Harding Lawson Associates

Transmittal/Memorandum

To: Alameda County Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Lowell Miller

From: David Leland DL
Date: April 6, 1989
Subject: February 1989 Treatment System Monitoring Report
Job No.: 09382,018.02

Remarks: Please find attached a copy of the "*Report of System Monitoring: February 1989, Dewatering Effluent Treatment System, Chinatown Redevelopment Project Area, Oakland, California*", describing the operations and monitoring of the treatment system located at 10th and Webster Streets in Oakland.

DL:cb/c9/032

cc:

4/7/89

A Report Prepared for

California Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6000
Oakland, California 94607

REPORT OF SYSTEM MONITORING:
FEBRUARY 1989
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA

HLA Job No. 9382,018.02

Submitted on behalf of:

City of Oakland Redevelopment Agency
One City Hall Plaza
Oakland, California 94612

by

Charles E. Myrick
Project Engineer

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415/892-0821

April 5, 1989

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1 INTRODUCTION

This report discusses the operation and monitoring of the dewatering effluent treatment system at 10th and Webster streets, Oakland, California, from February 1 to February 28, 1989. The system is treating water produced during ground-water dewatering of the block bounded by 10th, 11th, Webster, and Franklin streets, in conjunction with construction in progress at the site. The system is designed to remove petroleum hydrocarbons from dewatering effluent before the effluent is discharged to the storm drain.

This report has been prepared by Harding Lawson Associates (HLA) and is submitted in compliance with NPDES Permit CA 0029394, adopted on July 20, 1988, by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). Under the NPDES permit, treatment system discharge limits are 50 parts per billion (ppb) for total petroleum hydrocarbons (TPH) identified as gasoline; 5.6 ppb for lead; 5.0 ppb each for chlorobenzene, 1,2-dichloroethane, 1,2-dichloropropane, trichloroethylene, 1,1,2-trichloroethane, benzene, xylenes, and ethylbenzene; 0.5 ppb for toluene; 0.01 ppb for ethylene dibromide; and 0.0 ppb for total residual chlorine.

II TREATMENT SYSTEM OPERATION

The dewatering effluent treatment system was installed March 8, 1988, and has been in continuous operation since March 14, 1988. Water is treated by pumping it through four carbon contactors arranged in pairs. Organic compounds in the influent are adsorbed on the carbon. Each pair of contactors is arranged in parallel, and together constitute a module; the two modules are arranged in series. The system is configured so that water from the dewatering wells may be pumped through either module first. The system also comprises a holding tank for influent water, pumps, filters, piping, and instrumentation. Four water sampling ports -- one influent, two intermediate, and one effluent -- enable water samples to be collected throughout the treatment process. The intermediate ports are located between the two modules so the effectiveness of the first pair of contactors in reducing influent concentrations can be monitored. Depending on the configuration of modules, only one of these ports is intermediate in the system at any one time.

Treated effluent is discharged to the storm drain. From February 1 to March 1, 1989, total discharge of the system was 357,000 gallons, based on readings of the flow totalizing meter located in the discharge line. Average flow for this period was 8.9 gallons per minute (gpm).

The system was backwashed on February 4. The carbon in all four adsorption vessels was replaced by Northwestern Carbon on February 13.

Throughout the month, a floating residential swimming pool type chlorinator was deployed in the holding tank to retard algal growth in the treatment system.

III TREATMENT SYSTEM MONITORING

A. Sample Collection and Analysis

During this reporting period, treatment system samples were collected on February 8 from the influent, intermediate, and effluent sampling ports. A field blank was submitted with the samples collected.

All treatment system samples collected were analyzed by Pace Laboratories, Novato, California, a California-certified laboratory. The samples and blank were analyzed for halogenated organics by EPA Test Method 8010. Influent, effluent and blank samples were analyzed for TPH as gasoline using EPA Test Method 8015 and for aromatic organics by EPA Test Method 8020. Influent and effluent samples were analyzed for ethylene dibromide by EPA Test Method 504, for residual chlorine by Standard Method 408E, and for dissolved oxygen by EPA Test Method 360.2.

Results of analyses of samples collected November 18, 1988 through February 8, 1989 are summarized in Tables 1 through 4. Only analytical results for samples collected in February are discussed in this report. Laboratory reports for treatment system samples collected on February 8 are presented in Appendix A.

B. Discharge Limit Exceedences

There were three possible exceedences of permitted effluent discharge limits during this reporting period. The reported concentration of 1,2-dichloroethane in an effluent sample collected on February 8 was 9.1 μg/l (micrograms per liter, equivalent to ppb), as measured by EPA Test Method 8010. The reported concentration of toluene in an effluent sample collected on February 8 was 0.9 μg/l. Ethylene dibromide was also detected in the same sample at a concentration of 0.06 μg/l. Possible explanations for these exceedences include breakthrough as a result of carbon exhaustion, "channeling" in

the carbon beds, sample contamination during field operations, and/or laboratory analytical procedures. The most likely source of the 1,2-dichloroethane and ethylene dibromide is breakthrough. The most likely source of the toluene is either sample contamination or laboratory analytical procedures, since toluene was also detected in the field blank at a concentration of 1.0 μg/l.

All carbon beds in the treatment system were replaced on February 13.

There were no other exceedences of permitted effluent discharge limits during this reporting period.

IV RESULTS

Results of influent, intermediate, and effluent sample analyses for TPH and for EPA Test Method 8010, 8020, 8240 and 504 compounds, indicate that on the sampling date, the treatment system removed most individual constituents to below detection levels. The following compounds were detected at the concentrations given in effluent samples collected February 8: toluene at 0.9 μg/l, methylene chloride at 1.4 μg/l, 1,1-dichloroethane at 1.4 μg/l, chloroform at 1.6 μg/l, 1,2-dichloroethane at 9.1 μg/l, trichloroethene at 2.2 μg/l, and ethylene dibromide at 0.06 μg/l.

In the blank sample submitted February 8, methylene chloride was detected at a concentration of 2.9 μg/l, and toluene was detected at a concentration of 1.0 μg/l.

HLA SAMPLE ID #	88461801	88462301	88473001	88491201	88501501	88512101	89010501	89021201	89060801
DATE	11/18	11/23	11/30	12/07	12/15	12/21	01/05	01/12	02/08
TEST METHOD/ COMPOUNDS									
EPA 8020									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	9.2	NT	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	6.1	NT	1.1
Chlorobenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
1,2-Dichlorobenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
All other 8020 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
EPA 8015									
TPH (Gasoline)	ND < 50	60	90	ND < 50	NT	NT	130	NT	ND < 250
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
1,1-dichloroethene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	0.8	ND < 0.5	ND < 0.5
Methylene chloride	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	6.3
1,1-dichloroethane	0.8	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	1.9	0.5	1.2
Chloroform	0.8	1.6	NT	NT	ND < 0.5	1.1	2.1	0.8	1.5
1,2-dichloroethane	5.7	ND < 0.5	NT	NT	9.2	4.8	10.5	4.9	8.6
Trichloroethene	54	210	NT	NT	390	112	140	290	420
1,2-dichloropropane	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Tetrachloroethene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	1.4	0.4	0.7
Chlorobenzene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromoform	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1,2,2-tetrachloroethane	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Dibromochloromethane	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	NT	NT	ND	ND	ND	ND	ND
EPA 8240									
1,1-dichloroethene	NT	NT	0.5	ND < 0.5	NT	NT	NT	NT	NT
Methylene chloride	NT	NT	0.6	0.6	NT	NT	NT	NT	NT
1,1-dichloroethane	NT	NT	1.1	0.7	NT	NT	NT	NT	NT
Chloroform	NT	NT	1.5	0.7	NT	NT	NT	NT	NT
1,2-dichloroethane	NT	NT	9.4	5.8	NT	NT	NT	NT	NT
Benzene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
Trichloroethene	NT	NT	239	91.1	NT	NT	NT	NT	NT
Toluene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
1,1,2-trichloroethane	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
Tetrachloroethene	NT	NT	0.6	ND < 0.5	NT	NT	NT	NT	NT
Chlorobenzene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
All other 8240 compounds	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
EPA 504									
Ethylene dibromide	ND < 0.01	0.05	ND < 0.01	0.02	NT	NT	ND < 0.02	NT	0.05
Standard Method 408E									
Residual chlorine (mg/l)	ND < 0.2	ND < 0.01	ND < 0.01	ND < 0.01	NT	NT	ND < 0.01	NT	ND < 0.01
EPA 360.2									
Dissolved oxygen (mg/l)	NT	NT	NT	NT	NT	NT	NT	NT	6.6

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

TABLE 2. TREATMENT SYSTEM WATER ANALYSIS: INTERMEDIATE SAMPLES

HLA SAMPLE ID #	88461802	88462302	88473002	88491202	88501502	88512102	89010502	89021202	89060802
DATE	11/18	11/23	11/30	12/07	12/15	12/21	01/05	01/12	02/08
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	NT	NT	NT	NT	NT	NT	ND < 0.2	NT	NT
Toluene	NT	NT	NT	NT	NT	NT	ND < 0.2	NT	NT
Ethylbenzene	NT	NT	NT	NT	NT	NT	ND < 0.2	NT	NT
Xylenes	NT	NT	NT	NT	NT	NT	ND < 0.2	NT	NT
Chlorobenzene	NT	NT	NT	NT	NT	NT	ND < 0.2	NT	NT
1,3-Dichlorobenzene	NT	NT	NT	NT	NT	NT	ND < 0.2	NT	NT
All other 8020 compounds	NT	NT	NT	NT	NT	NT	ND < 0.2	NT	NT
EPA 8015									
TPH (Gasoline)	NT	NT	NT	NT	NT	NT	ND < 50	NT	NT
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
Methylene chloride	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	1.5
1,1-dichloroethane	0.7	ND < 0.5	NT	NT	ND < 0.5	0.6	ND < 0.5	ND < 0.5	1.3
Chloroform	1.2	2.0	NT	NT	ND < 0.5	1.2	ND < 0.5	ND < 0.5	1.4
1,2-dichloroethane	7.9	4.9	NT	NT	7.1	6.0	3.4	1.4	8.2
Trichloroethene	21	16.1	NT	NT	33.0	ND < 0.5	18.0	16.0	9.7
Tetrachloroethene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chlorobenzene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromoform	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,3-dichlorobenzene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	NT	NT	ND	ND	ND	ND	ND
EPA 8240									
Methylene chloride	NT	NT	2.0	ND < 0.5	NT	NT	NT	NT	NT
1,1-dichloroethane	NT	NT	1.2	1.5	NT	NT	NT	NT	NT
Chloroform	NT	NT	1.7	1.7	NT	NT	NT	NT	NT
1,2-dichloroethane	NT	NT	9.7	9.4	NT	NT	NT	NT	NT
Trichloroethene	NT	NT	28.3	18.7	NT	NT	NT	NT	NT
Toluene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
1,2-dichlorobenzene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
All other 8240 compounds	NT	NT	ND	ND	NT	NT	NT	NT	NT
EPA 504									
Ethylene dibromide	NT	NT	NT	NT	NT	NT	NT	NT	NT
Residual chlorine									
Residual chlorine (mg/l)	NT	NT	NT	NT	NT	NT	NT	NT	NT

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

HLA SAMPLE ID #	88461803	88462303	88473004	88491204	88501503	88512103	89010504	89021204	89060803
DATE	11/18	11/23	11/30	12/07	12/15	12/21	01/05	01/12	02/08
TOTAL FLOW (THOUSAND GALLONS	6435.2	6510.0	6645.1	6762.0	6830.6	6972.2	7200.0	7310.7	7784.3
AVERAGE FLOW (GPM)	13.7	10.4	13.4	11.6	6.0	16.4	10.5	11.0	12.2
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	0.9
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
Diphenylhydrazine	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
All other 8020 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
EPA 8015									
TPH (Gasoline)	ND < 50	ND < 50	ND < 50	ND < 50	NT	NT	ND < 50	NT	ND < 250
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
Dichlorodifluoromethane	28	ND < 2.0	NT	NT	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0
1,1-dichlorethene	ND < 0.5	12.3	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Methylene chloride	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	1.4
1,1-dichloroethane	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	1.0	0.9	1.4
Chloroform	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	1.4	1.0	1.6
1,1,1-trichloroethane	ND < 0.5	4.3	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,2-dichloroethane	3.6	2.7	NT	NT	4.3	3.5	6.8	5.3	9.1
Trichloroethene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	0.8	1.0	2.2
Tetrachloroethene	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	NT	NT	ND	ND	ND	ND	ND
EPA 8240									
Methylene Chloride	NT	NT	1.6	ND < 0.5	NT	NT	NT	NT	NT
1,1-dichloroethane			ND < 0.5	0.8	NT	NT	NT	NT	NT
Chloroform			ND < 0.5	0.8	NT	NT	NT	NT	NT
1,2-dichloroethane	NT	NT	2.2	5.1	NT	NT	NT	NT	NT
Trichloroethene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
Toluene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
All other 8240 compounds	NT	NT	ND	ND	NT	NT	NT	NT	NT
EPA 360.2									
Dissolved oxygen (mg/l)	NT	NT	NT	NT	NT	NT	NT	NT	9.9
EPA 625									
All compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 504									
Ethylene dibromide	ND < 0.01	ND < 0.01	ND < 0.01	ND < 0.02	NT	NT	ND < 0.02	NT	0.06
Standard Method 408E									
Residual chlorine (mg/l)	ND < 0.2	ND < 0.01	ND < 0.01	ND < 0.01	NT	NT	ND < 0.01	NT	ND < 0.01
Lead 7421									
Lead (mg/l)	NT	NT	NT	NT	NT	NT	NT	NT	NT

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

TABLE 4. TREATMENT SYSTEM WATER ANALYSIS: BLANK SAMPLES

HLA SAMPLE ID #	88461805	88462305	88473005	88491205	88501505	88512105	89010505	89021205	89060805
DATE	11/18	11/23	11/30	12/07	12/15	12/21	01/05	01/12	02/08
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	1.0
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
All other 8020 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT	NT	ND < 0.2	NT	ND < 0.2
EPA 8015									
TPH (Gasoline)	ND < 50	ND < 50	ND < 50	ND < 50	NT	NT	NT	NT	NT
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
Dichlorodifluoromethane	28	ND < 2.0	NT	NT	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0
1,1-dichloroethene	ND < 0.5	1.3	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Methylene chloride	1.0	3.8	NT	NT	13	ND < 0.5	9.6	1.0	2.9
1,1,1-trichloroethane	ND < 0.5	0.7	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,2-dichloroethane	ND < 0.5	ND < 0.5	NT	NT	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	NT	NT	ND	ND	ND	ND	ND
EPA 8240									
Toluene	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
Methylene Chloride	NT	NT	4.6	25.3	NT	NT	NT	NT	NT
Chloroform	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
Diphenylhydrazine	NT	NT	ND < 0.5	ND < 0.5	NT	NT	NT	NT	NT
All other 8240 compounds	NT	NT	ND	ND	NT	NT	NT	NT	NT
EPA 625									
All compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 504									
Ethylene dibromide	NT	NT	NT	NT	NT	NT	NT	NT	NT

ND - Not detected at stated detection limit.
NT - Not Tested.
All results reported in parts per billion (ppb) except where indicated.

Appendix A

LABORATORY ANALYTICAL RESULTS FOR TREATMENT SYSTEM SAMPLES

pace laboratories, inc
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94947

March 09, 1989
PACE Project Number: 490208.504

Attn: Mr. David Leland

Re: City of Oakland

Date Sample(s) Collected: 02/08/89
Date Sample(s) Received: 02/08/89

			INFLUENT	INTER.	EFFLUENT
PACE Sample Number:			70539	70540	70541
Parameter	Units	MDL	89060801	89060802	89060803
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chlorine, Total Residual	mg/L	0.01	ND	-	ND
Oxygen, Dissolved	mg/L	0.5	6.6	-	9.9
ORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Petroleum Fuels, Purgeable, as Gasoline (EPA Method 8015, Modified)	mg/L	0.25	ND	-	ND
HALOGENATED VOLATILE COMPOUNDS EPA 8010					
Dichlorodifluoromethane	ug/L	2.0	ND	ND	ND
Chloromethane	ug/L	2.0	ND	ND	ND
Vinyl Chloride	ug/L	2.0	ND	ND	ND
Bromomethane	ug/L	2.0	ND	ND	ND
Chloroethane	ug/L	2.0	ND	ND	ND
Trichlorofluoromethane	ug/L	2.0	ND	ND	ND
1,1-Dichloroethene	ug/L	0.5	ND	ND	ND
Methylene Chloride	ug/L	0.5	6.3	1.5	1.4
trans-1,2-Dichloroethene	ug/L	0.5	ND	ND	ND
1,1-Dichloroethane	ug/L	0.5	1.2	1.3	1.4
Chloroform	ug/L	0.5	1.5	1.4	1.6
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	ND	ND
Carbon Tetrachloride	ug/L	0.5	ND	ND	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	8.6	8.2	9.1
Trichloroethene (TCE)	ug/L	0.5	420	9.7	2.2
1,2-Dichloropropane	ug/L	0.5	ND	ND	ND
Bromodichloromethane	ug/L	0.5	ND	ND	ND
2-Chloroethylvinyl ether	ug/L	0.5	ND	ND	ND

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

pace laboratories, inc
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

March 09, 1989
PACE Project Number: 490208.504

PACE Sample Number:			INFLUENT 70539	INTER. 70540	EFFLUENT 70541
Parameter	Units	MDL	89060801	89060802	89060803
ORGANIC ANALYSIS					
HALOGENATED VOLATILE COMPOUNDS EPA 8010					
trans-1,3-Dichloropropene	ug/L	0.5	ND	ND	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND	ND	ND
1,1,2-Trichloroethane	ug/L	0.5	ND	ND	ND
Tetrachloroethene	ug/L	0.5	0.66	ND	ND
Dibromochloromethane	ug/L	0.5	ND	ND	ND
Chlorobenzene	ug/L	0.5	ND	ND	ND
Bromoform	ug/L	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	ND	ND
1,3-Dichlorobenzene	ug/L	0.5	ND	ND	ND
1,4-Dichlorobenzene	ug/L	0.5	ND	ND	ND
1,2-Dichlorobenzene	ug/L	0.5	ND	ND	ND
Bromochloromethane (Surrogate Recovery)	%		84	82	80
1,4-Dichlorobutane (Surrogate Recovery)	%		99	98	91
AROMATIC VOLATILE COMPOUNDS EPA 8020					
Benzene	ug/L	0.2	ND	-	ND
Toluene	ug/L	0.2	1.1	-	0.88
Chlorobenzene	ug/L	0.2	ND	-	ND
Ethylbenzene	ug/L	0.2	ND	-	ND
Xylene	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	-	86
1,2-DIBROMOETHANE (EDB) EPA METHOD 504					
1,2-Dibromoethane	ug/L	0.02	0.05	-	0.06
Date extracted			02-10-89	-	02-10-89

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

pace laboratories, inc
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

March 09, 1989
PACE Project Number: 490208.504

PACE Sample Number:			EFFLUENT 70542	BLANK 70543
Parameter	Units	MDL	89060804	89060805
ORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Petroleum Fuels, Purgeable, as Gasoline	mg/L	0.25	ND	ND
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dichlorodifluoromethane	ug/L	2.0	ND	ND
Chloromethane	ug/L	2.0	ND	ND
Vinyl Chloride	ug/L	2.0	ND	ND
Bromomethane	ug/L	2.0	ND	ND
Chloroethane	ug/L	2.0	ND	ND
Trichlorofluoromethane	ug/L	2.0	ND	ND
1,1-Dichloroethene	ug/L	0.5	ND	ND
Methylene Chloride	ug/L	0.5	1.4	2.9
trans-1,2-Dichloroethene	ug/L	0.5	ND	ND
1,1-Dichloroethane	ug/L	0.5	1.4	ND
Chloroform	ug/L	0.5	1.5	ND
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	ND
Carbon Tetrachloride	ug/L	0.5	ND	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	8.8	ND
Trichloroethene (TCE)	ug/L	0.5	2.0	ND
1,2-Dichloropropane	ug/L	0.5	ND	ND
Bromodichloromethane	ug/L	0.5	ND	ND
2-Chloroethylvinyl ether	ug/L	0.5	ND	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND	ND
1,1,2-Trichloroethane	ug/L	0.5	ND	ND
Tetrachloroethene	ug/L	0.5	ND	ND
Dibromochloromethane	ug/L	0.5	ND	ND
Chlorobenzene	ug/L	0.5	ND	ND
Bromoform	ug/L	0.5	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	ND
1,3-Dichlorobenzene	ug/L	0.5	ND	ND
1,4-Dichlorobenzene	ug/L	0.5	ND	ND

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

pace laboratories, inc
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
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March 09, 1989
PACE Project Number: 490208.504

PACE Sample Number:			EFFLUENT 70542	BLANK 70543
Parameter	Units	MDL	89060804	89060805
ORGANIC ANALYSIS				
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
1,2-Dichlorobenzene	ug/L	0.5	ND	ND
Bromochloromethane (Surrogate Recovery)	%		82	73
1,4-Dichlorobutane (Surrogate Recovery)	%		89	84
AROMATIC VOLATILE COMPOUNDS EPA 8020				
Benzene	ug/L	0.2	ND	ND
Toluene	ug/L	0.2	0.93	0.95
Chlorobenzene	ug/L	0.2	ND	ND
Ethylbenzene	ug/L	0.2	ND	ND
Xylene	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)	%		88	84

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

Approved:

Lisa J. Petersen
Lisa J. Petersen
Project Manager for
PACE Laboratories

Douglas E. Oram
Douglas E. Oram
Technical Reviewer for
PACE Laboratories

Harding Lawson Associates
200 Rush Landing Road
P.O. Box 6107
Novato, California 94948
415/892-0821
Telecopy: 415/892-1586

CHAIN OF CUSTODY FORM

Lab: PACE

Samplers: Caleb A. Ocanaya

Job Number: 09830202602

Name/Location: City of Oakland

Project Manager: David Leland

Recorder: Caleb A. Ocanaya (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	Preserved	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.	EPA 8015	Residual Cl	EDB (504)	Dissolved O2
2 3	X				5			1	89	06	0801	89	02	08	0930		X	X						X	X	X	X
2 3	X				3				89	06	0802	89	02	08	0900		X										
2 3	X				5			1	89	06	0803	89	02	08	0915		X	X						X	X	X	X
2 3	X				3				89	06	0804	89	02	08	0930		X	X						X			
2 3	X				3				89	06	0805	89	02	08	0945		X	X						X			

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) Caleb A. Ocanaya	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) David M Brous DATE/TIME 2-8-89 9:00	RECEIVED FOR LAB BY: (Signature) Catherine Hannan	DATE/TIME
METHOD OF SHIPMENT		

6533

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REPORT OF SYSTEM MONITORING: FEBRUARY 1989
DEWATERING EFFLUENT TREATMENT SYSTEM
CHINATOWN REDEVELOPMENT PROJECT AREA
OAKLAND, CALIFORNIA
April 5, 1989

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QUALITY CONTROL REVIEWER

Christopher R. Smith
Geologist - 4619