

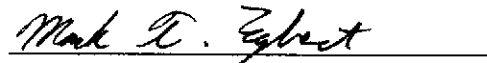
A Report Prepared for

California Regional Water Quality Control Board  
San Francisco Bay Region  
1800 Harrison Street, Suite 700  
Oakland, California 94612

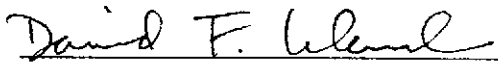
**REPORT OF QUARTERLY MONITORING  
SEPTEMBER 1990  
CHINATOWN REDEVELOPMENT PROJECT AREA  
OAKLAND, CALIFORNIA**

HLA Job No. 9382,040.02

by



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TABLE OF CONTENTS

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LIST OF TABLES.....	iii
LIST OF ILLUSTRATIONS.....	iii
INTRODUCTION .....	1
QUARTERLY GROUNDWATER MONITORING .....	2
CHEMICAL ANALYSES .....	3
RESULTS .....	4
Water Levels .....	4
Chemical Analyses .....	4
RECOMMENDATIONS AND PLANNED ACTIVITIES: OCTOBER THROUGH DECEMBER 1990 .....	5
REFERENCES .....	6

TABLES

ILLUSTRATIONS

APPENDIX     RESULTS OF LABORATORY ANALYSES OF  
                    GROUNDWATER SAMPLES

DISTRIBUTION

## LIST OF TABLES

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Table 1	Water-Level Elevations - March 1989 through September 1990
Table 2	Results of Organic Chemical Analyses of Groundwater Samples from Monitoring Wells

## LIST OF ILLUSTRATIONS

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Plate 1	Plan of Sites and Vicinity and Water-Level Contour Map - September 1990
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## INTRODUCTION

This report presents results of quarterly groundwater monitoring conducted on September 12 and 13, 1990, by Harding Lawson Associates (HLA) at the Chinatown Redevelopment Project Area in the vicinity of the Pacific Renaissance Plaza (PRP) site, Oakland, California (Plate 1). Quarterly sampling of selected monitoring wells was proposed in Section 2.3.2 of HLA's *Investigation Plan, Hydrocarbons in Offsite Groundwater (HLA, 1990a)*, dated June 8, 1990, and was to occur during the dewatering period originally scheduled to begin in June 1990. Although the dewatering system has not been activated because of construction delays, quarterly groundwater monitoring was performed to provide continuity of data until the start of dewatering. Dewatering is currently scheduled to begin in November 1990.

Groundwater samples were collected and water-level measurements recorded to monitor groundwater quality and hydraulic conditions in the vicinity of the PRP site. Monitoring Wells MW-10, MW-11, and MW-17 were sampled during the September round but have since been destroyed during excavation at the PRP site. Subsurface conditions and soil remediation activities are described or referenced in HLA's July 9, 1990 *Report of System Monitoring, March Through May 1990, Soil Treatment System (HLA, 1990b)*. Installation and initial sampling of Monitoring Wells MW-21, MW-22, and MW-23 are described in HLA's October 4 letter report titled *Installation of Monitoring Wells MW-21, MW-22, and MW-23, Chinatown Redevelopment Project Area, Oakland, California (HLA, 1990c)*.

## QUARTERLY GROUNDWATER MONITORING

Monitoring Wells MW-7, MW-10, MW-11, MW-12, and MW-17 through MW-23 were sampled in September 1990. Standard HLA equipment decontamination protocol was followed prior to sampling. All HLA employees performing field work were trained in safety procedures and used Level D personal protective equipment.

Water-level measurements were obtained prior to purging and sampling the wells. At least three well volumes were purged from each well prior to sampling; purge water was stored in 55-gallon drums onsite to await proper disposal. Samples were collected using a stainless steel bailer. After being decanted into 40-milliliter sample bottles, samples were labeled and stored on ice until delivery to the laboratory under chain of custody.

## CHEMICAL ANALYSES

Groundwater samples were submitted to Pace Laboratories, Inc., (PACE), Novato, California, for chemical analysis. Each sample was analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Test Method 8020.

## RESULTS

### Water Levels

Water-level data measured on September 12 and 13 are presented in Table 1 along with historical water-level data; water-level contours are shown on Plate 1. Compared to the most recent water-level measurements prior to September 1990 (August 3 for most wells, and August 27 for Wells MW-21 through MW-23), water levels increased in nine of the eleven wells; the increases ranged from 0.08 foot in MW-18 to 2.88 feet in MW-19. At Wells MW-10 and MW-12, water-level elevations decreased 0.20 foot and 2.93 feet, respectively. Water-level elevations recorded at Wells MW-12 and MW-19 for August 3 do not appear consistent with other measurements at these locations; recorded changes from August to September may not be indicative of actual changes because of possible measurement error.

### Chemical Analyses

Results of BTEX analyses of the groundwater samples collected on September 12 and 13 and historical groundwater chemistry data for BTEX and TPH as gasoline are presented in Table 2. Laboratory reports for the BTEX analyses of the September groundwater samples are presented in the Appendix.

All four BTEX compounds were detected in the groundwater samples from Wells MW-10, MW-11, MW-17, and MW-19. The concentrations measured at each well generally fell within the range of results collected during the last six months of operation of the biotreatment system (December 1989 through May 1990). At Wells MW-7, MW-12, and MW-18, one BTEX compound was detected. BTEX compounds were not detected in samples from Wells MW-20, MW-21, MW-22, and MW-23.

**RECOMMENDATIONS AND PLANNED ACTIVITIES:  
OCTOBER THROUGH DECEMBER 1990**

Installation of dewatering wells is scheduled for the week of November 12, 1990. Startup testing and monitoring of the groundwater treatment system is anticipated for the latter part of the week of November 12.

The next quarterly groundwater monitoring and sampling round is scheduled for December 1990; Monitoring Wells MW-7, MW-12, and MW-18 through MW-23 will be sampled. Water levels will be measured for these wells and for Monitoring Wells MW-2, MW-3, MW-6, and MW-8.

Analysis of groundwater for TPH as gasoline (EPA Test Method 8015) was proposed in the *Investigation Plan (HLA, 1990a)*. However, no TPH has been detected in any offsite well monitored except MW-19. On this basis, and because there is no action level for TPH, HLA recommends deleting this analysis from the quarterly groundwater monitoring program.

To streamline reporting of monthly monitoring of the groundwater treatment system and quarterly groundwater monitoring, HLA proposes consolidating the National Pollution Discharge Elimination System (NPDES) monitoring report with this quarterly report into a single report that would be submitted by the fifteenth of the month following the end of each quarter.



## REFERENCES

- Harding Lawson Associates, 1990a. *Investigation Plan, Hydrocarbons in Offsite Groundwater, Chinatown Redevelopment Project Area, Oakland, California*. June 8.
- \_\_\_\_\_, 1990b. *Report of System Monitoring, March through May 1990, Soil Treatment System, Pacific Renaissance Plaza, Oakland, California*. July 9.
- \_\_\_\_\_, 1990c. *Installation of Monitoring Wells MW-21, MW-22, and MW-23, Chinatown Redevelopment Project Area, Oakland, California*. October 4.

**LARGE  
MAP  
REMOVED**

Well No.	MW-2		MW-3		MW-6		MW-7		MW-8		MW-10		MW-11		MW-12	
	GROUND SURFACE 40.05	TOP OF CASING 39.55	GROUND SURFACE 39.02	TOP OF CASING 38.35	GROUND SURFACE 39.95	TOP OF CASING 39.59	GROUND SURFACE 39.35	TOP OF CASING 39.10	GROUND SURFACE 40.63	TOP OF CASING 40.47	GROUND SURFACE 36.74	TOP OF CASING 36.35	GROUND SURFACE 37.98	TOP OF CASING 37.55	GROUND SURFACE 37.70	TOP OF CASING 37.00
DATE	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation
02-Mar-89	-	-	-	-	-	-	-	-	-	-	27.23	9.12	28.98	8.57	28.46	8.54
11-Mar-89	-	-	-	-	-	-	-	-	-	-	23.59	12.76	28.93	8.62	28.22	8.78
18-Mar-89	-	-	32.20	6.15	-	-	31.52	7.58	-	-	23.17	13.18	27.79	9.76	27.85	9.15
25-Mar-89	-	-	27.76	10.59	-	-	30.08	9.02	-	-	23.19	13.16	28.10	9.45	27.47	9.53
30-Mar-89	-	-	-	-	-	-	-	-	-	-	23.56	12.79	28.48	9.07	27.43	9.57
04-Apr-89	28.52	11.03	27.56	10.79	28.00	11.59	29.00	10.10	30.45	10.02	23.34	13.01	28.61	8.94	28.44	8.56
08-Apr-89	-	-	-	-	-	-	-	-	-	-	23.50	12.85	29.31	8.24	-	-
11-Apr-89	-	-	-	-	-	-	-	-	-	-	23.64	12.71	29.45	8.10	-	-
12-Apr-89	28.59	10.96	27.63	10.72	27.17	12.42	28.96	10.14	30.45	10.02	-	-	-	-	28.64	8.36
18-Apr-89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19-Apr-89	-	-	-	-	-	-	28.13	10.97	-	-	23.41	12.94	26.77	10.78	26.98	10.02
25-Apr-89	-	-	-	-	-	-	-	-	-	-	23.39	12.96	29.18	8.37	27.47	9.53
02-May-89	28.71	10.84	26.84	11.51	27.49	12.10	28.54	10.56	29.80	10.67	23.54	12.81	28.44	9.11	27.36	9.64
09-May-89	27.99	11.56	26.58	11.77	27.34	12.25	28.34	10.76	29.68	10.79	23.86	12.49	27.09	10.46	26.85	10.15
17-May-89	27.80	11.75	26.62	11.73	27.11	12.48	28.16	10.94	29.27	11.20	23.63	12.72	28.88	8.67	27.63	9.37
22-May-89	27.52	12.03	28.17	10.18	26.89	12.70	27.69	11.41	28.68	11.79	23.54	12.81	28.56	8.99	27.62	9.38
31-May-89	27.99	11.56	26.28	12.07	27.11	12.48	28.28	10.82	29.31	11.16	24.54	11.81	29.18	8.37	28.16	8.84
05-Jun-89	27.60	11.95	25.83	12.52	27.00	12.59	28.18	10.92	29.41	11.06	23.22	13.13	28.92	8.63	28.08	8.92
14-Jun-89	27.58	11.97	26.00	12.35	26.88	12.71	28.09	11.01	29.20	11.27	22.66	13.69	28.66	8.89	27.97	9.03
19-Jun-89	-	-	-	-	-	-	-	-	-	-	22.74	13.61	28.20	9.35	27.47	9.53
28-Jun-89	-	-	27.88	10.47	-	-	-	-	-	-	22.66	13.69	28.57	8.98	27.83	9.17
05-Jul-89	27.34	12.21	25.92	12.43	26.66	12.93	27.68	11.42	28.99	11.48	23.41	12.94	27.61	9.94	27.10	9.90
21-Jul-89	-	-	24.73	13.62	-	-	27.60	11.50	-	-	23.04	13.31	27.58	9.97	27.03	9.97
28-Jul-89	-	-	-	-	-	-	-	-	-	-	23.03	13.32	27.48	10.07	-	-
01-Aug-89	27.22	12.33	26.67	11.68	26.61	12.98	27.44	11.66	28.79	11.68	23.19	13.16	26.64	10.91	26.35	10.65
09-Aug-89	27.18	12.37	25.91	12.44	26.57	13.02	27.40	11.70	28.74	11.73	21.77	14.58	27.17	10.38	26.85	10.15
15-Aug-89	27.24	12.31	25.95	12.40	27.63	11.96	27.62	11.48	28.79	11.68	22.86	13.49	27.16	10.39	26.98	10.02
30-Aug-89	27.21	12.34	-	-	26.60	12.99	27.52	11.58	28.66	11.81	23.20	13.15	26.87	10.68	26.44	10.56
06-Sep-89	27.22	12.33	25.93	12.42	26.61	12.98	27.38	11.72	28.77	11.70	23.78	12.57	26.92	10.63	26.33	10.67
28-Sep-89	-	-	-	-	-	-	-	-	-	-	22.40	13.95	28.26	9.29	-	-
03-Oct-89	26.71	12.84	25.24	13.11	26.30	13.29	27.35	11.75	28.29	12.18	21.60	14.75	27.30	10.25	26.85	10.15
01-Nov-89	26.49	13.06	25.07	13.28	26.12	13.47	26.96	12.14	28.14	12.33	22.57	13.78	28.12	9.43	27.28	9.72
20-Nov-89	26.28	13.27	24.91	13.44	25.96	13.63	26.80	12.30	28.00	12.47	22.30	14.05	27.43	10.12	26.73	10.27
04-Dec-89	26.18	13.37	24.76	13.59	25.88	13.71	26.87	12.23	27.91	12.56	20.89	15.46	27.59	9.96	26.82	10.18
21-Dec-89	26.40	13.15	26.05	12.30	25.10	14.49	26.93	12.17	27.98	12.49	22.07	14.28	26.38	11.17	26.36	10.64
02-Jan-90	26.40	13.15	25.08	13.27	25.00	14.59	26.96	12.14	27.91	12.56	22.32	14.03	26.63	10.92	26.79	10.21
31-Jan-90	26.04	13.51	24.74	13.61	25.80	13.79	26.61	12.49	27.70	12.77	21.76	14.59	26.33	11.22	26.22	10.78
27-Feb-90	26.02	13.53	24.68	13.67	25.69	13.90	26.54	12.56	27.59	12.88	21.65	14.70	26.39	11.16	26.37	10.63
11-Apr-90	25.89	13.66	24.57	13.78	25.62	13.97	26.51	12.59	27.46	13.01	20.33	16.02	26.37	11.18	26.32	10.68
18-May-90	25.84	13.71	24.51	13.84	25.63	13.96	25.94	13.16	27.35	13.12	20.52	15.83	24.89	12.66	24.90	12.10
24-May-90	-	-	-	-	-	-	26.46	12.64	-	-	22.37	13.98	27.65	9.90	26.75	10.25
30-May-90	25.86	13.69	24.67	13.68	25.56	14.03	26.69	12.41	27.34	13.13	23.24	13.11	27.96	9.59	27.07	9.93
06-Jun-90	25.78	13.77	24.50	13.85	25.55	14.04	26.11	12.99	27.39	13.08	21.68	14.67	25.24	12.31	24.92	12.08
14-Jun-90	25.70	13.85	24.38	13.97	25.48	14.11	25.73	13.37	27.31	13.16	21.72	14.63	24.76	12.79	24.44	12.56
03-Aug-90	25.59	13.96	25.33	13.02	25.37	14.22	25.38	13.72	27.02	13.45	22.15	14.20	24.67	12.88	21.15	15.85
27-Aug-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12-Sep-90	-	-	-	-	-	-	-	-	-	-	22.35	14.00	24.58	12.97	24.08	12.92
13-Sep-90	-	-	-	-	-	-	25.15	13.95	-	-	-	-	-	-	-	-

Note: Elevations are in feet above mean sea level (MSL). Depth to water measured in feet from top of casing.

Well No.	MW-17		MW-18		MW-19		MW-20		MW-21		MW-22		MW-23	
	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING
	39.16	40.16	36.52	35.88	37.15	36.62	38.32	37.86	38.67	38.08	37.70	37.34	34.68	34.23
DATE	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation
02-Mar-89	-	-	26.66	9.22	-	-	-	-	-	-	-	-	-	-
11-Mar-89	23.45	16.71	26.28	9.60	-	-	-	-	-	-	-	-	-	-
18-Mar-89	23.35	16.81	26.18	9.70	-	-	-	-	-	-	-	-	-	-
25-Mar-89	23.35	16.81	25.70	10.18	-	-	-	-	-	-	-	-	-	-
30-Mar-89	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04-Apr-89	24.18	15.98	26.10	9.78	-	-	-	-	-	-	-	-	-	-
08-Apr-89	24.28	15.88	25.82	10.06	-	-	-	-	-	-	-	-	-	-
11-Apr-89	24.83	15.33	-	-	-	-	-	-	-	-	-	-	-	-
12-Apr-89	-	-	26.16	9.72	-	-	-	-	-	-	-	-	-	-
18-Apr-89	24.64	15.52	-	-	-	-	-	-	-	-	-	-	-	-
19-Apr-89	-	-	25.89	9.99	-	-	-	-	-	-	-	-	-	-
25-Apr-89	24.57	15.59	27.91	7.97	-	-	-	-	-	-	-	-	-	-
02-May-89	22.71	17.45	25.76	10.12	-	-	-	-	-	-	-	-	-	-
09-May-89	23.89	16.27	25.38	10.50	-	-	-	-	-	-	-	-	-	-
17-May-89	24.85	15.31	25.59	10.29	-	-	-	-	-	-	-	-	-	-
22-May-89	25.28	14.88	25.27	10.61	-	-	-	-	-	-	-	-	-	-
31-May-89	24.91	15.25	26.04	9.84	-	-	-	-	-	-	-	-	-	-
05-Jun-89	22.62	17.54	25.98	9.90	-	-	-	-	-	-	-	-	-	-
14-Jun-89	20.44	19.72	25.89	9.99	-	-	-	-	-	-	-	-	-	-
19-Jun-89	19.72	20.44	25.91	9.97	-	-	-	-	-	-	-	-	-	-
28-Jun-89	20.89	19.27	25.76	10.12	-	-	-	-	-	-	-	-	-	-
05-Jul-89	21.56	18.60	25.68	10.20	-	-	-	-	-	-	-	-	-	-
21-Jul-89	21.52	18.64	25.58	10.30	-	-	-	-	-	-	-	-	-	-
28-Jul-89	20.25	19.91	-	-	-	-	-	-	-	-	-	-	-	-
01-Aug-89	21.15	19.01	25.32	10.56	-	-	-	-	-	-	-	-	-	-
09-Aug-89	21.59	18.57	25.31	10.57	-	-	-	-	-	-	-	-	-	-
15-Aug-89	21.21	18.95	25.49	10.39	-	-	-	-	-	-	-	-	-	-
30-Aug-89	23.24	16.92	25.37	10.51	-	-	-	-	-	-	-	-	-	-
06-Sep-89	22.75	17.41	25.24	10.64	-	-	-	-	-	-	-	-	-	-
28-Sep-89	23.34	16.82	-	-	-	-	-	-	-	-	-	-	-	-
03-Oct-89	23.65	16.51	25.38	10.50	-	-	-	-	-	-	-	-	-	-
01-Nov-89	23.98	16.18	25.68	10.20	-	-	-	-	-	-	-	-	-	-
20-Nov-89	23.91	16.25	25.46	10.42	-	-	-	-	-	-	-	-	-	-
04-Dec-89	23.31	16.85	25.45	10.43	-	-	-	-	-	-	-	-	-	-
21-Dec-89	23.53	16.63	25.32	10.56	22.32	14.30	26.63	11.23	-	-	-	-	-	-
02-Jan-90	23.85	16.31	25.37	10.51	22.60	14.02	26.80	11.06	-	-	-	-	-	-
31-Jan-90	23.71	16.45	25.10	10.78	22.20	14.42	26.44	11.42	-	-	-	-	-	-
27-Feb-90	24.29	15.87	25.19	10.69	22.04	14.58	26.45	11.41	-	-	-	-	-	-
11-Apr-90	-	-	25.09	10.79	21.23	15.39	26.44	11.42	-	-	-	-	-	-
18-May-90	24.69	15.47	24.62	11.26	21.38	15.24	25.61	12.25	-	-	-	-	-	-
24-May-90	27.78	12.38	25.12	10.76	22.28	14.34	26.31	11.55	-	-	-	-	-	-
30-May-90	28.54	11.62	25.33	10.55	22.91	13.71	26.68	11.18	-	-	-	-	-	-
06-Jun-90	26.55	13.61	24.78	11.10	22.13	14.49	25.90	11.96	-	-	-	-	-	-
14-Jun-90	26.21	13.95	24.53	11.35	22.04	14.58	25.43	12.43	-	-	-	-	-	-
03-Aug-90	26.40	13.76	24.41	11.47	25.32	11.30	25.01	12.85	27.60	10.48	-	-	-	-
27-Aug-90	-	-	-	-	-	-	-	-	27.52	10.56	22.93	14.41	22.45	11.78
12-Sep-90	24.70	15.46	-	-	-	-	24.06	13.80	27.38	10.70	-	-	-	-
13-Sep-90	-	-	24.33	11.55	22.44	14.18	-	-	-	-	22.78	14.56	21.27	12.96

Note: Elevations are in feet above mean sea level (MSL). Depth to water measured in feet from top of casing.

Table 2. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Purgeable Aromatics (EPA Method 8020) Petroleum Hydrocarbons (EPA Method 8015)						
WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
MW-7						
	04-Apr-89	ND	0.0007	0.0010	0.0012	ND
	03-May-89	ND	0.0012	0.0018	0.0048	0.27
	06-Jun-89	0.001	0.001	0.0022	0.0011	0.4
	07-Jul-89	0.0002	0.001	0.00034	0.0059	0.56
	02-Aug-89	ND	0.00152	0.0054	0.0059	0.7
	07-Sep-89	ND	ND	ND	0.0015	0.59
	05-Oct-89	ND	0.0011	0.0006	0.0013	0.73
	02-Nov-89	0.0002	0.001	0.0055	0.0036	0.63
	06-Dec-89	0.0006	0.0087	0.0059	0.0036	0.32
	03-Jan-90	0.0007	0.0007	0.0006	0.0013	0.18
	01-Feb-90	ND	0.0009	ND	0.0003	ND
	28-Feb-90	ND	0.0006	0.0004	0.0052	0.09
	11-Apr-90	ND	0.0007	0.0033	0.0029	0.130
	18-May-90	ND	0.0008	0.0014	0.0008	0.43
	13-Sep-90	ND	0.0019	ND	ND	NT
MW-10						
	02-Mar-89	NT	NT	NT	NT	2.8
	04-Apr-89	1.6	0.76	0.13	0.68	4.2
	01-May-89	1.2	0.67	0.16	0.67	3.4
	06-Jun-89 a	0.66/0.64	0.14/0.14	0.11/0.10	0.24/0.14	4.8/4.3
	06-Jul-89	2.0	2.2	0.54	1.8	12
	02-Aug-89 a	8.8/8.6	1.7/1.7	0.36/0.34	1.5/1.5	19/20
	06-Sep-89 a	8.1/11	5.2/6.3	0.82/0.93	5.5/6.1	36/34
	04-Oct-89	40	79	11	94	620
	01-Nov-89	21	10	2.0	12	95
	05-Dec-89	21	14	2.6	17	90
	03-Jan-90	17	2.2	2.4	9.1	70
	31-Jan-90	8.1	1.2	0.51	1.6	25
	28-Feb-90	2.5	0.13	0.029	0.7	4.9
	12-Sep-90	3.6	0.74	1.600	3.7	NT
MW-11						
	02-Mar-89	NT	NT	NT	NT	15
	04-Apr-89	2.5	3.8	0.17	2.4	10
	19-Apr-89	3.8	2.8	ND	5.7	14
	01-May-89	1.3	1.7	0.069	1.7	5.2
	07-Jun-89	0.082	0.097	0.045	0.167	12
	06-Jul-89 a	2.1/2.3	2.5/2.8	0.14/0.16	2.6/3.0	15/15
	02-Aug-89	7.2	7.5	0.26	7.1	37
	06-Sep-89	5.0	6.5	0.41	5.2	47
	04-Oct-89	3.3	2.8	0.15	2.5	11
	01-Nov-89	2.1	2.8	0.11	1.8	13
	05-Dec-89	1.3	1.5	0.084	1.3	7.6
	03-Jan-90	0.11	0.27	0.017	0.53	2.7
	31-Jan-90	0.072	0.18	0.0052	0.31	1.7
	28-Feb-90	0.17	0.43	0.014	0.48	1.8
	12-Sep-90	0.97	0.019	0.0064	0.057	NT

Table 2. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Purgeable Aromatics (EPA Method 8020) Petroleum Hydrocarbons (EPA Method 8015)						
WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
MW-12						
	15-Feb-89	ND	ND	ND	ND	ND
	03-Mar-89	NT	NT	NT	NT	ND
	05-Apr-89	0.0014	0.0023	ND	0.0054	ND
	02-May-89	0.026	0.0033	ND	0.0063	0.10
	07-Jun-89	0.034	0.0037	ND	0.012	0.18
	06-Jul-89	0.029	0.0025	ND	0.0059	0.12
	02-Aug-89	0.023	0.002	ND	0.005	ND
	07-Sep-89 a	0.051/0.059	0.0016/0.0022	ND/ND	0.0049/0.0058	ND/ND
	05-Oct-89 a	0.037/0.040	0.0032/0.0031	ND/ND	0.0086/0.0094	ND/ND
	02-Nov-89	0.0056	0.0011	ND	0.0019	0.071
	06-Dec-89	0.0062	0.0012	ND	0.0017	0.06
	03-Jan-90	0.0086	0.0010	ND	0.0012	0.09
	01-Feb-90 a	0.0018/0.0024	0.0010/0.0004	ND/ND	0.0005/0.0004	ND/ND
	01-Mar-90	0.0016	0.0014	ND	0.0003	ND
	11-Apr-90	0.0066	0.0174	0.0015	0.0116	0.147
	18-May-90	ND	0.0009	ND	ND	ND
	12-Sep-90	ND	ND	ND	0.0002	NT
MW-17						
	04-Apr-89	3.1	2.9	0.27	3.9	12
	02-May-89	1.2	1.0	0.11	1.4	3.9
	07-Jun-89	1.2	1.2	ND	1.3	6.3
	05-Jul-89	3.0	3.3	2.7	3.9	18
	02-Aug-89	4.8	9.5	0.63	14	47
	03-Aug-89	5.1	6.1	0.73	12	NT
	06-Sep-89	2.8	4.5	0.32	8.4	21
	04-Oct-89	0.47	0.092	0.018	1.0	2.8
	01-Nov-89	0.19	0.011	0.11	0.18	0.93
	05-Dec-89	0.16	0.036	0.0071	0.13	0.76
	03-Jan-90	0.056	0.0030	0.0010	0.022	0.25
	31-Jan-90	0.13	0.013	0.0014	0.050	0.30
	01-Mar-90 a	0.25/0.24	0.073/0.071	0.0069/0.0066	0.069/0.065	0.59/0.56
	12-Sep-90	0.30	0.29	0.075	0.40	NT

Table 2. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Purgeable Aromatics (EPA Method 8020) Petroleum Hydrocarbons (EPA Method 8015)						
WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
MW-18	15-Feb-89	ND	ND	ND	ND	ND
	03-Mar-89	NT	NT	NT	NT	ND
	05-Apr-89	ND	ND	ND	ND	ND
	02-May-89	ND	ND	ND	ND	ND
	07-Jun-89	ND	ND	ND	ND	ND
	06-Jul-89	ND	ND	ND	ND	ND
	02-Aug-89	ND	ND	ND	ND	ND
	06-Sep-89	ND	ND	ND	ND	ND
	05-Oct-89	ND	ND	ND	ND	ND
	01-Nov-89	ND	ND	ND	ND	ND
	06-Dec-89	ND	0.0009	ND	0.0013	ND
	02-Jan-90	0.016	0.0080	0.0014	0.0098	0.10
	01-Feb-90	ND	ND	ND	ND	ND
	01-Mar-90	0.0003	ND	ND	0.0002	ND
	11-Apr-90	0.0004	0.0006	0.0005	0.0003	ND
	18-May-90	ND	ND	ND	ND	ND
	13-Sep-90	0.0027	ND	ND	ND	NT
MW-19	15-Dec-89	5.0	0.30	0.078	0.61	12
	03-Jan-90	3.0	0.46	0.12	1.1	13
	01-Feb-90	1.1	0.022 LT	0.0040	0.032	1.9
	01-Mar-90	4.2	0.92	0.24	0.82	9.2
	11-Apr-90	3.8	1.1	0.82	0.34	10
	18-May-90	5.6	0.75	0.70	0.78	11
	13-Sep-90	1.4	1.2	0.35	1.6	NT
MW-20	15-Dec-89	ND	ND	ND	ND	ND
	03-Jan-90	0.0004	0.0004	ND	0.0008	ND
	01-Feb-90	ND	0.0014	ND	0.0005	ND
	28-Feb-90	ND	ND	ND	0.0005	ND
	11-Apr-90	0.0028	0.0110	0.0011	0.0066	ND
	18-May-90	ND	ND	ND	ND	ND
	12-Sep-90	ND	ND	ND	ND	NT
MW-21	27-Aug-90	ND	ND	ND	ND	NT
	12-Sep-90	ND	ND	ND	ND	NT
MW-22	27-Aug-90	ND	ND	ND	ND	NT
	13-Sep-90	ND	ND	ND	ND	NT
MW-23	27-Aug-90	ND	ND	ND	ND	NT
	13-Sep-90	ND	ND	ND	ND	NT

Table 2. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Purgeable Aromatics (EPA Method 8020)  
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
BLANK						
	05-Apr-89	0.5	ND	ND	ND	ND
	01-May-89	ND	ND	ND	ND	ND
	06-Jun-89	ND	ND	ND	ND	ND
	06-Jul-89	ND	ND	ND	ND	ND
	01-Aug-89	ND	ND	ND	ND	ND
	02-Aug-89	ND	ND	ND	ND	ND
	03-Aug-89	ND	ND	ND	ND	ND
	06-Sep-89	ND	ND	ND	ND	ND
	07-Sep-89	ND	ND	ND	ND	ND
	04-Oct-89	ND	ND	ND	ND	ND
	02-Nov-89	ND	ND	ND	ND	ND
	05-Dec-89	ND	ND	ND	ND	ND
	03-Jan-90	ND	0.0006	ND	0.0017	ND
	13-Sep-90	ND	ND	ND	ND	NT

## NOTES:

LOD: Limit of Detection.

ND: Not detected at or above LOD.

NT: Not tested.

\*: LOD Changed to 0.0002 on 01-May-89

\*\* : LOD Changed to 0.05 on 01-May-89

@: Two values indicate results of duplicate analyses.

LT: Less than the concentration indicated.

Organic constituents reported in milligrams per liter.

Analyses performed by PACE Laboratories, Inc.



**Appendix**

**RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES**

**REPORT OF LABORATORY ANALYSIS**

November 12, 1990

Mr. David Leland  
Harding Lawson Associates  
200 Rush Landing Road  
Novato, CA 94945

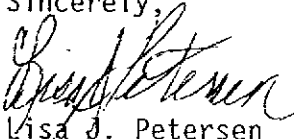
RE: PACE Project No. 400912.508  
PRP Monitoring

Dear Mr. Leland:

Enclosed is the revised report of laboratory analyses for samples received September 12, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

  
Lisa J. Petersen  
Project Manager

Enclosures



# REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates  
 200 Rush Landing Road  
 Novato, CA 94945

November 12, 1990  
 PACE Project  
 Number: 400912508  
 WPPLAB No. 1710

Attn: Mr. David Leland

PRP Monitoring

PACE Sample Number:		70 0807549	70 0807557	70 0807565
Date Collected:		09/12/90	09/12/90	09/12/90
Date Received:		09/12/90	09/12/90	09/12/90
Parameter	Units	MDL	9041MW10	9041MW17
			9041MW12	

## ORGANIC ANALYSIS

### AROMATIC VOLATILE COMPOUNDS EPA 8020

Benzene	ug/L	0.2	3600	300	ND
Toluene	ug/L	0.2	740	290	ND
Chlorobenzene	ug/L	0.2	LT 10	LT 2.0	ND
Ethylbenzene	ug/L	0.2	1600	75	ND
Xylenes, Total	ug/L	0.2	3700	400	0.2
1,3-Dichlorobenzene	ug/L	0.2	LT 10	LT 2.0	ND
1,4-Dichlorobenzene	ug/L	0.2	LT 10	LT 2.0	ND
1,2-Dichlorobenzene	ug/L	0.2	LT 10	LT 2.0	ND
Fluorobenzene (Surrogate Recovery)			72%	80%	101%

MDL Method Detection Limit  
 ND Not detected at or above the MDL.  
 LT Less than.

**REPORT OF LABORATORY ANALYSIS**

Mr. David Leland  
 Page 2

November 12, 1990  
 PACE Project  
 Number: 400912508

PRP Monitoring

PACE Sample Number:		70 0807573	70 0807581	70 0807590
Date Collected:		09/12/90	09/12/90	09/12/90
Date Received:		09/12/90	09/12/90	09/12/90
Parameter	Units	MDL	9041MW11	9041MW20 9041MW21

ORGANIC ANALYSIS

AROMATIC VOLATILE COMPOUNDS EPA 8020

Benzene	ug/L	0.2	970	ND	ND
Toluene	ug/L	0.2	19	ND	ND
Chlorobenzene	ug/L	0.2	ND	ND	ND
Ethylbenzene	ug/L	0.2	6.4	ND	ND
Xylenes, Total	ug/L	0.2	57	ND	ND
1,3-Dichlorobenzene	ug/L	0.2	ND	ND	ND
1,4-Dichlorobenzene	ug/L	0.2	ND	ND	ND
1,2-Dichlorobenzene	ug/L	0.2	ND	ND	ND
Fluorobenzene (Surrogate Recovery)			100%	95%	102%

MDL Method Detection Limit  
 ND Not detected at or above the MDL.

Mr. David Leland  
Page 3

November 12, 1990  
PACE Project

Number: 400912508

PRP Monitoring

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my supervision.

*Mostafa S. Dehdashti for*

Ruth J. Siegmund  
Organic Chemistry Manager

**REPORT OF LABORATORY ANALYSIS**

November 12, 1990

Mr. David Leland  
Harding Lawson Associates  
200 Rush Landing Road  
Novato, CA 94945

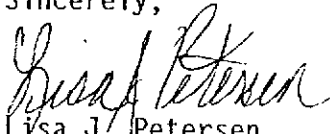
RE: PACE Project No. 400913.505  
PRP Monitoring

Dear Mr. Leland:

Enclosed is the revised report of laboratory analyses for samples received September 13, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

  
Lisa J. Petersen  
Project Manager

Enclosures



# REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates  
 200 Rush Landing Road  
 Novato, CA 94945

November 12, 1990  
 PACE Project  
 Number: 400913505  
 WPPLAB No. 1710

Attn: Mr. David Leland

PRP Monitoring

PACE Sample Number:	70 0808138	70 0808146	70 0808154		
Date Collected:	09/13/90	09/13/90	09/13/90		
Date Received:	09/13/90	09/13/90	09/13/90		
Parameter	Units	MDL	9041MW22	9041MW19	9041MW23

## ORGANIC ANALYSIS

### AROMATIC VOLATILE COMPOUNDS EPA 8020

Benzene	ug/L	0.2	ND	-	ND
Toluene	ug/L	0.2	ND	-	ND
Chlorobenzene	ug/L	0.2	ND	-	ND
Ethylbenzene	ug/L	0.2	ND	-	ND
Xylenes, Total	ug/L	0.2	ND	-	ND
1,3-Dichlorobenzene	ug/L	0.2	ND	-	ND
1,4-Dichlorobenzene	ug/L	0.2	ND	-	ND
1,2-Dichlorobenzene	ug/L	0.2	ND	-	ND
Fluorobenzene (Surrogate Recovery)			98%	-	98%

### AROMATIC VOLATILE COMPOUNDS EPA 8020

Benzene	ug/L	0.2	-	1400	-
Toluene	ug/L	0.2	-	1200	-
Chlorobenzene	ug/L	0.2	-	LT 10	-
Ethylbenzene	ug/L	0.2	-	350	-
Xylenes, Total	ug/L	0.2	-	1600	-
1,3-Dichlorobenzene	ug/L	0.2	-	LT 10	-
1,4-Dichlorobenzene	ug/L	0.2	-	LT 10	-
1,2-Dichlorobenzene	ug/L	0.2	-	LT 10	-
Fluorobenzene (Surrogate Recovery)			-	82%	-

MDL Method Detection Limit  
 ND Not detected at or above the MDL.  
 LT Less than.

**REPORT OF LABORATORY ANALYSIS**

Mr. David Leland  
 Page 2

November 12, 1990  
 PACE Project  
 Number: 400913505

PRP Monitoring

PACE Sample Number:		70 0808162	70 0808170	70 0808189	
Date Collected:		09/13/90	09/13/90	09/13/90	
Date Received:		09/13/90	09/13/90	09/13/90	
Parameter	Units	MDL	9041MW18	9041MW07	90410000

ORGANIC ANALYSIS

AROMATIC VOLATILE COMPOUNDS EPA 8020

Benzene	ug/L	0.2	-	-	-
Toluene	ug/L	0.2	-	-	ND
Chlorobenzene	ug/L	0.2	-	-	ND
Ethylbenzene	ug/L	0.2	-	-	ND
Xylenes, Total	ug/L	0.2	-	-	ND
1,3-Dichlorobenzene	ug/L	0.2	-	-	ND
1,4-Dichlorobenzene	ug/L	0.2	-	-	ND
1,2-Dichlorobenzene	ug/L	0.2	-	-	ND
Fluorobenzene (Surrogate Recovery)			-	-	98%

AROMATIC VOLATILE COMPOUNDS EPA 8020

Benzene	ug/L	0.2	2.7	ND	-
Toluene	ug/L	0.2	ND	1.9	-
Chlorobenzene	ug/L	0.2	ND	ND	-
Ethylbenzene	ug/L	0.2	ND	ND	-
Xylenes, Total	ug/L	0.2	ND	ND	-
1,3-Dichlorobenzene	ug/L	0.2	ND	ND	-
1,4-Dichlorobenzene	ug/L	0.2	ND	ND	-
1,2-Dichlorobenzene	ug/L	0.2	ND	ND	-
Fluorobenzene (Surrogate Recovery)			106%	91%	-

MDL Method Detection Limit  
 ND Not detected at or above the MDL.



Mr. David Leland  
Page 3

November 12, 1990  
PACE Project  
Number: 400913505

PRP Monitoring

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my supervision.

*Mostafa S. Dehdushti for*  
Ruth J. Siegmund  
Organic Chemistry Manager

**DISTRIBUTION**  
**REPORT OF QUARTERLY MONITORING**  
**SEPTEMBER 1990**  
**CHINATOWN REDEVELOPMENT PROJECT AREA**  
**OAKLAND, CALIFORNIA**  
**November 12, 1990**

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1 copy:	California Regional Water Quality Control Board San Francisco Bay Region 1800 Harrison Street, Suite 700 Oakland, California 94612  Attention: Mr. Steve Luquire	2
1 copy:	Alameda County Department of Environmental Health 80 Swan Way, Room 200 Oakland, California 94621  Attention: Mr. Lowell Miller	3
2 copies:	Redevelopment Agency of the City of Oakland 1333 Broadway, 9th Floor Oakland, California 94612  Attention: Mr. Peter Chen	4-5

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(continued)

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373 9th Street, Suite 502  
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Attention: Mr. Fred Warren

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QUALITY CONTROL REVIEWER

  
\_\_\_\_\_  
Tamara L. Williams  
Geologist - 3954



November 16, 1990

09382,040.02

California Regional Water Quality Control Board  
San Francisco Bay Region  
1800 Harrison Street, 7th Floor  
Oakland, California 94612

Attention : Mr. Donald Dalke

Dear Mr. Dalke:

06  
11/16/90  
Report of Quarterly Monitoring: September 1990  
Water Level Controls during Dewatering  
Chinatown Redevelopment Project Area  
Oakland, California

This letter transmits Harding Lawson Associates' (HLA) *Report of Quarterly Monitoring, September 1990, Chinatown Redevelopment Project Area, Oakland, California* dated November 12, 1990 and prepared on behalf of the Redevelopment Agency of the City of Oakland. The report documents results of water-level measurements and groundwater analyses at 11 monitoring wells within the boundaries or near the Pacific Renaissance Plaza (PRP) site in Oakland. The hydrogeologic setting at the site has been discussed in previous HLA reports. See for example HLA's report titled *Site Characterization, Pacific Renaissance Plaza, Chinatown Redevelopment Project Area, Oakland, California*, dated December 22, 1988.

This letter has also been prepared to inform you that during site dewatering activities, injection of water may be required to meet Bay Area Rapid Transit District (BART) construction guidelines for maintaining the stability of the BART tunnels adjacent to the 9th Street boundary of the site. BART limits variations in groundwater elevations to less than two feet across the tunnels adjacent to the PRP site. To maintain water levels across the tunnels within the two-foot constraint, it may be necessary to inject water on the north side of 9th Street between the BART tunnel and the site. (See Plate 1 in the attached report.) The need to install and operate injection wells will be determined based on monitoring of wells and piezometers in the vicinity of the tunnel.

The general contractor for the PRP project, Perini Corporation, expects dewatering of the site to begin in this month. Overall flow rates for the system are not known at this time, but can be estimated by comparison to flow rates for the dewatering system at the adjacent East Bay Municipal Utility District (EBMUD) site, which were initially about 50 gallons per minute (gpm) and declined to 15 - 20 gpm after 6 weeks of operation. If injection is required, total injection rates are expected to be a fraction of total extraction rates, because injection activities will focus on maintaining water levels near the BART tunnel, which occupies a small portion of the area affected by dewatering. Municipal water would be used for injection.

**Harding Lawson Associates**



November 16, 1990  
09382,040.02  
California Regional Water Quality Control Board  
San Francisco Bay Region  
Mr. Donald Dalke

We would be pleased to discuss site dewatering activities with you. If you have any questions, please call David Leland at 899-7352.

Yours very truly,

HARDING LAWSON ASSOCIATES, INC.

David F. Leland  
Associate Hydrologist

R. Bruce Scheibach  
Senior Associate Hydrogeologist

DFL\kab\14692

Attachment: *Report of Quarterly Monitoring, September 1990,  
Chinatown Redevelopment Project Area,  
Oakland, California*

cc: Steve Luquire, RWQCB  
Lowell Miller, Alameda County  
Peter Chen, Redevelopment Agency  
Doug Grant, PRA II  
Fred Warren, Perini