PES Environmental, Inc.
Engineering & Environmental Services

December 31, 1992

131.01.003

STID 4352

Alameda County Environmental Health Services
Hazardous Materials Division
80 Swan Way Room 200
Oakland, California 94621

Attn: Ms. Susan Hugo

GROUNDWATER MONITORING REPORT
NOVEMBER, 1992 SAMPLING EVENT
EMERY BAY PLAZA
1650 65TH STREET, EMERYVILLE, CALIFORNIA

Dear Ms. Hugo:

This letter presents data collected by PES Environmental, Inc. (PES) during the November 10, 1992 quarterly groundwater monitoring conducted at Emery Bay Plaza, located at 1650 65th Street in Emeryville (the Site, Plate 1). PES has been retained by Emery Bay Plaza, to conduct groundwater monitoring at the site. PES also provides operation, maintenance and monitoring of a groundwater extraction and treatment system at the site.

The purpose 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 action plan for this site.

BACKGROUND

Six monitoring wells and one extraction well were installed at the site (Plate 2) following removal of an on-site underground storage tank (UST) in July 1987 and several off-site USTs in September and October 1989. Groundwater has been monitored since November, 1989. An activated carbon groundwater treatment system was installed and its operation was begun in December, 1990. Discharges of treated groundwater are to the sanitary sewer under the authority of an East Bay Municipal Utility District wastewater discharge permit (Permit No. 502-45131). The present sampling is the thirteenth consecutive sampling event since groundwater monitoring was initiated, and the fifth to be conducted by PES.

GROUNDWATER ELEVATIONS

Water-level Measurement Procedures

Prior to sampling, the static groundwater level in each of the six 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.

Water levels decreased slightly in all wells except MW-4 since August 1992. The water level in MW-4 increased slightly since August 1992. Based on measured water levels on November 10, 1992, groundwater flow direction at the site was calculated to be toward the southwest, with an approximate gradient of less than 0.01 foot per foot, consistent with historical groundwater flow direction and gradient.

GROUNDWATER SAMPLING AND ANALYTICAL TESTING

Sampling Protocol

Groundwater samples were collected on November 10, 1992 by Blaine Tech Services, Inc. (Blaine Tech) from Monitoring Wells MW-2, MW-3, MW-4, MW-5, MW-6, and MW-7. Prior to sampling, the groundwater was visually inspected to assess the presence of floating product. A minimum of three well volumes were 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.

A sample was collected on November 24, 1992 by PES from the extraction well (Well EW-1), to monitor chemical conditions of extracted groundwater. The sample was collected from a sample tap located on piping upstream of the treatment system. Water was purged from the sample tap for approximately one minute prior to collection of the sample. Three 40-milliliter glass vials with teflon-lined caps were filled directly from the sample tap.

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

Analytical Program

Groundwater samples from all wells including the extraction well were sent to Coast-to-Coast Analytical Services, Inc. (Coast to Coast) in Benicia, California, a State Certified laboratory. Samples were analyzed for total petroleum hydrocarbons quantified as gasoline (TPH gas) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Test Method 5030/8260 and Cal DHS Draft TPH (Modified).

Analytical Results

Detectable levels of TPH gas and BTEX were found in all wells except MW-6. Consistent with historical monitoring data, Well MW-2, located within the backfill of the soil excavation at the former on-site UST, exhibited the highest levels of dissolved hydrocarbons (TPH and BTEX). However, levels of all analytes in MW-2 except benzene and toluene were slightly lower than in the August 27, 1992 sampling. The groundwater sample from EW-1, the extraction well, contained increased levels of 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 hydrocarbons in groundwater at the site on November 10, 1992 is presented on Plate 4.

SUMMARY

Groundwater elevations have decreased slightly since the August 27, 1992 sampling with the exception of MW-4 which has increased slightly. The groundwater flow direction continues to be toward the southwest. MW-2, the well nearest the former tank location, shows decreased levels of TPH gas and ethylbenzene and total xylenes and increased levels of benzene and toluene. EW-1 shows increased concentrations of total petroleum hydrocarbons quantified as gas (TPH gas) and benzene, toluene, ethylbenzene, total xylenes (BTEX) since the October 27, 1992 sampling.

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

Yours very truly,

PES ENVIRONMENTAL, INC.

Paul R. Lohman
Staff Engineer

For

Robert S. Creps, P. E.
Associate Engineer

REGISTERED PROFESSIONAL ENGINEER
ANDREW A. BRIEFER
No. 046518
Exp. 6/30/95
CIVIL
STATE OF CALIFORNIA

Attachments:

Table 1	Summary of Groundwater Elevations
Table 2	Summary of Analytical Results for Groundwater Samples
Plate 1	Site Location Map
Plate 2	Well Location Map
Plate 3	Groundwater Elevation Contours on November 10, 1992
Plate 4	Dissolved Hydrocarbons in Groundwater on November 10, 1992
Appendix A	Groundwater Sampling Reports
Appendix B	Analytical Laboratory Reports

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

Table 1. **Summary of Groundwater Elevations Through November 1992**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing Elevation (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
	01-Mar-91	ES	15.79	12.87	2.92
	28-May-91	ES	15.79	12.21	3.58
	01-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**
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
	01-Mar-91	ES	12.43	9.51	2.92
	28-May-91	ES	12.43	9.03	3.40
	01-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**
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
	01-Mar-91	ES	12.24	8.65	3.59
	28-May-91	ES	12.24	8.57	3.67
	01-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	12.24	8.35	3.89
	27-Aug-92	PES	12.24	9.00	3.24
	10-Nov-92	**PES**	**12.24**	**8.85**	**3.39**

Table 1. **Summary of Groundwater Elevations Through November 1992**
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing Elevation (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
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
	01-Mar-91	ES	12.82	8.11	4.71
	28-May-91	ES	12.82	7.39	5.43
	01-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**
MW-6	01-Mar-91	ES	12.03	8.59	3.44
	28-May-91	ES	12.03	8.35	3.68
	01-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**
MW-7	01-Mar-91	ES	12.9	7.51	5.39
	28-May-91	ES	12.9	7.07	5.83
	01-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**

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 1992
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
	Jan-92	PES	77	NA	10	8.7	2	7.6	NA	NA
	28-Feb-92	PES	70	NA	9.1	6.4	0.53	7.4	NA	NA
	28-May-92	PES	54	NA	8.0	4.8	2.4	6.2	NA	NA
	27-Aug-92	PES	47	NA	2.7	2.9	3.4	9.2	NA	NA
	10-Nov-92	**PES**	**45**	**<20**	**6.6**	**4.0**	**2.0**	**5.8**	**<0.05**	**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
	Aug-90	ES	ND	0.8	0.0044	0.0029	ND	0.0054	NA	NA
	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
	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	<0.05	NA	0.0025	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.37	NA	0.004	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	**PES**	**0.24**	**<0.1**	**0.0042**	**<0.0003**	**<0.0003**	**<0.0006**	**<0.0003**	**NA**

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1992
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 MCL = 0.001	Toluene DAL = 0.1	Ethyl-Benzene MCL = 0.68	Total Xylenes MCL = 1.75	Purgeable Halocarbons	Lead MCL = 0.005
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
	May-91	ES	NA	ND	0.0024	ND	ND	ND	NA	NA
	Aug-91	ES	NA	ND	0.0015	ND	ND	ND	NA	NA
	Jan-92	PES	<0.05	NA	0.0022	0.0004	<0.0003	0.0007	NA	NA
	28-Feb-92	PES	<0.05	NA	0.0016	<0.0003	<0.0003	0.0003	NA	NA
	28-May-92	PES	<0.05	NA	0.0015	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.08	NA	0.003	<0.001	<0.0005	0.0005	NA	NA
	10-Nov-92	**PES**	**0.18**	**<0.1**	**0.06**	**0.0009**	**<0.0003**	**<0.0006**	**<0.0003**	**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
	Jan-92	PES	0.19	NA	0.09	0.0005	<0.0003	0.0006	NA	NA
	28-Feb-92	PES	0.23***	NA	0.11	0.0009	<0.0003	0.0005	NA	NA
	28-May-92	PES	0.13	NA	0.10	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.52	NA	0.083	0.002	<0.0005	<0.0005	NA	NA
	10-Nov-92	**PES**	**0.24**	**<0.1**	**0.074**	**0.001**	**<0.0003**	**<0.0006**	**<0.0003**	**NA**

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1992
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 MCL = 0.001	Toluene DAL = 0.1	Ethyl-Benzene MCL = 0.68	Total Xylenes MCL = 1.75	Purgeable Halocarbons	Lead MCL = 0.005
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
	Jan-92	PES	<0.05	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-Feb-92	PES	<0.05	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-May-92	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	<0.05****	NA	<0.0005	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	**PES**	**<0.050**	**<0.1**	**<0.0003**	**<0.0003**	**<0.0003**	**<0.0006**	**<0.0003**	**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
	Jan-92	PES	0.27	NA	0.025	0.0005	<0.0003	0.0008	NA	NA
	1-Feb-92	PES	0.1***	NA	0.033	0.0007	<0.0003	0.0007	NA	NA
	28-May-92	PES	0.15	NA	0.021	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.44	NA	0.011	0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	**PES**	**0.37**	**<0.1**	**0.031**	**0.0012**	**<0.0003**	**0.0012**	**<0.0003**	**NA**

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1992
Emery Bay Plaza
1650 65th Street, Emeryville, California

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

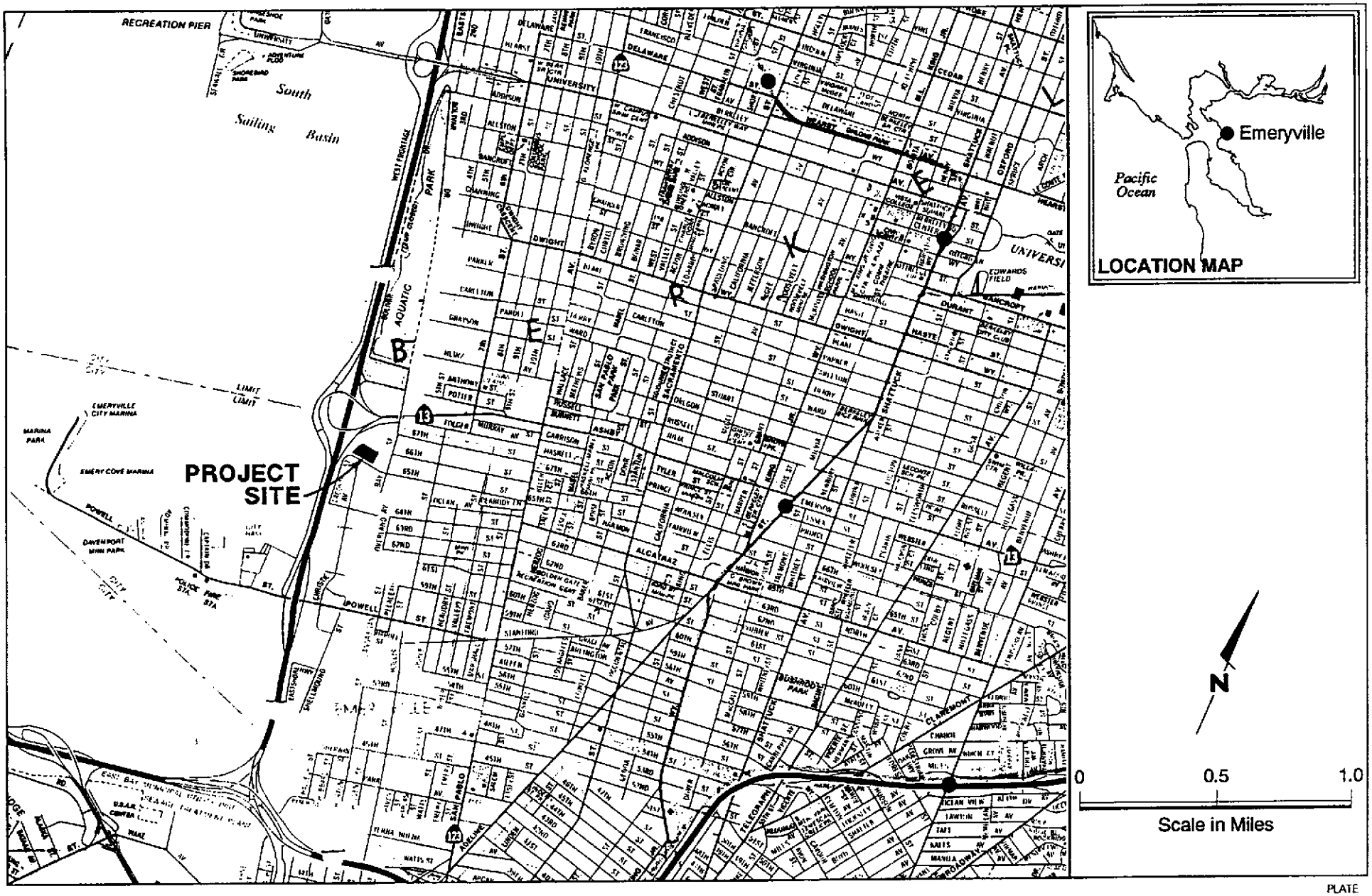
Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene MCL = 0.001	Toluene DAL = 0.1	Ethyl-Benzene MCL = 0.68	Total Xylenes MCL = 1.75	Purgeable Halocarbons	Lead MCL = 0.005
EW-1	May-90	ES	20	ND	7.5	4.5	1	6.3	0.068	ND**
	Aug-90	ES	NA	3.5	6	4.2	ND	4.6	0.016 *	ND**
	Nov-90	ES	47	3.1	6	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	2.7	NA	0.57	0.15	0.007	0.26	NA	NA
	3-Mar-92	PES	25	NA	3.6	2.6	0.53	2.6	NA	NA
	28-May-92	PES	16	NA	3.3	3.2	0.75	2.6	NA	NA
	29-Jun-92	PES	7	NA	2.2	3.1	0.27	1.4	NA	NA
	21-Jul-92	PES	1.6	NA	0.22	0.017	<0.0005	0.1	NA	NA
	27-Aug-92	PES	NS	NS	NS	NS	NS	NS	NS	NS
	23-Sep-92	PES	5.2	NA	1.1	0.59	0.1	1.0	NA	NA
	27-Oct-92	PES	1.3	NA	0.22	0.06	0.005	0.11	NA	NA
	24-Nov-92	**PES**	**7.1**	**NA**	**1.4**	**1.1**	**0.12**	**0.89**	**NA**	**NA**

Table 2. Summary of Analytical Results for Groundwater Samples Through November 1992
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.
**** = Small amount of Diesel 2 was detected in sample.
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 method detection 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



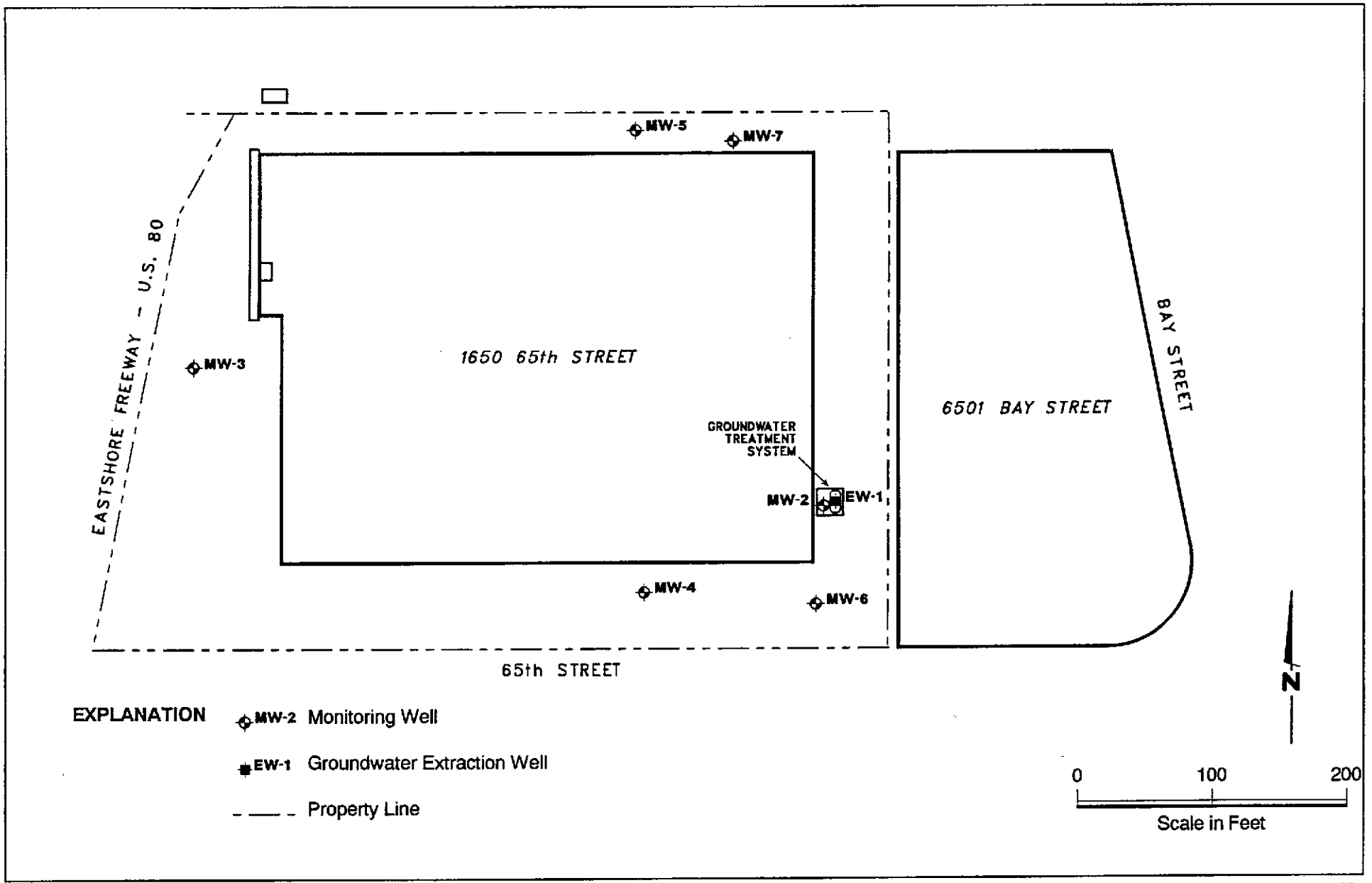
PLATE

1

PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
1650 65th Street
Emeryville, California

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
131.01.003	RSC	12/92		

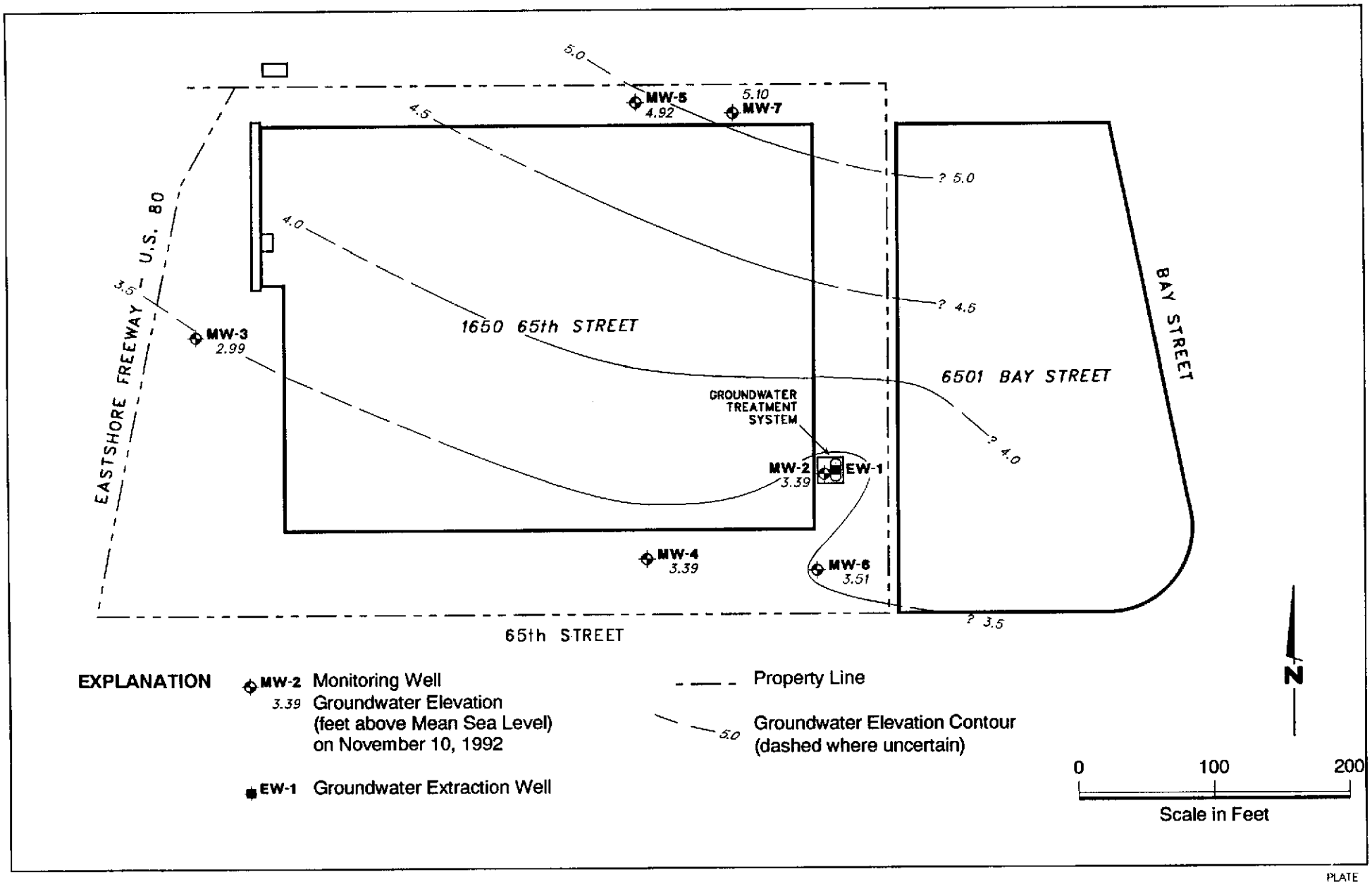


PES Environmental, Inc.
Engineering & Environmental Services

Well Location Map
1650 65th Street
Emeryville, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
131.01.003	RSC	12/92		



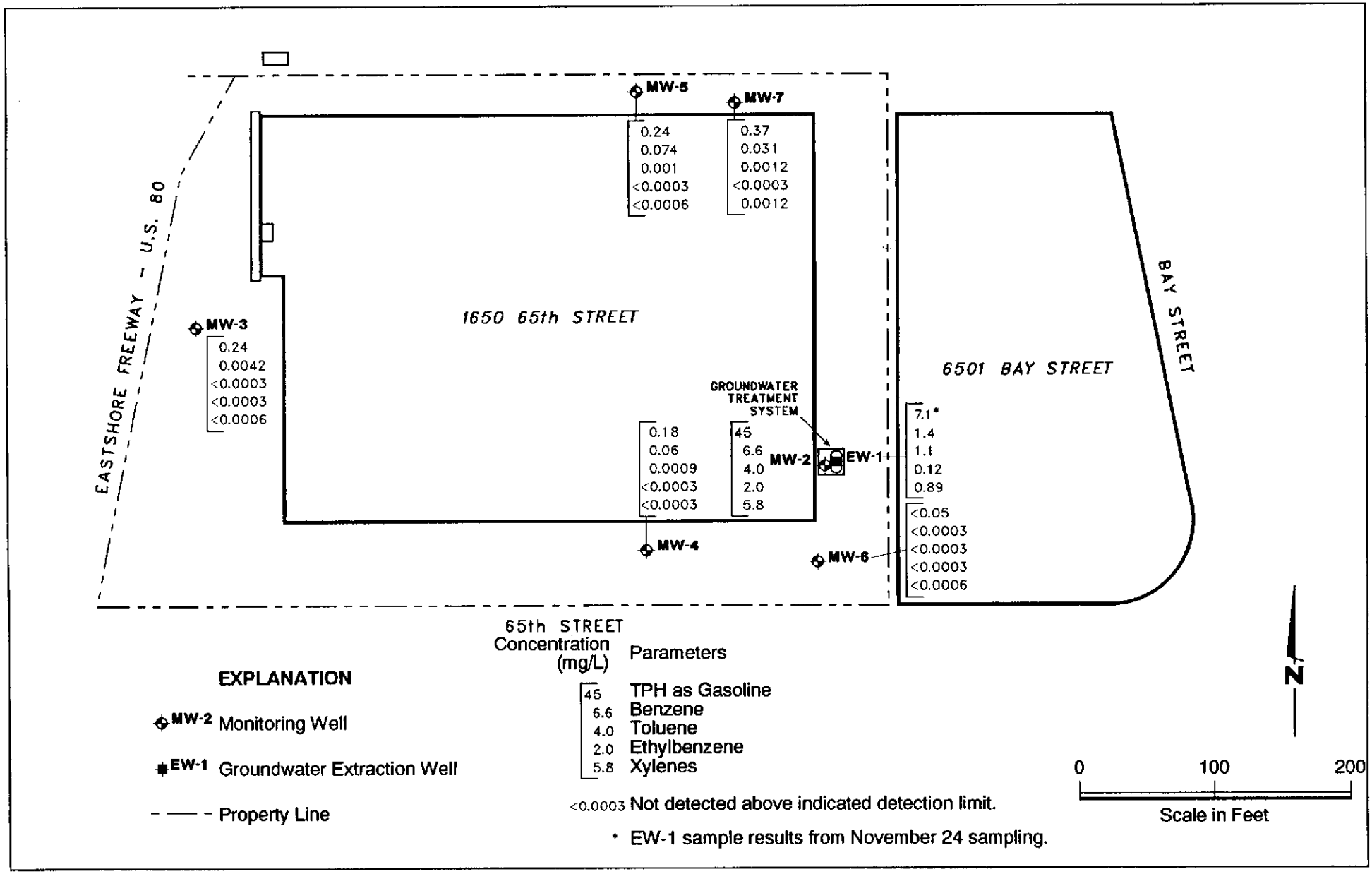
PLATE

3

PES Environmental, Inc.
Engineering & Environmental Services

Groundwater Elevation Contours on November 10, 1992
1650 65th Street
Emeryville, California

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
131.01.003		12/92		



PES Environmental, Inc.
Engineering & Environmental Services

Dissolved Hydrocarbons in Groundwater on November 10, 1992
1650 65th Street
Emeryville, California

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
131.01.003		12/92		

BLAINE
TECH SERVICES INC.

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

November 19, 1992

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

Attn: Paul Lowman

SITE:
PO Partners
1650 65th Street
Emeryville, California

SAMPLING EVENT:
Evacuate and sample seven wells

DATE:
November 10, 1992

GROUNDWATER SAMPLING REPORT 921110-A-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 is presented in the TABLE OF WELL MONITORING DATA. This data was collected during our inspection, well evacuation, and sample collection. Measurements include the total depth of the well and 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. Recharge performance can be evaluated by comparing the anticipated three, four, or five case volume evacuation gallonage with the volume which could actually be purged.

TABLE OF WELL MONITORING DATA

Well I.D.	MW-2			MW-3			MW-4			MW-5		
Date Sampled	11/10/92			11/10/92			11/10/92			11/10/92		
Well Diameter (in.)	2			4			4			4		
Total Well Depth (ft.)	26.64			18.45			15.96			18.0		
Depth To Water (ft.)	12.40			9.44			8.85			7.90		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	--			--			--			--		
1 Case Volume (gal.)	2.32			5.85			4.62			6.56		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	7.0			18.0			14.0			20.0		
Purging Device	MIDDLEBURG			MIDDLEBURG			MIDDLEBURG			MIDDLEBURG		
Sampling Device	BAILER			BAILER			BAILER			BAILER		
Time	15:15	15:20	15:25	12:15	12:28	12:52	11:40	11:48	11:54	13:24	13:33	13:46
Temperature (Fahrenheit)	66.8	66.9	66.9	69.5	68.7	68.1	73.5	73.9	73.9	67.6	66.8	67.4
pH	8.0	8.1	8.1	8.1	8.2	8.2	7.6	7.8	7.9	8.4	8.4	8.3
Conductivity (micromhos/cm)	4100	4000	4000	5300	5600	5400	8400	9200	9400	4000	4000	4000
Nephelometric Turbidity Units	>200	>200	>200	17.60	22.40	15.70	13.60	13.40	16.38	141	90.7	--
BTS Chain of Custody	921110-A-1			921110-A-1			921110-A-1			921110-A-1		
BTS Sample I.D.	MW-2			MW-3			MW-4			MW-5		
DHS HMTL Laboratory	COAST TO COAST			COAST TO COAST			COAST TO COAST			COAST TO COAST		
Analysis	TPH (GAS), BTEX			TPH (GAS), BTEX			TPH (GAS), BTEX			TPH (GAS), BTEX		

TABLE OF WELL MONITORING DATA

Well I.D.	MW-6			MW-7		
Date Sampled	11/10/92			11/10/92		
Well Diameter (in.)	4			4		
Total Well Depth (ft.)	18.80			18.80		
Depth To Water (ft.)	8.52			7.80		
Free Product (in.)	NONE			NONE		
Reason If Not Sampled	--			--		
1 Case Volume (gal.)	6.68			7.15		
Did Well Dewater?	NO			NO		
Gallons Actually Evacuated	20.5			22.0		
Purging Device	MIDDLEBURG			MIDDLEBURG		
Sampling Device	BAILER			BAILER		
Time	10:13	10:27	10:40	14:24	14:40	14:52
Temperature (Fahrenheit)	70.2	69.5	68.3	65.7	65.5	65.5
pH	7.0	7.0	7.0	8.5	8.3	8.3
Conductivity (micromhos/cm)	9800	>10,000	>10,000	2200	2000	2000
Nephelometric Turbidity Units	19.09	22.1	13.4	39.6	15.4	10.6
BTS Chain of Custody	921110-A-1			921110-A-1		
BTS Sample I.D.	MW-6			MW-7		
DHS HMTL Laboratory	COAST TO COAST			COAST TO COAST		
Analysis	TPH (GAS), BTEX			TPH (GAS), BTEX		

EQUIPMENT

Selection of Sampling Equipment

The determination of what apparatus is to be used on particular wells may be made by the property owner, but is usually made by the professional consultant directing the performance of the monitoring on the property owner's behalf. When no specific requirement is made, our personnel will select equipment that will accomplish the work in the most efficient manner. Our personnel are equipped with a variety of sampling devices that include USGS/Middleburg pumps, down hole electric submersible pumps, air lift pumps, suction pumps, and bailers made of both Teflon and stainless steel.

USGS/Middleburg pumps and bailers were selected for the collection of samples at this site.

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. The pump contains a flexible Teflon bladder which is alternately allowed to fill with well water and then collapsed. Actuation of the pump is accomplished with compressed air supplied by a single hose to one side of the Teflon membrane. Water on the other side of the membrane is squeezed 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.

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 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.

STANDARD PRACTICES

Evacuation

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water than has been newly drawn into the well from the surrounding geologic formation. The protocol used on these wells called for a volumetric removal of three case volumes with stabilization of standard water parameters. There are situations where up to ten case volumes of evacuation may be removed, especially when attempting to stabilize turbidity in undeveloped wells. Different professional consultants may specify different levels of evacuation prior to sampling or may request that specific parameters be used to determine when to collect the sample. Our personnel use several standard instruments to record the changes in parameters as the well is evacuated. These instruments are used regardless of whether or not a specific volumetric standard has been called for. As a result, the consultant will always be provided with a record of the pH, EC, and temperature changes that occurred during the evacuation process. Additional information obtained with different types of instruments (such as dissolved oxygen and turbidity meters) can also be collected if requested in advance.

Effluent Materials

The evacuation of purge water creates a volume of effluent water which, in most cases, must be contained. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new 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.

Observations and Measurements

Included in the scope of work are routine measurements and investigative procedures which are intended to determine if the wells are suitable for evacuation and sampling. These include measurement (from the top of the well case) of the total depth of the well; the depth to water, and the thickness of any free product zone (FPZ) encountered. The presence of a significant free product zone may interfere with efforts to collect a water sample that accurately reflects the condition of groundwater lying below the FPZ. This interference is caused by adhesion of petroleum to any device being lowered through the FPZ and the likelihood that minute globules of petroleum may break free of the sampling device and be included in the sample. Accordingly, evaluation of analytical results from

wells containing any amount of free petroleum should take into account the possibility that positive results have been skewed higher by such an inclusion. The decision to sample or not sample such wells is left to the discretion of our field personnel at the site and the consultant who establishes sampling guidelines based on the need for current information on groundwater conditions at the site.

Sampling Methodology

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms with 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 the T.E.G.D. which is published separately.

Sample Containers

Sample material is collected in specially prepared containers appropriate to the type of analyses intended. Our firm uses new sample containers of the type specified by either EPA or the RWQCB. Often times analytical laboratories wish to supply the sample containers because checks performed on these bottles are often part of a comprehensive laboratory QC program. In cases where the laboratory does not supply sample containers our personnel collect water samples in new containers that are appropriate to the type of analytical procedure that the sample is to receive. For example, 40 ml volatile organic analysis vials (VOAs) are used when analysis for gasoline and similar light volatile compounds is intended. These containers are prepared according to EPA SW 846 and will usually contain a small amount of preservative when the analysis is for TPH as gasoline or EPA 602. Vials intended for EPA 601 analysis and EPA 624 GCMS procedures are not preserved. The closure of volatile organic analysis water sample containers is accomplished with an open headed (syringe accessible) plastic screw cap brought down on top of a Teflon faced septum which is used to seal the sample without headspace.

Water samples intended for semivolatile and nonvolatile analysis such as total oil and grease (TOG) and diesel (TPH HBF) are collected and transported in properly prepared new glass liter bottles. Dark amber glass is used in the manufacture of these bottles to reduce any adverse effect on the sample by sunlight. Antimicrobial preservative may be added to the sample liquid if a prolonged holding time is expected prior to analysis. Closure is accomplished with a heavy plastic screw cap.

Groundwater well samples intended for metals analysis are transported in new plastic bottles and preserved with nitric acid. Our personnel can field filter the sample liquid prior to placing it in the sample container if instructed to perform this procedure.

Sample Handling Procedures

Water samples are collected in any of several appropriate devices such as bailers, Coliwasas, Middleburg sampling pumps etc. which are described in detail only as warranted by their employment at a given site. Sample liquid is decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA procedures for handling volatile organic and semi-volatile compounds.

Groundwater samples that are to receive metals analyses can be filtered prior to being placed in the plastic sample bottles that contain the nitric acid preservative. The filtration process employs new glass containers which are discarded and laboratory quality disposable filtering containers which are also discarded. A frequently used filtering procedure employs a vacuum pump to draw sample material through a 0.45 micron filter. The 0.45 micron pore size is standard, but the amount of filter available varies with the type of package selected. Filters are selected on the basis of the relative turbidity of the water sample. Samples which are relatively clean can be efficiently filtered with relatively inexpensive filters while very turbid water will require a very large filter with a high tolerance for sediments. One of several such filters our firm uses are the Nalgene Type A filters in which an upper and lower receptacle chamber are affixed to the filter. Sample material is poured into the upper chamber and a vacuum pump attached to the lower chamber. Simple actuation of the vacuum pump induces the flow of water through the filter and into the lower chamber. The sample is then decanted into the laboratory container and the filter assembly discarded. Cartridge type flow-through filters are more expensive but can be fitted directly to the discharge line of most sampling pumps (USGS/Middleburg pumps) and electric submersible pumps.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of 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 the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were transported in cooled ice chest to the office of Blaine Tech Services, Inc. to be stored in a refrigerator overnight. The following day, the samples were released into the custody of a courier for delivery to Coast to Coast Analytical Services.

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.

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. Decontamination procedures include complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lpn

attachments: chain of custody

BLAINE
TECH SERVICES INC.

1370 TULLY ROAD., SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

CHAIN OF CUSTODY 92110A1

CLIENT P&S

SITE 1650 65TH St.
Emeryville
Ca

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

GAS BTEX

LAB Coast to Coast DHS #

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

☐ EPA ☐ RWQCB REGION
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

Routine

SAMPLE I.D.	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL		ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
mw2	W	3	VOAs				
mw3							
mw4							
mw5							
mw6							
mw7							

SAMPLING COMPLETED	DATE 11-10-92	TIME 1530	SAMPLING PERFORMED BY			RESULTS NEEDED NO LATER THAN	Routine
RELEASED BY			DATE	TIME	RECEIVED BY	DATE	TIME
			11-10-92	1900	BTS FRIDGE	11-10-92	1900
RELEASED BY			DATE	TIME	RECEIVED BY	DATE	TIME
			11-13-92	1945		11/13	2:45 PM
RELEASED BY			DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory))
2059 Junction Ave. 2F
San Jose, CA 95131
(408) 955-9077

Lab Number : JA-0067-1
Project : 921110A1

CLIENT: Andrew Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Analyzed : 11/19/92
Analyzed by: DZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW2	Monitoring Water	J.C.	11/10/92	11/13/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
FUEL FINGERPRINT ANALYSIS				1,2,3
Benzene		50.	6600.	
Toluene		50.	4000.	
Ethylbenzene		50.	2000.	
Xylenes		100.	5800.	
1,2-Dichloroethane		50.	ND	
Ethylene dibromide		50.	ND	
Total Petroleum Hydrocarbons (Gasoline)		10000.	45000.	
Total Petroleum Hydrocarbons (Diesel)		20000.	ND	
BTX as a percent of fuel			36.	
Percent Surrogate Recovery			115.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)
(2) EXTRACTED by EPA 5030 (purge-and-trap)
(3) High detection limits are due to sample matrix.

11/20/92
MSD1/1D66A
MC/mcc
HP1-1118

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Rick L. Boydston, Group Leader

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory))
2059 Junction Ave. 2F
San Jose, CA 95131
(408) 955-9077

Lab Number : JA-0067-3
Project : 921110A1

CLIENT: Andrew Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Analyzed : 11/19/92
Analyzed by: DZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
MW4	Monitoring Water	J.C.	11/10/92	11/13/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.3	60.	
Toluene		0.3	0.9	
Ethylbenzene		0.3	ND	
Xylenes		0.6	ND	
1,2-Dichloroethane		0.3	ND	
Ethylene dibromide		0.3	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	180.	
Total Petroleum Hydrocarbons (Diesel)		100.	ND	
BTX as a percent of fuel			34.	
Percent Surrogate Recovery			110.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)
(2) EXTRACTED by EPA 5030 (purge-and-trap)

11/20/92
MSD1/1D62A
MC/mcc
HP1-1118

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Rick L. Boydston, Group Leader

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory))
2059 Junction Ave. 2F
San Jose, CA 95131
(408) 955-9077

CLIENT: Andrew Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : JA-0067-4
Project : 921110A1

Analyzed : 11/19/92
Analyzed by: DZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW5	Monitoring Water	J.C.	11/10/92	11/13/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.3	74.	
Toluene		0.3	1.0	
Ethylbenzene		0.3	ND	
Xylenes		0.6	ND	
1,2-Dichloroethane		0.3	ND	
Ethylene dibromide		0.3	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	240.	
Total Petroleum Hydrocarbons (Diesel)		100.	ND	
BTX as a percent of fuel			31.	
Percent Surrogate Recovery			110.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)
(2) EXTRACTED by EPA 5030 (purge-and-trap)

11/20/92
MSD1/1D74A
MC/mcc
HP1-1118

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Rick L. Boydston, Group Leader

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory))
2059 Junction Ave. 2F
San Jose, CA 95131
(408) 955-9077

Lab Number : JA-0067-5
Project : 921110A1

CLIENT: Andrew Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Analyzed : 11/19/92
Analyzed by: DZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW6	Monitoring Water	J.C.	11/10/92	11/13/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.3	ND	
Toluene		0.3	ND	
Ethylbenzene		0.3	ND	
Xylenes		0.6	ND	
1,2-Dichloroethane		0.3	ND	
Ethylene dibromide		0.3	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Total Petroleum Hydrocarbons (Diesel)		100.	ND	
BTX as a percent of fuel			Not Appl.	
Percent Surrogate Recovery			111.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)
(2) EXTRACTED by EPA 5030 (purge-and-trap)

11/20/92
MSD1/1D61A
MC/mcc
HP1-1118

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Rick L. Boydston, Group Leader

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory))
2059 Junction Ave. 2F
San Jose, CA 95131
(408) 955-9077

Lab Number : JA-0067-6
Project : 921110A1

CLIENT: Andrew Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Analyzed : 11/19/92
Analyzed by: DZ
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW7	Monitoring Water	J.C.	11/10/92	11/13/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.3	31.	
Toluene		0.3	1.2	
Ethylbenzene		0.3	ND	
Xylenes		0.6	1.2	
1,2-Dichloroethane		0.3	ND	
Ethylene dibromide		0.3	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	370.	
Total Petroleum Hydrocarbons (Diesel)		100.	ND	
BTX as a percent of fuel			9.0	
Percent Surrogate Recovery			114.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)
(2) EXTRACTED by EPA 5030 (purge-and-trap)

11/20/92
MSD1/1D76A
MC/mcc
HP1-1118

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Rick L. Boydston, Group Leader

Marissa Coronel
Laboratory Director

BLAINE TECH SERVICES INC.

1370 TULLY ROAD., SUITE 505
SAN JOSE, CA 95122
(408) 995 5535

ATTN: Andrew Brietler (CE)

CHAIN OF CUSTODY 92110A1

CLIENT PES

SITE 1650 65TH St.
EMERYVILLE
CA

CONDUCT ANALYSIS TO DETECT

LAB Coast to Coast DHS #

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

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

Routine

voa vials placed in gurd bottles @ lab (CE)

SAMPLE I.D.	DATE	TIME	MATRIX S = SOIL W = H2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	SAC BTEX	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW2	11/10/92	1530	W	3	VOAs		/				JA0067-1
MW3	11/10/92	1300					/				-2
MW4	11/10/92	1200					/				-3
MW5	11/10/92						/				-4
MW6	11/10/92						/				-5
MW7	11/10/92	1500					/				-6

SAMPLING COMPLETED	DATE	TIME
	11.10.92	1530

SAMPLING PERFORMED BY Jeff Austin

RESULTS NEEDED NO LATER THAN Routine (CE)

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Jeff Austin	11.10.92	1900	BTS FRIDGE	11.10.92	1900
C. Gil	11.13.92	1945		11/13	2:45pm
	11/13 3:14	1314pm		11/13/92	1314

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

cooler sealed & intact

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (Benicia Laboratory) (707) 747-2757
6006 Egret Court, Benicia, California 94510 FAX (707)747-2765

CLIENT: Andy Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : BD-0767-1
Project : 131.01.001 P.O. Partners/Emeryville
Analyzed : 12/02/92
Analyzed by: HC
Method : EPA 8260

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
92328A	Aqueous	Paul Lohman	11/24/92	11/25/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1,2,3
Benzene	(71432)	1.	1400.	
Toluene	(108883)	5.	1100.	
Ethylbenzene	(100411)	1.	120.	
Xylenes, Total		1.	890.	
Total Petroleum Hydrocarbons (Gasoline)		100.	7100.	

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)
(3) High concentration of some analytes caused the sample to be run diluted resulting in raised Practical Quantitation Limits for analytes. Refer to instrument blank for undiluted Practical Quantitation Limits.

12/04/92
INCOS 50-387
MC/trk/htc
BDL02I1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.
Marissa C. Coronel
Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (Benicia Laboratory) (707) 747-2757
6006 Egret Court, Benicia, California 94510 FAX (707)747-2765

CLIENT: Andy Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : BD-0767-2
Project : 131.01.001 P.O. Partners/Emeryville
Analyzed : 12/02/92
Analyzed by: HC
Method : EPA 602

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
92328B	Aqueous	Paul Lohman	11/24/92	11/25/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX (PURGEABLE AROMATICS)				1
Benzene	(71432)	0.5	ND	
Toluene	(108883)	2.	ND	
Ethylbenzene	(100411)	0.5	ND	
Xylenes, Total		0.5	ND	

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

12/04/92
INCOS 50-387
MC/trk/htc
BDLO2I1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa C. Coronel

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (Benicia Laboratory) (707) 747-2757
6006 Egret Court, Benicia, California 94510 FAX (707)747-2765

CLIENT: Andy Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : BD-0767-3
Project : 131.01.001 P.O. Partners/Emeryville
Analyzed : 12/02/92
Analyzed by: HC
Method : EPA 602

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
923281	Aqueous	Paul Lohman	11/24/92	11/25/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX (PURGEABLE AROMATICS)				1
Benzene	(71432)	0.5	ND	
Toluene	(108883)	1.	ND	
Ethylbenzene	(100411)	0.5	ND	
Xylenes, Total		0.5	ND	

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

12/04/92
INCOS 50-387
MC/trk/htc
BDL02I1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa C. Coronel

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (Benicia Laboratory)
6006 Egret Court, Benicia, California 94510

(707) 747-2757
FAX (707)747-2765

QC Batch ID: BDL02I1

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 12/02/92
Analyzed by: HC
Method : EPA 8260

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Aqueous			

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1,2
Benzene	(71432)	0.5	ND	
Toluene	(108883)	2.	ND	
Ethylbenzene	(100411)	0.5	ND	
Xylenes, Total		0.5	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

12/04/92
INCOS 50-387
MC/trk/htc
BD0767-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa C. Coronel

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (Benicia Laboratory) (707) 747-2757
6006 Egret Court, Benicia, California 94510 FAX (707)747-2765

QC Batch ID: BDL02I1

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 12/02/92
Analyzed by: HC
Method : EPA 8260

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
QC SPIKE	Aqueous		

CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	NOTE
BTEX + TPH (Gasoline)					1,2
Benzene	0.5	15.	16.	107.	
Toluene	2.	63.	65.	103.	
Ethylbenzene	0.5	16.	16.	100.	
Xylenes, Total	0.5	75.	80.	107.	
Total Petroleum Hydrocarbons (Gasoline)	50.	710.	800.	113.	

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

12/04/92
INCOS 50-387
MC/trk/htc
BD0767-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa C. Coronel

Marissa Coronel
Laboratory Director

COAST · TO · COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (Benicia Laboratory) (707) 747-2757
6006 Egret Court, Benicia, California 94510 FAX (707)747-2765

QC Batch ID: BDL02I1

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 12/02/92
Analyzed by: HC
Method : EPA 8260

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE DUPLICATE	Aqueous			

CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	0.5	15.	14.	93.	13.	
Toluene	2.	63.	63.	100.	3.1	
Ethylbenzene	0.5	16.	15.	94.	6.5	
Xylenes, Total	0.5	75.	79.	105.	1.3	
Total Petroleum Hydrocarbons (Gasoline)	50.	710.	650.	92.	21.	

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8260 (GC/MS)

12/04/92
INCOS 50-387
MC/trk/htc
BD0767-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa C. Coronel

Marissa Coronel
Laboratory Director

PES Environmental, Inc.
Engineering & Environmental Services

1682 Novato Boulevard, Suite [redacted]
Novato, California 94947
(415) 899-1600 FAX (415) 899-1601

CHAIN OF CUSTODY RECORD

SAMPLERS: PAUL LOHMAN

JOB NUMBER: 131.01.001

NAME/LOCATION: P.O. PARTNERS / EMERYVILLE

PROJECT MANAGER: ANDY BRIEFER

RECORDER: Paul Rohl (Signature Required)

DATE				SAMPLE NUMBER OR LAB NUMBER			SOURCE CODE	MATRIX				# CONTAINERS & PRESERV.					DEPTH IN FEET	COL MTD CD	QA CODE	ANALYSIS REQUESTED													
YR	MO	DY	TIME	YR	WK	SEQ		Water	Sediment	Soil	Oil	Unpres.	H_2SO_4	HNO_3	Filtered	HCl				EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pollutant Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.	TPH$_G$	BTEX					
92	11	24	1515	92	32	9A	23	X								3											X	X				
			1520			B	23	X								3												X				
			1525			1	23	X								3												X				

NOTES

NORMAL TURNAROUND

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) Paul Rohl			RECEIVED BY: (Signature) Brenda Dragg	DATE 11/6/92	TIME 11:00
RELINQUISHED BY: (Signature)			RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)			RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)			RECEIVED BY: (Signature)	DATE	TIME
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:					

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink