Harding Lawson Associates

90 OCT -9 AM 11:28

October 4, 1990

09382,040.02

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

Attention: Mr. Donald Dalke

Dear Mr. Dalke:

Installation of Monitoring Wells
MW-21, MW-22, and MW-23
Chinatown Redevelopment Project Area
Oakland, California

Introduction

This letter provides information on the installation, development, and sampling of three monitoring wells in the Chinatown Redevelopment Project area and near the Pacific Renaissance Plaza (PRP) site, Oakland, California (Plate 1). Harding Lawson Associates (HLA) installed these wells to monitor groundwater quality and hydraulic conditions in the vicinity of the PRP site. Expansion of the monitoring well network in the vicinity of the PRP site was requested by Mr. Dalke of the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) in letters dated April 4 and May 9, 1990, to Mr. Peter Chen of the Redevelopment Agency of the City of Oakland (Agency). In response to these RWQCB requests, HLA prepared a report entitled *Investigation Plan, Hydrocarbons in Offsite Groundwater, Chinatown Redevelopment Project Area, Oakland, California,* dated June 8, 1990. The three well locations proposed in HLA's plan were approved by the RWQCB in a letter dated July 25, 1990, from Mr. Dalke to Mr. Chen.

Well Installation and Soil Sampling

The well borings were drilled and the 4-inch-diameter monitor wells constructed by Weeks Drilling and Pump of Sebastopol, California using a Mobile B-53 hollow-stem auger rig and augers with an outside diameter of 10 inches. On July 30, 1990, Well MW-21 was completed to a total depth of 37 feet. Monitoring Wells MW-23 and MW-22 were constructed on August 13 and 14, 1990, and completed at depths of 35 feet and 38 feet, respectively. An HLA geologist supervised the drilling and well installation and collected soil samples at 5-foot intervals. The soil samples were screened for volatile organic compounds using an organic vapor analyzer (OVA) to aid in selecting soil samples for analysis. Because OVA readings were indicative of background conditions, samples submitted for analysis were selected on the assumption that contaminants indicative of fuel hydrocarbons, if present, would be encountered near the water table. One soil sample was collected and submitted for laboratory analysis from each boring: at Wells MW-21 and MW-22 samples submitted were from

just below the water table at depths of 31 feet and 26 feet below ground surface (bgs), respectively, and at MW-23, a sample was submitted from just above the water table at a depth of 20 feet bgs.

Borings were logged using the Unified Soil Classification System (USCS) and the Munsell Color Index Chart. Lithologic descriptions and well completion details are shown on Plates 2, 3, and 4.

Drilling and soil sampling equipment was decontaminated prior to and after use according to standard HLA protocol. HLA employees performing field work were safety trained and used Level D protective equipment. Soil cuttings generated from the borings were collected and stockpiled on the PRP site.

Soil samples were submitted to Pace Laboratories, Inc., of Novato, California (PACE), for chemical analysis and were accompanied by completed chain-of-custody forms. Each sample was analyzed for Total Fuel Hydrocarbons (TFH) and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Test Methods 8015 (modified) and 8020, respectively (Table 1).

Kister, Savio, and Rei, of El Cerrito, California, surveyed horizontal coordinates, top-of-casing, and ground surface elevations for Wells MW-21, MW-22, and MW-23 on September 13, 1990.

Well Development and Groundwater Sampling

Monitoring Well MW-21 was developed using a submersible pump on August 1, 1990, by pumping approximately 150 gallons of water from the well. On August 21, 1990, Monitoring Wells MW-21, MW-22, and MW-23 were developed using a submersible pump. Approximately 65 gallons of groundwater were pumped from Well MW-21, while 90 gallons and 80 gallons of groundwater were pumped from Wells MW-22 and MW-23, respectively. The discharge water was stored on the PRP site in 55-gallon drums. At least ten well volumes were purged from each well during development.

On August 27, 1990 water level elevations were measured and groundwater samples were collected from each well and submitted to PACE for analysis using EPA Test Methods 8010 and 8020 (Table 3). Measured depths to water and calculated water-level elevations are presented in Table 2.

Chemical Analysis Results

Toluene was detected in the soil sample analyzed from the boring for Well MW-22 at a concentration of 0.082 parts per million (ppm, equivalent to milligrams/kilogram) (Table 1). No other chemicals were detected by Methods 8010/8020 in the three soil samples submitted for analysis.

BTEX compounds were not detected in the groundwater samples from the three wells. The groundwater sample from Well MW-21 contained chloroform and tetrachloroethene at concentrations of 12 parts per billion (ppb, equivalent to

micrograms/liter) and 33 ppb, respectively (Table 3). The groundwater sample from Well MW-22 contained methylene chloride and trichloroethene at concentrations of 0.6 ppb and 1.9 ppb, respectively. The groundwater sample from Well MW-23 contained chloroform at a concentration of 1.5 ppb. All other EPA Test Method 8010 and 8020 analytes were below their respective detection limits.

Quarterly Sampling

In Section 2.3.3 of HLA's *Investigation Plan*, quarterly monitoring of selected wells during the dewatering period is proposed. Because of construction delays, the dewatering system, which was scheduled to begin operations in July 1990, is now scheduled to begin operations in November 1990. To provide continuity of monitoring data between the cessation of biotreatment system operations and dewatering, an interim monitoring round was performed in September. Results will be reported to the RWQCB by early November.

If you have any questions or comments regarding this report, please call Mark Egbert at 899-7315 or David Leland at 899-7352; we will be pleased to discuss the report with you.

Yours very truly,

HARDING LAWSON ASSOCIATES

Mark T. Egbert
Project Geologist

David F. Leland
Associate Hydrologist

MTE/DFL/lah/B13776-H

Attachments:
- Table 1 - Results of Chemical Analyses of Soil Samples Collected During Monitoring Well Installation
- Table 2 - Groundwater Elevations - August 27, 1990
- Table 3 - Results of Chemical Analyses of Groundwater Samples from Monitoring Wells
- Plate 1 - Plan of Sites and Vicinity
- Plate 2 - Log of Boring and Well Completion Detail MW-21
- Plate 3 - Log of Boring and Well Completion Detail MW-22
- Plate 4 - Log of Boring and Well Completion Detail MW-23

cc: Peter Chen, Agency
Lowell Miller, Alameda County Department of Environmental Health

Table 1. Results of Chemical Analyses of Soil Samples Collected During Monitoring Well Installation

Monitoring Well Name	Sampling Date	Sample Depth (Feet) (a)	Soil Type (b)	TFH (ppm) (c)	BTEX (ppm) (d)
MW-21	7/30/90	31.0 (s)	Silty Sand	ND	ND
MW-22	8/14/90	26.0 (s)	Sand	ND	0.082 (t)
MW-23	8/13/90	21.0	Sand	ND	ND
Detection Limits				1	0.005

Concentrations expressed as milligrams of chemical per kilogram of soil mg/kg, equivalent to (ppm), as received by weight.

(a) Feet below ground surface.
(b) Soil descriptions based on the Unified Soil Classification System.
(c) Total Fuel Hydrocarbons, (Light) as Gasoline (EPA 8015).
(d) Benzene, Toluene, Ethylbenzene, and Xylenes (EPA 8020).
(t) Toluene concentration reported.
(s) Saturated - below the water table.
ND Not Detected.

Table 2. Groundwater Elevations - August 27, 1990 **Harding Lawson Associates**

Monitoring Well Name	Top of Casing Elevation (Feet AMSL) (a)	Depth to Groundwater (Feet)	Water Level Elevation (Feet AMSL)
MW-21	38.08	27.52	10.56
MW-22	37.34	22.93	14.41
MW-23	34.23	22.45	11.78

(a) Above mean sea level.

Table 3. Results of Chemical Analyses of Groundwater Samples from Monitoring Wells

Monitoring Well Name	Sampling Date	Methylene Chloride (ppb)	Chloroform (ppb)	Trichloroethene (ppb)	Tetrachloroethene (ppb)	BTEX (a) (ppb)
MW-21	8/27/90	ND	12	ND	33	ND
MW-22	8/27/90	0.6	ND	1.9	ND	ND
MW-23	8/27/90	ND	1.5	ND	ND	ND
Detection Limits		0.5	0.5	0.5	0.5	0.2

Concentrations expressed as micrograms of chemical per liter of water (ug/l, equivalent to ppb), as received by weight.

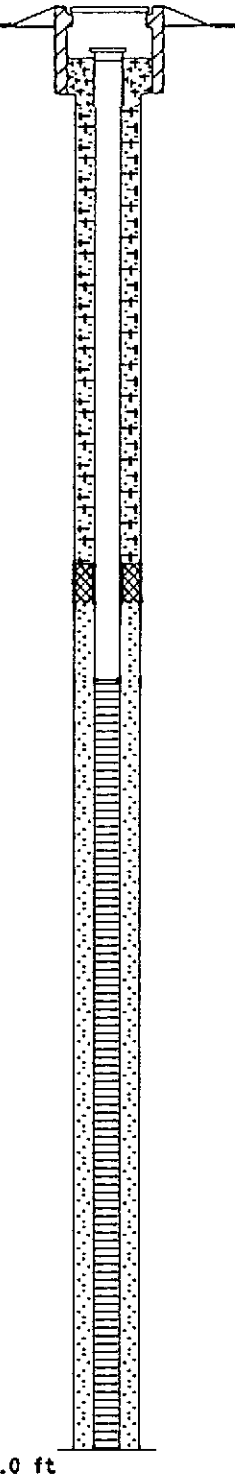
(a) Benzene, Toluene, Ethylbenzene, and Xylenes.
ND Not Detected.

LARGE MAP REMOVED

Top of PVC Casing Elevation 38.08 ft MSL

Equipment 10"Hollow Stem Auger

Elevation 38.67 ft MSL Date 7/30/90



GROUND SURFACE

TOP OF CASING
0.6 ft below ground surface

10" DIA. BORING
0 to 37.0 ft

4" DIA. SCHEDULE 40 PVC WELL CASING
0 to 17.0 ft

BENTONITE-CEMENT SEAL
0.5 to 14.0 ft

BENTONITE PELLET SEAL
14.0 to 15.0 ft

MONTEREY #3 SAND PACK
15.0 to 37.0 ft

4" DIA. SCHEDULE 40 PVC WELL SCREEN
(.020" slot size)
17.0 to 37.0 ft

BOTTOM WELL CAP at 37.0 ft
HOLE CLEANED OUT to 37.0 ft
BOTTOM OF BORING at 39.0 ft

Depth (ft)	Sample	Blows/ft*	OVA (ppm)	
0			0	4" ASPHALT CONCRETE 4" BASEROCK BROWN SILTY SAND (SM) loose, dry, with brick and debris (Fill)
5			0	OLIVE-BROWN SILTY SAND (SM) 2.5Y 4/3 loose, moist, sand fine grained
10			2	OLIVE-BROWN SILTY CLAYEY SAND (SC) 2.5Y 4/3 loose to medium dense, moist, sand fine grained
15		26	3	
20		43	0	GRAY-BROWN SAND (SW) 2.5Y 5/2 dense, moist, sand fine to medium grained
25		38	0	
30		45	0	▽ at 30.0 ft: becoming saturated
35		27	0	OLIVE SANDY CLAY (CL) 5Y 4/3 very stiff, moist at 38.0 ft: color change to olive-brown (2.5Y 4/3) bottom of boring at 39.0 ft
40		28	0	

PLATE 2

Harding Lawson Associates
Engineering and Environmental Services

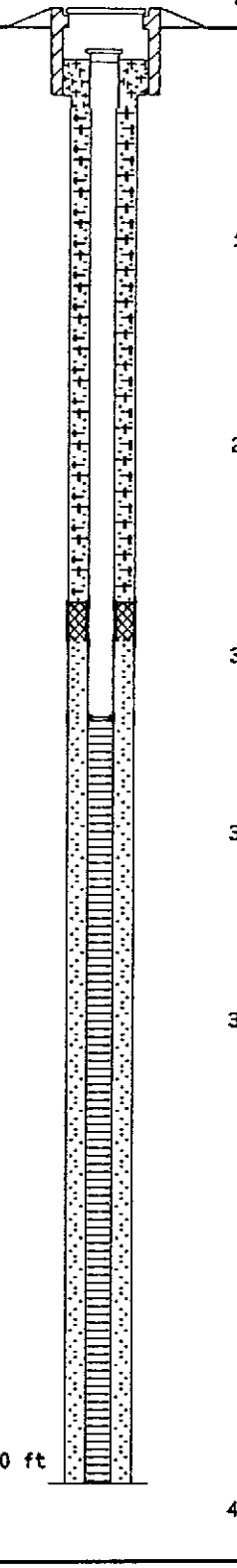
Log of Boring and Well Completion Detail MW-21
Chinatown Redevelopment Project Area
Oakland, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	9382.051.02	MTE	9/90	

Top of PVC Casing Elevation 37.34 ft MSL

Equipment 12"Hollow Stem Auger

Elevation 37.70 ft MSL Date 8/14/90



Blows/ft*	OVA (ppm)	Depth (ft)	Sample	
		0		4" ASPHALT CONCRETE 4" CONCRETE 4" BASEROCK BROWN CLAYEY SAND (SC) medium dense, moist, 10-20% clay, sand fine to medium grained at 2.0 ft: color change to mottled orange and tan
15	0	5		
		10		No recovery from 10.0 to 11.5 ft.
24				
		15		
30	0			at 16.0 ft mottled orange and tan clayey sand becoming dense
		20		GREY SAND (SP) dense, moist, sand fine to medium grained, <5% silt
39	0			
		25		▼ at 25.0 ft: becoming saturated
38	0			
		30		
		35		BLUE-GREEN SANDY CLAY (CL) stiff to very stiff, moist, 20-30% fine sand
42	0	40		at 39.0 ft: increase in sand content to 30-40% bottom of boring at 39.5 ft

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion Detail MW-22
Chinatown Redevelopment Project Area
Oakland, California

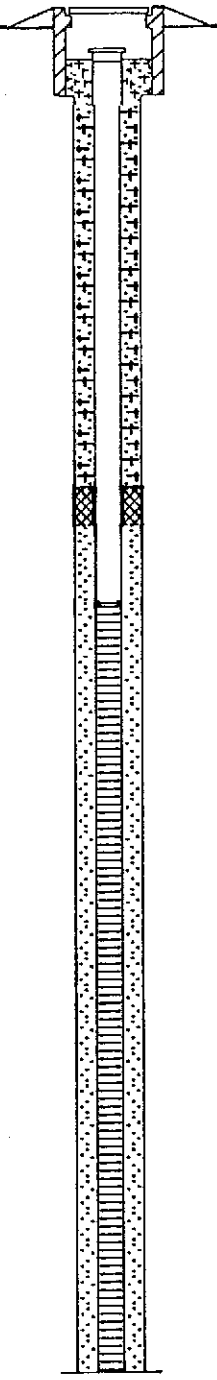
PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	9382.051.02	MTE	9/90	

Top of PVC Casing Elevation 34.23 ft MSL

Equipment 12"Hollow Stem Auger

Elevation 34.68 ft MSL Date 8/13/90



Blows/ft*	OVA (ppm)	Depth (ft)	Sample	
		0		GROUND SURFACE TOP OF CASING 0.5 ft below ground surface 12" DIA. BORING 0 to 35.0 ft 4" DIA. SCHEDULE 40 PVC WELL CASING 0.5 to 15.0 ft BENTONITE-CEMENT SEAL 0.5 to 12.0 ft 4" CONCRETE BROWN SILTY SAND (SM) loose, dry (Fill) YELLOW-BROWN SAND (SP) medium dense, moist, trace to 5% clay, sand fine to medium grained
23		5		No recovery from 5.0 to 6.5 ft
17	0	10		BENTONITE PELLET SEAL 12.0 to 13.0 ft at 12.0 ft: increase in clay content to 10-15%
27	0	15		ORANGE AND GREY CLAYEY SAND (SC) medium dense, moist, 15% clay, sand fine to medium-grained, mottled
31	0	20		LONESTAR #3 SAND PACK 13.0 to 35.0 ft ORANGE AND GREY SAND (SP) dense, moist to wet, trace to 5% clay, sand medium grained, mottled
				▼ at 23.5 ft: becoming saturated
39	0	25		4" DIA. SCHEDULE 40 PVC WELL SCREEN (.020" slot size) 15.0 to 35.0 ft
		30		No recovery at 30.0 ft.
30	0	35		BOTTOM WELL CAP at 35.0 ft GREY AND TAN SANDY CLAY (CL) very stiff, moist, 20% very fine to fine grained sand, mottled HOLE CLEANED OUT to 35.0 ft BOTTOM OF BORING at 36.5 ft bottom of boring at 36.5 ft
		40		

PLATE 4

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion Detail MW-23
Chinatown Redevelopment Project Area
Oakland, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	9382.051.02	MTE	9/90	