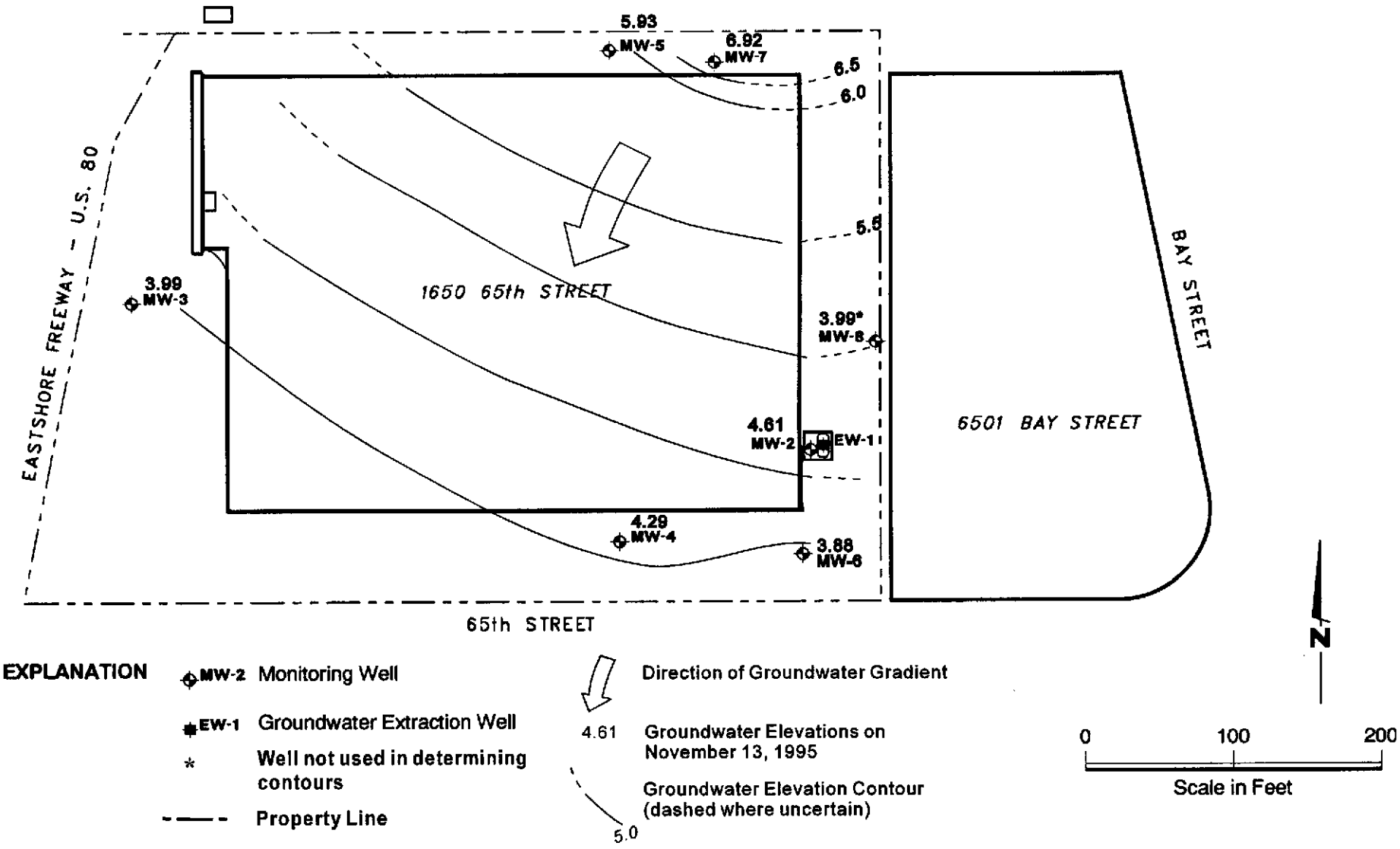


PES Environmental, Inc.
Engineering & Environmental Services

Well Location Map
1650 65th Street
Emeryville, California

PLATE
2

131.0100.003	131010S1.CDR		12/95
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

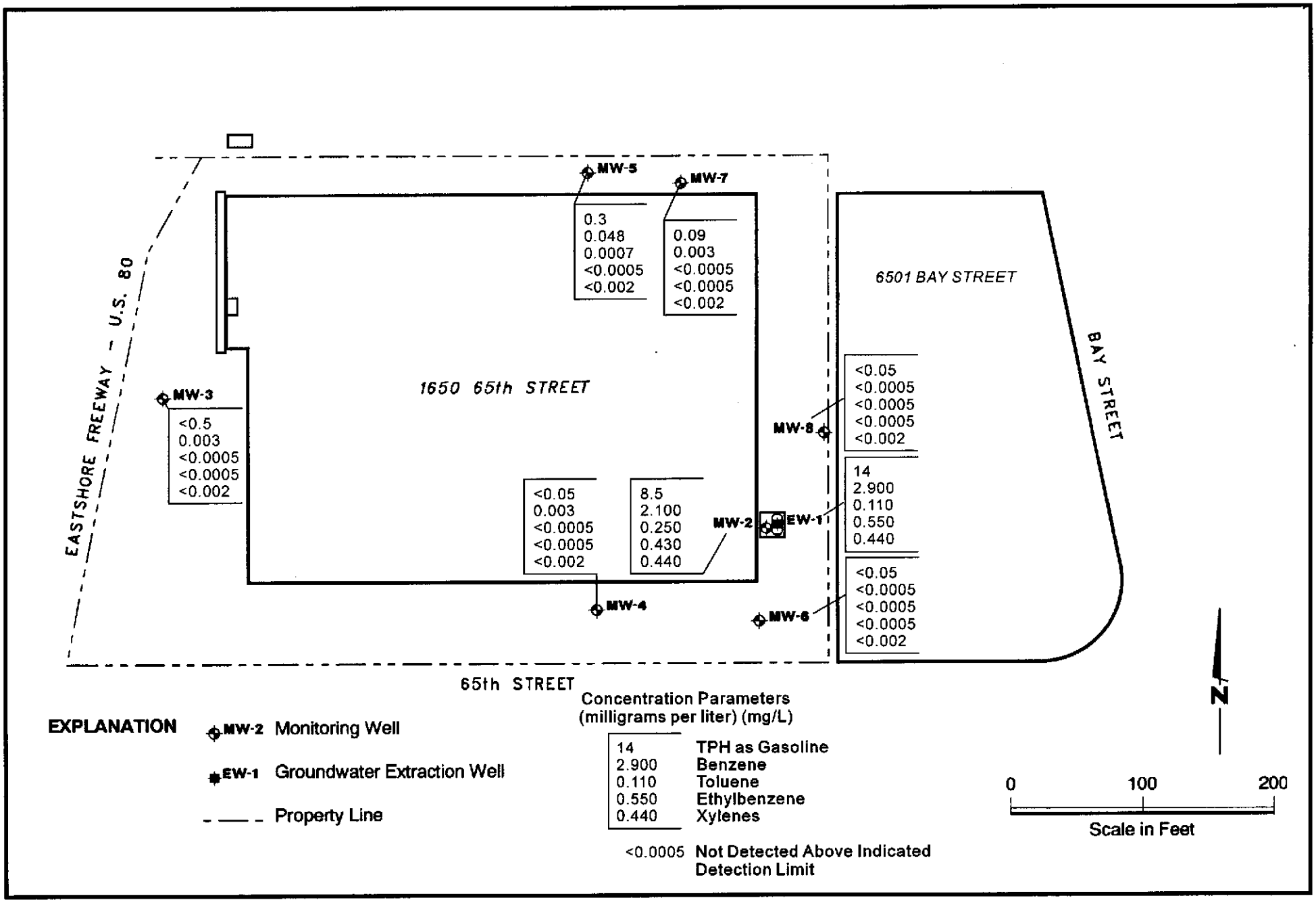


PES Environmental, Inc.
Engineering & Environmental Services

Groundwater Elevation Contours on November 13, 1995
1650 65th Street
Emeryville, California

PLATE
3

131.0100.003	131010S4.CDR		12/95
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



EXPLANATION

- MW-2 Monitoring Well
- EW-1 Groundwater Extraction Well
- Property Line

Concentration Parameters (milligrams per liter) (mg/L)

14	TPH as Gasoline
2.900	Benzene
0.110	Toluene
0.550	Ethylbenzene
0.440	Xylenes

<0.0005 Not Detected Above Indicated Detection Limit

PES Environmental, Inc.
Engineering & Environmental Services

Dissolved Hydrocarbons in Groundwater on November 13, 1995
1650 65th Street
Emeryville, California

PLATE 4

131.0100.003	131010S3.CDR		12/95
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

BLAINE
TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

November 17, 1995

PES Environmental, Inc.
1682 Novato Blvd., Suite 100
Novato, CA 94947

ATTN: Mary Williams

Site:
Emery Bay Plaza
1650 65th Street
Emeryville, California

Date:
November 13, 1995

GROUNDWATER SAMPLING REPORT 951113-K-1

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results, or become involved with the marketing or installation of remedial systems.

This report deals with the groundwater well sampling performed by our firm in response to your request. Data collected in the course of our work at the site are presented in the TABLE OF WELL MONITORING DATA. This information was collected during our inspection, well evacuation and sample collection. Measurements include the total depth of the well and the depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, and temperature readings were obtained during well evacuation and at the time of sample collection.

STANDARD PRACTICES

Evacuation and Sampling Equipment

As shown in the TABLE OF MONITORING DATA, the wells at this site were evacuated according to a protocol requirement for the three case volumes. The wells were evacuated using bailers and electric submersible pumps.

Samples were collected using bailers.

Bailers: A bailer, in its simplest form, is a hollow tube which has been fitted with a check valve at the lower end. The device can be lowered into a well by means of a cord. When the bailer enters the water, the check valve opens and liquid flows into the interior of the bailer. The bottom check valve prevents water from escaping when the bailer is drawn up and out of the well.

Two types of bailers are used in groundwater wells at sites where fuel hydrocarbons are of concern. The first type of bailer is made of a clear material such as acrylic plastic and is used to obtain a sample of the surface and the near surface liquids, in order to detect the presence of visible or measurable fuel hydrocarbon floating on the surface. The second type of bailer is made of Teflon or stainless steel, and is used as an evacuation and/or sampling device.

Bailers are inexpensive and relatively easy to clean. Because they are manually operated, variations in operator technique may have a greater influence than would be found with more automated sampling equipment. Also, where fuel hydrocarbons are involved, the bailer may include near surface contaminants that are not representative of water deeper in the well.

Electric Submersible Pumps: Electric submersible pumps are appropriate for the high volume evacuation of wells of any depth provided the well diameter is large enough to admit the pump. Four inch and three inch diameter wells will readily accept electric submersible pumps, while two inch wells do not. In operation, the pump is lowered into the well with a pipe train above it. A checkvalve immediately above the pump and below the first section of pipe prevents water that has entered the pipe from flowing back into the well. Electricity is provided to the pump via an electrical cable and the action of the pump is to push water up out of the well.

Electric submersible pumps are often used as well evacuation devices, which are then supplanted with a more specialized sample collection device (such as a bailer) at the time of sampling. An alternative is to use the pump for both evacuation and sampling. When a bailer is used to collect the sample, interpretation of results by the consultant should allow for variations attributable to near surface contamination entering the bailer. When the electric submersible is, itself, used for sample collection it should be operated with the output restricted to a point where the loss of

volatiles becomes indistinguishable from the level obtained with true sampling pumps. It should be noted that when the pump is used for both evacuation and sample collection that it is possible to perform these operations as an uninterrupted continuum. This contrasts with the variations in elapsed time between evacuation and sample collection that occur when field personnel cease one mode of operation and must bring other apparatus into use.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site.

Effluent Materials

The evacuation process creates a volume of effluent water which must be contained. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new 55 gallon DOT 17 E drums to the site, which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater well. If that sample does not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

Sampling Methodology

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms to both State and Regional Water Quality Control Board standards and specifically adheres to EPA requirements for apparatus, sample containers and sample handling as specified in publication SW 846 and T.E.G.D. which is published separately.

Sample Containers

Sample containers are supplied by the laboratory performing the analyses.

Sample Handling Procedures

Following collection, samples are promptly placed in an ice chest containing deionized ice or an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days, as jobs and projects often do.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under our standard chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date and signature of person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to American Environmental Network in Pleasant Hill, California. AEN is certified by the California Department of Health Services as a Hazardous Materials Testing Laboratory, and is listed as DOHS HMTL #1172.

Personnel

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lp

attachments: table of well monitoring data
chain of custody

TABLE OF WELL MONITORING DATA

Well I.D.	EW-1			MW-2			MW-3			MW-4		
Date Sampled	11/13/95			11/13/95			11/13/95			11/13/95		
Well Diameter (in.)	4			2			4			4		
Total Well Depth (ft.)	27.92			24.56			18.19			15.91		
Depth To Water (ft.)	11.14			11.18			8.44			7.95		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	10.9			2.1			6.3			5.2		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	33.0			6.5			19.0			18.0		
Purging Device	ELECTRIC SUBMERSIBLE			BAILER			ELECTRIC SUBMERSIBLE			ELECTRIC SUBMERSIBLE		
Sampling Device	BAILER			BAILER			BAILER			BAILER		
Time	11:26	11:27	11:28	11:10	11:13	11:16	09:54	09:55	09:56	09:37	09:38	09:39
Temperature (Fahrenheit)	69.2	69.6	69.6	69.0	68.6	69.0	69.0	69.2	69.0	73.4	74.4	75.0
pH	7.6	7.6	7.6	7.4	7.5	7.6	7.6	7.4	7.6	7.1	7.0	7.2
Conductivity (micromhos/cm)	2400	2500	2400	6400	3400	3700	4800	3400	3400	11000	10000	10000
Nephelometric Turbidity Units	27.8	28.3	16.0	>200	>200	>200	12.5	9.3	7.2	12.3	10.7	7.5
Dissolved Oxygen (mg/L)	0.5			0.4			0.4			0.6		
BTS Chain of Custody	951113-K-1			951113-K-1			951113-K-1			951113-K-1		
BTS Sample I.D.	EW-1			MW-2			MW-3			MW-4		
DOHS HMTL Laboratory	AEN			AEN			AEN			AEN		
Analysis	TPH-GAS, BTEX			TPH-GAS, BTEX			TPH-GAS, BTEX			TPH-GAS, BTEX		

TABLE OF WELL MONITORING DATA

Well I.D.	MW-5			MW-6			MW-7			MW-8		
Date Sampled	11/13/95			11/13/95			11/13/95			11/13/95		
Well Diameter (in.)	4			4			4			2		
Total Well Depth (ft.)	17.93			18.74			18.70			24.57		
Depth To Water (ft.)	6.89			8.15			5.98			11.02		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	7.2			6.9			8.2			2.1		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	22.0			21.0			25.0			6.5		
Purging Device	ELECTRIC SUBMERSIBLE			ELECTRIC SUBMERSIBLE			ELECTRIC SUBMERSIBLE			BAILER		
Sampling Device	BAILER			BAILER			BAILER			BAILER		
Time	10:28	10:29	10:31	09:13	09:15	09:16	10:13	10:14	10:16	10:49	10:52	10:55
Temperature (Fahrenheit)	66.8	66.8	67.2	68.6	70.4	69.6	66.2	66.2	66.4	65.6	66.0	65.8
pH	7.6	7.7	7.6	7.3	7.4	7.4	7.6	7.5	7.6	7.4	7.2	7.4
Conductivity (micromhos/cm)	3000	3000	3000	12000	12000	13000	1800	1500	1600	19000	21000	20000
Nephelometric Turbidity Units	9.8	5.5	4.8	18.1	12.4	8.4	13.6	7.2	5.5	>200	>200	>200
Dissolved Oxygen (mg/L)	0.5			0.8			0.6			0.4		
BTS Chain of Custody	951113-K-1			951113-K-1			951113-K-1			951113-K-1		
BTS Sample I.D.	MW-5			MW-6			MW-7			MW-8		
DOHS HMTL Laboratory	AEN			AEN			AEN			AEN		
Analysis	TPH-GAS, BTEX			TPH-GAS, BTEX			TPH-GAS, BTEX			TPH-GAS, BTEX		

BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

CHAIN OF CUSTODY 95 1113-K1

CLIENT PES

SITE Emery Bay Plaza
1650 65th Street
Emeryville, CA.

LAB AEN DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ LIA ☐ OTHER ☐ RWQCB REGION

SPECIAL INSTRUCTIONS Invoice & Report to PES

PES PES # 131.0100.003
Contact Jenny Han (PES) before analyzing T.B.

CONDUCT ANALYSIS TO DETECT

C = COMPOSITE ALL CONTAINERS

SAMPLE I.D.		MATRIX S = SOIL W = H2O	CONTAINERS TOTAL	VOA	C	TPH-G (EPA# MOD 8015)	BTEX (EPA# 8020)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
EW-1	1135	W	3			X	X				
MW2	1120					X	X				
MW3	1005					X	X				
MW4	945					X	X				
MW5	1035					X	X				
MW6	925					X	X				
MW7	1020					X	X				
MW8	1100					X	X				
TB	—		2					T.B. On Hold			

SAMPLING COMPLETED DATE 11/13/95 TIME Noon

SAMPLING PERFORMED BY Keith Brown

RESULTS NEEDED NO LATER THAN STANDARD TAT

		DATE	TIME		DATE	TIME
RELEASED BY		11/13/95	1530	RECEIVED BY	11/13/95	1530
RELEASED BY				RECEIVED BY		
RELEASED BY				RECEIVED BY		

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

PES ENVIRONMENTAL, INC.

SAMPLE ID: EW-1
AEN LAB NO: 9511197-01
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	2,900 *	10	ug/L	11/21/95
Toluene	108-88-3	110 *	10	ug/L	11/21/95
Ethylbenzene	100-41-4	550 *	10	ug/L	11/21/95
Xylenes, Total	1330-20-7	440 *	40	ug/L	11/21/95
Purgeable HCs as Gasoline	5030/GCFID	14 *	1	mg/L	11/21/95

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-2
AEN LAB NO: 9511197-02
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	2,100 *	10	ug/L	11/21/95
Toluene	108-88-3	250 *	10	ug/L	11/21/95
Ethylbenzene	100-41-4	430 *	10	ug/L	11/21/95
Xylenes, Total	1330-20-7	440 *	40	ug/L	11/21/95
Purgeable HCs as Gasoline	5030/GCFID	8.5 *	1	mg/L	11/21/95

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-3
AEN LAB NO: 9511197-03
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	3 *	0.5	ug/L	11/22/95
Toluene	108-88-3	ND	0.5	ug/L	11/22/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	11/22/95
Xylenes, Total	1330-20-7	ND	2	ug/L	11/22/95
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	11/22/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-4
AEN LAB NO: 9511197-04
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	3 *	0.5	ug/L	11/22/95
Toluene	108-88-3	ND	0.5	ug/L	11/22/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	11/22/95
Xylenes, Total	1330-20-7	ND	2	ug/L	11/22/95
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	11/22/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-5
AEN LAB NO: 9511197-05
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	48 *	0.5	ug/L	11/27/95
Toluene	108-88-3	0.7 *	0.5	ug/L	11/27/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	11/27/95
Xylenes, Total	1330-20-7	ND	2	ug/L	11/27/95
Purgeable HCs as Gasoline	5030/GCFID	0.3 *	0.05	mg/L	11/27/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-6
AEN LAB NO: 9511197-06
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	ND	0.5	ug/L	11/22/95
Toluene	108-88-3	ND	0.5	ug/L	11/22/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	11/22/95
Xylenes, Total	1330-20-7	ND	2	ug/L	11/22/95
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	11/22/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-7
AEN LAB NO: 9511197-07
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	3 *	0.5	ug/L	11/22/95
Toluene	108-88-3	ND	0.5	ug/L	11/22/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	11/22/95
Xylenes, Total	1330-20-7	ND	2	ug/L	11/22/95
Purgeable HCs as Gasoline	5030/GCFID	0.09 *	0.05	mg/L	11/22/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: MW-8
AEN LAB NO: 9511197-08
AEN WORK ORDER: 9511197
CLIENT PROJ. ID: 131.0100.003

DATE SAMPLED: 11/13/95
DATE RECEIVED: 11/13/95
REPORT DATE: 11/30/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	ND	0.5	ug/L	11/22/95
Toluene	108-88-3	ND	0.5	ug/L	11/22/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	11/22/95
Xylenes, Total	1330-20-7	ND	2	ug/L	11/22/95
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	11/22/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9511197

CLIENT PROJECT ID: 131.0100.003

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9511197
INSTRUMENT: F
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
11/21/95	EW-1	01	96
11/21/95	MW-2	02	95
11/22/95	MW-3	03	93
11/22/95	MW-4	04	93
11/27/95	MW-5	05	92
11/22/95	MW-6	06	94
11/22/95	MW-7	07	95
11/22/95	MW-8	08	93
QC Limits:			92-109

DATE ANALYZED: 11/21/95
SAMPLE SPIKED: LCS
INSTRUMENT: F

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	19.2	95	14	60-120	20
Toluene	57	109	15	60-120	20
Hydrocarbons as Gasoline	500	119	9	60-120	20

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

K-3,5-3 951117

BLAINE
TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

CONDUCT ANALYSIS TO DETECT

LAB: AEN | DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION ______

CHAIN OF CUSTODY: 951113-K1
CLIENT: PES
SITE: Emery Bay Plaza, 1650 65th Street, Emeryville, CA

SPECIAL INSTRUCTIONS: Invoice & Report to PES
PES PEO # 131.0100.003
Contact Jenny Han (PES) before analyzing T.B.

SAMPLE I.D.		MATRIX (S = SOIL, W = H2O)	CONTAINERS TOTAL	VOA	C = COMPOSITE ALL CONTAINERS	TPH-G (EPA# MOD 8015)	BTEX (EPA# 8020)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
EW-1	1135	W	3	01 A-C		X	X				
MW2	1120	↓	↓	02 A-C		X	X				
MW3	1005			03 A-C		X	X				
MW4	945			04 A-C		X	X				
MW5	1035			05 A-C		X	X				
MW6	925			06 A-C		X	X				
MW7	1020			07 A-C		X	X				
MW8	1100			08 A-C		X	X				
TB	—	↓	2	~~09 A~~ (TB NOT RECEIVED)				T.B. ON HOLD		NOT RECEIVED	

SAMPLING COMPLETED: DATE 11/13/95 TIME 1200
SAMPLING PERFORMED BY: Keith Brown
RESULTS NEEDED NO LATER THAN: STANDARD TAT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	11/13/95	1330	Michael Ehrmuller	11/13/95	1330
Michael Ehrmuller	11/13/95	16:35	Ronald C. Jensen	11/13/95	16:35

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	