



November 30, 1995

131.0200.001

Ms. Lynn Tolin  
Christie Avenue Partners - J.S.  
5800 Shellmound, Suite 210  
Emeryville, California 94608

ENVIRONMENTAL  
PROTECTION  
95 DEC -4 PM 2:44

**QUARTERLY GROUNDWATER MONITORING REPORT  
OCTOBER 1995 SAMPLING EVENT  
EMERY BAY MARKETPLACE  
EMERYVILLE, CALIFORNIA**

Dear Ms. Tolin:

This letter report presents data collected by PES Environmental, Inc. (PES) during the October 1995 quarterly groundwater monitoring conducted at the Emery Bay Marketplace site, located in Emeryville, California (Plate 1). PES has been retained by Christie Avenue Partners - J.S. to conduct quarterly groundwater monitoring at the subject site. The current groundwater monitoring program consists of measuring product thickness, if any, and depth to groundwater in 17 onsite and off-site monitoring wells on a quarterly basis, and purging and sampling six of the monitoring wells (Wells W-7, W-13, W-14, W-19, W-20 and W-24). Plate 2 shows the location of monitoring wells at the site.

The purpose of the groundwater monitoring program at this site is to: (1) evaluate the presence of hydrocarbons in groundwater; (2) monitor potential migration of dissolved-phase hydrocarbons; and (3) monitor seasonal water level variations at the subject property. The monitoring is performed in accordance with Alameda County Department of Environmental Health (ACDEH) requirements and the approved work plan for this site entitled *Work Plan for Groundwater Monitoring and Free Product Removal at the Emery Bay Marketplace, Emeryville, California*, prepared by McLaren Hart and dated July 6, 1990.

**BACKGROUND**

Beginning in the early 1980's, environmental activities at this site consisted of removal of underground fuel storage tanks (USTs) and hydrocarbon contaminated soils, performing soil borings, and installing groundwater monitoring wells. As a result of these activities, fuel oil found in onsite soils and groundwater was attributed to leaking USTs and/or piping associated with an asphalt refinery formerly located at the site. Additionally, free floating product was observed in onsite groundwater monitoring wells.

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Twenty-four monitoring wells have been installed at this site during the course of prior environmental investigations. Seven of these wells have been abandoned and 17 onsite and off-site wells currently remain. McLaren Hart began quarterly groundwater monitoring activities at the subject site in July 1990. The present sampling is the tenth since PES began performing quarterly groundwater monitoring in July 1993.

## GROUNDWATER ELEVATIONS

### Water-level Measurement Procedures

Prior to sampling on October 11, 1995, groundwater levels in the monitoring wells were measured to a precision of 0.01 foot using an electronic water-level indicator/interface probe. 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. The presence of free-phase product was evaluated and, if present, was measured to a precision of 0.01 foot using an interface probe.

### Results

Two of the 17 wells scheduled for water level measurements were inaccessible during quarterly monitoring activities and therefore measurements were not obtained for these wells. Wells W-4 and W-16 were inaccessible due to grading related to construction activities along the adjacent railroad property. Water levels for the remaining 15 wells were measured on October 11. These levels were then 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 and product levels for wells at the site is presented in Table 1, and a report summarizing the water level measurement procedures is presented in Appendix A.

Water levels in all measured wells have generally decreased relative to the July 1995 sampling event. Water levels decreased in all but one well, Well W-5. Based on measured water levels on October 11, 1995, groundwater at the site flows in a southwesterly direction with an approximate gradient of 0.004 to 0.05. These measurements show no significant changes from historical groundwater flow direction and gradient.

Consistent with historical monitoring results, a free-phase floating product layer 1.90 feet thick was found in Well W-5 and a thin layer (0.04 feet) was present in Well W-19. No free-phase product or sheen were found in the remaining wells.

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## GROUNDWATER SAMPLING AND ANALYTICAL TESTING

### Sampling Protocol

Groundwater samples were collected on October 11, 1995 by Blaine Tech Services, Inc. (Blaine Tech). Blaine Tech collected samples from W-7, W-13, W-14, W-19, W-20, and W-24. A minimum of three well volumes were purged prior to sampling using a clean teflon bailer. Purge water was contained and collected in a 55-gallon drum to be stored onsite prior to obtaining analytical results and subsequent disposal. During purging activities, 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 1-liter glass bottles preserved with hydrochloric acid.

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

### Analytical Program

All groundwater samples collected during this quarterly monitoring event were analyzed by American Environmental Network (AEN), a State-certified laboratory located in Pleasant Hill, California. Samples were analyzed for total petroleum hydrocarbons quantified as diesel (TPH-diesel) and as motor oil (TPH-oil) by EPA Test Method 8015 (modified).

### Analytical Results

Sample analytical results from the recent groundwater monitoring event indicate that TPH-diesel was detected in all six of the wells sampled, at concentrations ranging from 0.1 milligrams per liter (mg/l) in W-20 to 66 mg/l in W-7. TPH-oil was detected only in W-7 (11 mg/l) and W-19 (1 mg/l), and remained unchanged in Well W-20. Concentrations of TPH-diesel have increased in five of the wells samples (Wells W-7, W-13, W-14, W-19, and W-24). TPH-oil concentrations have decreased or remained the same as the prior monitoring event.

Analytical results, including historical monitoring data for the previous sampling events, are presented in Table 2. The laboratory report and chain of custody records are provided in Appendix B. The distribution of hydrocarbons in groundwater at the site on October 11, 1995 is presented on Plate 4.


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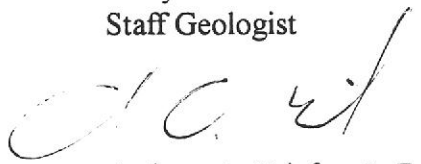
**SUMMARY**

Groundwater elevations have generally decreased since the July 1995 sampling event, however, the groundwater flow direction and gradient have remained approximately the same. Consistent with historical monitoring results, free-phase product was found on the groundwater in Wells W-5 and W-19. Reported concentrations of TPH-diesel have increased slightly in five wells, and remained the same in Well W-20 since the July 1995 monitoring activities. TPH-oil was detected only in two of the wells sampled at, or below, previously reported levels.

Yours very truly,

**PES ENVIRONMENTAL, INC.**

  
Jenny F. Han  
Staff Geologist

  
Andrew A. Briefer, P. E.  
Associate Engineer



Attachments:	Table 1	Summary of Groundwater Elevations
	Table 2	Summary of Petroleum Hydrocarbon Analytical Results for Groundwater Samples
	Plate 1	Site Location Map
	Plate 2	Well Location Map
	Plate 3	Groundwater Elevation Contours on October 11, 1995
	Plate 4	Dissolved Hydrocarbons in Groundwater on October 11, 1995
	Appendix A	Water Level and Groundwater Sampling Report
	Appendix B	Analytical Laboratory Report

cc: Ms. Susan Hugo - Alameda County Department of Environmental Health



**Table 1. Summary of Groundwater Elevations  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-1	07-Aug-81	WCC	11.47	4.30	6.20 (2)	
	10-Sep-81	WCC		4.40	6.10 (2)	
	06-May-87	WCC		6.00	6.08 (2)	
	20-Aug-89	MH		5.60	5.87	
	11-Oct-89	MH		5.63	5.84	
	22-Feb-90	MH		4.92	6.55	
	28-Feb-90	MH		5.02	6.45	
	09-Apr-90	MH		5.44	6.03	
	07-Jun-90	MH		5.37	6.10	
	25-Jul-90	MH		5.26	6.21	
	03-Oct-90	MH		5.43	6.04	
	03-Jan-91	MH		5.69	5.78	
	03-Apr-91	MH		4.74	6.73	
	25-Oct-91	MH		5.22	6.25	
	15-Jan-92	MH		4.88	6.59	
	23-Apr-92	MH		4.98	6.49	
	21-Jul-92	MH		5.16	6.31	
	22-Oct-92	MH		5.79	5.68	
	26-Jan-93	MH		4.82	6.65	
	29-Apr-93	MH		6.01	5.46	
	22-Jul-93	PES		6.05	5.42	
	07-Oct-93	PES		6.15	5.32	
	06-Jan-94	PES		5.50	5.97	
	05-Apr-94	PES		5.87	5.60	
	08-Jul-94	PES		5.86	5.61	
	04-Oct-94	PES		5.94	5.53	
11-Jan-95	PES	4.93	6.54			
06-Apr-95	PES	5.02	6.45			
13-Jul-95	PES	5.52	5.95			
11-Oct-95	PES	6.25	5.22			
W-4	07-Aug-81	WCC	9.96	4.30	6.20 (2)	
	10-Sep-81	WCC		4.40	6.10 (2)	
	18-Jan-82	WCC		2.50	8.00 (2)	
	27-Mar-85	WCC		NA	8.65	
	20-Aug-89	MH		3.95	6.01	
	11-Oct-89	MH		3.87	6.09	
	22-Feb-90	MH		2.00	7.96	
	28-Feb-90	MH		2.39	7.57	
	09-Apr-90	MH		3.17	6.79	
	07-Jun-90	MH		2.73	7.23	
	25-Jul-90	MH		3.71	6.25	

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W-4 Cont	03-Oct-90	MH		4.18	5.78	
	03-Jan-91	MH		3.64	6.32	
	03-Apr-91	MH		1.45	8.51	
	25-Oct-91	MH		4.29	5.67	
	15-Jan-92	MH		2.56	7.40	
	23-Apr-92	MH		2.80	7.16	
	21-Jul-92	MH		4.03	5.93	
	22-Oct-92	MH		4.50	5.46	
	26-Jan-93	MH		1.52	8.44	
	29-Apr-93	MH		3.02	6.94	
	22-Jul-93	PES		3.86	6.10	
	07-Oct-93	PES		NM	NM	
	06-Jan-94	PES		NM	NM	
	05-Apr-94	PES		NM	NM	
	08-Jul-94	PES		NM	NM	
	4-Oct-94	PES		NM	NM	
	11-Jan-95	PES		NM	NM	
	06-Apr-95	PES		NM	NM	
	13-Jul-95	PES		NM	NM	
	11-Oct-95	PES		NM	NM	
W-5	07-Aug-81	WCC	11.41	4.70	7.50 (2)	NA
	10-Sep-81	WCC		4.90	7.30 (2)	NA
	18-Jan-82	WCC		2.50	9.60 (2)	NA
	27-Mar-85	WCC		NA	9.28	NA
	11-Oct-89	MH		4.43	7.58	0.71
	22-Feb-90	MH		3.80	8.36	0.88
	28-Feb-90	MH		4.43	8.38	1.65
	09-Apr-90	MH		4.73	8.23	1.82
	07-Jun-90	MH		4.30	8.64	1.80
	25-Jul-90	MH		5.10	8.11	2.12
	03-Oct-90	MH		4.90	7.45	1.11
	03-Jan-91	MH		4.77	7.36	0.85
	03-Apr-91	MH		2.42	9.02	0.03
	25-Oct-91	MH		5.47	6.94	1.18
	15-Jan-92	MH		3.21	8.88	0.80
	23-Apr-92	MH		3.13	8.28	1.41
	21-Jul-92	MH		3.55	9.14	1.50
	22-Oct-92	MH		4.28	8.36	1.45
	26-Jan-93	MH		3.28	9.18	1.24
	29-Apr-93	MH		2.60	8.81	NP
22-Jul-93	PES		5.78	7.48	2.18	

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Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-5	07-Oct-93	PES		4.46	7.35	0.48
Cont	06-Jan-94	PES		5.38	7.02	1.17
	05-Apr-94	PES		4.62	7.86	1.26
	08-Jul-94	PES		4.95	7.79	1.57
	04-Oct-94	PES		5.20	7.35	1.34
	11-Jan-95	PES		2.65	9.53	0.90
	06-Apr-95	PES		3.12	9.07	0.92
	13-Jul-95	PES		5.01	6.53	0.15
	11-Oct-95	PES		4.97	8.06	1.90
W-7	06-May-87	WCC	9.05	3.00	6.88 (2)	
	20-Aug-89	MH		3.59	5.46	
	11-Oct-89	MH		3.08	5.97	
	22-Feb-90	MH		1.75	7.30	
	28-Feb-90	MH		1.31	7.74	
	09-Apr-90	MH		2.42	6.63	
	07-Jun-90	MH		1.21	7.84	
	25-Jul-90	MH		2.76	6.29	
	03-Oct-90	MH		3.22	5.83	
	03-Jan-91	MH		3.17	5.88	
	03-Apr-91	MH		1.18	7.87	
	25-Oct-91	MH		3.47	5.59	
	15-Jan-92	MH		3.88	5.17	
	23-Apr-92	MH		3.20	5.85	
	21-Jul-92	MH		3.65	5.40	
	22-Oct-92	MH		4.58	4.77	
	26-Jan-93	MH		1.12	7.93	
	29-Apr-93	MH		2.90	6.15	
	22-Jul-93	PES		4.26	4.79	
	07-Oct-93	PES		5.48	3.57	
	06-Jan-94	PES		5.10	3.95	
	05-Apr-94	PES		5.94	3.11	
	08-Jul-94	PES		5.74	3.31	
	04-Oct-94	PES		5.83	3.22	
	11-Jan-95	PES		5.44	3.61	
	06-Apr-95	PES		5.79	3.26	
	13-Jul-95	PES		3.75	5.3	
	11-Oct-95	PES		6.08	2.97	

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Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-8	06-May-87	WCC	10.43	5.50	6.88 (2)	
	20-Aug-89	MH		3.59	6.84	
	22-Feb-90	MH		1.50	8.93	
	28-Feb-90	MH		1.78	8.65	
	09-Apr-90	MH		3.12	7.31	
	07-Jun-90	MH		2.90	7.53	
	27-Jul-90	MH		3.33	7.10	
	03-Oct-90	MH		3.65	6.78	
	03-Jan-91	MH		3.46	6.97	
	03-Apr-91	MH		1.47	8.96	
	25-Oct-91	MH		3.54	6.89	
	15-Jan-92	MH		2.98	7.45	
	24-Apr-92	MH		3.01	7.42	
	21-Jul-92	MH		3.41	7.02	
	22-Oct-92	MH		4.23	6.20	
	26-Jan-93	MH		NM	NM	
	29-Apr-93	MH		2.29	8.14	
	22-Jul-93	PES		3.17	7.26	
	07-Oct-93	PES		NM	NM	
	06-Jan-94	PES		2.69	7.74	
	05-Apr-94	PES		2.78	7.65	
	08-Jul-94	PES		3.26	7.17	
	04-Oct-94	PES		3.62	6.81	
11-Jan-95	PES	2.69	7.74			
06-Apr-95	PES	2.42	8.01			
13-Jul-95	PES	3.20	7.23			
11-Oct-95	PES	3.78	6.65			
W-13	20-Aug-89	MH	8.15	4.64	3.51	
	11-Oct-89	MH		4.60	3.55	
	22-Feb-90	MH		3.85	4.30	
	28-Feb-90	MH		4.18	3.97	
	09-Apr-90	MH		4.31	3.84	
	07-Jun-90	MH		3.93	4.22	
	25-Jul-90	MH		4.40	3.75	
	03-Oct-90	MH		4.67	3.48	
	03-Jan-91	MH		4.43	3.72	
	03-Apr-91	MH		3.64	4.51	
	25-Oct-91	MH		4.54	3.72	
	15-Jan-92	MH		3.82	4.33	
	23-Apr-92	MH		4.12	4.03	
	21-Jul-92	MH		4.44	3.71	

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W-13 Cont	22-Oct-92	MH		4.42	3.73	
	26-Jan-93	MH		3.10	5.05	
	29-Apr-93	MH		4.04	4.11	
	22-Jul-93	PES		4.30	3.85	
	07-Oct-93	PES		4.32	3.83	
	06-Jan-94	PES		4.07	4.08	
	05-Apr-94	PES		4.20	3.95	
	08-Jul-94	PES		3.94	4.21	
	04-Oct-94	PES		4.37	3.78	
	11-Jan-95	PES		2.73	5.42	
	06-Apr-95	PES		3.60	4.55	
	13-Jul-95	PES		3.56	4.59	
	11-Oct-95	PES		4.28	3.87	
W-14	20-Aug-89	MH	7.97	5.02	2.95	
	22-Feb-90	MH		4.19	3.78	
	28-Feb-90	MH		4.46	3.51	
	09-Apr-90	MH		4.36	3.61	
	07-Jun-90	MH		5.29	2.68	
	25-Jul-90	MH		4.83	3.14	
	03-Oct-90	MH		5.09	2.88	
	03-Jan-91	MH		4.32	3.65	
	03-Apr-91	MH		4.31	3.66	
	25-Oct-91	MH		4.41	3.56	
	15-Jan-92	MH		4.18	3.79	
	23-Apr-92	MH		4.93	3.04	
	21-Jul-92	MH		4.57	3.40	
	22-Oct-92	MH		5.28	2.69	
	26-Jan-93	MH		3.94	4.03	
	29-Apr-93	MH		4.59	3.38	
	22-Jul-93	PES		5.30	2.67	
	07-Oct-93	PES		5.18	2.79	
	06-Jan-94	PES		5.09	2.88	
	05-Apr-94	PES		5.39	2.58	
08-Jul-94	PES		5.37	2.60		
04-Oct-94	PES		4.97	3.00		
11-Jan-95	PES		4.66	3.31		
06-Apr-95	PES		4.13	3.84		
13-Jul-95	PES		4.36	3.61		
11-Oct-95	PES		5.33	2.64		

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Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-15	20-Aug-89	MH	11.53	3.43	8.10	
	11-Oct-89	MH		4.26	7.27	
	22-Feb-90	MH		2.58	8.95	
	28-Feb-90	MH		2.53	9.00	
	09-Apr-90	MH		2.48	9.05	
	07-Jun-90	MH		4.54	6.99	
	25-Jul-90	MH		4.00	7.53	
	03-Oct-90	MH		3.46	8.07	
	03-Jan-91	MH		2.97	8.56	
	03-Apr-91	MH		3.05	8.48	
	25-Oct-91	MH		2.88	8.65	
	15-Jan-92	MH		3.54	7.99	
	23-Apr-92	MH		2.78	8.75	
	21-Jul-92	MH		2.67	8.86	
	22-Oct-92	MH		2.65	8.88	
	26-Jan-93	MH		2.47	9.06	
	29-Apr-93	MH		2.56	8.97	
	29-Apr-93	PES		3.38	8.15	
	07-Oct-93	PES		3.88	7.65	
	06-Jan-94	PES		3.03	8.50	
	05-Apr-94	PES		3.03	8.50	
	08-Jul-94	PES		2.89	8.64	
	04-Oct-94	PES		2.90	8.63	
	11-Jan-95	PES		2.84	8.69	
	06-Apr-95	PES		2.62	8.91	
	13-Jul-95	PES		2.67	8.86	
	11-Oct-95	PES		3.13	8.40	
W-16	11-Oct-89	MH	10.94	4.81	6.19	0.07
	22-Feb-90	MH		3.92	7.02	NP
	28-Feb-90	MH		3.88	7.06	NP
	09-Apr-90	MH		7.81	3.13	NP
	07-Jun-90	MH		6.19	4.75	NP
	27-Jul-90	MH		4.44	6.50	NP
	03-Oct-90	MH		4.38	6.58	0.02
	03-Jan-91	MH		4.67	6.29	0.02
	03-Apr-91	MH		3.50	7.46	0.02
	25-Oct-91	MH		4.64	6.30	NP
	15-Jan-92	MH		4.11	6.83	NP
	23-Apr-92	MH		3.89	7.05	NP
	21-Jul-92	MH		4.28	6.66	NP
	22-Oct-92	MH		NM	NM	NM



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Emery Bay Marketplace  
Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-16	26-Jan-93	MH		2.47	8.47	NP
Cont	22-Jul-93	PES		NM	NM	NM
	07-Oct-93	PES		NM	NM	NM
	06-Jan-94	PES		NM	NM	NM
	05-Apr-94	PES		NM	NM	NM
	08-Jul-94	PES		NM	NM	NM
	04-Oct-94	PES		NM	NM	NM
	11-Jan-95	PES		NM	NM	NM
	06-Apr-95	PES		NM	NM	NM
	13-Jul-95	PES		NM	NM	NM
	11-Oct-95	PES		NM	NM	NM
W-17	11-Oct-89	MH	12.14	9.12	3.02	
	22-Feb-90	MH		5.42	6.72	
	28-Feb-90	MH		5.35	6.79	
	09-Apr-90	MH		5.72	6.42	
	07-Jun-90	MH		NM	NM	
	26-Jul-90	MH		5.59	6.55	
	03-Oct-90	MH		5.72	6.42	
	03-Jan-91	MH		6.28	5.86	
	03-Apr-91	MH		4.69	7.45	
	25-Oct-91	MH		6.00	6.14	
	15-Jan-92	MH		5.57	6.57	
	23-Apr-92	MH		5.17	6.97	
	21-Jul-92	MH		5.54	6.60	
	22-Oct-92	MH		6.10	6.04	
	26-Jan-93	MH		4.45	7.69	
	29-Apr-93	MH		5.25	6.89	
	22-Jul-93	PES		NM	NM	
	07-Oct-93	PES		NM	NM	
	06-Jan-94	PES		5.88	6.26	
	05-Apr-94	PES		5.28	6.86	
	08-Jul-94	PES		5.35	6.79	
	04-Oct-94	PES		6.77	5.37	
	11-Jan-95	PES		NM	NM	
	06-Apr-95	PES		2.64	9.50	
	13-Jul-95	PES		5.29	6.85	
	11-Oct-95	PES		5.82	6.32	

**Table 1. Summary of Groundwater Elevations  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-18	11-Oct-89	MH	11.34	5.52	5.82	
	22-Feb-90	MH		4.42	6.92	
	28-Feb-90	MH		4.77	6.57	
	09-Apr-90	MH		5.24	6.10	
	07-Jun-90	MH		4.28	7.06	
	25-Jul-90	MH		4.98	6.36	
	03-Oct-90	MH		5.44	5.90	
	03-Jan-91	MH		5.84	5.50	
	03-Apr-91	MH		4.94	6.40	
	25-Oct-91	MH		5.55	5.79	
	15-Jan-92	MH		5.24	6.10	
	23-Apr-92	MH		4.81	6.53	
	21-Jul-92	MH		5.01	6.33	
	22-Oct-92	MH		5.55	5.79	
	26-Jan-93	MH		4.72	6.62	
	29-Apr-93	MH		4.68	6.66	
	22-Jul-93	PES		5.07	6.27	
	07-Oct-93	PES		5.48	5.86	
	06-Jan-94	PES		5.49	5.85	
	05-Apr-94	PES		5.25	6.09	
	08-Jul-94	PES		4.98	6.36	
	04-Oct-94	PES		5.28	6.06	
	11-Jan-95	PES		4.55	6.79	
06-Apr-95	PES	4.02	7.32			
13-Jul-95	PES	4.95	6.39			
11-Oct-95	PES	5.30	6.04			
W-19	09-Apr-90	MH	10.27	5.11	5.16	
	07-Jun-90	MH		4.77	5.50	
	25-Jul-90	MH		4.93	5.34	
	03-Oct-90	MH		4.95	5.32	
	03-Jan-91	MH		5.95	4.32	
	03-Apr-91	MH		5.39	4.88	
	25-Oct-91	MH		5.47	4.80	
	15-Jan-92	MH		5.18	5.09	
	23-Apr-92	MH		5.34	4.93	
	21-Jul-92	MH		5.08	5.19	
	22-Oct-92	MH		5.31	4.96	
	26-Jan-93	MH		4.82	5.45	
	29-Apr-93	MH		5.09	5.18	
	22-Jul-93	PES		5.04	5.24	
	07-Oct-93	PES		5.09	5.18	
					0.01	
					NP	

Table 1. Summary of Groundwater Elevations  
Through October 1995

Emery Bay Marketplace  
Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-19	06-Jan-94	PES		5.13	5.14	NP
Cont	05-Apr-94	PES		4.92	5.35	NP
	08-Jul-94	PES		5.01	5.26	
	04-Oct-94	PES		5.03	5.27	0.03
	11-Jan-95	PES		4.79	5.48	NP
	06-Apr-95	PES		4.92	5.38	0.03
	13-Jul-95	PES		4.99	5.30	0.02
	11-Oct-95	PES		5.11	5.19	0.04
W-20	09-Apr-90	MH	6.82	4.08	2.74	
	07-Jun-90	MH		3.79	3.03	
	25-Jul-90	MH		4.00	2.82	
	03-Oct-90	MH		4.03	2.79	
	03-Jan-91	MH		4.12	2.70	
	03-Apr-91	MH		3.84	2.98	
	25-Oct-91	MH		4.07	2.75	
	15-Jan-92	MH		3.75	3.07	
	23-Apr-92	MH		4.08	2.74	
	21-Jul-92	MH		4.02	2.80	
	22-Oct-92	MH		4.07	2.75	
	26-Jan-93	MH		3.30	3.52	
	29-Apr-93	MH		4.00	2.82	
	22-Jul-93	PES		3.84	2.98	
	07-Oct-93	PES		3.79	3.03	
	06-Jan-94	PES		3.84	2.98	
	05-Apr-94	PES		3.90	2.92	
	08-Jul-94	PES		3.63	3.19	
	06-Oct-94	PES		3.76	3.06	
	11-Jan-95	PES		2.76	4.06	
	06-Apr-95	PES		3.56	3.26	
	13-Jul-95	PES		3.09	3.73	
	11-Oct-95	PES		3.71	3.11	
W-21	09-Apr-90	MH	9.48	5.21	4.27	
	07-Jun-90	MH		4.84	4.64	
	25-Jul-90	MH		5.05	4.43	
	03-Oct-90	MH		5.18	4.30	
	03-Jan-91	MH		5.47	4.01	
	03-Apr-91	MH		4.80	4.68	
	25-Oct-91	MH		5.04	4.44	
	15-Jan-92	MH		4.95	4.53	
	23-Apr-92	MH		5.17	4.31	

Table 1. Summary of Groundwater Elevations  
Through October 1995  
Emery Bay Marketplace  
Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-21	21-Jul-92	MH		5.07	4.41	
Cont	22-Oct-92	MH		5.28	4.20	
	26-Jan-93	MH		4.46	5.02	
	29-Apr-93	MH		5.39	4.09	
	22-Jul-93	PES		5.32	4.16	
	07-Oct-93	PES		5.38	4.10	
	06-Jan-94	PES		5.30	4.18	
	05-Apr-94	PES		5.18	4.30	
	08-Jul-94	PES		5.18	4.30	
	04-Oct-94	PES		5.08	4.40	
	11-Jan-95	PES		4.73	4.75	
	06-Apr-95	PES		4.92	4.56	
	13-Jul-95	PES		5.11	4.37	
	11-Oct-95	PES		5.31	4.17	
W-22	09-Apr-90	MH	11.67	7.50	4.17	
	07-Jun-90	MH		7.36	4.31	
	25-Jul-90	MH		7.49	4.18	
	03-Oct-90	MH		7.68	3.99	
	03-Jan-91	MH		7.88	3.79	
	03-Apr-91	MH		7.64	4.03	
	25-Oct-91	MH		6.69	4.98	
	15-Jan-92	MH		7.61	4.06	
	23-Apr-92	MH		7.21	4.46	
	21-Jul-92	MH		7.69	3.98	
	22-Oct-92	MH		7.82	3.85	
	26-Jan-93	MH		7.40	4.27	
	29-Apr-93	MH		7.71	3.96	
	22-Jul-93	PES		7.76	3.91	
	07-Oct-93	PES		7.35	4.32	
	06-Jan-94	PES		7.04	4.63	
	05-Apr-94	PES		NM	NM	
	08-Jul-94	PES		6.43	5.24	
	04-Oct-94	PES		6.66	5.01	
	11-Jan-95	PES		4.67	7.00	
	06-Apr-95	PES		6.16	5.51	
	13-Jul-95	PES		6.29	5.38	
	11-Oct-95	PES		6.59	5.08	

**Table 1. Summary of Groundwater Elevations  
Through October 1995**

Emery Bay Marketplace  
Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-23	09-Apr-90	MH	9.16	1.51	7.65	
	07-Jun-90	MH		1.78	7.38	
	27-Jul-90	MH		2.63	6.53	
	03-Oct-90	MH		3.20	5.96	
	03-Jan-91	MH		2.36	6.80	
	03-Apr-91	MH		0.60	8.56	
	25-Oct-91	MH		2.36	6.80	
	15-Jan-92	MH		1.62	7.54	
	23-Apr-92	MH		1.18	7.98	
	21-Jul-92	MH		2.17	6.99	
	22-Oct-92	MH		2.76	6.40	
	26-Jan-93	MH		0.39	8.77	
	29-Apr-93	MH		0.97	8.19	
	22-Jul-93	PES		1.87	7.29	
	07-Oct-93	PES		2.86	6.30	
	06-Jan-94	PES		1.88	7.28	
	05-Apr-94	PES		1.30	7.86	
	08-Jul-94	PES		1.77	7.39	
	04-Oct-94	PES		2.39	6.77	
	11-Jan-95	PES		0.49	8.67	
06-Apr-95	PES	0.86	8.30			
13-Jul-95	PES	1.38	7.78			
11-Oct-95	PES	2.32	6.84			
W-24	07-Jun-90	MH	8.72	4.75	3.97	
	25-Jul-90	MH		5.02	3.70	
	03-Oct-90	MH		5.00	3.72	
	03-Jan-91	MH		5.25	3.47	
	03-Apr-91	MH		4.56	4.16	
	25-Oct-91	MH		5.09	3.63	
	15-Jan-92	MH		4.82	3.90	
	23-Apr-92	MH		4.94	3.78	
	21-Jul-92	MH		5.00	3.72	
	22-Oct-92	MH		5.13	3.59	
	26-Jan-93	MH		3.38	5.34	
	29-Apr-93	MH		4.98	3.74	
	22-Jul-93	PES		5.02	3.70	
	07-Oct-93	PES		4.46	4.26	
	06-Jan-94	PES		4.83	3.89	
	05-Apr-94	PES		4.85	3.87	
08-Jul-94	PES	4.54	4.18			
04-Oct-94	PES	4.69	4.03			

**Table 1. Summary of Groundwater Elevations  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Potentiometric Surface Elevations (feet MSL)	Product Thickness (feet)
W-24	11-Jan-95	PES		2.63	6.09	
Cont	06-Apr-95	PES		4.44	4.28	
	13-Jul-95	PES		4.04	4.68	
	11-Oct-95	PES		4.78	3.94	

**NOTES:**

(1) Well W-1 is located on the Nielson property.

(2) Groundwater elevation taken from earlier reports does not agree with calculated elevation using current top of casing elevation.

feet MSL = Feet above Mean Sea Level.

NA = Data not available.

NM = Not measured.

NP = Product not present or insufficient amount present to perform measurements.

WCC = Woodward Clyde Consultants

MH = McLaren Hart

PES = PES Environmental, Inc.



**Table 2. Summary of Petroleum Hydrocarbon  
Analytical Results for Groundwater Samples  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Concentrations expressed in milligrams per liter [mg/L] - equivalent to parts per million [ppm]

Well Number	Sample Date	Sampled by	TPH as Diesel	TPH as Motor Oil
W-1	14-Apr-87	WCC	NA	<5
	28-Feb-90	MH	<0.5	NA
	11-Apr-90	MH	<0.1	0.57
W-4	01-Mar-90	MH	<0.5	NA
	10-Apr-90	MH	<0.1	<0.25
W-5	27-Sep-89	MH	20	NA
	25-Oct-91	MH	NA	NA
W-7	26-Sep-89	MH	1.1	NA
	28-Feb-90	MH	<0.5	NA
	11-Apr-90	MH	5.6	7.5
	30-Jul-90	MH	2.6	2.0
	04-Oct-90	MH	5.0	6.0
	04-Jan-91	MH	4.0	12
	03-Apr-91	MH	<1.0	3.2
	25-Oct-91	MH	1.4 (3)	2.3
	16-Jan-92	MH	1.6	3.6
	24-Apr-92	MH	3.3	4.9
	23-Jul-92	MH	2.6	4.0
	23-Oct-92	MH	3.8	4.2
	27-Jan-93	MH	<0.5	8.0 (1)
	29-Apr-93	MH	1.6	1.7(1)
	22-Jul-93	PES	1.50	1.50
	07-Oct-93	PES	2.90	2.90
	06-Jan-94	PES	<0.05	0.11
	05-Apr-94	PES	2.90	1.70
	08-Jul-94	PES	8.4	38
	04-Oct-94	PES	20	76
11-Jan-95	PES	17	<0.2	
06-Apr-95	PES	25	4	
13-Jul-95	PES	55	13	
11-Oct-95	<b>PES</b>	<b>66</b>	<b>11</b>	
W-8	17-Apr-87	WCC	10(2)	NA
	26-Sep-89	MH	7.1	NA
	01-Mar-90	MH	4.5	NA
	18-Apr-90	MH	5.3	NA

**Table 2. Summary of Petroleum Hydrocarbon  
Analytical Results for Groundwater Samples  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Concentrations expressed in milligrams per liter [mg/L] - equivalent to parts per million [ppm]

Well Number	Sample Date	Sampled by	TPH as Diesel	TPH as Motor Oil
W-13	28-Feb-90	MH	<0.5	NA
	12-Apr-90	MH	<0.5	NA
	27-Jul-90	MH	<0.5	<1
	04-Oct-90	MH	<0.5	<1
	03-Jan-91	MH	<0.5	<1
	04-Apr-91	MH	<0.5	<1
	25-Oct-91	MH	<0.5	<1
	16-Jan-92	MH	<0.5	<0.5
	24-Apr-92	MH	<0.5	<0.5
	22-Jul-92	MH	<0.5	<0.5
	23-Oct-92	MH	<0.5	<0.5
	27-Jan-93	MH	<0.05	0.11(1)
	29-Apr-93	MH	<0.5	0.12(1)
	22-Jul-93	PES	<0.05	0.25
	07-Oct-93	PES	<0.05	0.35
	06-Jan-94	PES	<0.05	<0.10
	05-Apr-94	PES	<0.05	<0.10
	08-Jul-94	PES	<0.05	0.5
	04-Oct-94	PES (4)	0.3	<0.2
	11-Jan-95	PES (4)	0.5	<0.2
06-Apr-95	PES (4)	0.3	<0.2	
13-Jul-95	PES (4)	0.3	<0.2	
11-Oct-95	PES	0.4	<0.2	
W-14	28-Feb-90	MH	<0.5	NA
	11-Apr-90	MH	<0.1	<0.25
	30-Jul-90	MH	<0.6	<1
	04-Oct-90	MH	<0.5	<1
	04-Jan-91	MH	<0.5	<1
	04-Apr-91	MH	<0.5	<1
	25-Oct-91	MH	<0.5	<1
	16-Jan-92	MH	<0.5	<0.5
	24-Apr-92	MH	<0.5	<0.5
	22-Jul-92	MH	<0.5	<0.5
	23-Oct-92	MH	<0.5	<0.5
	27-Jan-93	MH	<0.05	0.13
	29-Apr-93	MH	<0.05	0.15
	22-Jul-93	PES	<0.05	0.16

**Table 2. Summary of Petroleum Hydrocarbon  
Analytical Results for Groundwater Samples  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Concentrations expressed in milligrams per liter [mg/L] - equivalent to parts per million [ppm]

Well Number	Sample Date	Sampled by	TPH as Diesel	TPH as Motor Oil
W-14 Cont	07-Oct-93	PES	<0.05	0.34
	06-Jan-94	PES	<0.05	0.15
	05-Apr-94	PES	<0.05	<0.10
	08-Jul-94	PES	<0.05	0.3
	04-Oct-94	PES (4)	0.4	<0.2
	11-Jan-95	PES (4)	0.3	<0.2
	06-Apr-95	PES (4)	0.3	<0.2
	13-Jul-95	PES (4)	0.2	<0.2
	11-Oct-95	PES	0.4	<0.2
W-15	25-Sep-89	MH	1.2	NA
	13-Apr-90	MH	1.5	NA
W-16	27-Sep-89	MH	4.7	NA
	28-Feb-90	MH	22	NA
	13-Apr-90	MH	9.0	NA
W-17	25-Sep-89	MH	0.7	NA
	13-Apr-90	MH	1.6	NA
W-18	26-Sep-89	MH	3.1	NA
	13-Apr-90	MH	5.1	NA
W-19	12-Apr-90	MH	1.1	NA
	16-Apr-90	MH	<0.5	NA
	27-Jul-90	MH	<1	8.0
	03-Oct-90	MH	<0.5	3.0
	03-Jan-91	MH	<0.5	<1
	03-Apr-91	MH	<2.5	8.4
	25-Oct-91	MH	<0.5	34
	17-Jan-92	MH	<10.0	29
	23-Apr-92	MH	<2.0	7.1
	23-Jul-92	MH	<0.1	7.3
	22-Oct-92	MH	<10	28
	26-Jan-93	MH	0.79	35
	29-Apr-93	MH	<0.05	8.2
	22-Jul-93	PES	<0.50	20.00
	07-Oct-93	PES	0.45	2.00
06-Jan-94	PES	0.50	7.10	

**Table 2. Summary of Petroleum Hydrocarbon  
Analytical Results for Groundwater Samples  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Concentrations expressed in milligrams per liter [mg/L] - equivalent to parts per million [ppm]

Well Number	Sample Date	Sampled by	TPH as Diesel	TPH as Motor Oil
<b>W-19</b> <b>Cont</b>	05-Apr-94	PES	<0.20	2.70
	08-Jul-94	PES	3.4	2.5
	04-Oct-94	PES	13	11
	11-Jan-95	PES	7.2	<0.2
	06-Apr-95	PES	NS (5)	NS (5)
	13-Jul-95	PES	5.1	1
	11-Oct-95	PES	6.5	1
<b>W-20</b>	12-Apr-90	MH	<0.5	NA
	16-Apr-90	MH	<0.5	NA
	30-Jul-90	MH	<0.5	<1
	03-Oct-90	MH	<0.5	<1
	04-Jan-91	MH	<0.5	<1
	04-Apr-91	MH	<0.5	2.3
	25-Oct-91	MH	<0.5	<1
	17-Jan-92	MH	<0.5	<0.5
	24-Apr-92	MH	<0.5	<0.5
	22-Jul-92	MH	<0.5	<0.5
	22-Oct-92	MH	<0.5	<0.5
	27-Jan-93	MH	<0.10	0.42 (1)
	29-Apr-93	MH	<0.05	0.38(1)
	22-Jul-93	PES	<0.05	1.90
	07-Oct-93	PES	<0.05	0.12
	06-Jan-94	PES	<0.05	0.17
	05-Apr-94	PES	<0.05	<0.10
08-Jul-94	PES	<0.05	<0.20	
06-Oct-94	PES	<0.05	<0.2	
11-Jan-95	PES	1.4	<0.2	
06-Apr-95	PES	2.0	<0.2	
13-Jul-95	PES	0.1	<0.2	
11-Oct-95	PES	0.1	<0.2	
<b>W-21</b>	12-Apr-90	MH	1.4	NA
	18-Apr-90	MH	1.7	NA
<b>W-22</b>	12-Apr-90	MH	<0.5	NA
	18-Apr-90	MH	<0.5	NA

**Table 2. Summary of Petroleum Hydrocarbon  
Analytical Results for Groundwater Samples  
Through October 1995**  
Emery Bay Marketplace  
Emeryville, California

Concentrations expressed in milligrams per liter [mg/L] - equivalent to parts per million [ppm]

Well Number	Sample Date	Sampled by	TPH as Diesel	TPH as Motor Oil
W-23	12-Apr-90	MH	2.9	NA
	18-Apr-90	MH	3.6	NA
W-24	07-Jun-90	MH	<0.5	NA
	27-Jul-90	MH	<0.5	<1
	03-Oct-90	MH	<0.5	<1
	03-Jan-91	MH	<0.5	<1
	03-Apr-91	MH	<0.5	1.1
	25-Oct-91	MH	<0.5	<1
	17-Jan-92	MH	<0.5	<0.5
	24-Apr-92	MH	<0.5	<0.5
	23-Jul-92	MH	<0.5	<0.5
	22-Oct-92	MH	<0.5	<0.5
	26-Jan-93	MH	<0.05	0.20 (1)
	29-Apr-93	MH	<0.05	0.14 (1)
	22-Jul-93	PES	<0.05	0.42
	07-Oct-93	PES	<0.05	0.45
	06-Jan-94	PES	<0.05	<0.10
	05-Apr-94	PES	<0.05	<0.10
	08-Jul-94	PES	0.06	<0.20
04-Oct-94	PES	0.5	<0.2	
11-Jan-95	PES	0.5	<0.2	
06-Apr-95	PES	0.3	<0.2	
13-Jul-95	PES	0.2	<0.2	
11-Oct-95	PES	0.4	<0.2	

Notes:

- (1) = TPH quantified as motor oil although chromatogram pattern not typical of motor oil.  
 (2) = Semiquantified results include gasoline, diesel, and some oil and grease in Well W-8.  
 (3) = TPH quantified as diesel although chromatograph pattern not typical of diesel.  
 (4) = Well not sampled due to the presence of free-phase product on the surface of the water column.  
 < 0.5 = Not detected above indicated detection limit.

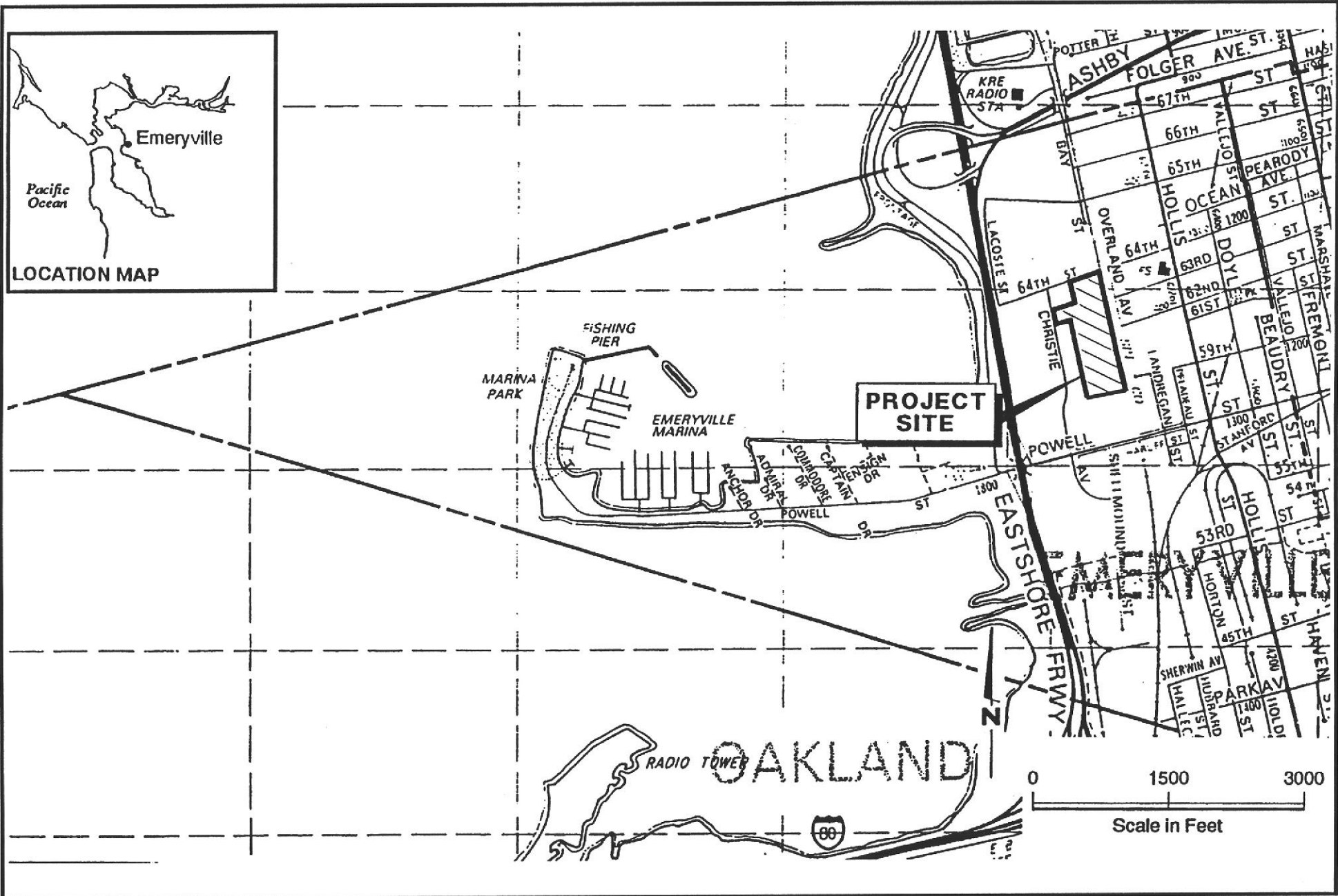
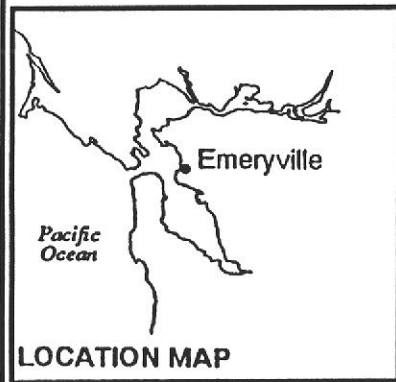
TPH = Total petroleum hydrocarbons

NA = Not Analyzed

WCC = Woodward Clyde Consultants

MH = McLaren Hart

PES = PES Environmental, Inc.

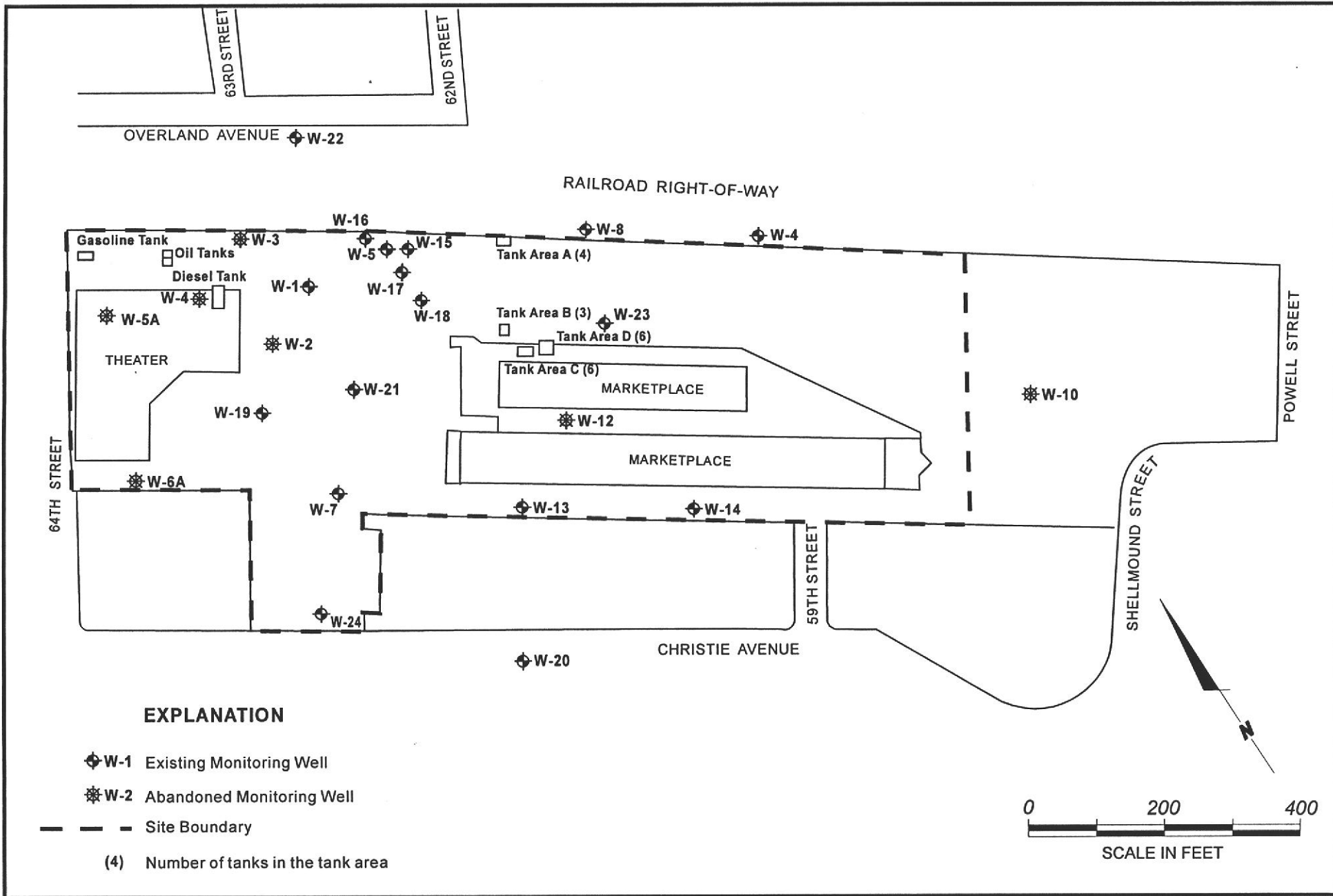


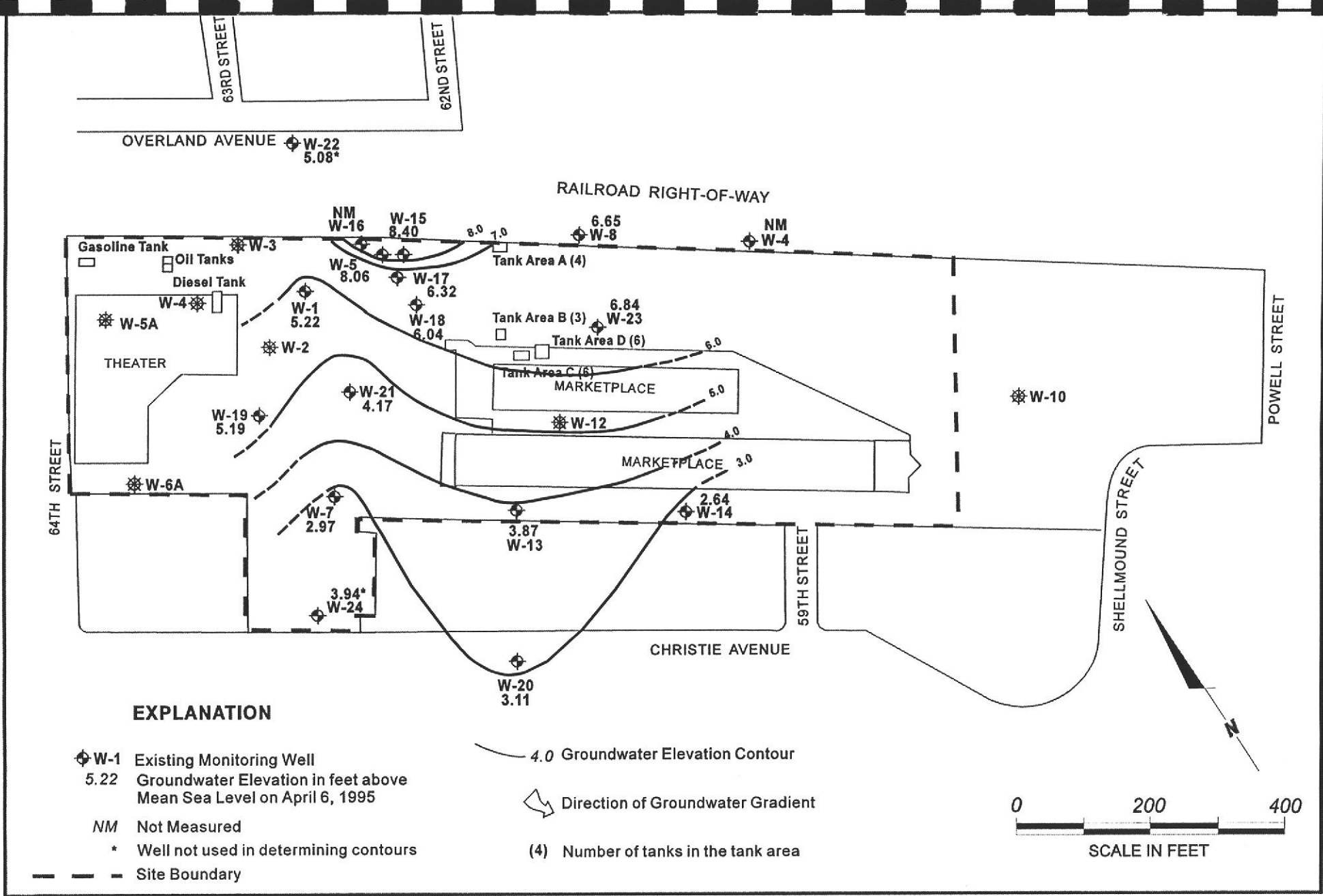
 **PES Environmental, Inc.**  
Engineering & Environmental Services

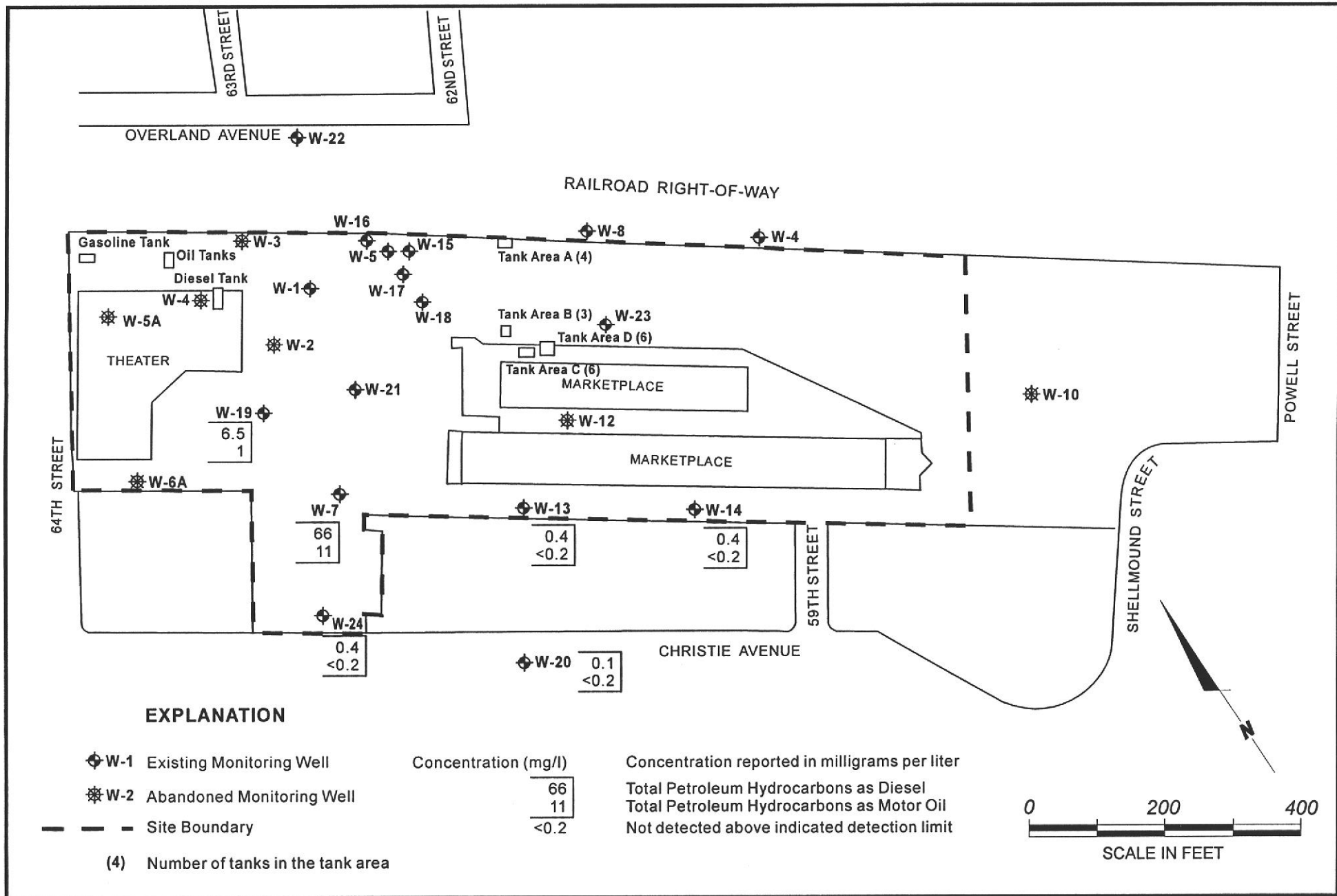
Site Location Map  
Emery Bay Marketplace  
Emeryville, California

PLATE  
**1**









**APPENDIX A**

**WATER LEVEL AND GROUNDWATER SAMPLING REPORT**

October 23, 1995

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

ATTN: Mary Williams

Site:  
Emery Bay Market Place  
Christie Street  
Emeryville, California

Date:  
October 11, 1995

## GROUNDWATER SAMPLING REPORT 951011-K-1

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

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

## STANDARD PRACTICES

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### 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 three case volumes of water, before sampling. The wells were evacuated using bailers.

Samples were collected using bailers.

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

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

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

### Decontamination

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

### Effluent Materials

The evacuation process creates a volume of effluent water which must be contained. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new 55 gallon DOT 17 E drums to the site, which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater



well. If that sample does not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

### **Sampling Methodology**

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

### **Sample Containers**

Sample containers are supplied by the laboratory performing the analyses.

### **Sample Handling Procedures**

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

### **Sample Designations**

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

### **Chain of Custody**

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

## Hazardous Materials Testing Laboratory

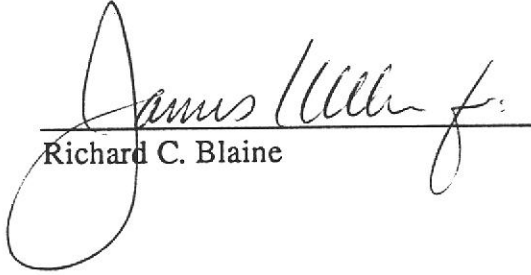
The samples obtained at this site were delivered to American Environmental Network in Pleasant Hill, California. AEN is certified by the California Department of Health Services as a Hazardous Materials Testing Laboratory, and is listed as DOHS HMTL #1172.

### Personnel

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

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

Please call if we can be of any further assistance.

  
Richard C. Blaine

RCB/dk

attachments: table of well monitoring data  
chain of custody

## TABLE OF WELL MONITORING DATA

Well I.D.	W-7	W-13	W-14	W-19
Date Sampled	10/11/95	10/11/95	10/11/95	10/11/95
Well Diameter (in.)	2	2	2	2
Total Well Depth (ft.)	12.46	10.03	9.90	13.57
Depth To Water (ft.)	6.08	4.28	5.33	5.11
Reason If Not Sampled	NONE --	NONE --	NONE --	0.04 --
1 Case Volume (gal.)	1.0	0.9	0.7	1.3
Did Well Dewater?	YES @ 1.5 GALS.	YES @ 2.0 GALS.	YES @ 1.0 GALS.	NO
Gallons Actually Evacuated	1.5	2.0	1.0	4.0
Purging Device	BAILER	BAILER	BAILER	BAILER
Sampling Device	BAILER	BAILER	BAILER	BAILER
Time	10:40    13:40	10:51    10:55    14:05	11:05    13:51	12:09    12:12    12:14
Temperature (Fahrenheit)	67.0    66.2	61.6    61.8    63.0	63.6    63.6	71.8    69.2    69.4
pH	6.4    6.8	7.0    7.1    7.2	7.4    7.1	6.9    6.8    6.8
Conductivity (micromhos/cm)	4000    6200	1000    1000    1100	1200    1100	3000    2800    2700
BTS Chain of Custody	951011-K-1	951011-K-1	951011-K-1	951011-K-1
BTS Sample I.D.	W-7	W-13	W-14	W-19
DOHS HMTL Laboratory	AEN	AEN	AEN	AEN
Analysis	TPH (DIESEL) AND TPH (MOTOR OIL)	TPH (DIESEL) AND TPH (MOTOR OIL)	TPH (DIESEL) AND TPH (MOTOR OIL)	TPH (DIESEL) AND TPH (MOTOR OIL)

## TABLE OF WELL MONITORING DATA

Well I.D.	W-20			W-24		
Date Sampled	10/11/95			10/11/95		
Well Diameter (in.)	2			2		
Total Well Depth (ft.)	16.97			11.12		
Depth To Water (ft.)	3.71			4.78		
Free Product (ft.)	NONE			NONE		
Reason If Not Sampled	--			--		
1 Case Volume (gal.)	2.1			1.0		
Did Well Dewater?	NO			NO		
Gallons Actually Evacuated	6.5			3.0		
Purging Device	BAILER			BAILER		
Sampling Device	BAILER			BAILER		
Time	11:19	11:22	11:24	11:40	11:42	11:44
Temperature (Fahrenheit)	63.2	61.2	61.6	64.8	64.6	64.6
pH	6.8	6.7	6.7	7.4	7.1	7.0
Conductivity (micromhos/cm)	6000	7200	7400	1600	1100	1200
BTS Chain of Custody	951011-K-1			951011-K-1		
BTS Sample I.D.	W-20			W-24		
DOHS HMTL Laboratory	AEN			AEN		
Analysis	TPH (DIESEL) AND TPH (MOTOR OIL)			TPH (DIESEL) AND TPH (MOTOR OIL)		



**APPENDIX B**

**ANALYTICAL LABORATORY REPORT**

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

PES ENVIRONMENTAL, INC.  
1682 NOVATO BLVD.  
SUITE 100  
NOVATO, CA 94947

ATTN: JENNY HAHN  
CLIENT PROJ. ID: 131.0201.001

C.O.C. NUMBER: 951011-K1

REPORT DATE: 10/24/95

DATE(S) SAMPLED: 10/11/95

DATE RECEIVED: 10/12/95

AEN WORK ORDER: 9510147

### PROJECT SUMMARY:

On October 12, 1995, this laboratory received 6 water sample(s).

Client requested sample(s) be analyzed for organic parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

  
Larry Klein  
Laboratory Director

cc: Blaine Tech Services

## PES ENVIRONMENTAL, INC.

SAMPLE ID: W-7  
AEN LAB NO: 9510147-01  
AEN WORK ORDER: 9510147  
CLIENT PROJ. ID: 131.0201.001

DATE SAMPLED: 10/11/95  
DATE RECEIVED: 10/12/95  
REPORT DATE: 10/24/95

---

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	10/16/95
TPH as Diesel	GC-FID	66 *	0.3 mg/L		10/19/95
TPH as Oil	GC-FID	11 *	1 mg/L		10/19/95

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

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit



## PES ENVIRONMENTAL, INC.

SAMPLE ID: W-13  
AEN LAB NO: 9510147-02  
AEN WORK ORDER: 9510147  
CLIENT PROJ. ID: 131.0201.001

DATE SAMPLED: 10/11/95  
DATE RECEIVED: 10/12/95  
REPORT DATE: 10/24/95

---

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	10/16/95
TPH as Diesel	GC-FID	0.4 *	0.05 mg/L		10/19/95
TPH as Oil	GC-FID	ND	0.2 mg/L		10/19/95

---

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## PES ENVIRONMENTAL, INC.

SAMPLE ID: W-14  
AEN LAB NO: 9510147-03  
AEN WORK ORDER: 9510147  
CLIENT PROJ. ID: 131.0201.001

DATE SAMPLED: 10/11/95  
DATE RECEIVED: 10/12/95  
REPORT DATE: 10/24/95

---

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	10/16/95
TPH as Diesel	GC-FID	0.4 *	0.05 mg/L		10/19/95
TPH as Oil	GC-FID	ND	0.2 mg/L		10/19/95

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ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## PES ENVIRONMENTAL, INC.

SAMPLE ID: W-19  
AEN LAB NO: 9510147-04  
AEN WORK ORDER: 9510147  
CLIENT PROJ. ID: 131.0201.001

DATE SAMPLED: 10/11/95  
DATE RECEIVED: 10/12/95  
REPORT DATE: 10/24/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	10/16/95
TPH as Diesel	GC-FID	6.5 *	0.05 mg/L		10/19/95
TPH as Oil	GC-FID	1 *	0.2 mg/L		10/19/95

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

PES ENVIRONMENTAL, INC.

SAMPLE ID: W-20  
 AEN LAB NO: 9510147-05  
 AEN WORK ORDER: 9510147  
 CLIENT PROJ. ID: 131.0201.001

DATE SAMPLED: 10/11/95  
 DATE RECEIVED: 10/12/95  
 REPORT DATE: 10/24/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	10/16/95
TPH as Diesel	GC-FID	0.1 *	0.05	mg/L	10/19/95
TPH as Oil	GC-FID	ND	0.2	mg/L	10/19/95

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

PES ENVIRONMENTAL, INC.

SAMPLE ID: W-24  
 AEN LAB NO: 9510147-06  
 AEN WORK ORDER: 9510147  
 CLIENT PROJ. ID: 131.0201.001

DATE SAMPLED: 10/11/95  
 DATE RECEIVED: 10/12/95  
 REPORT DATE: 10/24/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for TPH	EPA 3510	-		Extrn Date	10/16/95
TPH as Diesel	GC-FID	0.4 *	0.05 mg/L		10/19/95
TPH as Oil	GC-FID	ND	0.2 mg/L		10/19/95

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

AEN (CALIFORNIA)  
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9510147

CLIENT PROJECT ID: 131.0201.001

Quality Control Summary

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

Definitions

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

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

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

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

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

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

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

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

## QUALITY CONTROL DATA

METHOD: EPA 3510 GCFID

AEN JOB NO: 9510147  
 DATE EXTRACTED: 10/16/95  
 INSTRUMENT: A  
 MATRIX: WATER

## Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery	
			n-Pentacosane	
10/19/95	W-7	01	95	
10/19/95	W-13	02	99	
10/19/95	W-14	03	107	
10/19/95	W-19	04	94	
10/19/95	W-20	05	100	
10/19/95	W-24	06	78	
QC Limits:			59-118	

DATE EXTRACTED: 10/13/95  
 DATE ANALYZED: 10/16/95  
 SAMPLE SPIKED: DI WATER  
 INSTRUMENT: A

## Method Spike Recovery Summary

Analyte	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Diesel	2.07	86	<1	58-107	15

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

\*\*\* END OF REPORT \*\*\*

# BLAINE TECH SERVICES INC

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

## CONDUCT ANALYSIS TO DETECT

LAB AEN 9510147 DHS # \_\_\_\_\_  
ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND  
 EPA R-1, S-6  RWQCB REGION \_\_\_\_\_  
 LIA  
 OTHER

CHAIN OF CUSTODY  
951011-K1  
CLIENT PES  
SITE EMERY BAY MARKET PLACE  
CHRISTIE AVE.  
EMERYVILLE, CA.

C = COMPOSITE ALL CONTAINERS

TPH-Diesel (MED. 8015)  
TPH-Motor Oil (HOP. 8015)

SPECIAL INSTRUCTIONS  
INVOICED REPORT TO PES  
Jenny Nahn  
Job# 131,0201.001  
CC: Report to Blaine Tech. Services

SAMPLE I.D.	S = SOIL W = H2O	MATRIX		TOTAL	Amber w/IK1	C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT							ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
		TPH-Diesel (MED. 8015)	TPH-Motor Oil (HOP. 8015)														
01AB W-7 1345	W			2		X	X										
2AB W-13 1410						X	X										
3AB W-14 1355						X	X										
4AB W-19 1220						X	X										
5AB W-20 1130						X	X										
6AB W-24 1155						X	X										

SAMPLING COMPLETED 10/11/95 DATE 10/11/95 TIME \_\_\_\_\_  
SAMPLING PERFORMED BY Keith Brown  
RESULTS NEEDED NO LATER THAN As Contracted  
RELEASED BY [Signature] DATE 10/12/95 TIME 1100 RECEIVED BY [Signature] DATE 10/12/95 TIME 1100  
RELEASED BY [Signature] DATE 10/12/95 TIME 11:55 RECEIVED BY [Signature] DATE 10/12/95 TIME 1155  
RELEASED BY \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_ RECEIVED BY \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_

SHIPPED VIA \_\_\_\_\_ DATE SENT \_\_\_\_\_ TIME SENT \_\_\_\_\_ COOLER # \_\_\_\_\_