

Harding Lawson Associates



Transmittal/Memorandum

---

**To:** Alameda County Department of Environmental Health  
470 27th Street  
Oakland, California 94612

**Attention:** Mr. Storm Goranson

---

**From:** David Leland *DL*  
**Date:** November 18, 1988  
**Subject:** October 1988 Treatment System Monitoring Report  
**Job No.:** 9382,018.02

---

**Remarks:** Please find attached a copy of the "Report of System Monitoring: October 1988, 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/cv/M1/075

NOV 18 1988  
HAZARDOUS WASTE PROGRAM

---

**cc:**

---

Engineers  
and  
Geoscientists

7655 Redwood Blvd.  
P.O. Box 578  
Novato, CA 94948

Telephone  
415/892-0821  
Telex 340523

Arizona  
Alaska  
California

Colorado  
Hawaii  
Nevada

Texas  
Telecopy  
415/892-0831

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:  
OCTOBER 1988  
DEWATERING EFFLUENT TREATMENT SYSTEM  
CHINATOWN REDEVELOPMENT PROJECT AREA  
OAKLAND, CALIFORNIA**

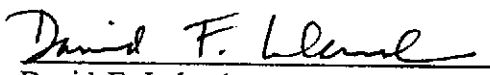
HLA Job No. 9382,018.02

Submitted on behalf of:

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

by

  
\_\_\_\_\_  
Charles E. Myrick  
Project Engineer

  
\_\_\_\_\_  
David F. Leland  
Associate Hydrologist

Harding Lawson Associates  
7655 Redwood Boulevard  
P.O. Box 578  
Novato, California 94948  
415/892-0821

November 18, 1988

TABLE OF CONTENTS

---

LIST OF TABLES..... iii

I INTRODUCTION ..... 1

II TREATMENT SYSTEM OPERATION ..... 2

III TREATMENT SYSTEM MONITORING ..... 3

    A. Sample Collection and Analysis..... 3

    B. Discharge Limit Exceedences ..... 3

IV RESULTS ..... 4

TABLES

APPENDIX

    A LABORATORY ANALYTICAL RESULTS FOR TREATMENT  
    SYSTEM SAMPLES

DISTRIBUTION

**LIST OF TABLES**

---

Table 1	Treatment System Water Analysis: Influent Samples
Table 2	Treatment System Water Analysis: Intermediate Samples
Table 3	Treatment System Water Analysis: Effluent Samples
Table 4	Treatment System Water Analysis: Blank Samples

## I INTRODUCTION

This report discusses the operation and monitoring of the dewatering effluent treatment system at 10th and Webster streets, Oakland, California, from October 1 to October 31, 1988. 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. 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 October 1 to October 31, total discharge of the system was 575,000 gallons, based on readings of the flow totalizing meter located in the discharge line. Average flow for this period was 13.3 gallons per minute (gpm), with weekly average flows ranging from 7.1 to 15.7 gpm.

The system was backwashed on October 10, October 13, October 21, and October 26.

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

Samples of treatment system water were collected weekly during this reporting period from the influent, intermediate, and effluent sampling ports. Quality Assurance/Quality Control samples consisted of weekly trip blanks.

All treatment system samples collected during this period were analyzed by Pace Laboratories, Novato, California, a California-certified laboratory. All influent, effluent and blank samples were analyzed for TPH as gasoline by EPA Test Method 8015, for purgeable volatile organic compounds by EPA Test Method 8020, for halogenated hydrocarbons by EPA Test Method 8010, for ethylene dibromide by EPA Test Method 504, and for total residual chlorine by Standard Method 408E. Intermediate samples collected October 18 and 27 were analyzed by Methods 8010, 8020 and 504. Intermediate samples collected October 6 and 21 were analyzed by Method 8010 only. Effluent samples collected October 6 were analyzed for dissolved oxygen.

Results of analyses of samples collected September 9 through October 27 are summarized in Tables 1 through 4. Only analytical results for samples collected in October are discussed in this report. Laboratory reports for treatment system samples collected in October are presented in Appendix A.

#### B. Discharge Limit Exceedences

There were no exceedences of a permitted effluent discharge limit during this reporting period.

#### IV RESULTS

Results of influent, intermediate, and effluent sample analyses for TPH and for EPA Test Method 8010, 8020 and 504 compounds, indicate that on most days sampled, the treatment system removed all individual constituents to below detection levels. Methylene chloride was detected on October 21 at a concentration of 1.1  $\mu\text{g}/\text{l}$ . On October 18 and 21, 1,2-dichloroethane was detected at concentrations of 1.1 and 1.4  $\mu\text{g}/\text{l}$ , respectively. Trichloroethene was detected at a concentration of 0.6  $\mu\text{g}/\text{l}$  on October 18.

Dissolved oxygen in the effluent was measured on October 6 at a concentration of 4.5 mg/l.



TABLE 1. TREATMENT SYSTEM WATER ANALYSIS: INFLUENT SAMPLES

Harding Lawson Associates

HLA SAMPLE ID #	88350121	88360913	88371601	88382311	88392914	88400602	88431803	88432104	88442703
DATE	09/01	09/09	09/16	09/23	09/29	10/06	10/18	10/21	10/27
TEST METHOD/ COMPOUNDS									
EPA 8020									
Benzene	1.2	ND < 0.2	1.4	8.9	0.8	ND < 0.2	ND < 0.2	0.8	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	1.5	ND < 0.2	ND < 0.2	ND < 0.2	0.2	ND < 0.2
Chlorobenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	3.0	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
1,2-Dichlorobenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 8020 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
TPH									
Gasoline	80	190	210	140	54	190	ND < 50	ND < 50	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
1,1-dichloroethene	ND < 0.5	ND < 0.5	ND < 0.5	2.3	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Methylene chloride	ND < 0.5	0.8	1.7	ND < 0.5	ND < 0.5	0.8	ND < 0.5	0.7	ND < 0.5
1,1-dichloroethane	0.7	ND < 0.5	0.6	2.7	ND < 0.5	ND < 0.5	0.7	ND < 0.5	ND < 0.5
Chloroform	1.2	0.8	0.8	2.5	0.6	0.8	1.0	1.7	ND < 0.5
1,2-dichloroethane	10	7.5	6.7	2.5	1.2	6.0	5.5	5.9	5.4
Trichloroethene	390	240	270	300	215	289	290	180	160
1,2-dichloropropane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	140
Tetrachloroethene	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromoform	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	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	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Dibromochloromethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 624									
Chloroform	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-dichloroethane	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzene	NT	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethene	NT	NT	NT	NT	NT	NT	NT	NT	NT
Toluene	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,1,2-trichloroethane	NT	NT	NT	NT	NT	NT	NT	NT	NT
Tetrachloroethene	NT	NT	NT	NT	NT	NT	NT	NT	NT
Chlorobenzene	NT	NT	NT	NT	NT	NT	NT	NT	NT
All other 624 compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 504									
Ethylene dibromide	0.15	0.12	0.35	ND < 0.05	ND < 0.05	0.17	0.06	0.18	0.31
Residual chlorine									
Residual chlorine (mg/l)	0.03	0.02	0.02	0.02	0.03	ND < 0.02	ND < 0.02	ND < 0.01	0.02

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

Harding Lawson Associates

HLA SAMPLE ID #	88350122	88360912	88371604	88382312	88392911	88400604	88431802	88432102	88442702
DATE	09/01	09/09	09/16	09/23	09/29	10/06	10/18	10/21	10/27
<b>TEST METHOD/COMPOUNDS</b>									
<b>EPA 8020</b>									
Benzene	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	NT	NT
Toluene	ND < 0.2	ND < 0.2	NT	ND < 0.7	ND < 0.2	NT	1.5	NT	NT
Ethylbenzene	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	NT	NT
Xylenes	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	NT	NT
Chlorobenzene	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	NT	NT
1,3-Dichlorobenzene	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	NT	NT
All other 8020 compounds	ND < 0.2	ND < 0.2	NT	ND < 0.2	ND < 0.2	NT	ND < 0.2	NT	NT
<b>TPH</b>									
Gasoline	ND < 50	ND < 50	NT	NT	NT	NT	NT	NT	NT
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
<b>EPA 8010</b>									
Methylene chloride	ND < 0.5	1.7	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1-dichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	0.9	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chloroform	0.9	0.9	0.7	1.1	ND < 0.5	0.9	0.5	0.9	ND < 0.5
1,2-dichloroethane	6.8	8.9	1.1	9.9	4.2	7.7	6.1	7.4	5.2
Trichloroethene	8.4	13	9.8	19	ND < 0.5	20	4.2	22	ND < 0.5
Tetrachloroethene	ND < 0.5	ND < 0.5	23	ND < 0.5	1.2	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Bromoform	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,3-dichlorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>EPA 624</b>									
1,2-dichloroethane	NT	NT	NT	NT	NT	NT	NT	NT	NT
Chloroform	NT	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethene	NT	NT	NT	NT	NT	NT	NT	NT	NT
Toluene	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-dichlorobenzene	NT	NT	NT	NT	NT	NT	NT	NT	NT
All other 624 compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT
<b>EPA 504</b>									
Ethylene dibromide	NT	NT	NT	NT	NT	NT	NT	NT	ND < 0.01
<b>Residual chlorine</b>									
Residual chlorine (mg/l)	0.03	0.02	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 3. TREATMENT SYSTEM WATER ANALYSIS: EFFLUENT SAMPLES

PAGE 1

Harding Lawson Associates

HLA SAMPLE ID #	88350123	88360911	88371605	88382313	88392913	88400601	88431801	88432105	88442701
DATE	09/01	09/09	09/16	09/23	09/29	10/06	10/18	10/21	10/27
TOTAL FLOW (THOUSAND GALLONS)	4879.3	5060.9	5221.3	5376.2	5508.8	5667.2	5927.7	5958.5	6065.1
AVERAGE FLOW (GPM)	17.2	15.8	15.9	15.4	15.4	15.7	15.1	7.1	12.3
TEST METHOD/COMPOUNDS									
EPA 8020									
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Diphenylhydrazine	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 8020 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
TPH									
Gasoline	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010									
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	1.1	ND < 0.5
1,2 dichloroethane	ND < 0.5	ND < 0.5	ND < 0.8	1.4	0.6	ND < 0.5	1.1	1.4	ND < 0.5
Trichloroethene	ND < 0.5	ND < 0.5	ND < 0.5	0.6	ND < 0.5	ND < 0.5	0.6	ND < 0.5	ND < 0.5
Tetrachloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 624									
Toluene	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methylene Chloride	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane	NT	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethene	NT	NT	NT	NT	NT	NT	NT	NT	NT
All other 624 compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 360.2									
Dissolved oxygen (mg/l)	6.3	NT	NT	NT	NT	4.5	NT	NT	NT
EPA 625									
All compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 504									
Ethylene dibromide	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.04	ND < 0.03	ND < 0.03	ND < 0.01
Residual chlorine									
Residual chlorine (mg/l)	0.02	0.01	0.01	0.01	0.01	ND < 0.2	ND < 0.2	ND < 0.1	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

Harding Lawson Associates

HLA SAMPLE ID #	88350124	88360915	88371602	88382314	88392912	88400605	88431804	88432106	88442704	
DATE	09/01	09/09	09/16	09/23	09/29	10/06	10/18	10/21	10/27	
TEST METHOD/COMPOUNDS										
EPA 8020										
Benzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Toluene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
All other 8020 compounds	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
TPH										
Gasoline	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50
Diesel	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 8010										
Methylene chloride	ND < 0.5	ND < 0.5	0.9	ND < 0.5	0.6	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,2-dichloroethane	ND < 0.5	ND < 0.5	0.5	ND < 0.5	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All other 8010 compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 624										
Toluene	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methylene Chloride	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Chloroform	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Diphenylhydrazine	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
All other 624 compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 625										
All compounds	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
EPA 504										
Ethylene dibromide	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.04	ND < 0.03	ND < 0.03	ND < 0.03	ND < 0.01

-----  
 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

Report date: October 21, 1988  
Client: Harding Lawson Associates  
P.O Box 578  
Novato, CA 94947  
Attn.: David Leland

Pace job #: HLA 0831100-L  
**TREATMENT SYSTEM**  
**10-6-88**

Date sampled: October 6, 1988  
Sampled by: Tim Walker

Site: City of Oakland

Date received: October 6, 1988  
Submitted by: Tim Walker

P.O.: 9382, 026.02

Lab #	Client ID	Matrix	Analysis
8- 9663	88400601	<b>EFFLUENT</b> water	TPH (light) only 5030/8015
8- 9663	88400601	water	Vol Org. Cpds. 8010 + 8020
8- 9667	88400601	water	Total Residual Chlorine
8- 9663	88400601	water	EDB EPA 504
8- 9664	88400602	<b>INFLUENT</b> water	TPH (light) only 5030/8015
8- 9664	88400602	water	Vol Org. Cpds. 8010 + 8020
8- 9668	88400602	water	Total Residual Chlorine
8- 9664	88400602	water	EDB EPA 504
8- 9662	88400603	<b>EFFLUENT</b> water	Dissol. Ox. 360.2
8- 9665	88400604	<b>INTER</b> water	Purg. Halocarbons 601/8010
8- 9666	88400605	<b>BLANK</b> water	TPH (light) only 5030/8015
8- 9666	88400605	water	Vol Org. Cpds. 8010 + 8020
8- 9666	88400605	water	EDB EPA 504

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. The samples will be returned to the client after the 30-day period, unless other arrangements are made. If you have any questions, please feel free to call Lisa Petersen, our Client Services Coordinator at 415-883-6100.

*C. Sontag*  
Sample Controller



laboratories, inc.

FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

Report Date: 20-Oct-88
PACE JOB #: HLA 0831.100-L
Analytical Method: 5030/8015
MATRIX: WATER

Completion Date: 11-Oct-88
Reported by: J.HARWOOD
Analyst: LEWIS

Table for LAB # 8-9663, CLIENT'S ID: 400601, EFFLUENT. Columns: COMPOUND, RESULT (ug/l), Detection Limit (ug/l). Row: Total Petroleum Hydrocarbons (light)-- N.D. 50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 100 %

Table for LAB # 8-9664, CLIENT'S ID: 400602, INFLUENT. Columns: COMPOUND, RESULT (ug/l), Detection Limit (ug/l). Row: Total Petroleum Hydrocarbons (light)-- 190 50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 96 %

Table for LAB # 8-9666, CLIENT'S ID: 400605, BLANK. Columns: COMPOUND, RESULT (ug/l), Detection Limit (ug/l). Row: Total Petroleum Hydrocarbons (light)-- N.D. 50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 96 %

Handwritten signature: Douglas Crum
Analytical Supervisor



laboratories, inc.

FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA  
METHOD: 5030/8015

PACE JOB #:HLA 0831.100-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Gasoline-----	N.D.	13%	96%

QUALITY CONTROL DATA

Surrogate Spike % Recovery			
Fluorobenzene	98 %	104 %	109 %

N.D.: Not Detected

*Douglas Orman*  
-----  
Analytical Supervisor





**laboratories, inc**  
FORMERLY WESCO LABORATORIES

# REPORT OF LABORATORY ANALYSIS

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

Report Date: 20-Oct-88  
PACE JOB #: HLA 0831.100-L  
Analytical Method: EPA 8010  
MATRIX: WATER

Completion Date: 12-Oct-88  
Reported by: J. HARWOOD  
Analyst: LEWIS

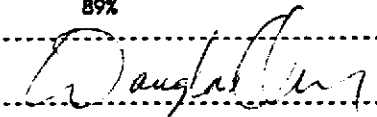
	EFF	INF	INTER	BLANK
LAB #:	8-9663	8-9664	8-9665	8-9666
CLIENT'S ID:	400601	400602	400604	400605

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane	N.D.	N.D.	N.D.	N.D.	2.0
Chloromethane	N.D.	N.D.	N.D.	N.D.	2.0
Vinyl Chloride	N.D.	N.D.	N.D.	N.D.	2.0
Bromomethane	N.D.	N.D.	N.D.	N.D.	2.0
Chloroethane	N.D.	N.D.	N.D.	N.D.	2.0
Trichlorofluoromethane	N.D.	N.D.	N.D.	N.D.	2.0
1,1-Dichloroethene	N.D.	N.D.	N.D.	N.D.	0.5
Methylene Chloride	N.D.	0.8	N.D.	N.D.	0.5
trans-1,2-Dichloroethene	N.D.	N.D.	N.D.	N.D.	0.5
1,1-Dichloroethane	N.D.	N.D.	N.D.	N.D.	0.5
Chloroform	N.D.	0.8	0.9	N.D.	0.5
1,1,1-Trichloroethane (TCA)	N.D.	N.D.	N.D.	N.D.	0.5
Carbon Tetrachloride	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)	N.D.	6.0	7.7	N.D.	0.5
Trichloroethene (TCE)	N.D.	289	20	N.D.	0.5
1,2-Dichloropropane	N.D.	N.D.	N.D.	N.D.	0.5
Bromodichloromethane	N.D.	N.D.	N.D.	N.D.	0.5
2-Chloroethylvinyl ether	N.D.	N.D.	N.D.	N.D.	0.5
trans-1,3-Dichloropropene	N.D.	N.D.	N.D.	N.D.	0.5
cis-1,3-Dichloropropene	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2-Trichloroethane	N.D.	N.D.	N.D.	N.D.	0.5
Tetrachloroethene	N.D.	N.D.	N.D.	N.D.	0.5
Dibromochloromethane	N.D.	N.D.	N.D.	N.D.	0.5
Chlorobenzene	N.D.	N.D.	N.D.	N.D.	0.5
Bromoform	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane	N.D.	N.D.	N.D.	N.D.	0.5
1,3-Dichlorobenzene	N.D.	N.D.	N.D.	N.D.	0.5
1,4-Dichlorobenzene	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichlorobenzene	N.D.	N.D.	N.D.	N.D.	0.5

**QUALITY CONTROL DATA**

Surrogate Spike	Percent Recovery			
Bromochloromethane	93%	90%	93%	98%
1,4-Dichlorobutane	92%	89%	87%	89%

N.D.: Not Detected

  
Analytical Supervisor

BLANK, SPIKE DUPLICATE AND SPIKE REPORT    LAB #:    HLA 0831.100-L  
METHOD : EPA 8010

COMPOUND	Blank (ug/l)	Spike Duplicate % deviation	Spike % recovery
Dichlorodifluoromethane	N.D.	-	N.S.
Chloromethane	N.D.	-	N.S.
Vinyl Chloride	N.D.	-	N.S.
Bromomethane	N.D.	-	N.S.
Chloroethane	N.D.	-	N.S.
Trichlorofluoromethane	N.D.	-	N.S.
1,1-Dichloroethene	N.D.	-	N.S.
Methylene Chloride	N.D.	-	N.S.
trans-1,2-Dichloroethene	N.D.	-	N.S.
1,1-Dichloroethane (M.S.)	N.D.	1	98
Chloroform	N.D.	-	N.S.
1,1,1-Trichloroethane (TCA)	N.D.	-	N.S.
Carbon Tetrachloride	N.D.	-	N.S.
1,2-Dichloroethane (EDC)	N.D.	-	N.S.
Trichloroethene (TCE) (M.S.)	N.D.	3	96
1,2-Dichloropropane	N.D.	-	N.S.
Bromodichloromethane	N.D.	-	N.S.
2-Chloroethylvinyl ether	N.D.	-	N.S.
trans-1,3-Dichloropropene	N.D.	2	103
cis-1,3-Dichloropropene	N.D.	-	N.S.
1,1,2-Trichloroethane	N.D.	-	N.S.
Tetrachloroethene (M.S.)	N.D.	2	94
Dibromochloromethane	N.D.	-	N.S.
Chlorobenzene	N.D.	-	N.S.
Bromoform	N.D.	-	N.S.
1,1,2,2-Tetrachloroethane	N.D.	-	N.S.
1,3-Dichlorobenzene	N.D.	-	N.S.
1,4-Dichlorobenzene	N.D.	-	N.S.
1,2-Dichlorobenzene	N.D.	-	N.S.

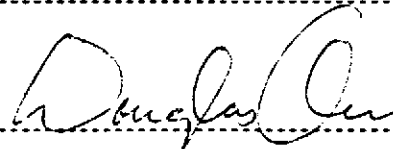
QUALITY CONTROL DATA

Surrogate Spike % Recovery

Bromochloromethane	91%	96%	95%
1,4-Dichlorobutane	112%	94%	89%

N.D.: Not Detected

N.S.: Not Spiked

  
Analytical Supervisor



laboratories, inc.

FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

Report Date: 20-Oct-88
PACE JOB #:
Analytical Method:
MATRIX: WATER

HLA 0831.100-L
EPA 8020

Completion Date:
Reported by:
Analyst:

12-Oct-88
J. Harwood
Lewis

Table with columns: LAB #, CLIENT'S ID, COMPOUND, RESULT (ug/l), and Detection Limit (ug/l). Rows include Benzene, Toluene, Chlorobenzene, Ethylbenzene, Xylene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, and 1,2-Dichlorobenzene. Results are mostly N.D. with detection limits of 0.2 ug/l.

QUALITY CONTROL DATA

Table showing Surrogate Spike Fluorobenzene with Percent Recovery of 101%, 78%, and 101%.

QUALITY CONTROL DATA

METHOD: EPA 8020

Table with columns: COMPOUND, Blank (ug/l), Spike Duplicate % deviation, and Spike % recovery. Rows include Benzene, Toluene, and p-Xylene.

QUALITY CONTROL DATA

Table showing Surrogate Spike % Recovery for Fluorobenzene at 100%, 98%, and 99%.

N.D.: Not Detected

Handwritten signature of Douglas Oran, Analytical Supervisor



laboratories, inc.  
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

Report Date: 20-Oct-88 Completion Date: 13-Oct-88  
 PACE JOB #: HLA 0831.100-L Reported By: Harwood  
 Analytical Method: EPA 504 Analyst: Clark  
 MATRIX: WATER

	EFFLUENT	INFLUENT	BLANK	
LAB #:	8-9663	8-9664	8-9666	
CLIENT'S ID:	400601	400605	400605	
COMPOUND	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Ethylene Dibromide	N.D.	0.17	N.D.	0.04

BLANK, SPIKE DUPLICATE AND SPIKE REPORT

METHOD: EPA 504 PACE JOB #: HLA 0831.100-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Ethylene Dibromide	N.D. %	11	86

QUALITY CONTROL DATA

Surrogate Spike % Recovery

N.D.: Not Detected  
 N.S.: Not Spiked

*Douglas Cronin*  
 Analytical Supervisor



laboratories, inc.  
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

Report Date: 20-Oct-88 Analysis Completion : 6-Oct-88  
 PACE JOB #: HLA 0831.100-L Reported By: J.Harwood  
 Analytical Method: ASTM-color disc. Analyst: Ayzenberg  
 MATRIX: WATER

LAB #	CLIENT'S ID:		TOTAL CHLORINE (mg/l)
8-9667	400601	EFFLUENT	N.D.
8-9668	400602	INFLUENT	N.D.

Detection Limit: 0.2

N.D.: Not Detected.

  
 -----  
 Analytical Supervisor



laboratories, inc.

FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

Report Date: 20-Oct-88
PACE JOB #: HLA 0831.100-L
Analytical Method: SMEWW 421 B\*
MATRIX: WATER

Analysis Completion : 7-Oct-88
Reported By: J. Harwood
Analyst: E.T.S.

Table with 4 columns: LAB #, CLIENT'S ID, CLIENT'S ID (handwritten), DISSOLVED OXYGEN (mg/l). Row 1: 8-9662, 400603, EFFLUENT, 4.5

\*: Standards Methods for the Examination of Water and Wastewater, 16th ed., 1985. (421 B= Azide Modified Winkler Method).

Handwritten signature: Douglas...
Analytical Supervisor

# CHAIN OF CUSTODY FORM

Lab: PACE

Job Number: 9382, 026.02  
 Name/Location: CITY OF OAKLAND  
 Project Manager: WA D. LELAND

Samplers: Walker tj  
 Recorder: [Signature]  
(Signature Required)

SOURCE CODE	MATRIX				#CONTAINERS & PRESERV.			SAMPLE NUMBER OR LAB NUMBER			DATE			
	Water	Sediment	Soil	Oil	Unpres.	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Yr	Wk	Seq	Yr	Mo	Dy	Time
23	X				4			88	40	0601	88	10	06	
23	X				4			88	40	0602	88	10	06	
23	X				2			88	40	0603	88	10	06	
23	X				2			88	40	0604	88	10	06	
23	X				4			88	40	0605	88	10	06	

ANALYSIS REQUESTED										
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Piltnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (C)	<u>DSS OXYGEN</u>	<u>DSS CHLORINE</u>		
XX	XX	XX	XX	XX	XX	XX				
XX	XX	XX	XX	XX	XX	XX				

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

CHAIN OF CUSTODY RECORD		
RELINQUISHED BY: <u>[Signature]</u>	RECEIVED BY: _____	DATE/TIME _____
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE/TIME _____
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE/TIME _____
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE/TIME _____
DISPATCHED BY: _____	DATE/TIME _____	RECEIVED FOR LAB BY: <u>C. Sontag</u> 10/6/88 3pm
METHOD OF SHIPMENT _____		

RECEIVED  
 NOV 2 1988  
 HARDING LAWSON ASSOC.

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

Report date: October 31, 1988  
 Client: Harding Lawson Associates  
 200 Rush Landing Road  
 Novato, CA 94947  
 Attn.: D. Leland

Pace job #: HLA 0831101-L  
**TREATMENT SYSTEM**  
**10-18-88**

Date sampled: October 18, 1988  
 Sampled by: Tim Walker

Site: City of Oakland

Date received: October 18, 1988  
 Submitted by: Tim Walker

P.O.: 9382 026 02

Lab #	Client ID	Matrix	Analysis
8- 1002	88431801 <b>EFFLUENT</b>	water	TPH (light) only 5030/8015
8- 1002	88431801	water	Vol Org. Cpds. 8010 + 8020
8- 1002	88431801	water	EDB EPA 504
8- 1003	88431802 <b>INTEL</b>	water	Vol Org. Cpds. 8010 + 8020
8- 1004	88431803 <b>INFLUENT</b>	water	TPH (light) only 5030/8015
8- 1004	88431803	water	Vol Org. Cpds. 8010 + 8020
8- 1004	88431803	water	EDB EPA 504
8- 1005	88431804 <b>BLANK</b>	water	TPH (light) only 5030/8015
8- 1005	88431804	water	Vol Org. Cpds. 8010 + 8020
8- 1005	88431804	water	EDB EPA 504
8- 1000	88431805 <b>INFLUENT</b>	water	Total Residual Chlorine
8- 1001	88431806 <b>EFFLUENT</b>	water	Total Residual Chlorine

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. The samples will be returned to the client after the 30-day period, unless other arrangements are made. If you have any questions, please feel free to call Lisa Petersen, our Client Services Coordinator at 415-883-6100.

*C. Sontag*  
 Sample Controller



Report Date: 28-Oct-88  
PACE JOB #: HLA 0831.101-L  
Analytical Method: EPA 8010  
MATRIX: WATER

Completion Date: 19-Oct-88  
Reported by: Harwood  
Analyst: Attia

	EFF	INTEL	INF	BLANK	
LAB #:	8-1002	8-1003	8-1004	8-1005	
CLIENT'S ID:	431801	431802	431803	431804	
COMPOUND	RESULT	RESULT	RESULT	RESULT	Detection
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	Limit (ug/l)
Dichlorodifluoromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Chloromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Vinyl Chloride-----	N.D.	N.D.	N.D.	N.D.	2.0
Bromomethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Chloroethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Trichlorofluoromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
1,1-Dichloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
Methylene Chloride-----	N.D.	N.D.	N.D.	N.D.	0.5
trans-1,2-Dichloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1-Dichloroethane-----	N.D.	N.D.	0.7	N.D.	0.5
Chloroform-----	N.D.	0.5	1.0	N.D.	0.5
1,1,1-Trichloroethane (TCA)-----	N.D.	N.D.	N.D.	N.D.	0.5
Carbon Tetrachloride-----	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)-----	1.1	6.1	5.5	N.D.	0.5
Trichloroethene (TCE)-----	0.6	4.2	290*	N.D.	0.5
1,2-Dichloropropane-----	N.D.	N.D.	N.D.	N.D.	0.5
Bromodichloromethane-----	N.D.	N.D.	N.D.	N.D.	0.5
2-Chloroethylvinyl ether-----	N.D.	N.D.	N.D.	N.D.	0.5
trans-1,3-Dichloropropene-----	N.D.	N.D.	N.D.	N.D.	0.5
cis-1,3-Dichloropropene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2-Trichloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Tetrachloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
Dibromochloromethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Chlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
Bromoform-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
1,3-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,4-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery			
Bromochloromethane	91 %	97 %	97 %	87 %
1,4-Dichlorobutane	95 %	92 %	89 %	98 %

N.D.: Not Detected

\*: TCE quantified at 10x dilution.

  
Analytical Supervisor

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # HLA 0831.101-L  
METHOD : EPA 8010

COMPOUND	Blank (ug/l)	Spike Duplicate % deviation	Spike % recovery
Dichlorodifluoromethane	N.D.	-	N.S.
Chloromethane	N.D.	-	N.S.
Vinyl Chloride	N.D.	-	N.S.
Bromomethane	N.D.	-	N.S.
Chloroethane	N.D.	-	N.S.
Trichlorofluoromethane	N.D.	-	N.S.
1,1-Dichloroethene	N.D.	-	N.S.
Methylene Chloride	N.D.	-	N.S.
trans-1,2-Dichloroethene	N.D.	-	N.S.
1,1-Dichloroethane (M.S.)	N.D.	5	100
Chloroform	N.D.	-	N.S.
1,1,1-Trichloroethane (TCA)	N.D.	-	N.S.
Carbon Tetrachloride	N.D.	-	N.S.
1,2-Dichloroethane (EDC)	N.D.	-	N.S.
Trichloroethene (TCE) (M.S.)	N.D.	6	97
1,2-Dichloropropane	N.D.	-	N.S.
Bromodichloromethane	N.D.	-	N.S.
2-Chloroethylvinyl ether	N.D.	-	N.S.
trans-1,3-Dichloropropene	N.D.	4	101
cis-1,3-Dichloropropene	N.D.	-	N.S.
1,1,2-Trichloroethane	N.D.	-	N.S.
Tetrachloroethene (M.S.)	N.D.	2	106
Dibromochloromethane	N.D.	-	N.S.
Chlorobenzene	N.D.	-	N.S.
Bromoform	N.D.	-	N.S.
1,1,2,2-Tetrachloroethane	N.D.	-	N.S.
1,3-Dichlorobenzene	N.D.	-	N.S.
1,4-Dichlorobenzene	N.D.	-	N.S.
1,2-Dichlorobenzene	N.D.	-	N.S.

QUALITY CONTROL DATA

Surrogate Spike % Recovery			
Bromochloromethane	100 %	102 %	103 %
1,4-Dichlorobutane	105 %	97 %	101 %

N.D.: Not Detected  
N.S.: Not Spiked

  
Analytical Supervisor

Report Date: 28-Oct-88 Completion Date: 25-Oct-88  
 PACE JOB #: HLA 0831.101-L Reported by: Harwood  
 Analytical Method: 5030/8015 Analyst: Powell  
 MATRIX: WATER Instrument I.D.: Varian 3300

LAB #: 8-1002 CLIENT'S ID: *EFF* 431801

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.	50.0

QUALITY CONTROL DATA  
 Surrogate Spike % Recovery  
 Fluorobenzene 95 %

LAB #: 8-1004 CLIENT'S ID: *INF* 431803

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.*	50.0

QUALITY CONTROL DATA  
 Surrogate Spike % Recovery  
 Fluorobenzene 100 %

LAB #: 8-1005 CLIENT'S ID: *BLANK* 431804

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.	50.0

QUALITY CONTROL DATA  
 Surrogate Spike % Recovery  
 Fluorobenzene 98 %

N.D.: Not Detected

\*: The sample contains 190 ppb of TCE.



-----  
 Analytical Supervisor

QUALITY CONTROL DATA  
 METHOD: 5030/8015

PACE JOB #:HLA 0831.101-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Gasoline-----	N.D.	1	110

QUALITY CONTROL DATA

Surrogate	Spike % Recovery
Fluorobenzene	100 %
	103 %
	98 %

N.D.: Not Detected



-----  
 Analytical Supervisor

Report Date: 28-Oct-88  
PACE JOB #: HLA 0831.101-L  
Analytical Method: EPA 8020  
MATRIX: WATER

Completion Date: 19-Oct-88  
Reported by: Harwood  
Analyst: Attia  
Instrument I.D.: Varian 3300

LAB #:	EFFLUENT		INTER
	8-1002	8-1003	8-1003
CLIENT'S ID:	431801	431802	431802

---

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Benzene-----	N.D.	N.D.	0.2
Toluene-----	N.D.	1.5	0.2
Chlorobenzene-----	N.D.	N.D.	0.2
Ethylbenzene-----	N.D.	N.D.	0.2
Xylene-----	N.D.	N.D.	0.2
1,3-Dichlorobenzene-----	N.D.	N.D.	0.2
1,4-Dichlorobenzene-----	N.D.	N.D.	0.2
1,2-Dichlorobenzene-----	N.D.	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike                      Percent Recovery  
Fluorobenzene                                      99 %                      99 %

LAB #:	INFLUENT		BLANK
	8-1004	8-1005	8-1005
CLIENT'S ID:	431803	431803	431804

---

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Benzene-----	N.D.	N.D.	0.2
Toluene-----	N.D.	N.D.	0.2
Chlorobenzene-----	N.D.	N.D.	0.2
Ethylbenzene-----	N.D.	N.D.	0.2
Xylene-----	N.D.	N.D.	0.2
1,3-Dichlorobenzene-----	N.D.	N.D.	0.2
1,4-Dichlorobenzene-----	N.D.	N.D.	0.2
1,2-Dichlorobenzene-----	N.D.	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike                      Percent Recovery  
Fluorobenzene                                      97 %                      100 %



-----  
Analytical Supervisor

QUALITY CONTROL DATA  
METHOD: EPA 8020

PACE JOB#: HLA 0831.101

COMPOUND	Blank (ug/l)	Spike Duplicate % deviation	Spike % recovery
Benzene-----	N.D.	0	99
Toluene-----	0.7	0	100
p-Xylene-----	N.D.	0	102

QUALITY CONTROL DATA

Surrogate Spike % Recovery

Fluorobenzene                      105 %                      97 %                      99%

N.D.: Not Detected



-----  
Analytical Supervisor

Report Date:	28-Oct-88	Extraction Date:	14-Oct-88
PACE JOB #:	HLA 0831.101-L	Completion Date:	26-Oct-88
Analytical Method:	EPA 504	Reported By:	Harwood
MATRIX:	WATER	Analyst:	Clark
		Instrument I.D.:	Varian 3300

	EFF	INF	BLANK	
LAB #:	8-1002	8-1004	8-1005	
CLIENT'S ID:	431801	431803	431804	
COMPOUND	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Ethylene Dibromide	N.D.	0.06	N.D.	0.03

BLANK, SPIKE DUPLICATE AND SPIKE REPORT

METHOD: EPA 504 PACE JOB #HLA 0831.101-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
QUALITY CONTROL DATA			
Surrogate Spike % Recovery			
Ethylene Dibromide	N.D.	8 %	39%

N.D.: Not Detected



-----  
 Analytical Supervisor

Report Date: 28-Oct-88  
PACE JOB #: HLA 0831.101-L  
Analytical Method: A.S.T.M.  
MATRIX: WATER

Completion Date: 18-Oct-88  
Reported By: Harwood  
Analyst: Ayzenberg

=====

LAB #	CLIENT'S ID:	TOTAL RESIDUAL CHLORINE (mg/l)
-------	--------------	-----------------------------------

-----

8-1000	431805 INFLUENT	N.D.
--------	-----------------	------

8-1001	431806 EFFLUENT	N.D.
--------	-----------------	------

Detection Limit: 0.2 mg/l



-----  
Analytical Supervisor





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: FACE 4LA 0831.10

Job Number: 09202 026 02  
 Name/Location: CITY OF OAKLAND  
 Project Manager: D. LELAND

Samplers: WALKER TJ  
 Recorder: [Signature]  
 (Signature Required)

SOURCE CODE	MATRIX				#CONTAINERS & PRESERV.			SAMPLE NUMBER OR LAB NUMBER			DATE			
	Water	Sediment	Soil	Oil	Unpres.	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Yr	Wk	Seq	Yr	Mo	Dy	Time
23	X				X			88	43	18001	88	10	18	
23	X				X			88	43	18002	88	10	18	
23	X				X			88	43	18003	88	10	18	
23	X				X			88	43	18004	88	10	18	
23	X				X			88	43	18005	88	10	18	
23	X				X			88	43	18006	88	10	18	

ANALYSIS REQUESTED												
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Plltnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (L)	RES CHLORINE					EDS (504)

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

CHAIN OF CUSTODY RECORD		
RELINQUISHED BY: (Signature)	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)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)
METHOD OF SHIPMENT		DATE/TIME

REPORT OF LABORATORY ANALYSIS

RECEIVED  
 NOV 10 1988  
 HARDING LAWSON ASSOCIATES

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

Report date: November 8, 1988  
 Client: Harding Lawson Associates  
 200 Rush Landing Road  
 Novato, CA 94947  
 Attn.: David Leland

Pace job #: HLA 0831102-L

TREATMENT SYSTEM  
 10-21-88

Date sampled: October 21, 1988  
 Sampled by: T. Walker

Site: City of Oakland

Date received: October 21, 1988  
 Submitted by: T. Walker

P.O.: 09382,026.02

Lab #	Client ID	Matrix	Analysis
8- 1132	432101 INFLUENT	water	Total Residual Chlorine
8- 1133	432102 INTER	water	Purg. Halocarbons 601/8010
8- 1134	432103 EFFLUENT	water	Total Residual Chlorine
8- 1135	432104 INFLUENT	water	Purg. Halocarbons 601/8010
8- 1135	432104	water	TPH with 8020
8- 1135	432104	water	EDB EPA 504
8- 1136	432105 EFFLUENT	water	Purg. Halocarbons 601/8010
8- 1136	432105	water	TPH with 8020
8- 1136	432105	water	EDB EPA 504
8- 1137	432106 BLANK	water	Purg. Halocarbons 601/8010
8- 1137	432106	water	TPH with 8020
8- 1137	432106	water	EDB EPA 504

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. The samples will be returned to the client after the 30-day period, unless other arrangements are made. If you have any questions, please feel free to call Lisa Petersen, our Client Services Coordinator at 415-883-6100.

*C. Sontag*  
 Sample Controller

Report Date: 07-Nov-88 Completion Date: 25-Oct-88  
 PACE JOB #: HLA 0831.102-L Analyst: Attia  
 Analytical Method: EPA 5030/8015/8020 Reported by: Harwood  
 MATRIX: WATER

LAB #: 8-1135 CLIENT'S ID: INFLUENT 432104

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.*	50.0

QUALITY CONTROL DATA Surrogate Spike % Recovery  
 Fluorobenzene 112 %

LAB #: 8-1136 CLIENT'S ID: EFFLUENT 432105

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.	50.0

QUALITY CONTROL DATA Surrogate Spike % Recovery  
 Fluorobenzene 97 %

LAB #: 8-1137 CLIENT'S ID: BLANK 432106

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.	50.0

QUALITY CONTROL DATA Surrogate Spike % Recovery  
 Fluorobenzene 94 %

N.D.: Not Detected  
 \*: TCE found at 190 ug/l.

*Attia*  
 -----  
 Analytical Supervisor



laboratories, inc.

FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

Report Date: 07-Nov-88
PACE JOB #: HLA 0831.102-L
Analytical Method: EPA 504
MATRIX: WATER

Completion Date: 1-Nov-88
Reported By: Harwood
Analyst: Clark

Table with 4 columns: INF, EFF, BLANK, and Detection Limit (ug/l). Rows include LAB #, CLIENT'S ID, and Ethylene Dibromide results.

BLANK, SPIKE DUPLICATE AND SPIKE REPORT

METHOD: EPA 504 PACE JOB #: HLA 0831.102-L

Table with 4 columns: Blank ug/l, Spike Duplicate % deviation, Spike % recovery. Row for Ethylene Dibromide shows N.D. %, 8 %, and 39%.

N.D.: Not Detected
N.S.: Not Spiked

Handwritten signature

Analytical Supervisor

Report Date: 04-Nov-88 Completion Date: 24-Oct-88  
 PACE JOB #: HLA 0831.102-L Reported By: Harwood  
 Analytical Method: A.S.T.M. Analyst: Ayzenberg  
 MATRIX: WATER

=====

LAB #	CLIENT'S ID:	TOTAL RESIDUAL CHLORINE (mg/l)
-------	--------------	-----------------------------------

-----

8-1132	432101 INFLUENT	<0.1
--------	-----------------	------

8-1134	432102'S EFFLUENT	<0.1
--------	-------------------	------

Detection Limit: 0.1

QUALITY CONTROL DATA PACE JOB #:HLA 0831.102-L

=====

COMPOUND	Blank (mg/l)	Spike Duplicate % deviation	Spike % recovery
----------	-----------------	--------------------------------	---------------------

=====

TOTAL RESIDUAL CHLORINE	0	0	-
----------------------------	---	---	---



-----  
 Analytical Supervisor

QUALITY CONTROL DATA

METHOD: EPA 5030/8015/8020

PACE JOB #: HLA 0831.102-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene-----	N.D.	4	106
Toluene-----	N.D.	2	103
p-Xylene-----	N.D.	2	104
Gasoline-----	N.D.	1	110

QUALITY CONTROL DATA

Surrogate Spike % Recovery

Fluorobenzene	100 %	103 %	98%
---------------	-------	-------	-----

N.D.: Not Detected



-----  
Analytical Supervisor

Report Date: 04-Nov-88  
 PACE JOB #: HLA 0831.102-L  
 Analytical Method: EPA 8010  
 MATRIX: WATER

Completion Date: 25-Oct-88  
 Reported by: Harwood  
 Analyst: Attia

	INTER	INF	EFF	BLANK
LAB #:	8-1133	8-1135	8-1136	8-1137
CLIENT'S ID:	432102	432104	432105	432106

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Dichlorodifluoromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Chloromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Vinyl Chloride-----	N.D.	N.D.	N.D.	N.D.	2.0
Bromomethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Chloroethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Trichlorofluoromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
1,1-Dichloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
Methylene Chloride-----	N.D.	0.7	1.1	N.D.	0.5
trans-1,2-Dichloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1-Dichloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Chloroform-----	0.9	1.7	N.D.	N.D.	0.5
1,1,1-Trichloroethane (TCA)-----	N.D.	N.D.	N.D.	N.D.	0.5
Carbon Tetrachloride-----	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)-----	7.4	5.9	1.4	N.D.	0.5
Trichloroethene (TCE)-----	22	180*	N.D.	N.D.	0.5
1,2-Dichloropropane-----	N.D.	N.D.	N.D.	N.D.	0.5
Bromodichloromethane-----	N.D.	N.D.	N.D.	N.D.	0.5
2-Chloroethylvinyl ether-----	N.D.	N.D.	N.D.	N.D.	0.5
trans-1,3-Dichloropropene-----	N.D.	N.D.	N.D.	N.D.	0.5
cis-1,3-Dichloropropene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2-Trichloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Tetrachloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
Dibromochloromethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Chlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
Bromoform-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
1,3-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,4-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery			
Bromochloromethane	88 %	96 %	92 %	95 %
1,4-Dichlorobutane	89 %	86 %	82 %	92 %

N.D.: Not Detected

\*: Run 10x dilution with Surrogate Spike Recovery.



Analytical Supervisor

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # HLA 0831.102-L  
METHOD : EPA 8010

COMPOUND	Blank (ug/l)	Spike Duplicate % deviation	Spike % recovery
Dichlorodifluoromethane	N.D.	-	N.S.
Chloromethane	N.D.	-	N.S.
Vinyl Chloride	N.D.	-	N.S.
Bromomethane	N.D.	-	N.S.
Chloroethane	N.D.	-	N.S.
Trichlorofluoromethane	N.D.	-	N.S.
1,1-Dichloroethene	N.D.	-	N.S.
Methylene Chloride	N.D.	-	N.S.
trans-1,2-Dichloroethene	N.D.	-	N.S.
1,1-Dichloroethane (M.S.)	N.D.	1	98
Chloroform	N.D.	-	N.S.
1,1,1-Trichloroethane (TCA)	N.D.	-	N.S.
Carbon Tetrachloride	N.D.	-	N.S.
1,2-Dichloroethane (EDC)	N.D.	-	N.S.
Trichloroethene (TCE) (M.S.)	N.D.	2	100
1,2-Dichloropropane	N.D.	-	N.S.
Bromodichloromethane	N.D.	-	N.S.
2-Chloroethylvinyl ether	N.D.	-	N.S.
trans-1,3-Dichloropropene	N.D.	1	92
cis-1,3-Dichloropropene	N.D.	-	N.S.
1,1,2-Trichloroethane	N.D.	-	N.S.
Tetrachloroethene (M.S.)	N.D.	6	108
Dibromochloromethane	N.D.	-	N.S.
Chlorobenzene	N.D.	-	N.S.
Bromoform	N.D.	-	N.S.
1,1,2,2-Tetrachloroethane	N.D.	-	N.S.
1,3-Dichlorobenzene	N.D.	-	N.S.
1,4-Dichlorobenzene	N.D.	-	N.S.
1,2-Dichlorobenzene	N.D.	-	N.S.

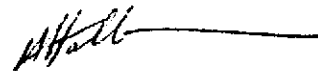
QUALITY CONTROL DATA

Surrogate Spike % Recovery

Bromochloromethane	96 %	102 %	109%
1,4-Dichlorobutane	101 %	92 %	98%

N.D.: Not Detected

N.S.: Not Spiked



Analytical Supervisor



Report Date: 04-Nov-88  
PACE JOB #: HLA 0831.102-L  
Analytical Method: EPA 8020  
MATRIX: WATER

Completion Date: 25-Oct-88  
Reported by: Harwood  
Analyst: Attia

	INF	EFF	BLANK	
LAB #:	8-1135	8-1136	8-1137	
CLIENT'S ID:	432104	432105	432106	
COMPOUND	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Benzene-----	0.8	N.D.	N.D.	0.2
Toluene-----	0.2	N.D.	N.D.	0.2
Chlorobenzene-----	N.D.	N.D.	N.D.	0.2
Ethylbenzene-----	N.D.	N.D.	N.D.	0.2
Xylene-----	N.D.	N.D.	N.D.	0.2
1,3-Dichlorobenzene-----	N.D.	N.D.	N.D.	0.2
1,4-Dichlorobenzene-----	N.D.	N.D.	N.D.	0.2
1,2-Dichlorobenzene-----	N.D.	N.D.	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery		
Fluorobenzene	102 %	106 %	103 %

QUALITY CONTROL DATA

METHOD: EPA 8020 PACE JOB#: HLA 0831.102

COMPOUND	Blank (ug/l)	Spike Duplicate % deviation	Spike % recovery
Benzene-----	N.D.	7	105
Toluene-----	N.D.	5	104
p-Xylene-----	N.D.	5	107

QUALITY CONTROL DATA

Surrogate Spike	% Recovery		
Fluorobenzene	111 %	104 %	104%

N.D.: Not Detected

*Attia*

-----  
Analytical Supervisor



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

### CHAIN OF CUSTODY FORM

Lab: ACE HLA 0831.102

Job Number: 9302 026 02  
 Name/Location: CITY OF OAKLAND  
 Project Manager: W. D. LELAND

Samplers: WALKER TJ

Recorder: [Signature]  
 (Signature Required)

SOURCE CODE	MATRIX				#CONTAINERS & PRESERV.			SAMPLE NUMBER OR LAB NUMBER			DATE			
	Water	Sediment	Soil	Oil	Unpres.	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Yr	Wk	Seq	Yr	Mo	Dy	Time
23	X				X			88	43	2101	88	10	21	
23	X				X			88	43	2102	88	10	21	
23	X				X			88	43	2103	88	10	21	
23	X				X			88	43	2104	88	10	21	
23	X				X			88	43	2105	88	10	21	
23	X				X			88	43	2106	88	10	21	

STATION DESCRIPTION/NOTES

ANALYSIS REQUESTED											
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pflmt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.					

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				
						<del>STD TAT</del>
						5 day

CHAIN OF CUSTODY RECORD		
RELINQUISHED BY: (Signature)	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)	DATE/TIME	RECEIVED FOR LAB BY: (Signature) DATE/TIME
METHOD OF SHIPMENT		

TREATMENT SYSTEM

10-27-88

Report Date: 15-Nov-88 Completion Date: 09-Nov-88  
 PACE JOB #: HLA 0831.103-L Reported By: J.HARWOOD  
 Analytical Method: EPA 504 Analyst: CLARK  
 MATRIX: WATER Instrument I.D.: 3700-ALPHA

	EFFLUENT	INTERMEDIATE	
LAB #:	8-1318	8-1321	
CLIENT'S ID:	442701	442702	
COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Ethylene Dibromide	N.D.	N.D.	0.01

	BLANK	INFLUENT	
LAB #:	8-1323	8-1324	
CLIENT'S ID:	4452704	442703	
COMPOUND	RESULT (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Ethylene Dibromide	N.D.	0.31	0.01

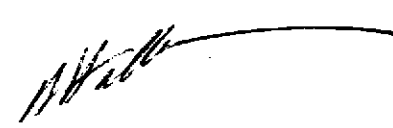
BLANK, SPIKE DUPLICATE AND SPIKE REPORT  
 METHOD: EPA 504 PACE JOB #: HLA 0831.103-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
----------	---------------	--------------------------------	---------------------

QUALITY CONTROL DATA  
 Surrogate Spike % Recovery

Ethylene Dibromide	N.D. %	10 %	103%
--------------------	--------	------	------

N.D.: Not Detected  
 N.S.: Not Spiked

  
 Analytical Supervisor

Report Date: 15-Nov-88 Completion Date: 28-Oct-88  
 PACE JOB #: HLA 0831.103-L Reported By: J. Harwood  
 Analytical Method: A.S.T.M. Analyst: Ayzenberg  
 MATRIX: WATER

LAB #	CLIENT'S ID:	TOTAL RESIDUAL CHLORINE (mg/l)
8-1319	442701 EFFLUENT	N.D.
8-1325	442703 INFLUENT	0.02
Detection Limit		0.01

QUALITY CONTROL DATA		PACE JOB #:	HLA 0831.10
COMPOUND	Blank (mg/l)	Spike Duplicate % deviation	Spike % recovery
TOTAL RESIDUAL CHLORINE	N.D.	28	60 - 80



-----  
Analytical Supervisor

Report Date: 12-Nov-88  
PACE JOB #: HLA 0831.103-L  
Analytical Method: 5030/8015  
MATRIX: WATER

Completion Date: 02-Nov-88  
Reported by: Petersen  
Analyst: ATTIA

LAB #: 8-1317

CLIENT'S ID: *EFFLUENT* 442701

COMPOUND	RESULT (ug/l)	Detection Limit(ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.	50.0

QUALITY CONTROL DATA

Surrogate Spike % Recovery  
Fluorobenzene 82 %

LAB #: 8-1322

CLIENT'S ID: *INFLUENT* 442703

COMPOUND	RESULT (ug/l)	Detection Limit(ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.*	50.0

QUALITY CONTROL DATA

Surrogate Spike % Recovery  
Fluorobenzene 85 %

LAB #: 8-1323

CLIENT'S ID: *BLANK* 442704


COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Total Petroleum Hydrocarbons (light)--	N.D.	50.0

QUALITY CONTROL DATA

Surrogate Spike % Recovery  
Fluorobenzene 85 %

\* : Trichloroethene present at 160 ug/l.

N.D.: Not Detected

  
-----  
Analytical Supervisor



laboratories, inc

FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

METHOD: 5030/8015

PACE JOB #:HLA 0831.103-L

Table with 4 columns: COMPOUND, Blank ug/l, Spike Duplicate % deviation, Spike % recovery. Row 1: Gasoline, N.D., 13, 109

QUALITY CONTROL DATA

Surrogate Spike % Recovery

Table with 4 columns: Compound, Blank ug/l, Spike Duplicate % deviation, Spike % recovery. Row 1: Fluorobenzene, 89 %, 102 %, 103 %

N.D.: Not Detected

Handwritten signature

Analytical Supervisor

Report Date: 12-Nov-88  
PACE JOB #: HLA 0831.103-L  
Analytical Method: EPA 8020  
MATRIX: WATER

Extract/Purge Date: 02-Nov-88  
Completion Date: 02-Nov-88  
Analyst: LEWIS/ATTIA  
Reported by: Petersen

LAB #:	EFFLUENT		INFLUENT	
	CLIENT'S ID:	8-1317 442701	8-1322 442703	
COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Benzene-----	N.D.	0.2	N.D.	0.2
Toluene-----	N.D.	0.2	N.D.	0.2
Chlorobenzene-----	N.D.	0.2	N.D.	0.2
Ethylbenzene-----	N.D.	0.2	N.D.	0.2
Xylene-----	N.D.	0.2	N.D.	0.2
1,3-Dichlorobenzene-----	N.D.	0.2	N.D.	0.2
1,4-Dichlorobenzene-----	N.D.	0.2	N.D.	0.2
1,2-Dichlorobenzene-----	N.D.	0.2	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike                      Percent Recovery  
Fluorobenzene                              95 %                              98 %

**BLANK**

LAB #: 8-1323  
CLIENT'S ID: 442704

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene-----	N.D.	0.2
Toluene-----	N.D.	0.2
Chlorobenzene-----	N.D.	0.2
Ethylbenzene-----	N.D.	0.2
Xylene-----	N.D.	0.2
1,3-Dichlorobenzene-----	N.D.	0.2
1,4-Dichlorobenzene-----	N.D.	0.2
1,2-Dichlorobenzene-----	N.D.	0.2

QUALITY CONTROL DATA

Surrogate Spike                      Percent Recovery  
Fluorobenzene                              95 %

N.D.: Not Detected



-----  
Analytical Supervisor



laboratories, inc

FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

METHOD: EPA 8020

PACE JOB#: HLA 0831.1

Table with 4 columns: COMPOUND, Blank (ug/l), Spike Duplicate % deviation, Spike % recovery. Rows include Benzene, Toluene, and p-Xylene.

QUALITY CONTROL DATA

Surrogate Spike % Recovery

Table with 4 columns: Surrogate Spike % Recovery, Fluorobenzene, 102 %, 99 %, 101

N.D.: Not Detected

Handwritten signature

Analytical Supervisor



Report Date: 12-Nov-88  
PACE JOB #: HLA 0831.103-L  
Analytical Method: EPA 8010

Completion Date: 02-Nov-88  
Reported by: Petersen  
Analyst: ATTIA/LEWIS

MATRIX: WATER

LAB #:	EFF	INTER	INF	BLANK
	8-1317	8-1320	8-1322	8-1323
CLIENT'S ID:	442701	442702	442703	442704

COMPOUND	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	RESULT (ug/l)	Detection Limit(ug/l)
Dichlorodifluoromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Chloromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Vinyl Chloride-----	N.D.	N.D.	N.D.	N.D.	2.0
Bromomethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Chloroethane-----	N.D.	N.D.	N.D.	N.D.	2.0
Trichlorofluoromethane-----	N.D.	N.D.	N.D.	N.D.	2.0
1,1-Dichloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
Methylene Chloride-----	N.D.	N.D.	N.D.	N.D.	0.5
trans-1,2-Dichloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1-Dichloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Chloroform-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1,1-Trichloroethane (TCA)-----	N.D.	N.D.	N.D.	N.D.	0.5
Carbon Tetrachloride-----	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichloroethane (EDC)-----	N.D.	9.0	8.7	N.D.	0.5
Trichloroethene (TCE)-----	N.D.	4.7	140	N.D.	0.5
1,2-Dichloropropane-----	N.D.	N.D.	N.D.	N.D.	0.5
Bromodichloromethane-----	N.D.	N.D.	N.D.	N.D.	0.5
2-Chloroethylvinyl ether-----	N.D.	N.D.	N.D.	N.D.	0.5
trans-1,3-Dichloropropene-----	N.D.	N.D.	N.D.	N.D.	0.5
cis-1,3-Dichloropropene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2-Trichloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Tetrachloroethene-----	N.D.	N.D.	N.D.	N.D.	0.5
Dibromochloromethane-----	N.D.	N.D.	N.D.	N.D.	0.5
Chlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
Bromoform-----	N.D.	N.D.	N.D.	N.D.	0.5
1,1,2,2-Tetrachloroethane-----	N.D.	N.D.	N.D.	N.D.	0.5
1,3-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,4-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5
1,2-Dichlorobenzene-----	N.D.	N.D.	N.D.	N.D.	0.5

QUALITY CONTROL DATA

Surrogate Spike	Percent Recovery			
Bromochloromethane	87 %	86 %	90 %	87 %
1,4-Dichlorobutane	105 %	104 %	108 %	110 %

N.D.: Not Detected

  
Analytical Supervisor

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # HLA 0831.103-L  
METHOD : EPA 8010

COMPOUND	Blank (ug/l)	Spike Duplicate % deviation	Spike % recovery
Dichlorodifluoromethane	N.D.	-	N.S.
Chloromethane	N.D.	-	N.S.
Vinyl Chloride	N.D.	-	N.S.
Bromomethane	N.D.	-	N.S.
Chloroethane	N.D.	-	N.S.
Trichlorofluoromethane	N.D.	-	N.S.
1,1-Dichloroethene	N.D.	-	N.S.
Methylene Chloride	N.D.	-	N.S.
trans-1,2-Dichloroethene	N.D.	-	N.S.
1,1-Dichloroethane (M.S.)	N.D.	4	103
Chloroform	N.D.	-	N.S.
1,1,1-Trichloroethane (TCA)	N.D.	-	N.S.
Carbon Tetrachloride	N.D.	-	N.S.
1,2-Dichloroethane (EDC)	N.D.	-	N.S.
Trichloroethene (TCE) (M.S.)	N.D.	4	112
1,2-Dichloropropane	N.D.	-	N.S.
Bromodichloromethane	N.D.	-	N.S.
2-Chloroethylvinyl ether	N.D.	-	N.S.
trans-1,3-Dichloropropene	N.D.	6	101
cis-1,3-Dichloropropene	N.D.	-	N.S.
1,1,2-Trichloroethane	N.D.	-	N.S.
Tetrachloroethene (M.S.)	N.D.	7	103
Dibromochloromethane	N.D.	-	N.S.
Chlorobenzene	N.D.	-	N.S.
Bromoform	N.D.	-	N.S.
1,1,2,2-Tetrachloroethane	N.D.	-	N.S.
1,3-Dichlorobenzene	N.D.	-	N.S.
1,4-Dichlorobenzene	N.D.	-	N.S.
1,2-Dichlorobenzene	N.D.	-	N.S.

QUALITY CONTROL DATA

Surrogate Spike % Recovery

Bromochloromethane	90 %	107 %	110
1,4-Dichlorobutane	117 %	105 %	115

N.D.: Not Detected

N.S.: Not Spiked



Analytical Supervisor



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

# CHAIN OF CUSTODY FORM

Lab: YARE

Job Number: 9902 026 02  
 Name/Location: CITY OF OAKLAND  
 Project Manager: DAVE LELAND

Samplers: WALKER T J  
 OGANSEY BCA

Recorder: J Walker  
 (Signature Required)

SOURCE CODE	MATRIX				#CONTAINERS & PRESERV.			SAMPLE NUMBER OR LAB NUMBER			DATE			
	Water	Sediment	Soil	Oil	Unpres.	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Yr	Wk	Seq	Yr	Mo	Dy	Time
29	X				X			99	44	2701	99	10	27	1445
29	X				X			99	44	2702	99	10	27	1503
29	X				X			99	44	2703	99	10	27	1515
29	X				X			99	44	2704	99	10	27	1530

STATION DESCRIPTION/NOTES

ANALYSIS REQUESTED										
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pflnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (c)	EDS	RES	CHLORINE	
X	X				X	X	X			
X	X				X	X				
X	X				X	X				
X	X				X	X				

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				
						STANDARD TAT
						EDS 2WK TAT

CHAIN OF CUSTODY RECORD		
RELINQUISHED BY: (Signature)	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)	DATE/TIME	RECEIVED FOR LAB BY: (Signature) DATE/TIME
METHOD OF SHIPMENT		

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

DISTRIBUTION

REPORT OF SYSTEM MONITORING: OCTOBER 1988  
DEWATERING EFFLUENT TREATMENT SYSTEM  
CHINATOWN REDEVELOPMENT PROJECT AREA  
OAKLAND, CALIFORNIA  
November 18, 1988

COPY NO. 4

		<u>Copy No.</u>
1 copy:	California Regional Water Quality Control Board San Francisco Bay Region 1111 Jackson Street, Room 6000 Oakland, California 94607 Attention: Mr. Peter Johnson	1
2 copies:	City of Oakland Redevelopment Agency One City Hall Plaza Oakland, California 94612 Attention: Mr. Peter Chen	2-3
1 copy:	Alameda County Department of Environmental Health 80 Swan Way, Room 200 Oakland, California 94621 Attention: Mr. Storm Goranson	4

CEM/DFL/CRS/tra/g6529-R

QUALITY CONTROL REVIEWER



Christopher R. Smith  
Senior Associate Hydrogeologist