PES Environmental, Inc.
Engineering & Environmental Services

April 27, 2001

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MAY 03 2001

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

Attention: Ms. Susan Hugo

GROUNDWATER MONITORING REPORT AND REQUEST FOR CLOSURE
EMERY BAY PLAZA
1650 65TH STREET
EMERYVILLE, CALIFORNIA

Dear Ms. Hugo:

This letter presents data collected by PES Environmental, Inc. (PES) during the groundwater monitoring conducted in October 2000 at Emery Bay Plaza in Emeryville, California (Plate 1). PES has been retained by Emery Bay Plaza to conduct groundwater monitoring at the subject site. In addition, this report provides an evaluation and discussion of the historical groundwater monitoring data and a request for site closure.

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.

This report includes the following: (1) background information; (2) procedures and results of groundwater monitoring and sampling; (3) summary of groundwater monitoring; (4) request for closure evaluation; and (5) recommendations.

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 the 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.*

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

The in-situ bioremediation program was conducted by PES at the site by periodically introducing an oxygen source, in the form of a solution of hydrogen peroxide (H_2O_2), and nutrients (nitrogen and phosphorous), into Wells EW-1, MW-2 and MW-8. Nutrient introduction began in August 1994. Dissolved oxygen measurements were conducted prior to and during the nutrient additions, and during the groundwater monitoring events.

In December 1995, the groundwater monitoring program and the bioremediation pilot study were evaluated. The result of the evaluation was presented in PES' *Year End Summary Report, Bioremediation Pilot Study and Quarterly Groundwater Monitoring, November 1995 Sampling Event, Emery Bay Plaza, 1650 65th Street, Emeryville, California*, dated December 29, 1995. The year-end report recommended that the groundwater monitoring program be revised to focus on monitoring of wells EW-1, MW-2, MW-4, and MW-8, located in the vicinity of the former UST. Data collected from these four wells provided information on groundwater quality and the progress of the bioremediation program. The revised quarterly groundwater monitoring program was verbally approved by you during a phone conversation with Andrew Briefer of PES on February 13, 1996. In-situ bioremediation continued until December 1998. At that time, PES received approval from you to discontinue groundwater monitoring and evaluate the site for closure.

GROUNDWATER MONITORING AND SAMPLING

Water-Level Measurement

Procedures

Groundwater levels in the monitoring wells were measured by Blaine Tech Services (Blaine Tech) of San Jose, California, on October 12, 2000. 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.

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.

In general, groundwater elevations on October 12, 2000 have generally decreased in the monitoring wells compared with the prior monitoring event and have remained similar to measurements obtained during previous monitoring events conducted around this time of last year. Elevations decreased in five of the monitoring wells and increased in two wells. Based on measured water levels on October 12, 2000, groundwater flow direction at the site was calculated to be toward the southwest, with an approximate gradient ranging from 0.004 to 0.005 foot per foot. The direction of groundwater flow and gradient are consistent with historical data.

Dissolved Oxygen Measurement

Procedures

Prior to purging and sampling, the total dissolved oxygen in Wells MW-2, MW-4, MW-8 and Well EW-1 was measured in-situ using a YSI, Inc., Model 51B 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.

Results

Total dissolved oxygen concentrations were measured on October 12, 2000. Total dissolved oxygen concentrations measured in onsite wells ranged from 0.3 to 0.4 milligrams per liter (mg/L). Dissolved oxygen concentrations measured during the October 2000 monitoring event are provided in the groundwater sampling report in Appendix A. A historical summary of dissolved oxygen measurements is presented in Table 3.

Groundwater Sampling

Sampling Protocol

Groundwater samples were collected by Blaine Tech on October 12, 2000. Groundwater samples were collected from Wells MW-2, MW-4, MW-8, and EW-1. 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

The four groundwater samples were analyzed by Kiff Analytical LLC. (Kiff), a California state-certified laboratory located in Davis, California. Samples were analyzed for total petroleum hydrocarbons quantified as gasoline (TPHg), methyl tert butyl ether (MTBE), benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Test Method 8015M/8020.

Analytical Results

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 October 12, 2000 is presented on Plate 4.

Concentrations of TPHg and BTEX have slightly decreased or remained the same in the monitoring wells near the former UST relative to the previous sampling event. Consistent with historical monitoring data, highest concentrations of dissolved hydrocarbons (TPHg and BTEX) were detected in Well MW-2, located within the backfill of the former UST excavation near the former UST. TPHg was detected in both Wells MW-2 and EW-1 at concentrations of 16 and 7.7 mg/L, respectively. Concentrations of benzene were detected in Wells MW-2 and EW-1 at 3.8 and 3.0 mg/L, respectively. Lower concentrations of toluene, ethylbenzene, and total xylenes were detected in the two wells (up to 1.3, 0.73 and 1.8 mg/L, respectively). Benzene was detected in well MW-4 at 0.0013 mg/L. TPHg and BTEX were not detected in

the sample collected from Well MW-8. MTBE was not detected at or above the laboratory reporting limit in any of the groundwater samples.

SUMMARY OF GROUNDWATER MONITORING DATA

Depth to groundwater measurements and corresponding groundwater elevations collected during the October 12, 2000 monitoring event indicate that the direction of groundwater flow in the vicinity of the former UST is to the southwest with a shallow gradient. This direction of groundwater flow has been consistent with historical groundwater monitoring data.

Groundwater monitoring has been ongoing at the site since 1989. The source of dissolved petroleum hydrocarbons onsite was an underground gasoline tank located near the southeast corner of the building. Results of the groundwater monitoring indicate that the dissolved hydrocarbons are limited to the immediate vicinity of the former UST, where Wells EW-1 and MW-2 are located.

An activated carbon groundwater treatment system was operated at the subject site from 1990 to 1993. This system was discontinued and an in-situ bioremediation program was implemented at the site. From the first nutrient introduction in August 1994 to April 1998, in-situ bioremediation significantly reduced dissolved petroleum hydrocarbon concentrations in groundwater at the site. Hydrocarbon concentrations increased after the last introduction in July 1998 and the effectiveness of continued nutrient introduction appeared to have diminished. Therefore, the nutrient introduction was discontinued. Dissolved hydrocarbon concentrations have generally been static or have slightly decreased since discontinuation of the in-situ bioremediation program.

CLOSURE EVALUATION

The subject property consists of one large office building. The building structure consists of a concrete slab on an elevated building pad. The building is surrounding by small landscaped areas and asphalt-paved parking lots. Historical groundwater monitoring indicates groundwater is present at 7 to 12 feet below ground surface within Bay Mud, which has generally low transmissivity. Based on previous groundwater monitoring data, the groundwater has a shallow gradient and based on the lower permeability soils encountered at the site, groundwater movement is expected to be slow. Consequently, the dissolved hydrocarbons found in groundwater at the site have remained localized to the vicinity of the former UST. Minor concentrations of dissolved hydrocarbons have been detected in the downgradient well MW-4. However, these concentrations have remained stable since 1990. The historical monitoring indicates the areal extent of affected groundwater is localized and is not migrating.

To evaluate whether the affected groundwater has potential to pose a health risk to site users, PES estimated indoor air concentrations which might result from volatilization of residual dissolved aromatic hydrocarbons in groundwater beneath the office building. The calculated indoor air concentrations were then compared with the U.S. Environmental Protection Agency Region IX preliminary remediation goals (PRGs) for ambient air. Details concerning the methodology and results of this health risk assessment are presented in Appendix C. Based on the results of the evaluation, the calculated indoor air concentrations resulting from volatilization of residual chemicals in groundwater do not exceed their respective PRGs. Consequently, concentrations detected in the affected groundwater do not appear to pose significant health risk to site users.

RECOMMENDATIONS

On the basis of the stable and localized nature of the groundwater plume and the absence of potential health or ecological risk, no further groundwater monitoring is recommended at the site. Accordingly, on behalf of Emery Bay Plaza, PES requests Alameda County Environmental Health Services (ACEHS) issue a letter of "No Further Action" with respect to groundwater conditions in the vicinity of the former UST. Following receipt of ACEHS issued "No Further Action" letter, the groundwater monitoring wells will be destroyed in accordance with applicable local and state requirements.

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

Yours very truly,

PES ENVIRONMENTAL, INC.

Saulius Germanas, C. HG.
Senior Geologist

Andrew A. Briefer, P. E.
Principal Engineer

Attachments:

Table 1	Summary of Groundwater Elevations Through October 2000
Table 2	Summary of Analytical Results for Groundwater Samples Through October 2000
Table 3	Summary of Total Dissolved Oxygen Through October 2000
Table 4	Summary of Nutrient Introduction to Wells Through July 1998
Plate 1	Site Location Map
Plate 2	Well Location Map
Plate 3	Groundwater Elevation Contours on October 12, 2000
Plate 4	Dissolved Hydrocarbons in Groundwater on October 12, 2000
Appendix A	Groundwater Sampling Report
Appendix B	Analytical Laboratory Reports
Appendix C	Chemical Vapor Volatilization Model

cc: Mr. Thomas Gram - P. O. Partners
Ms. Lynn Tolin - Emery Bay Plaza

QUALITY CONTROL REVIEWER

Robert S. Creps, P.E.
Principal Engineer

Table 1. Summary of Groundwater Elevations Through October 2000
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
	2-Mar-96	PES	15.79	10.42	5.37
	9-May-96	PES	15.79	10.78	5.01
	8-Aug-96	PES	15.79	10.56	5.23
	11-Nov-96	PES	15.79	10.64	5.15
	14-Feb-97	PES	15.79	10.29	5.50
	14-May-97	PES	15.79	10.60	5.19
	12-Aug-97	PES	15.79	10.87	4.92
	12-Nov-97	PES	15.79	10.64	5.15
	4-Feb-98	PES	15.79	10.83	4.96
	18-May-98	PES	15.79	10.10	5.69
	11-Aug-98	PES	15.79	10.58	5.21
	17-Dec-98	PES	15.79	10.45	5.34
	7-Oct-99	PES	15.79	10.51	5.28
	12-Oct-00	**PES**	**15.79**	**10.73**	**5.06**
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

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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-3	28-May-91	ES	12.43	9.03	3.40
Cont.	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
	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
	2-Mar-96	PES	12.43	7.31	5.12
	9-May-96	PES	12.43	7.72	4.71
	8-Aug-96	PES	12.43	8.22	4.21
	11-Nov-96	PES	12.43	8.67	3.76
	14-Feb-97	PES	12.43	7.18	5.25
	14-May-97	PES	12.43	8.03	4.40
	12-Aug-97	PES	12.43	7.39	5.04
	12-Nov-97	PES	12.43	8.53	3.90
	4-Feb-98	PES	12.43	7.39	5.04
	18-May-98	PES	12.43	7.31	5.12
	11-Aug-98	PES	12.43	7.95	4.48
	17-Dec-98	PES	12.43	8.58	3.85
	7-Oct-99	PES	12.43	8.25	4.18
	12-Oct-00	**PES**	**12.43**	**8.22**	**4.21**
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

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Emery Bay Plaza
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Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-4 Cont.	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
	2-Mar-96	PES	12.24	7.89	4.35
	9-May-96	PES	12.24	7.64	4.60
	8-Aug-96	PES	12.24	7.76	4.48
	11-Nov-96	PES	12.24	8.00	4.24
	14-Feb-97	PES	12.24	7.63	4.61
	14-May-97	PES	12.24	7.78	4.46
	12-Aug-97	PES	12.24	7.71	4.53
	12-Nov-97	PES	12.24	7.84	4.40
	4-Feb-98	PES	12.24	7.11	5.13
	18-May-98	PES	12.24	7.35	4.89
	11-Aug-98	PES	12.24	7.52	4.72
	17-Dec-98	PES	12.24	7.99	4.25
	7-Oct-99	PES	12.24	7.82	4.42
	12-Oct-00	**PES**	**12.24**	**7.97**	**4.27**
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
	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

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Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-5 Cont.	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
	2-Mar-96	PES	12.82	7.26	5.56
	9-May-96	PES	12.82	6.00	6.82
	8-Aug-96	PES	12.82	6.67	6.15
	11-Nov-96	PES	12.82	6.69	6.13
	14-Feb-97	PES	12.82	5.88	6.94
	14-May-97	PES	12.82	6.25	6.57
	12-Aug-97	PES	12.82	6.77	6.05
	12-Nov-97	PES	12.82	7.21	5.61
	4-Feb-98	PES	12.82	6.81	6.01
	18-May-98	PES	12.82	4.81	8.01
	11-Aug-98	PES	12.82	6.38	6.44
	17-Dec-98	PES	12.82	7.00	5.82
	7-Oct-99	PES	12.82	7.23	5.59
	12-Oct-00	**PES**	**12.82**	**7.30**	**5.52**
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

Table 1. Summary of Groundwater Elevations Through October 2000
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MW-6	2-Mar-96	PES	12.03	8.02	4.01
Cont.	9-May-96	PES	12.03	7.64	4.39
	8-Aug-96	PES	12.03	7.53	4.50
	11-Nov-96	PES	12.03	8.45	3.58
	14-Feb-97	PES	12.03	7.58	4.45
	14-May-97	PES	12.03	8.62	3.41
	12-Aug-97	PES	12.03	7.62	4.41
	12-Nov-97	PES	12.03	8.56	3.47
	4-Feb-98	PES	12.03	6.56	5.47
	18-May-98	PES	12.03	7.29	4.74
	11-Aug-98	PES	12.03	7.25	4.78
	17-Dec-98	PES	12.03	8.42	3.61
	7-Oct-99	PES	12.03	7.62	4.41
	12-Oct-00	**PES**	**12.03**	**8.05**	**3.98**
MW-7	1-Mar-91	ES	12.9	7.51	5.39
	28-May-91	ES	12.9	7.07	5.83
	1-Aug-91	ES	12.9	NA	NA
	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
	2-Mar-96	PES	12.9	6.02	6.88
	9-May-96	PES	12.9	6.11	6.79
	8-Aug-96	PES	12.9	6.87	6.03
	11-Nov-96	PES	12.9	6.39	6.51
	14-Feb-97	PES	12.9	5.97	6.93
	14-May-97	PES	12.9	5.89	7.01
	12-Aug-97	PES	12.9	6.56	6.34
	12-Nov-97	PES	12.9	6.76	6.14
	4-Feb-98	PES	12.9	5.94	6.96

Table 1. Summary of Groundwater Elevations Through October 2000
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	18-May-98	PES	12.9	4.19	8.71
Cont.	11-Aug-98	PES	12.9	6.21	6.69
	17-Dec-98	PES	12.9	6.80	6.10
	7-Oct-99	PES	12.9	NM	NM
	12-Oct-00	**PES**	**12.9**	**7.18**	**5.72**
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
	2-Mar-96	PES	15.01	10.11	4.90
	9-May-96	PES	15.01	10.50	4.51
	8-Aug-96	PES	15.01	10.04	4.97
	11-Nov-96	PES	15.01	10.55	4.46
	14-Feb-97	PES	15.01	9.95	5.06
	14-May-97	PES	15.01	10.08	4.93
	12-Aug-97	PES	15.01	10.63	4.38
	12-Nov-97	PES	15.01	10.13	4.88
	4-Feb-98	PES	15.01	10.17	4.84
	18-May-98	PES	15.01	9.49	5.52
	11-Aug-98	PES	15.01	10.57	4.44
	17-Dec-98	PES	15.01	10.52	4.49
	7-Oct-99	PES	15.01	NM	NM
	12-Oct-00	**PES**	**15.01**	**10.15**	**4.86**

NOTES:

Ft MSL = feet above Mean Sea Level
ES = Engineering-Science, Inc.
PES = PES Environmental, Inc.
BLAINE = Blaine Tech Services, Inc.
NA = Information not available at this date.
NM = Well was inaccessible due to parked cars

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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	NA	8.4	7.4	2.4	13	0.015 *	0.05
	Feb-90	ES	54	NA	NA	7.8	5.6	1.6	8.4	0.032 *	0.021
	May-90	ES	40	NA	NA	7.8	7.5	1.6	7.6	0.076 *	0.025
	Aug-90	ES	49	4.6	NA	9	8	ND	8.9	0.040 *	0.0059
	Nov-90	ES	73	3.5	NA	6.9	5.9	1.4	7.4	NA	NA
	Mar-91	ES	72	1.8	NA	5.5	6.6	1	7.7	NA	NA
	May-91	ES	31	ND	NA	8.4	4.7	1.7	6.3	NA	NA
	Aug-91	ES	47	ND	NA	7.6	1.6	7.3	7.8	NA	NA
	29-Jan-92	PES	77.000	NA	NA	10.000	8.700	2.000	7.600	NA	NA
	28-Feb-92	PES	70.000	NA	NA	9.100	6.400	0.530	7.400	NA	NA
	28-May-92	PES	54.000	NA	NA	8.000	4.800	2.400	6.200	NA	NA
	27-Aug-92	PES	47.000	NA	NA	2.700	2.900	3.400	9.200	NA	NA
	10-Nov-92	PES	45.000	<20	NA	6.600	4.000	2.000	5.800	<0.050	NA
	18-Feb-93	PES	14.000	NA	NA	2.300	0.810	0.670	1.400	NA	NA
	20-May-93	PES	43.000	NA	NA	7.300	5.200	1.500	5.500	NA	NA
	19-Aug-93	PES	45.000	NA	NA	4.900	3.700	1.300	3.400	NA	NA
	15-Nov-93	PES	97.000	NA	NA	6.100	1.700	1.700	4.100	NA	NA
	14-Feb-94	PES	27.000	NA	NA	5.000	0.830	1.200	3.100	NA	NA
	16-May-94	PES	77.000	NA	NA	6.800	1.100	1.400	3.300	NA	NA
	10-Aug-94	PES	25	NA	NA	5.600	0.750	1.400	1.700	NA	NA
	3-Nov-94	PES	24	NA	NA	7.200	0.500	1.500	1.600	NA	NA
	9-Feb-95	PES	12	NA	NA	2.200	0.100	0.480	0.940	NA	NA
	9-May-95	PES	7.8	NA	NA	1.300	0.078	0.340	0.480	NA	NA
	10-Aug-95	PES	5.3	NA	NA	1.300	0.150	0.240	0.270	NA	NA
	13-Nov-95	PES	8.5	NA	NA	2.100	0.250	0.430	0.440	NA	NA
	13-Feb-96	PES	5.2	NA	NA	1.500	0.190	0.210	0.290	NA	NA
	9-May-96	PES	1.7	NA	NA	0.370	0.130	0.060	0.090	NA	NA
	8-Aug-96	PES	4.5	NA	NA	1.200	0.490	0.160	0.380	NA	NA
	11-Nov-96	PES	6.0	NA	NA	2.100	0.920	0.200	0.590	NA	NA
	14-Feb-97	PES	3.8	NA	NA	1.500	0.056	0.240	0.040	NA	NA
	14-May-97	PES	3.6	NA	NA	2.000	0.100	0.160	0.220	NA	NA
	12-Aug-97	PES	7.3	NA	NA	3.200	0.330	0.290	0.420	NA	NA
	12-Nov-97	PES	8.9	NA	NA	3.000	1.300	0.330	0.750	NA	NA
	4-Feb-98	PES	7.6	NA	NA	2.800	0.190	0.410	0.150	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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	18-May-98	PES	2.2	NA	NA	1.300	0.240	0.078	0.120	NA	NA
Cont.	11-Aug-98	PES	11	NA	NA	2.3	0.42	0.29	0.77	NA	NA
	17-Dec-98	PES	14	NA	<0.2	3.5	0.49	0.49	0.58	NA	NA
	7-Oct-99	PES	11	NA	<0.5	4.8	1.5	0.81	1.6	NA	NA
	7-Oct-00	**PES**	**16**	**NA**	**<0.010**	**3.8**	**1.3**	**0.73**	**1.8**	**NA**	**NA**
MW-3	Nov-89	ES	0.13	NA	NA	0.0022	ND	ND	0.003	ND	ND
	Feb-90	ES	ND	NA	NA	0.0025	ND	ND	ND	NA	0.011
	May-90	ES	ND	ND	NA	0.002	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.8	NA	0.0044	0.0029	ND	0.0054	NA	NA
	Nov-90	ES	0.9	0.8	NA	0.0034	ND	ND	ND	NA	NA
	Mar-91	ES	ND	ND	NA	0.025	0.025	0.0053	0.32	NA	NA
	May-91	ES	ND	ND	NA	0.0026	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	NA	0.0019	ND	ND	ND	NA	NA
	29-Jan-92	PES	0.092	NA	NA	0.0024	<0.0003	0.0006	<0.0003	NA	NA
	28-Feb-92	PES	0.160***	NA	NA	0.0028	<0.0003	0.0007	0.0005	NA	NA
	28-May-92	PES	<0.050	NA	NA	0.0025	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.370	NA	NA	0.0040	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.240	<0.100	NA	0.0042	<0.0003	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.140	NA	NA	0.0018	<0.0005	<0.0005	<0.0005	NA	NA
	20-May-93	PES	0.072	NA	NA	0.0031	<0.0005	<0.0005	<0.0005	NA	NA
	19-Aug-93	PES	<0.050	NA	NA	0.0032	<0.0005	<0.0005	0.0007	NA	NA
	15-Nov-93	PES	0.070	NA	NA	0.0023	0.0007	<0.0005	0.0015	NA	NA
	14-Feb-94	PES	0.120	NA	NA	0.0053	0.0023	0.0012	0.0042	NA	NA
	16-May-94	PES	0.120	NA	NA	0.0031	<0.0005	<0.0005	0.0017	NA	NA
	10-Aug-94	PES	0.1	NA	NA	0.003	< 0.0005	0.0005	<0.002	NA	NA
	3-Nov-94	PES	0.1	NA	NA	0.003	< 0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.1	NA	NA	0.002	<0.0005	<0.0005	<0.002	NA	NA
	9-May-95	PES	0.1	NA	NA	0.003	<0.0005	0.0005	<0.002	NA	NA
	10-Aug-95	PES	0.1	NA	NA	0.003	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	PES	<0.05	NA	NA	0.003	<0.0005	<0.0005	<0.002	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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	Nov-89	ES	0.2	NA	NA	0.0023	ND	ND	ND	ND	ND
	Feb-90	ES	ND	NA	NA	ND	ND	ND	ND	NA	0.006
	May-90	ES	ND	ND	NA	0.001	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.8	NA	0.0089	0.0071	ND	0.0094	NA	NA
	Nov-90	ES	ND	0.7	NA	0.0027	ND	ND	ND	NA	NA
	Mar-91	ES	NA	ND	NA	0.003	ND	ND	ND	NA	NA
	May-91	ES	NA	ND	NA	0.0024	ND	ND	ND	NA	NA
	Aug-91	ES	NA	ND	NA	0.0015	ND	ND	ND	NA	NA
	29-Jan-92	PES	<0.050	NA	NA	0.0022	0.0004	<0.0003	0.0007	NA	NA
	28-Feb-92	PES	<0.050	NA	NA	0.0016	<0.0003	<0.0003	0.0003	NA	NA
	28-May-92	PES	<0.050	NA	NA	0.0015	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.080	NA	NA	0.003	<0.001	<0.0005	0.0005	NA	NA
	10-Nov-92	PES	0.180	<0.100	NA	0.060	0.0009	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.060	NA	NA	0.0017	<0.0005	<0.0005	<0.0005	NA	NA
	20-May-93	PES	<0.050	NA	NA	0.0022	<0.0005	<0.0005	<0.0005	NA	NA
	19-Aug-93	PES	<0.050	NA	NA	0.0020	0.0006	<0.0005	0.0005	NA	NA
	15-Nov-93	PES	<0.050	NA	NA	0.0020	0.0005	<0.0005	0.0009	NA	NA
	14-Feb-94	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	16-May-94	PES	<0.050	NA	NA	0.0017	0.0009	<0.0005	0.0011	NA	NA
	10-Aug-94	PES	<0.05	NA	NA	0.002	<0.0005	<0.0005	<0.002	NA	NA
	3-Nov-94	PES	0.06	NA	NA	0.002	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.06	NA	NA	0.002	0.0006	<0.0005	<0.002	NA	NA
	9-May-95	PES	0.07	NA	NA	0.001	<0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	NA	0.001	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	PES	<0.05	NA	NA	0.003	<0.0005	<0.0005	<0.002	NA	NA
	13-Feb-96	PES	<0.05	NA	NA	0.0013	<0.0005	<0.0005	<0.002	NA	NA
	9-May-96	PES	<0.05	NA	NA	0.0009	<0.0005	<0.0005	<0.002	NA	NA
	8-Aug-96	PES	<0.05	NA	NA	0.0009	<0.0005	<0.0005	<0.002	NA	NA
	11-Nov-96	PES	<0.05	NA	NA	0.0013	0.0006	<0.0005	<0.002	NA	NA
	14-Feb-97	PES	<0.05	NA	NA	0.0006	<0.0005	<0.0005	<0.002	NA	NA
	14-May-97	PES	<0.05	NA	NA	0.0009	<0.0005	<0.0005	<0.002	NA	NA
	12-Aug-97	PES	<0.05	NA	NA	0.0009	<0.0005	<0.0005	<0.002	NA	NA
	12-Nov-97	PES	<0.05	NA	NA	0.0013	<0.0005	<0.0005	<0.002	NA	NA
	4-Feb-98	PES	0.05	NA	NA	0.0019	0.0018	0.0011	0.004	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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	18-May-98	PES	<0.05	NA	NA	0.00091	<0.0005	<0.0005	0.0011	NA	NA
Cont.	11-Aug-98	PES	<0.05	NA	NA	0.00063	<0.0005	<0.0005	<0.0005	NA	NA
	17-Dec-98	PES	<0.1	NA	<0.01	<0.001	<0.001	<0.001	<0.001	NA	NA
	7-Oct-99	PES	<0.05	NA	<0.005	0.0015	<0.0005	<0.0005	<0.0005	NA	NA
	7-Oct-00	**PES**	**<0.05**	**NA**	**<0.0005**	**0.0013**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**	**NA**
MW-5	Nov-89	ES	ND	NA	NA	0.074	ND	ND	0.0042	ND	ND
	Feb-90	ES	ND	NA	NA	0.2	ND	ND	ND	NA	0.012
	May-90	ES	ND	ND	NA	0.11	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.7	NA	0.066	0.0022	ND	0.0038	NA	NA
	Nov-90	ES	0.6	0.9	NA	0.069	ND	ND	ND	NA	NA
	Mar-91	ES	ND	1.1	NA	0.066	0.0023	ND	ND	NA	NA
	May-91	ES	ND	ND	NA	0.11	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	NA	0.078	0.0021	ND	ND	NA	NA
	29-Jan-92	PES	0.190	NA	NA	0.090	0.0005	<0.0003	0.0006	NA	NA
	28-Feb-92	PES	0.230***	NA	NA	0.110	0.0009	<0.0003	0.0005	NA	NA
	28-May-92	PES	0.130	NA	NA	0.100	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.520	NA	NA	0.083	0.002	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.240	<0.100	NA	0.074	0.0010	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.190	NA	NA	0.056	0.0006	<0.0005	<0.0005	NA	NA
	20-May-93	PES	<0.200	NA	NA	0.056	<0.002	<0.002	<0.002	NA	NA
	19-Aug-93	PES	0.170	NA	NA	0.050	0.0007	<0.0005	<0.0005	NA	NA
	15-Nov-93	PES	0.220	NA	NA	0.049	0.001	<0.001	<0.001	NA	NA
	14-Feb-94	PES	0.140	NA	NA	0.062	<0.0005	<0.0005	<0.0005	NA	NA
	16-May-94	PES	0.310	NA	NA	0.140	0.003	<0.003	<0.003	NA	NA
	12-Aug-94	PES	0.5	NA	NA	0.095	0.034	0.004	0.014	NA	NA
	3-Nov-94	PES	0.4	NA	NA	0.079	0.0006	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.3	NA	NA	0.074	0.0008	<0.0005	<0.0002	NA	NA
	9-May-95	PES	0.2	NA	NA	0.047	0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	0.2	NA	NA	0.046	0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	PES	0.3	NA	NA	0.048	0.0007	<0.0005	<0.002	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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	May-90	ES	NA	ND	NA	ND	ND	ND	ND	ND	ND**
	Aug-90	ES	NA	ND	NA	NA	NA	NA	NA	NA	ND**
	Nov-90	ES	1.2	1.4	NA	0.0012	ND	ND	ND	0.0012	NA
	Mar-91	ES	ND	ND	NA	ND	ND	ND	ND	NA	NA
	May-91	ES	ND	ND	NA	ND	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	NA	ND	ND	ND	ND	NA	NA
	29-Jan-92	PES	<0.050	NA	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-Feb-92	PES	<0.050	NA	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-May-92	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	<0.050****	NA	NA	<0.0005	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	<0.050	<0.100	NA	<0.0003	<0.0003	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	20-May-93	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	19-Aug-93	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	15-Nov-93	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	14-Feb-94	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	16-May-94	PES	<0.050	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	10-Aug-94	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	3-Nov-94	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	9-May-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
MW-7	May-90	ES	NA	0.6	NA	0.24	ND	ND	ND	0.24	ND**
	Aug-90	ES	ND	ND	NA	0.081	0.0018	ND	ND	0.0844	ND**
	Nov-90	ES	ND	0.8	NA	0.054	ND	ND	ND	0.054	NA
	Mar-91	ES	ND	ND	NA	0.1	0.0036	ND	ND	NA	NA
	May-91	ES	ND	ND	NA	0.12	0.0027	ND	ND	NA	NA
	Aug-91	ES	ND	ND	NA	0.074	0.0033	ND	ND	NA	NA
	29-Jan-92	PES	0.270	NA	NA	0.025	0.0005	<0.0003	0.0008	NA	NA
	28-Feb-92	PES	0.100***	NA	NA	0.033	0.0007	<0.0003	0.0007	NA	NA
	28-May-92	PES	0.150	NA	NA	0.021	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.440	NA	NA	0.011	0.001	<0.0005	<0.0005	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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-Nov-92	PES	0.370	<0.100	NA	0.031	0.0012	<0.0003	0.0012	<0.0003	NA
Cont.	18-Feb-93	PES	0.270	NA	NA	0.077	0.0013	<0.0005	0.0014	NA	NA
	20-May-93	PES	0.300	NA	NA	0.150	0.003	<0.002	0.003	NA	NA
	19-Aug-93	PES	0.110	NA	NA	0.040	0.0010	<0.0005	0.0011	NA	NA
	15-Nov-93	PES	0.120	NA	NA	0.015	0.0006	<0.0005	0.0023	NA	NA
	14-Feb-94	PES	0.120	NA	NA	0.038	<0.0005	<0.0005	<0.0005	NA	NA
	17-May-94	PES	<0.300	NA	NA	0.061	<0.003	<0.003	<0.003	NA	NA
	10-Aug-94	PES	0.1	NA	NA	0.009	<0.0005	<0.0005	<0.002	NA	NA
	3-Nov-94	PES	0.1	NA	NA	0.003	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	0.2	NA	NA	0.050	0.0006	<0.0005	<0.002	NA	NA
	9-May-95	PES	0.3	NA	NA	0.120	0.001	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	NA	0.007	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	PES	0.09	NA	NA	0.003	<0.0005	<0.0005	<0.002	NA	NA
MW-8	3-Nov-94	PES	<0.05	NA	NA	0.001	<0.0005	<0.0005	<0.002	NA	NA
	9-Feb-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	9-May-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	10-Aug-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	13-Nov-95	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	13-Feb-96	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	9-May-96	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	8-Aug-96	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	11-Nov-96	PES	<0.05	NA	NA	<0.0005	0.0009	<0.0005	<0.002	NA	NA
	14-Feb-97	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	14-May-97	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	12-Aug-97	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.002	NA	NA
	12-Nov-97	PES	<0.05	NA	NA	0.0033	0.0023	<0.0005	<0.002	NA	NA
	4-Feb-98	PES	<0.05	NA	NA	0.0011	<0.0005	<0.0005	<0.002	NA	NA
	18-May-98	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	11-Aug-98	PES	<0.05	NA	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	17-Dec-98	PES	<0.05	NA	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	7-Oct-99	PES	NS	NS	NS	NS	NS	NS	NS	NA	NA
	12-Oct-00	**PES**	**<0.05**	**NA**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**	**NA**

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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	May-90	ES	20	ND	NA	7.5	4.5	1	6.3	0.068	ND**
	Aug-90	ES	NA	3.5	NA	6	4.2	ND	4.6	0.016 *	ND**
	Nov-90	ES	47	3.1	NA	6	3.4	1	4.7	NA	NA
	17-Dec-90	ES	NA	NA	NA	11	7.9	2.2	10	NA	NA
	19-Dec-90	ES	NA	NA	NA	3.7	2.5	ND	2.3	NA	NA
	21-Dec-90	ES	NA	NA	NA	3.2	2.2	ND	1.7	NA	NA
	27-Dec-90	ES	NA	NA	NA	2.9	2.1	0.16	1.5	NA	NA
	4-Jan-91	ES	NA	NA	NA	3.2	2.8	ND	ND	NA	NA
	11-Jan-91	ES	NA	NA	NA	3	2.4	0.2	1.8	NA	NA
	6-Feb-91	ES	NA	NA	NA	0.47	0.23	0.011	0.39	NA	NA
	13-Feb-91	ES	NA	NA	NA	1.2	0.28	ND	0.36	NA	NA
	15-Mar-91	ES	NA	NA	NA	0.13	0.085	0.006	0.17	NA	NA
	3-Jul-91	ES	NA	NA	NA	1.3	0.95	0.22	1.4	NA	NA
	1-Aug-91	ES	NA	NA	NA	0.22	0.19	0.013	0.27	NA	NA
	16-Aug-91	ES	NA	NA	NA	0.17	0.16	0.013	0.19	NA	NA
	13-Nov-91	ES	NA	NA	NA	3.1	0.27	0.04	0.22	NA	NA
	29-Jan-92	PES	2.700	NA	NA	0.570	0.150	0.0070	0.260	NA	NA
	26-Mar-92	PES	25.000	NA	NA	3.600	2.600	0.530	2.600	NA	NA
	28-May-92	PES	16.000	NA	NA	3.300	3.200	0.750	2.600	NA	NA
	29-Jun-92	PES	7.000	NA	NA	2.200	3.100	0.270	1.400	NA	NA
	21-Jul-92	PES	1.600	NA	NA	0.220	0.017	<0.0005	0.100	NA	NA
	27-Aug-92	PES	NS	NS	NA	NS	NS	NS	NS	NS	NS
	23-Sep-92	PES	5.200	NA	NA	1.100	0.590	0.100	1.000	NA	NA
	27-Oct-92	PES	1.300	NA	NA	0.220	0.061	0.0053	0.110	NA	NA
	24-Nov-92	PES	7.100	NA	NA	1.400	1.100	0.120	0.890	NA	NA
	18-Feb-93	PES	7.200	NA	NA	1.400	0.930	0.210	1.000	NA	NA
	09-Mar-93	PES	4.600	NA	NA	0.990	0.750	0.062	0.840	NA	NA
	21-Apr-93	PES	4.900	NA	NA	0.270	0.180	0.020	0.190	NA	NA
	13-May-93	PES	2.600	NA	NA	0.520	0.110	0.023	0.330	NA	NA
	28-Jun-93	PES	9.500	NA	NA	1.900	0.460	0.230	1.000	NA	NA
	11-Aug-93	PES	1.300	NA	NA	<0.002	<0.002	<0.002	0.400	NA	NA
	15-Nov-93	PES	46.000	NA	NA	2.900	0.380	0.500	1.700	NA	NA
	14-Feb-94	PES	21.000	NA	NA	4.500	0.860	1.000	2.800	NA	NA
	16-May-94	PES	19.000	NA	NA	7.300	0.930	1.300	3.300	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through October 2000
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	MTBE	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	10-Aug-94	PES	19	NA	NA	4.200	0.490	1.100	1.500	NA	NA
Cont.	3-Nov-94	PES	20	NA	NA	6.000	0.230	1.400	1.400	NA	NA
	9-Feb-95	PES	8.7	NA	NA	1.800	0.110	0.380	0.740	NA	NA
	9-May-95	PES	6.6	NA	NA	1.100	0.051	0.270	0.380	NA	NA
	10-Aug-95	PES	2.6	NA	NA	0.410	0.016	0.110	0.097	NA	NA
	13-Nov-95	PES	14	NA	NA	2.900	0.110	0.550	0.440	NA	NA
	13-Feb-96	PES	3.7	NA	NA	1.000	0.220	0.170	0.280	NA	NA
	9-May-96	PES	0.97	NA	NA	0.230	0.050	0.039	0.047	NA	NA
	8-Aug-96	PES	0.74	NA	NA	0.200	0.063	0.025	0.049	NA	NA
	11-Nov-96	PES	0.64	NA	NA	0.340	0.110	0.034	0.090	NA	NA
	14-Feb-97	PES	4.20	NA	NA	1.600	0.043	0.260	0.040	NA	NA
	14-May-97	PES	2.2	NA	NA	0.940	0.011	0.064	0.068	NA	NA
	12-Aug-97	PES	3.2	NA	NA	1.400	0.028	0.086	0.110	NA	NA
	12-Nov-97	PES	2.0	NA	NA	0.790	0.045	0.028	0.090	NA	NA
	4-Feb-98	PES	7.2	NA	NA	2.600	0.190	0.310	0.140	NA	NA
	18-May-98	PES	1.5	NA	NA	0.820	0.019	0.071	0.067	NA	NA
	11-Aug-98	PES	5.1	NA	NA	1.2	0.0065	0.075	0.21	NA	NA
	17-Dec-98	PES	5.9	NA	0.04	2.2	0.16	0.0035	0.31	NA	NA
	7-Oct-99	PES	11	NA	<0.5	3.1	0.098	0.49	0.89	NA	NA
	12-Oct-00	**PES**	**7.7**	**NA**	**<0.010**	**3.0**	**0.056**	**0.38**	**0.20**	**NA**	**NA**

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.
BLAINE = Blaine Tech Services, 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
MTBE = Methyl tert butyl ether

Table 3. Summary of Total Dissolved Oxygen Through October 2000
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	
	11-Jan-96	10:47	PES	1.4	(1)
	14-Jan-96	17:27	PES	>15	
	17-Jan-96	8:03	PES	8.2	
	19-Jan-96	9:31	PES	4.8	
	21-Jan-96	18:10	PES	2.6	
	25-Jan-96	20:13	PES	1.8	
	13-Feb-96	11:43	Blaine	0.4	
	11-Apr-96	10:12	PES	0.1	(1)
	15-Apr-96	8:48	PES	>15	
	9-May-96	11:22	Blaine	0.6	
	8-Aug-96	10:41	Blaine	0.7	
	23-Oct-96	8:00	PES	0.3	(1)
	11-Nov-96	9:57	Blaine	0.6	
	14-Feb-97	9:43	Blaine	0.8	
	19-Feb-97	9:15	PES	0.4	(1)
	4-Apr-97	8:20	PES	0.6	(1)
	14-May-97	10:14	Blaine	6.1	
	26-Jun-97	8:43	PES	0.3	(1)
	12-Aug-97	11:35	Blaine	0.3	
	10-Oct-97	9:30	PES	0.4	(1)
	12-Nov-97	10:31	Blaine	0.5	
	4-Feb-98	9:59	Blaine	0.8	

Table 3. Summary of Total Dissolved Oxygen Through October 2000
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-2 Cont.	13-Mar-98	8:40	PES	0.2	(1)
	9-Apr-98	9:30	PES	0.4	(1)
	18-May-98	9:16	Blaine	0.5	
	9-Jul-98	9:05	PES	1.0	(1)
	11-Aug-98	9:58	Blaine	1.0	
	17-Dec-98	9:50	Blaine	1.2	
	7-Oct-99	10:25	Blaine	1.2	
	12-Oct-00	**10:18**	**Blaine**	**0.3**	
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	
	11-Jan-96	13:12	PES	1.6	(1)
	13-Feb-96	NM	NM	NM	
	11-Apr-96	15:00	PES	0.2	(1)
	9-May-96	NM	NM	NM	
	8-Aug-96	NM	NM	NM	
	23-Oct-96	12:05	PES	0.4	(1)
	11-Nov-96	NM	NM	NM	
	14-Feb-97	NM	NM	NM	
	19-Feb-97	10:15	PES	0.4	(1)
	4-Apr-97	11:00	PES	0.4	(1)
	14-May-97	NM	NM	NM	
	26-Jun-97	12:15	PES	0.5	(1)
	12-Aug-97	NM	NM	NM	
	10-Oct-97	12:30	PES	0.4	(1)
	12-Nov-97	NA	Blaine	0.8	
	4-Feb-98	NA	Blaine	1.0	
	13-Mar-98	11:45	PES	0.2	(1)
	9-Apr-98	10:38	PES	0.2	(1)
	18-May-98	NA	NM	NM	
	9-Jul-98	13:05	PES	0.5	(1)
	11-Aug-98	NA	NM	NM	
	17-Dec-98	NA	NM	NM	

Table 3. **Summary of Total Dissolved Oxygen Through October 2000**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-3	7-Oct-99	NA	NM	NM	
Cont.	**12-Oct-00**	**NA**	**NM**	**NM**	
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	
	16-Mar-95	15:30	PES	0.07	(1)
	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	
	11-Jan-96	13:25	PES	1.0	(1)
	13-Feb-96	10:47	Blaine	0.4	
	11-Apr-96	10:35	PES	0.1	(1)
	9-May-96	10:55	Blaine	0.7	
	8-Aug-96	9:58	Blaine	0.8	
	23-Oct-96	9:10	PES	0.3	(1)
	11-Nov-96	9:01	Blaine	0.6	
	14-Feb-97	9:02	Blaine	0.8	
	19-Feb-97	9:50	PES	0.2	(1)
	4-Apr-97	8:47	PES	0.5	(1)
	14-May-97	9:31	Blaine	5.4	
	26-Jun-97	11:17	PES	0.4	(1)
	12-Aug-97	10:47	Blaine	0.6	
	10-Oct-97	10:20	PES	0.4	(1)
	12-Nov-97	9:12	Blaine	0.6	
	4-Feb-98	8:45	Blaine	1.0	
	13-Mar-98	11:15	PES	0.8	(1)
	9-Apr-98	11:40	PES	0.3	(1)
	18-May-98	8:31	Blaine	0.6	
	9-Jul-98	13:10	PES	0.3	(1)
	11-Aug-98	9:00	Blaine	1.1	
	17-Dec-98	8:40	Blaine	1.6	
	7-Oct-99	9:43	Blaine	1.7	
	12-Oct-00	**8:44**	**Blaine**	**0.4**	
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)

Table 3. Summary of Total Dissolved Oxygen Through October 2000
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-5 Cont.	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	
	11-Jan-96	11:29	PES	1.5	(1)
	13-Feb-96	NM	NM	NM	
	11-Apr-96	10:50	PES	0.15	(1)
	9-May-96	NM	NM	NM	
	8-Aug-96	NM	NM	NM	
	23-Oct-96	11:25	PES	0.4	(1)
	11-Nov-96	NM	NM	NM	
	14-Feb-97	NM	NM	NM	
	19-Feb-97	10:40	PES	0.4	(1)
	4-Apr-97	10:50	PES	0.5	(1)
	14-May-97	NM	NM	NM	
	26-Jun-97	7:58	PES	0.5	(1)
	12-Aug-97	NM	NM	NM	
	10-Oct-97	NM	NM	NM	
	12-Nov-97	NA	Blaine	0.5	
	4-Feb-98	NA	Blaine	0.9	
	13-Mar-98	NM	NM	NM	
	9-Apr-98	10:40	PES	0.1	(1)
	18-May-98	NA	NM	NM	
	9-Jul-98	12:55	PES	0.2	(1)
	11-Aug-98	NA	NM	NM	
	17-Dec-98	NA	NM	NM	
	7-Oct-99	NA	NM	NM	
	12-Oct-00	**NA**	**NM**	**NM**	
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	

Table 3. Summary of Total Dissolved Oxygen Through October 2000
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-6	13-Nov-95	9:13	Blaine	0.8	
Cont.	11-Jan-96	10:12	PES	2.4	(1)
	14-Jan-96	17:40	PES	2.4	
	17-Jan-96	8:25	PES	2.2	
	19-Jan-96	9:40	PES	2.2	
	21-Jan-96	18:32	PES	2.0	
	25-Jan-96	20:28	PES	1.8	
	13-Feb-96	NM	NM	NM	
	11-Apr-96	10:25	PES	0.1	(1)
	9-May-96	NM	NM	NM	
	8-Aug-96	NM	NM	NM	
	23-Oct-96	8:50	PES	0.4	(1)
	11-Nov-96	NM	NM	NM	
	14-Feb-97	NM	NM	NM	
	19-Feb-97	9:40	PES	0.6	(1)
	4-Apr-97	8:35	PES	0.6	(1)
	14-May-97	NM	NM	NM	
	26-Jun-97	11:00	PES	0.4	(1)
	12-Aug-97	NM	NM	NM	
	10-Oct-97	10:05	PES	0.6	(1)
	12-Nov-97	NA	Blaine	1.5	
	4-Feb-98	NA	Blaine	1.2	
	13-Mar-98	10:00	PES	0.5	(1)
	9-Apr-98	11:58	PES	0.4	(1)
	18-May-98	NA	NM	NM	
	9-Jul-98	13:15	PES	0.3	(1)
	11-Aug-98	NA	NM	NM	
	17-Dec-98	NA	NM	NM	
	7-Oct-99	NA	NM	NM	
	12-Oct-00	**NA**	**NM**	**NM**	
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	
	3-Jul-95	19:30	PES	0.19	
	10-Aug-95	11:47	Blaine	0.9	
	20-Sep-95	10:45	PES	1.0	(1)
	11-Jan-96	11:18	PES	1.4	(1)
	13-Nov-95	10:13	Blaine	0.6	
	13-Feb-96	NM	NM	NM	
	9-May-96	NM	NM	NM	
	8-Aug-96	NM	NM	NM	
	23-Oct-96	11:15	PES	0.5	(1)
	11-Nov-96	NM	NM	NM	

Table 3. Summary of Total Dissolved Oxygen Through October 2000
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-7 Cont.	14-Feb-97	NM	NM	NM	
	19-Feb-97	10:30	PES	0.5	(1)
	14-May-97	NM	NM	NM	
	26-Jun-97	7:47	PES	0.5	(1)
	12-Aug-97	NM	NM	NM	
	10-Oct-97	NM	NM	NM	
	12-Nov-97	NA	Blaine	0.5	
	4-Feb-98	NA	Blaine	0.7	
	13-Mar-98	NM	NM	NM	
	9-Apr-98	10:20	PES	0.9	(1)
	18-May-98	NA	NM	NM	
	9-Jul-98	12:50	PES	0.15	(1)
	11-Aug-98	NA	NM	NM	
	17-Dec-98	NA	NM	NM	
	7-Oct-99	NA	NM	NM	
	12-Oct-00	**NA**	**NM**	**NM**	
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	
	11-Jan-96	9:56	PES	5.0	(1)
	14-Jan-96	17:03	PES	>15	
	17-Jan-96	7:43	PES	>15	
	19-Jan-96	9:12	PES	>15	
	21-Jan-96	17:58	PES	>15	
	25-Jan-96	20:03	PES	4.0	

Table 3. Summary of Total Dissolved Oxygen Through October 2000
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
MW-8	13-Feb-96	11:17	Blaine	>15	
Cont.	11-Apr-96	9:10	PES	6.2	(1)
	15-Apr-96	8:35	PES	>15	
	9-May-96	12:51	Blaine	0.5	
	8-Aug-96	10:14	Blaine	0.7	
	23-Oct-96	7:45	PES	0.4	(1)
	11-Nov-96	10:31	Blaine	1.8	
	14-Feb-97	10:06	Blaine	1.0	
	19-Feb-97	9:00	PES	3.0	(1)
	4-Apr-97	8:00	PES	>15	(1)
	14-May-97	10:49	Blaine	6.9	
	26-Jun-97	8:11	PES	0.6	(1)
	12-Aug-97	11:12	Blaine	0.6	
	10-Oct-97	9:10	PES	3.0	(1)
	12-Nov-97	9:38	Blaine	1.2	
	4-Feb-98	9:10	Blaine	0.7	
	13-Mar-98	8:45	PES	1.4	(1)
	9-Apr-98	8:30	PES	0.2	(1)
	18-May-98	8:51	Blaine	0.9	
	9-Jul-98	9:15	PES	0.6	(1)
	11-Aug-98	9:25	Blaine	0.9	
	17-Dec-98	9:05	Blaine	1.3	
	7-Oct-99	NM	NM	NM	
	12-Oct-00	**9:20**	**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	
	1-Jul-95	19:50	PES	5.68	
	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	

Table 3. **Summary of Total Dissolved Oxygen Through October 2000**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Time of Day	Measured by	Total Dissolved Oxygen (mg/L)	Notes
EW-1 Cont.	28-Sep-95	9:43	PES	>15	
	13-Nov-95	11:26	Blaine	0.5	
	11-Jan-96	10:25	PES	1.8	(1)
	14-Jan-96	17:21	PES	>15	
	17-Jan-96	8:10	PES	14.2	
	19-Jan-96	9:25	PES	8.2	
	21-Jan-96	18:18	PES	4.0	
	25-Jan-96	20:17	PES	2.0	
	13-Feb-96	12:04	Blaine	0.3	
	11-Apr-96	10:00	PES	0.2	(1)
	15-Apr-96	8:44	PES	>15	
	9-May-96	11:41	Blaine	0.5	
	8-Aug-96	11:13	Blaine	0.6	
	23-Oct-96	8:15	PES	0.3	(1)
	11-Nov-96	9:35	Blaine	0.7	
	14-Feb-97	9:24	Blaine	0.9	
	19-Feb-97	9:30	PES	0.4	(1)
	4-Apr-97	8:10	PES	0.6	(1)
	14-May-97	9:54	Blaine	5.8	
	26-Jun-97	8:30	PES	0.4	(1)
	12-Aug-97	11:26	Blaine	0.4	
	10-Oct-97	9:45	PES	0.4	(1)
	12-Nov-97	10:03	Blaine	0.9	
	4-Feb-98	9:38	Blaine	1.1	
	13-Mar-98	8:34	PES	0.4	(1)
	9-Apr-98	8:45	PES	0.1	(1)
	18-May-98	9:38	Blaine	1.0	
	9-Jul-98	8:50	PES	1.3	
	11-Aug-98	10:25	Blaine	1.3	
	17-Dec-98	9:25	Blaine	1.1	
	7-Oct-99	10:01	Blaine	1.3	
	12-Oct-00	**9:53**	**Blaine**	**0.3**	

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.
NA = Not available
mg/L = milligrams per liter

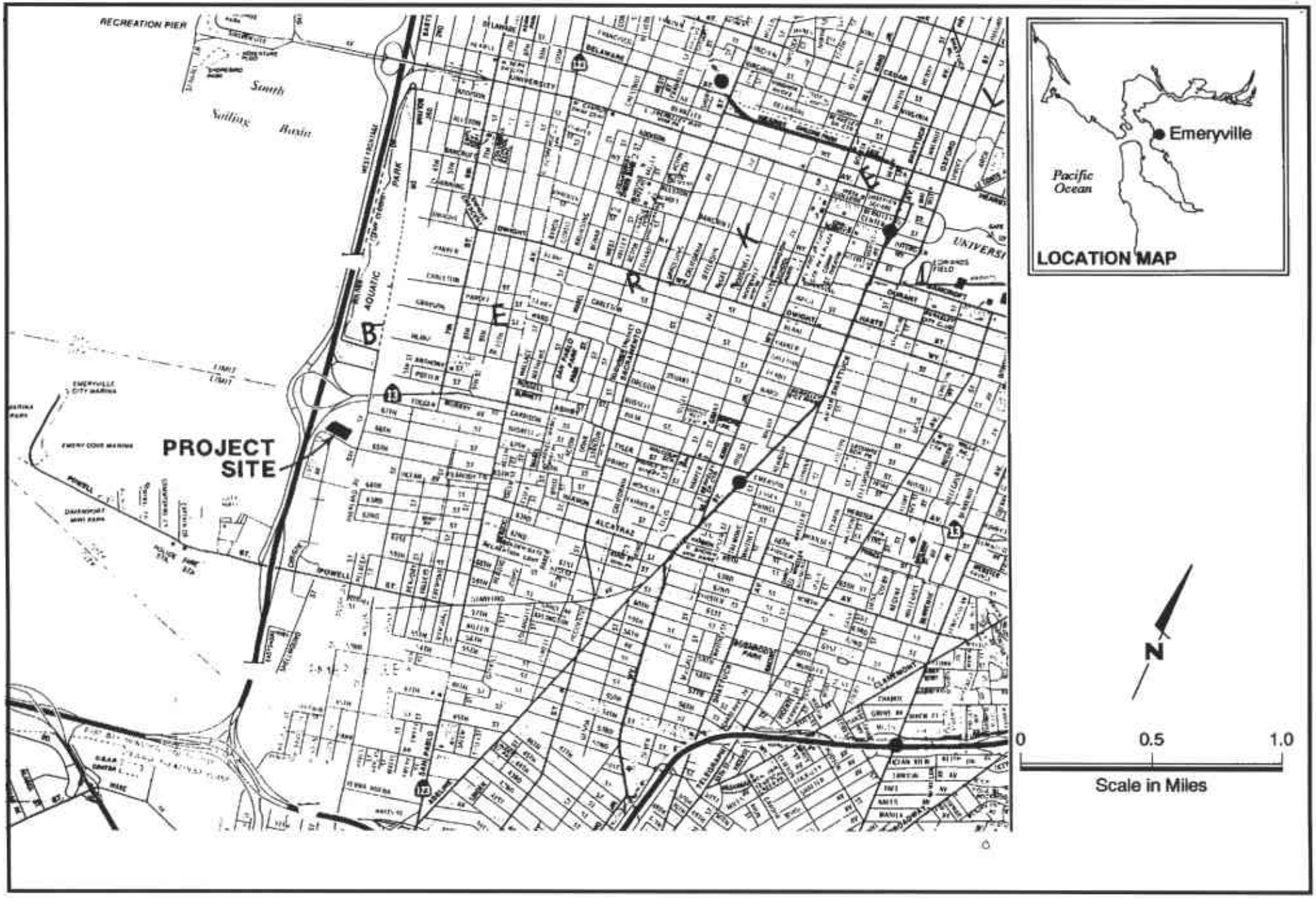
Table 4. Summary of Nutrient Introduction to Wells Through July 1998
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Name	Date Introduced	Flow Rate (gpm)	Volume of Enriched Water Introduced (gallons)	Concentration of H2O2 (ppm)	Amount of O2 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
	1/11/96	3.2 to 4.0	250	10,000	9.80
	4/11/96	3.5 to 3.8	250	10,000	9.80
	7/16/96	3.2 to 4.0	249.5	10,000	9.78
	10/23/96	4.0 to 4.6	250	10,000	9.80
	2/19/97	3.9 to 4.1	250	10,000	9.80
	4/4/97	3.7 to 4.4	250	10,000	9.80
	6/26/97	4.0 to 4.2	249.8	10,000	9.79
	10/10/97	3.2 to 4.1	250	10,000	9.80
	3/13/98	2.9 to 4.6	250	10,000	9.80
	4/9/98	3.1 to 3.5	250	10,000	9.80
	7/9/98	2.8 to 4.5	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
	1/11/96	4.1 to 4.5	226.6	10,000	8.88
	4/11/96	3.9 to 4.2	214	10,000	8.39
	7/16/96	3.8 to 4.0	198	10,000	7.76
	10/23/96	4.0 to 4.3	222	10,000	8.70
	2/19/97	3.8 to 4.0	249.1	10,000	9.76
	4/4/97	3.2 to 3.5	192	10,000	7.52
	6/26/97	3.8 to 3.9	215	10,000	8.43
	10/10/97	3.0 to 3.2	190	10,000	7.45
	3/13/98	3.0 to 4.0	210	10,000	8.23
	4/9/98	3.2 to 3.8	160	10,000	6.27
	7/9/98	2.5 to 3.0	189	10,000	7.41
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
	1/11/96	0.3 to 1.1	33.4	10,000	1.31
	4/11/96	0.2 to 0.5	36	10,000	1.41
	7/16/96	0.1 to 0.4	52.5	10,000	2.06
	10/23/96	0.1 to 0.96	53	10,000	2.08
	2/19/97	0.1 to 0.3	25.9	10,000	1.02
	4/4/97	0.1 to 0.6	83	10,000	3.25
	6/26/97	0.2 to 1.1	84	10,000	3.29
	10/10/97	0.1 to 1.8	85	10,000	3.33

Table 4. Summary of Nutrient Introduction to Wells Through July 1998
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Name	Date Introduced	Flow Rate (gpm)	Volume of Enriched Water Introduced (gallons)	Concentration of H2O2 (ppm)	Amount of O2 Introduced (pounds)
MW-8 Cont.	3/13/98	0.4 to 0.9	65	10,000	2.55
	4/9/98	0.2 to 0.8	90	10,000	3.53
	7/9/98	0.4 to 1.0	61	10,000	2.39
		TOTAL	7,694.2	**TOTAL**	301.54

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.

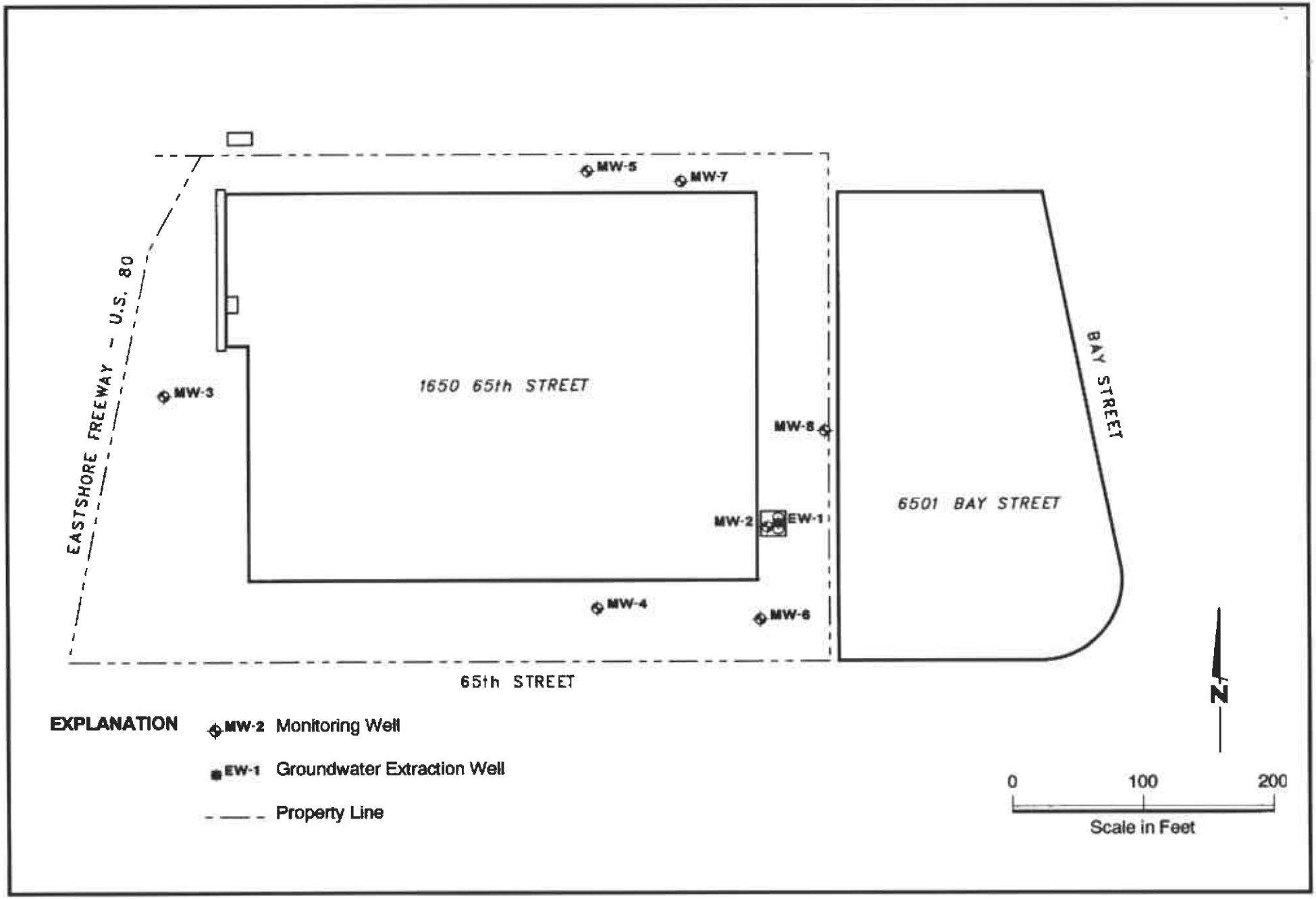


PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
1650 65th Street
Emeryville, California

PLATE
1

131-001-00-003	1310100003_V1Q.CDR	AAB	5/01
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



EXPLANATION

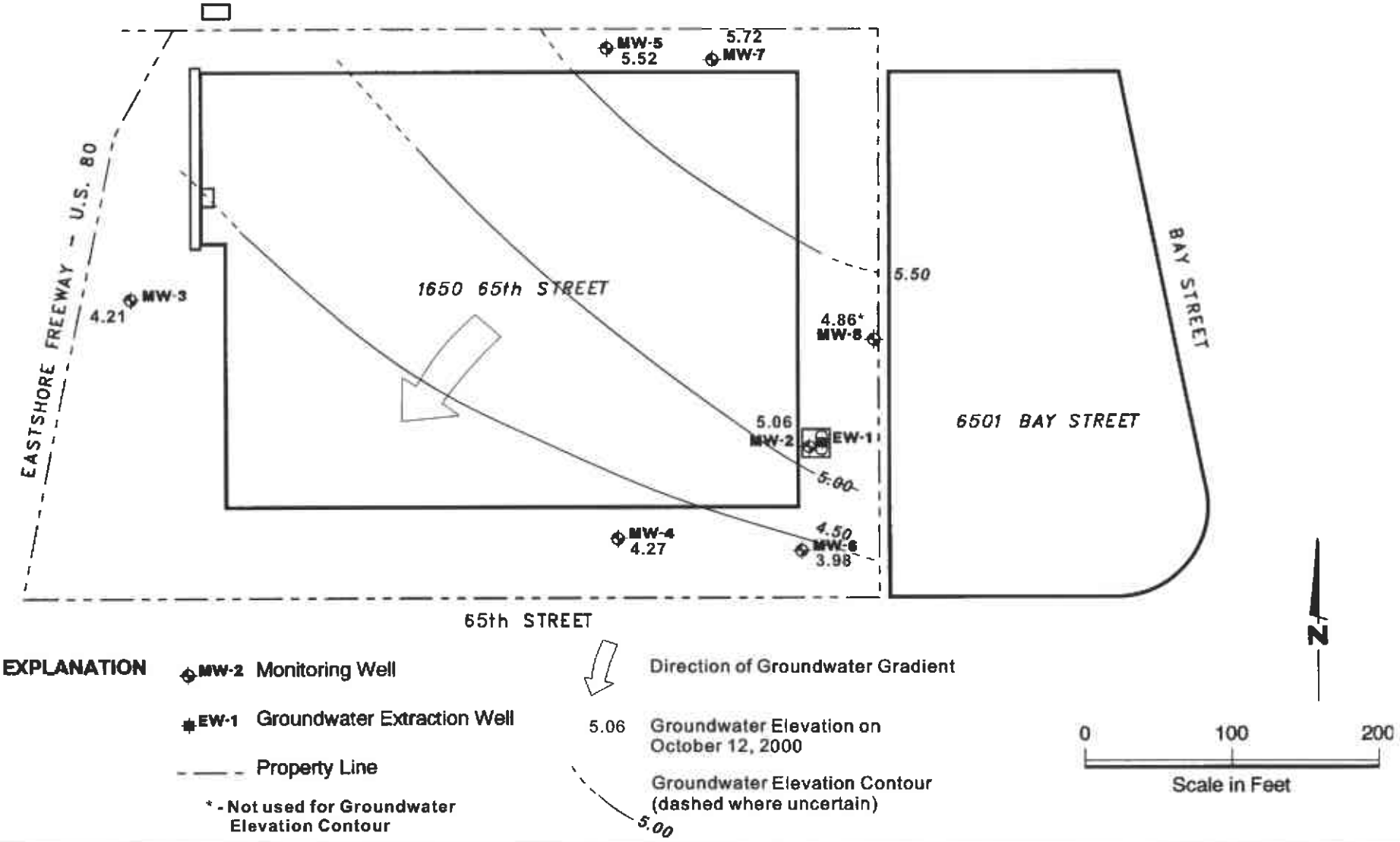
- MW-2 Monitoring Well
- EW-1 Groundwater Extraction Well
- Property Line

PES Environmental, Inc.
Engineering & Environmental Services

Well Location Map
1650 65th Street
Emeryville, California

PLATE
2

131-001-00-003	1310100003_p2-3q-00.cdr	AAS	5/01
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

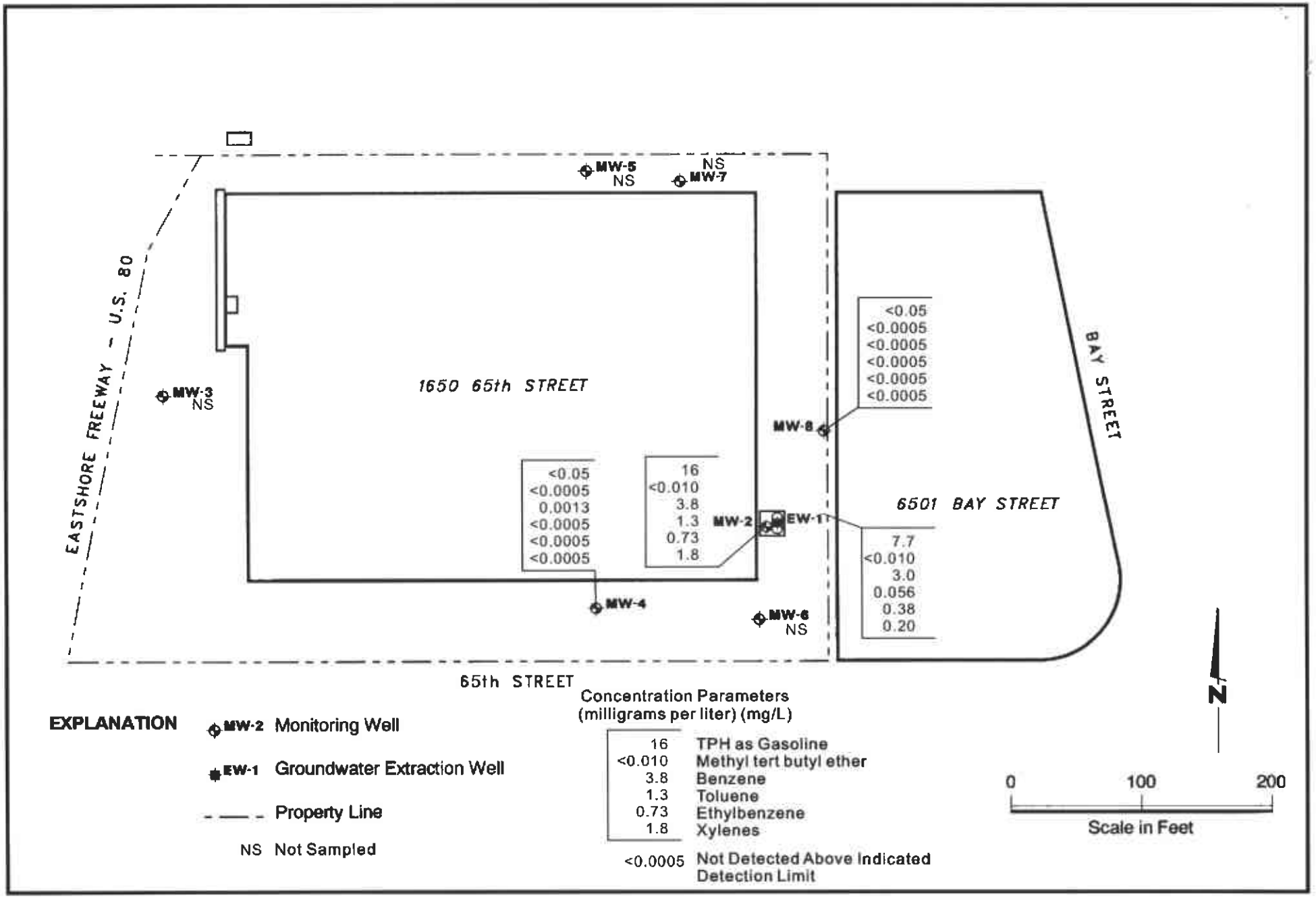


PES Environmental, Inc.
Engineering & Environmental Services

Groundwater Elevation Contours on October 12, 2000
1650 65th Street
Emeryville, California

PLATE
3

131-001-00-003	1310100003_p3-4Q-00.CDR	AAB	5/01
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



PES Environmental, Inc.
Engineering & Environmental Services

Dissolved Hydrocarbons in Groundwater on October 12, 2000
1650 65th Street
Emeryville, California

PLATE
4

131-001-01-003	1310100003_P4-3Q-00.CDR	A+D	5/01
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
(408) 573-7771 FAX
(408) 573-0555 PHONE
CONTRACTOR'S LICENSE #746684
www.blainetech.com

October 24, 2000

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

Attention: Jenny Han

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

DATE:
October 12, 2000

Water Level Report 001012-R-1.WL

Personnel from our office were present at the site on Thursday, October 12, 2000 to obtain water levels and conduct a sheen and odor check. Please note that we are reporting only the water levels, not elevations.

Well designation	Well diameter (in.)	Depth to water (ft.)	Well depth (ft.)	Sheen/ Odor	Top of Casing or Top of Box
EW-1	4	10.54	27.72	Odor	TOC
MW-2	2	10.73	22.74	Odor	TOC
MW-3	4	8.22	18.14	--	TOC
MW-4	4	7.97	15.81	Odor	TOC
MW-5	4	7.30	17.95	Odor	TOC
MW-6	4	8.05	18.73	--	TOC
MW-7	4	7.18	18.70	Odor	--
MW-8	2	10.15	23.68	--	--

William Jones
Project Coordinator

WRJ/pb

BLAINE
TECH SERVICES, INC.

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SAN JOSE, CA 95112-1105
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(408) 573-0555 PHONE
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October 24, 2000

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

ATTN: Jenny Han

Site:
Emery Bay Plaza
1650 65th St.
Emeryville, California

Date:
October 12, 2000

GROUNDWATER SAMPLING REPORT 001012-R-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. Pre-purge downhole dissolved oxygen readings were obtained in all wells sampled. A series of electrical conductivity, pH, turbidity, and temperature readings were obtained during well evacuation and at the time of sample collection.

Dissolved oxygen readings were obtained by use of the YSI Instruments Model 58 Dissolved Oxygen Meter. This meter was equipped with a downhole stirring probe. The instrument was

air calibrated before each reading per the manufacturer's operating procedures.

STANDARD PRACTICES

Evacuation and Sampling Equipment

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

Samples were collected using disposable bailers.

USGS/Middleburg Positive Displacement Sampling Pumps: USGS/Middleburg positive displacement sampling pumps are EPA approved pumps appropriate for use in wells down to two inches in diameter and depths up to several hundred feet. Actuation of the pump is accomplished with compressed air supplied by a single hose. Water is pushed out of the pump and up a Teflon conductor pipe to the surface. Evacuation and sampling are accomplished as a continuum. The rate of water removal is relatively slow and loss of volatiles almost non-existent. There is only positive pressure on the water being sampled and there is no impeller cavitation or suction. The pumps can be placed at any location within the well, can draw water from the very bottom of the well case, and are virtually immune to the erosive effects of silt or lack of water which destroy other types of pumps.

Disadvantages associated with Middleburg pumps include their high cost, low flow rate, temperamental operation, and cleaning requirements which are both elaborate and time consuming.

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 check valve 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.

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 and/or solvents 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 polyethylene, Teflon, or stainless steel, and is used as an evacuation and/or sampling device. Disposable bailers are made of polyethylene plastic, decontaminated by the manufacturer, individually packaged for one-time only use, and are inexpensive. Teflon and stainless steel bailers are relatively easy to clean and are considered reusable with proper decontamination.

Because bailers are manually operated, variations in operator technique may have a greater influence on performance than would be found when using more automated sampling equipment. Also, in cases where fuel hydrocarbons are involved the bailer may include near-surface contaminants that are not representative of water located deeper in the well.

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 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 analyzed at Kiff Analytical in Davis, California. Kiff is certified by the California Department of Health Services under the Environmental Laboratory Accreditation Program (ELAP), and is listed as ELAP #2236.

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.

William Jones
Project Coordinator

WRJ/pb

attachments: table of well monitoring data
chain of custody

TABLE OF WELL MONITORING DATA

Well I.D.	EW-1			MW-2			MW-4			MW-8		
Date Sampled	10/12/00			10/12/00			10/12/00			10/12/00		
Well Diameter (in.)	4			2			4			2		
Total Well Depth (ft.)	27.72			22.74			15.81			23.68		
Depth To Water (ft.)	10.54			10.73			7.97			10.15		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	11.2			1.9			5.1			2.2		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	36.0			6.0			18.0			7.5		
Purging Device	ELECTRIC SUBMERSIBLE			MIDDLEBURG			ELECTRIC SUBMERSIBLE			MIDDLEBURG		
Sampling Device	DISPOSABLE BAILER			DISPOSABLE BAILER			DISPOSABLE BAILER			DISPOSABLE BAILER		
Time	9:53	9:54	9:56	10:18	10:22	10:26	8:44	8:45	8:46	9:20	9:25	9:33
Temperature (Fahrenheit)	65.6	66.5	66.9	64.8	65.6	65.6	68.7	69.5	70.3	63.4	62.7	62.2
pH	7.6	7.4	7.4	8.9	9.0	9.0	8.7	8.4	8.4	7.0	7.4	7.5
Conductivity (micromhos/cm)	1727	1400	1390	1450	1440	1440	10,100	10,180	10,330	26,260	25,850	26,400
Nephelometric Turbidity Units	50	15	12	26	32	13	15	14	23	187.0	>200	>200
Dissolved Oxygen (mg/L)	0.3			0.3			0.4			0.4		
BTS Chain of Custody	001012-R1			001012-R1			001012-R1			001012-R1		
BTS Sample I.D.	EW-1			MW-2			MW-4			MW-8		
DOHS HMTL Laboratory	KIFF			KIFF			KIFF			KIFF		
Analysis	TPH (GAS), BTEX, MTBE			TPH (GAS), BTEX, MTBE			TPH (GAS), BTEX, MTBE			TPH (GAS), BTEX, MTBE		

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF BTS # 00012-R1

CLIENT: PES

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

CONDUCT ANALYSIS TO DETECT

LAB: KIFF DHS #

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

SPECIAL INSTRUCTIONS

Invoice and Report to : PES

Attn: Jenny Han

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	TPH-G (8015)	BTEX & MTBE (8020)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW 4	10/12/00	840	W	3	HCl VOA		X	X				
MW 8	↓	936	↓	↓	↓		X	X				
EW 1	↓	957	↓	↓	↓		X	X				
MW 2	↓	1027	↓	↓	↓		X	X				

SAMPLING COMPLETED: DATE 10/12/00 TIME 1030

SAMPLING PERFORMED BY: Jared Bowen

RESULTS NEEDED NO LATER THAN: Per Client

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Jared Bowen	10/13/00	4:10			
			Osama Albahami/KIFF Analytical	101300	1610

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

KIFF ANALYTICAL LLC

Report Number : 18065
Date : 10/20/2000

RECEIVED NOV - 6 2000

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

Subject : 4 Water Samples
Project Name : Emery Bay Plaza, 1650 65th Street, Emeryville, CA
Project Number : BTS # 001012-R1

Dear Ms. Han,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 18065
Date : 10/20/2000

Project Name : **Emery Bay Plaza, 1650 65th Street, Emeryville, CA**
Project Number : **BTS # 001012-R1**

Sample : **MW 4** Matrix : Water Lab Number : 18065-01
Sample Date :10/12/2000

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**1.3**	0.50	ug/L	EPA 8260B	10/19/2000
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	10/19/2000
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	10/19/2000
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	10/19/2000
Methyl-t-butyl ether	**< 0.50**	0.50	ug/L	EPA 8260B	10/19/2000
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	10/19/2000
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	10/19/2000
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	10/19/2000

Sample : **MW 8** Matrix : Water Lab Number : 18065-02
Sample Date :10/12/2000

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	10/18/2000
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	10/18/2000
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	10/18/2000
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	10/18/2000
Methyl-t-butyl ether	**< 0.50**	0.50	ug/L	EPA 8260B	10/18/2000
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	10/18/2000
Toluene - d8 (Surr)	98.1		% Recovery	EPA 8260B	10/18/2000
4-Bromofluorobenzene (Surr)	98.0		% Recovery	EPA 8260B	10/18/2000

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 18065
Date : 10/20/2000

Project Name : **Emery Bay Plaza, 1650 65th Street, Emeryville, CA**
Project Number : **BTS # 001012-R1**

Sample : **EW 1** Matrix : Water Lab Number : 18065-03
Sample Date :10/12/2000

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**3000**	10	ug/L	EPA 8260B	10/19/2000
Toluene	**56**	10	ug/L	EPA 8260B	10/19/2000
Ethylbenzene	**380**	10	ug/L	EPA 8260B	10/19/2000
Total Xylenes	**200**	10	ug/L	EPA 8260B	10/19/2000
Methyl-t-butyl ether	**< 10**	10	ug/L	EPA 8260B	10/19/2000
TPH as Gasoline	**7700**	1000	ug/L	EPA 8260B	10/19/2000
Toluene - d8 (Surr)	98.3		% Recovery	EPA 8260B	10/19/2000
4-Bromofluorobenzene (Surr)	97.8		% Recovery	EPA 8260B	10/19/2000

Sample : **MW 2** Matrix : Water Lab Number : 18065-04
Sample Date :10/12/2000

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**3800**	10	ug/L	EPA 8260B	10/19/2000
Toluene	**1300**	10	ug/L	EPA 8260B	10/19/2000
Ethylbenzene	**730**	10	ug/L	EPA 8260B	10/19/2000
Total Xylenes	**1800**	10	ug/L	EPA 8260B	10/19/2000
Methyl-t-butyl ether	**< 10**	10	ug/L	EPA 8260B	10/19/2000
TPH as Gasoline	**16000**	1000	ug/L	EPA 8260B	10/19/2000
Toluene - d8 (Surr)	99.6		% Recovery	EPA 8260B	10/19/2000
4-Bromofluorobenzene (Surr)	98.0		% Recovery	EPA 8260B	10/19/2000

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 18065

Date : 10/20/2000

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Emery Bay Plaza, 1650**

Project Number :

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Spike Recovery Data														
Benzene	18065-02	<0.50	22.9	23.0	23.7	23.7	ug/L	EPA 8260B	10/18/200	104	103	0.658	70-130	25
Toluene	18065-02	<0.50	22.9	23.0	22.2	22.2	ug/L	EPA 8260B	10/18/200	96.9	96.6	0.351	70-130	25
Tert-Butanol	18065-02	<5.0	22.9	23.0	24.2	24.6	ug/L	EPA 8260B	10/18/200	106	107	1.01	70-130	25
Methyl-t-Butyl Ether	18065-02	<0.50	22.9	23.0	23.1	23.2	ug/L	EPA 8260B	10/18/200	101	101	0.178	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 18065

Date : 10/20/2000

QC Report : Laboratory Control Sample (LCS)

Project Name : **Emery Bay Plaza, 1650**

Project Number :

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	10/18/200	97.6	70-130
Toluene	40.0	ug/L	EPA 8260B	10/18/200	91.3	70-130
Tert-Butanol	40.0	ug/L	EPA 8260B	10/18/200	108	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	10/18/200	90.3	70-130

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

BLAINE

TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF BTS # 001012-R1

CLIENT: PES

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

LAB: KIFF 18065 DHS #

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

SPECIAL INSTRUCTIONS

Invoice and Report to : PES

Attn: Jenny Han

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: TPH-G (8015)	BTEX & MTBE (8020)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW 4	10/12/00	840	W	3	HCl VOA		X	X				-01
MW 8		936					X	X				-02
EW 1		957					X	X				-03
MW 2		1027					X	X				-04

SAMPLING COMPLETED: DATE 10/12/00 TIME 1030

SAMPLING PERFORMED BY: Jared Bowen

RESULTS NEEDED NO LATER THAN: Per Client

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Jared Bowen	10/13/00	4:10			
			Osama Albahami/KIFF Analytical	101300	1610

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

APPENDIX C

CHEMICAL VAPOR VOLATILIZATION MODEL

PES Environmental, Inc. (PES) performed an evaluation of potential ambient air concentrations of aromatic hydrocarbons. Indoor air concentrations of benzene, toluene, ethylbenzene, and total xylenes, within the subject site office building resulting from volatilization of residual dissolved aromatic hydrocarbons in groundwater beneath the subject building were estimated. The estimated concentrations were compared to United States Environmental Protection Agency Region IX preliminary remediation goals (PRGs) for ambient air (EPA, 2000). Calculated indoor chemical concentrations that are below the respective PRGs indicate no significant potential human health risks.

The source of contaminants at the site is releases of gasoline from a former underground storage tank (UST) located near the southeast corner of the onsite building. Because available analytical data does not suggest the presence of soil contamination beneath the building, the source of contaminants at the site is limited to residual aromatic hydrocarbons in groundwater. Residual aromatic hydrocarbons in groundwater that are evaluated include benzene, toluene, ethylbenzene, and total xylenes.

The following sections describe the methodology of the evaluation and present the results.

METHODOLOGY

Chemical concentrations in ambient air within the subject site office building were estimated by modeling volatilization of chemicals from affected groundwater beneath the building. Upward diffusion of the chemicals through the soil cover is modeled to calculate a vapor flux at the ground surface. An air-mixing model was then used to estimate ambient air concentrations in the building.

Estimation of Chemical Vapor Flux

Steady-state vapor flux at the ground surface is estimated using the following equation (Farmer et al., 1980), which is a modified form of Fick's law of diffusion:

$$E_i = D_{air}\left(C_v - C_0\right)\frac{1}{L}\left(\frac{P_a^{3.33}}{P_t^2}\right)\left(10^4\right)$$

where:

E_i = emission flux of chemical i at the ground surface, in mg/m^2·s;
D_{air} = chemical air diffusion coefficient of chemical i, in cm^2/s;
C_v = chemical i concentration in the vapor phase at depth L, in mg/cm^3;
C_o = chemical i concentration at the ground surface, in mg/cm^3;
L = soil cover thickness, in cm;
P_t = total porosity of soil cover, (dimensionless); and
P_a = air-filled porosity of soil cover, (dimensionless).

In this model, the following assumptions are made:

- steady-state single direction (upward) movement of soil vapors occur;
- diffusive transport dominates over convective transport and no net upward dissolved-phase flux occurs (Johnson and Ettinger, 1991);
- soil properties are constant over space and time;
- the chemical concentration at the ground surface (C_o) is negligible relative to the chemical concentration at depth (C_v), therefore the concentration gradient (C_v - C_o) equals C_v; and
- soil porosity and tortuosity factors are assumed to follow the model of Millington and Quirk (1961).

Estimation of Chemical Vapor Concentrations

As stated above, because no soil analytical data was collected beneath the building, the model assumes only chemical vapor in soil pores volatilizing from contaminated groundwater at the groundwater surface or from contaminated pore water in the vadose zone. The dissolved and vapor phases are in equilibrium in accordance with Henry's Law:

$$C_{vw} = HC_w\left(10^{-3}\right)$$

where:

C_{vw} = chemical concentration in the vapor phase arising from volatilization from groundwater, in mg/cm^3;
H = Henry's Law coefficient for chemical i (dimensionless); and
C_w = chemical i concentration dissolved in groundwater, in mg/ℓ.

Estimating Indoor Air Concentrations

Indoor air concentrations were estimated using the methodology of the Orange County Public Health Care Agency Vapor Diffusion Model (Orange County, 1994).

$$C_{in} = \frac{E_i b A_f}{V}\left(10^3\right)$$

where:

C_{in} = indoor air concentration of chemical i, in $\mu g/m^3$;
E_i = emission flux, in $mg/m^2 \cdot s$;
b = attenuation factor, based on surface cover type, (dimensionless);
A_f = area of emission flux, in m^2; and
V = indoor ventilation rate, in m^3/s.

and:

$$V = A_{building} hR$$

where:

$A_{building}$ = indoor building area where chemical vapors concentrate, in m^2;
h = indoor height of building, in m; and
R = air exchange rate in, s^{-1}.

The following assumptions are made in applying this method:

- Vapor emissions are constant over time (i.e., steady-state);
- Vapors emissions are instantaneously and uniformly mixed within the entire space of the building;
- The attenuation factor, b, equals 0.01, which corresponds to a concrete slab-on-grade floor, with minimal cracks in the slab (Johnson and Ettinger, 1991);
- The flux area, A_f, consists of a triangular area with a length of 120 feet by a width of 40 foot area (223 m^2) in the southeastern corner of the building, which is based on the October 2000 groundwater monitoring data;
- The area of the building, $A_{building}$, measures approximately 390 by 300 feet (10,884 m^2);
- The inside building height is 20 feet (6 m); and
- The air exchange rate of the building is assumed to be 1 exchange per hour (1/3600 s). Table C-1 summarizes chemical-specific data (D_{air}, H, *and* K_{oc}) and site-specific data used in the calculations.

Concentrations of chemicals in groundwater and soil used in these calculations are shown in Table C-2. For chemicals in groundwater, the highest detected groundwater concentration

during the latest groundwater sampling event (October 2000) was used. If no chemical was detected in soil or groundwater, the highest method detection limit for that media was used.

RESULTS

Table C-3 summarizes the results of the calculations for benzene, toluene, ethylbenzene, and total xylenes. Vapor-phase concentrations from groundwater are tabulated, and calculated emission flux rates are provided for the dominant source. The estimated indoor air concentrations from volatilization are also provided and compared to the Region IX EPA PRGs.

Estimated chemical concentrations within the subject building ranged from 0.019 $\mu g/m^3$ for toluene to 0.081 $\mu g/m^3$ for benzene. In all cases, the estimated indoor air concentration was significantly less than the respective PRG. For example, the estimated concentration of benzene (0.081 $\mu g/m^3$) is less than its respective PRG (0.25$\mu g/m^3$). Consequently, the residual chemicals in soil and groundwater beneath the office building at 1650 65th Street do not present a health risk to users of the site.

It is noted that the methodology used to calculate ambient air chemical concentrations likely overestimates the actual building air concentrations for several reasons: (1) the method, by nature, conservatively estimates emission flux and indoor air concentrations; (2) site-specific input parameter values were conservatively chosen; (3) it is assumed that contaminant concentrations are uniform and ubiquitous in the emission flux area; (4) it is assumed that no adsorption of upward diffusing soil vapors occurs; and (5) it is assumed that no reduction in contaminant concentrations from biological or chemical degradation is occurring over time. A more detailed evaluation of these factors would likely result in significantly lower estimated ambient air concentrations.

REFERENCES

Engineering-Science (ES), 1989. *Environmental Phase I Survey, 1650 65th Street Property, Emeryville, California.* April.

Farmer, W.J., M.S. Jang, J. Letey, and W.F. Spencer, 1980. *Land Disposal of Hexachlorobenzene Wastes: Controlling Vapor Movement in Soil*, EPA - 600/2-80-119, U.S. EPA.

Johnson, P. and R. Ettinger, 1991. Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors into Buildings, *Environmental Science & Technology*, Vol. 25, No. 8, pp. 1445-1452, August.

Millington, R.J., and J.M. Quirk, 1961. Permeability of Porous Solids. *Trans. Faraday Soc.*, Vol. 57, pp. 1200-1207.

Orange County, 1994. *Environmental Site Mitigation Manual, Vapor Diffusion Model.* County of Orange, California.

United States Environmental Protection Agency (EPA), 1986. *Superfund Public Health Evaluation Manual.* October.

United States Environmental Protection Agency, Region IX (EPA), 2000. *Region IX Preliminary Remediation Goals (PRGs), 2000.* November.

Table C-1
Site Specific Data
Emery Bay Plaza
1650 65th Street, Emeryville, California

Chemical Specific Data

Compound	D_{air} cm^2/s	H (unitless)
Benzene	0.093	0.22
Toluene	0.076	0.32
Ethylbenzene	0.085	0.26
Total xylenes	0.072	0.29

Site Specific and Default Data

Parameter	Value	Units	Description
C_i	0	mg/cm^3	Chemical i concentration at the ground surface; assume = 0
L	335	cm	Soil cover thickness over groundwater = 11 feet (average depth-to-water measurement in well MW-2)
P_t	0.38	cm^3/cm^3	Total Porosity of soil cover (Bay Mud)
P_a	0.38	cm^3/cm^3	Air-filled porosity of soil cover (moist, Bay Mud)
b	0.01	mg/m^2	Attenuation factor; concrete slab floor with minimal cracking (Johnson and Ettinger, 1991)
A_f	223	m^2	Area of emission flux; assume groundwater contamination area beneath building is equivalent and is conservatively assumed to be a triangular corner of the building measuring 120 feet by 40 feet
V	17.63	m^3/s	Indoor ventilation rate
$A_{building}$	10,884	m^2	Indoor building area where chemical vapors concentrate = 117,000 square feet
h	6	m	Indoor height of building = 20 feet
R	0.00027	s^{-1}	Air exchange rate = 1/3,600 second, assume 1 exchange per hour

Notes:
D_{air} = Chemical air diffusion coefficient
H = Henry's Law coefficient (unitless)

Reference
EPA 1986 and EPA 1994

Table C-2
Concentrations of Aromatic Volatile Organic Compounds in Soil and Groundwater Used in Volatilization Estimate Calculations
Emery Bay Plaza
1650 65th Street, Emeryville, California

Compound	Groundwater[1] (mg/L)
Benzene	3.8
Toluene	1.3
Ethylbenzene	0.73
Total xylenes	1.8

Notes:
mg/L = Milligrams per liter
mg/kg = Milligrams per kilogram
[1] = Highest detectable concentration in groundwater samples collected during the latest quarterly monitoring event (October 2000)

Table C-3
Summary of Estimated Soil Vapor, Emission Flux, and Indoor Air Concentrations
From Groundwater; Comparison with EPA Region IX Preliminary Remedial Goals
Emery Bay Plaza
1650 65th Street, Emeryville, California

Compound	Maximum Concentration In Groundwater C_w (mg/L)	Vapor-Phase Concentration from Groundwater C_{vw} (mg/cm^3)	Calulated Emission Flux from Groundwater E_i (mg/m^{2}s)	Estimated Indoor Air Concentration C_{in} (ug/m^3)	Ambient Air PRG (ug/m^3)	Indoor Air Concentration Exceed PRG?
Benzene	3.8	0.000836	6.41E-04	0.081	0.25	No
Ethylbenzene	1.3	0.000338	2.37E-04	0.03	1,100	No
Toluene	0.73	0.000234	1.46E-04	0.019	400	No
Xylene	1.8	0.000522	3.10E-04	0.039	730	No

Notes:
PRG = Preliminary remediation goal (EPA, 2000)

PES Environmental, Inc.