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April 30, 1991

09382,041.02

California Regional Water Quality Control Board San Francisco Bay Region 2101 Webster Street Oakland, California 94612

Attention: Mr. Don Dalke

Dear Mr. Dalke:

Report of Monitoring: January through March 1991 Chinatown Redevelopment Project Area Oakland, California

This letter transmits the Report of Monitoring of Groundwater and Dewatering Effluent Treatment System, January through March 1991, Chinatown Redevelopment Project Area, Oakland, California dated April 30, 1991. The report was prepared by Harding Lawson Associates (HLA) on behalf of the Redevelopment Agency of the City of Oakland (Agency).

Analysis of groundwater samples collected from monitoring wells in March 1991 indicates low to nondetectable concentrations of target analytes at most wells sampled. Gasoline constituents continue to be detected at Well MW-19 although concentrations have declined compared to December 1990 data.

The onsite groundwater treatment system continued to operate during this period. Analytical results indicate the treatment system reduced concentrations of volatile organic compounds to below discharge standards.

On the basis of discussions with the general contractor for the Pacific Renaissance Plaza (PRP) project, dewatering operations are expected to terminate in July 1991. After termination, HLA will evaluate the extent of petroleum hydrocarbons remaining in groundwater in the vicinity of the PRP site and report on the evaluation to the Regional Water Quality Control Board, San Francisco Bay Region.

Please call me at 899-7352 or Peter Chen of the Agency at 273-3692 if you have any questions.

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Yours very truly,

HARDING LAWSON ASSOCIATES, INC.

David F. Leland, P.E.

Associate Engineer

 $\mathrm{DFL/jas}\ 17502\mathrm{-oak}$ 

Attachment: Report of Monitoring of Groundwater and Dewatering Effluent Treatment

System, January through March 1991, Chinatown Redevelopment Project

Area, Oakland, California

cc: Lester Feldman, RWQCB

John Jang, RWQCB

Lowell Miller, Alameda County

Peter Chen, Agency (2)

Doug Grant, Pacific Renaissance Associates II

Fred Warren, Perini Corporation

A Report Prepared for

California Regional Water Quality Control Board San Francisco Bay Region 2101 Webster Street, Suite 500 Oakland, California 94612

REPORT OF MONITORING OF GROUNDWATER AND DEWATERING EFFLUENT TREATMENT SYSTEM JANUARY THROUGH MARCH 1991 CHINATOWN REDEVELOPMENT PROJECT AREA OAKLAND, CALIFORNIA

HLA Job No. 9382,040.02

bу

Mark T. Egbert Project Geologist

David F. Leland, P.E. Associate Engineer

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

April 30, 1991

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### 1.0 INTRODUCTION

This report discusses operations and monitoring of the construction dewatering effluent treatment system at the Pacific Renaissance Plaza (PRP) site, and quarterly groundwater monitoring in the Chinatown Redevelopment Project Area of Oakland, California (Plate 1) from January through March 1991. The activities described here were performed by or under the direction of Harding Lawson Associates (HLA) on behalf of the Redevelopment Agency of the City of Oakland (Agency).

The effluent treatment system was operated in conjunction with in situ soil bioremediation until May 30, 1990 (HLA, 1990b). The system was restarted on November 26, 1990; HLA has continued to maintain and operate the system during construction dewatering of the PRP site by Perini Corporation, the general contractor for the project. Treatment system monitoring through December 1990 was reported in HLA's Report of Monitoring of Groundwater and Dewatering Effluent Treatment System (HLA, 1991a).

The treatment system operates under National Pollution Discharge Elimination

System (NPDES) permit CA0029394, approved by the California Regional Water Quality

Control Board, San Francisco Bay Region (RWQCB) as Order No. 88-119 dated July 26,

1988.

Groundwater monitoring is being performed to assess the distribution of gasoline hydrocarbons in groundwater in the vicinity of the PRP site. Groundwater monitoring was performed as proposed in HLA's *Investigation Plan*, *Hydrocarbons in Offsite* Groundwater (HLA, 1990a), and is scheduled to continue through the construction dewatering period.

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### 2.0 QUARTERLY GROUNDWATER MONITORING

Water levels were measured at 11 wells on January 11, February 11 and March 8, 1991 to monitor hydraulic conditions at the PRP site. On February 11, 1991, groundwater samples were collected from Monitoring Wells MW-7 and MW-19 and on March 8, 1991, groundwater samples were collected from Monitoring Wells MW-3, MW-7, and MW-18 through MW-23 to monitor groundwater chemistry in the vicinity of the PRP site (Plate 1).

Standard HLA decontamination protocol was followed prior to sampling. All HLA employees performing field work were trained in safety procedures and used Level D personal protective equipment.

For wells sampled on February 11 and March 8, water levels were obtained prior to purging and sampling. At least three well volumes were purged from each well prior to sampling; purge water was collected and processed through the treatment system.

Groundwater samples were collected with a stainless steel bailer. After being decanted into 40-milliliter sample bottles, samples were labeled and stored on ice until delivery under chain of custody to Pace Laboratories, Inc., (PACE), of Novato, California for chemical analysis. Each sample was analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Test Method 8020 and for total petroleum hydrocarbons (TPH) as gasoline using EPA Test Method 8015.

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### 3.0 TREATMENT SYSTEM OPERATIONS AND MONITORING

### 3.1 Operations and Maintenance

From January 1 through March 28, 1991, 3,080,000 gallons of groundwater from the dewatering wells and rain water collection sumps were pumped through the groundwater treatment system and released to the storm sewer. This is an average of approximately 25 gallons per minute (gpm) or 35,400 gallons per day (gpd), and is well below the NPDES maximum permitted average flow of 72,000 gpd.

The treatment system sand filter was changed or backwashed 68 times during the reporting period; the carbon filters were backwashed 13 times. Bag filters were changed 42 times; cartridge filters were replaced 18 times. Treatment system filters were changed or backflushed more frequently during periods of rain because of increases in flow volume and suspended sediment in the influent.

### 3.2 Releases

During this quarter, release of untreated water occurred on February 5 and March 13, as described by HLA in letters to Mr. John Jang of the RWQCB dated February 24, 1991 and March 18, 1991 (HLA, 1991b and 1991c), respectively.

On February 5, 1991, the first Baker storage tank overflowed and released an estimated 3,000 gallons of untreated water to the storm gutter on Franklin Street, which directs water to the storm sewer inlet at 9th and Webster streets. To characterize the release, an influent water sample was collected from the first storage tank on February 5. In addition, samples were collected from four pipes representing individual sources of dewatering effluent that discharge to the treatment system storage tanks. The four pipes represent water from Dewatering Wells DW-1 through DW-11, Dewatering Wells DW-12 and DW-13 and sumps in the bottom of the excavation near 9th Street,

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In January, as required by the NPDES permit CA0029394, biennial analyses for metals were performed on the influent and effluent samples by PACE. A fish bioassay was performed by ToxScan Laboratory, a state-certified laboratory in Watsonville, California, on the January effluent sample to evaluate toxicity. A fish bioassay of the effluent is required annually.

The duplicate influent sample for January, analyzed by EPA Test Methods 8010 and 8020, the duplicate influent sample for February, analyzed by EPA Test Method 8010, and all EPA Test Method 504 analyses for ethylene dibromide (EDB) were performed by KJC. Dissolved oxygen measurements were obtained in the field by HLA for the February and March rounds. All other monthly analyses were performed by PACE.

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# 5.0 RECOMMENDATIONS AND PLANNED ACTIVITIES - APRIL THROUGH JUNE 1991

The next quarterly groundwater monitoring round is scheduled for June 1991; Monitoring Wells MW-3, MW-7, and MW-18 through MW-23 will be sampled. Water levels will be measured at these wells and at Monitoring Wells MW-2, MW-6, and MW-8.

Review of historical monitoring well data indicates that TPH has not been measured in samples from Wells MW-3, MW-20, MW-21, MW-22 and MW-23, and has been detected only once at MW-18. Since September 1990, only two wells, MW-7 and MW-19, have shown detectable concentrations of TPH. HLA recommends continued quarterly analysis for TPH as gasoline of samples from Monitoring Wells MW-7 and MW-19, and quarterly analysis of all monitoring well samples for BTEX compounds.

Samples from the treatment system will be collected and analyzed monthly in accordance with the NPDES permit. It is currently estimated by Perini Corporation that the dewatering system will terminate operation in July 1991.

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### 6.0 REFERENCES

Oakland, California. March 18.

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Treatment System, Chinatown Redevelopment Project Area, Oakland, California.
June 15.

\_\_\_\_\_\_, 1991a. Report of Monitoring of Groundwater and Dewatering Effluent
Treatment System, October through December 1990. Chinatown Redevelopment
Project Area, Oakland, California. January 23.

\_\_\_\_\_\_, 1991b. Letter to RWQCB, Report of Noncompliance, Water Treatment System,
NPDES Permit CA0029394, Pacific Renaissance Plaza, Oakland, California.
February 14.

\_\_\_\_\_\_, 1991c. Letter to RWQCB, Report of Noncompliance: March 13, 1991, Water
Treatment System, NPDES Permit CA0029394, Pacific Renaissance Plaza,

# LARGE MAP REMOVED

TABLE 1. SUMMARY OF ANALYTICAL PROGRAM - TREATMENT SYSTEM MONITORING PACIFIC RENAISSANCE PLAZA, OAKLAND, CALIFORNIA

### ANALYSES PERFORMED/LABORATORY

Sampling Points	Date	Sample Number	8010	8020	TPH (Gasoline) 8015	EDB 504	Metals	Chlorine	Dissolved Oxygen	Fish Bioassay
Influent Influent	11-Jan-91 11-Jan-91	91011101 91011102 (dup)	PACE KJC	PACE KJC	PACE	KJC	PACE	PACE	PACE	
Influent Influent	11-Feb-91 11-Feb-91	91022103 91021103	PACE	KJC PACE	PACE	KJC		PACE		
Influent Influent Influent	8-Mar-91 8-Mar-91 8-Mar-91	91033001 91033002 (dup) 91033007	PACE	PACE PACE	PACE PACE	KJC		PACE		
Intermediate	11-Jan-91	91011103	PACE	PACE						
Intermediate	11-Feb-91	91021104	PACE	PACE						
Intermediate	8-Mar-91	91033003	PACE	PACE						
Effluent	11-Jan-91	91011104	PACE	PACE	PACE	KJC	PACE	PACE	PACE	ToxScan
Effluent Effluent Trip Blank Effluent Effluent Trip Blank	11-Feb-91 11-Feb-91 11-Feb-91 11-Feb-91 11-Feb-91 11-Feb-91	91022105 91022106 (dup) 91022107 91021105 91021106 (dup) 91021107	PACE PACE PACE	PACE PACE PACE	PACE PACE	KIC KIC KIC		PACE		
Effluent Effluent Field Blank Effluent Effluent Field Blank	8-Mar-91 8-Mar-91 8-Mar-91 8-Mar-91 8-Mar-91	91033004 91033005 (dup) 91033006 91033008 91033009 (dup) 91033010	PACE PACE PACE	PACE PACE PACE	PACE PACE PACE	KJC KJC		PACE		

Samples Collected after the	February Releas	e of Untreated Influent Water					 		<del></del> -	
Baker Tanks	5-Feb-91	91020501	PACE	PACE					ł	
Franklin Street Sumps	6-Feb-91	91020601	PACE	PACE				1	<b>,</b>	
9th Street Sumps	6-Feb-91	91020602	PACE	PACE		1	ŀ	1		
Webster Street Sumps	11-Feb-91	91022108	KJC	KJC		KJC	l			
9th Street Wells and Sumps	11-Feb-91	91022109	KJC	KJC	ŀ	KJC				
Franklin Street Sumps	12-Feb-91	91021201	KIC	KJC	l	KJC			1	
Wells DW-1 to DW-11	12-Feb-91	91021202	KJC	KJC		KJC		ļ	1	
Travel Blank	12-Feb-91	911092	<u> </u>	KJC	<u> </u>	KJC	 <u> </u>	<u> </u>	1	

Table 2. WATER-LEVEL ELEVATIONS - AUGUST 1990 THROUGH MARCH 1991

Well No.	MW	-2	MW	-3	MW	-6	MW	-7	MW	-8	MW-	-12
	GROUND SURFACE 40.05	TOP OF CASING 39.55	GROUND SURFACE 39.02	TOP OF CASING 38.35	GROUND SURFACE 39.95	TOP OF CASING 39.59	GROUND SURFACE 39.35	TOP OF CASING 39.10	GROUND SURFACE 40.63	TOP OF CASING 40,47	GROUND SURFACE 37.70	TOP OF CASING 37.00
DATE	Depth to Water	Ele- vation										
3-Aug-90	25.59	13.96	25.33	13.02	25.37	14.22	25.38	13.72	27.02	13.45	21.15	15.85
27-Aug-90	•	-	•	-	•	-	-	-	•	-	-	-
12-Sep-90	-	-	-	-	-	-	-	_	-	_	24.08	12.92
13-Sep-90	-	-	-	-		-	25.15	13.95	-	-	-	
14-Nov-90	25.38	14.17	23.91	14.44	25.25	14.34	24.97	14.13	26.72	13.75	23.37	13.63
3-Dec-90	26.12	13.43	24.69	13.66	25.44	14.15	27.66	11.44	27.28	13,19	25.45	11.55
11-Jan-91	28.60	10.95	28.97	9.38	27.50	12.09	29.82	9.28	29.04	11.43	•	•
11-Feb-91	32.39	7.16	32.37	5.98	29.43	10.16	32.35	6.75	30.88	9.59	•	•
8-Mar-91	33.57	5.98	32.29	6.06	30.41	9.18	32.04	7.06	31.98	8.49	•	•

Elevations are in feet above mean sea level (MSL).

Depth to water measured in feet from top of casing.

<sup>\*</sup> Well MW-12 was damaged during excavation and construction activities and can no longer be monitored.

Table 2. WATER-LEVEL ELEVATIONS - AUGUST 1990 THROUGH MARCH 1991

Well No.	MW-	18	MW-	19	MW-	20	MW-	21	MW-	22	MW-	23
	GROUND SURFACE 36.52	TOP OF CASING 35.88	GROUND SURFACE 37.15	TOP OF CASING 36.62	GROUND SURFACE 38.32	TOP OF CASING 37.86	GROUND SURFACE 38.67	TOP OF CASING 38.08	GROUND SURFACE 37.70	TOP OF CASING 37.34	GFICUND SURFACE 34.68	TOP OF CASING 34.23
DATE	Depth to Water	Ele- vation	Depth to Water	Ele- vation								
3-Aug-90	24.41	11.47	25.32	11.30	25.01	12.85	27.60	10.48	-	-	-	-
27-Aug-90	-	-	-		•	-	27.52	10.56	22.93	14.41	22.45	11.78
12-Sep-90	-	-	-	-	24.06	13.80	27.38	10.70	-	-	-	-
13-Sep-90	24.33	11.55	22.44	14.18	-	-		-	22.78	14.56	21.27	12.96
14-Nov-90	24.13	11.75	21.97	14.65	24.47	13.39	27.32	10.76	22.65	14.69	21.80	12.43
3-Dec-90	24.81	11.07	22.16	14.46	26.29	11,57	27.39	10.69	22.78	14.56	22.00	12.23
11-Jan-91	25.90	9.98	25.33	11.29	28.38	9.48	28.03	10.05	24.98	12.36	22.51	11.72
11-Feb-91	26.40	9.48	26.55	10.07	29.55	8.31	28.08	10.00	26.05	11.29	22.69	11.54
8-Mar-91	26.44	9.44	26.56	10.06	29.95	7.91	28.33	9.75	26.63	10.71	22.77	11.46

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

Table 3. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS
Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ethyl Benzene	XYLENES, TOTAL	TPH AS GASOLINE
ΓΟD	(mg/l)	0.0005	/0.0002 <b>*</b>	0.0005/	0.0002 *	0.25/0.05*
MW-12	12-Sep-90	ND	ND	ND	0.0002	NT
	3-Dec-90	0.0006	0.0002 †	ND	0.0002 †	ND
MW-18	15-Feb-89	ND	ND	ND	NO	ND
M 11-10	3-Mar-89	NT	NT	NT NT	ND NT	ND ND
	5-Apr-89	ND	ND	ND	. ND	ND ND
	2-May-89	ND	ND	ND	ND ND	ND ND
	7-Jun-89	ND	ND	ND	ND ND	ND
	6-Jul-89	ND ND	ND	ND	ND	ND
	2-Aug-89	ND	ND	ND	ND	ND
	6-Sep-89	ND	ND	ND	ND	ND
	5-Oct-89	ND	ND	ND	ND	ND
	1-Nov-89	ND	ND	ND	ND	ND
	6-Dec-89	ND	0.0009	ND	0.0013	ND .
	2-Jan-90	0.016	0.0080	0.0014	0.0098	0.10
	1-Feb-90	ND	ND	ND	ND	ND
	1-Mar-90	0.0003	ND	ND	0.0002	ND ND
	11-Apr-90	0.0004	0.0006	0.0005	0.0003	ND
	18-May-90	ND	ND	ND	ND	ND ND
	13-Sep-90	0.0027	ND	ND	ND	NT
	4-Dec-90	0.0029	0.0002 †	ND	0.0003 †	ND
	8-Mar-91	0.0009	0.0003	ND	ND ND	ND
MW-19	15-Dec-89	5.0	0.30	0.078	0.61	12
	3-Jan-90	3.0	0.46	0.12	1.1	13
	1-Feb-90	1.1	0.022	LT 0.0040	0.032	1.9
	1-Mar-90	4.2	0.92	0.24	0.82	9.2
	11-Apr-90	3.8	†. <b>1</b>	0.82	0.34	10
	18-May-90	5.6	0.75	0.70	0.78	11
	13-Sep-90	1.4	1.2	0.35	1.6	NT
	4-Dec-90	2.1	1.5	0.42	1.6	12
	11-Feb-91	0.45 a	0.12 a	0.086	0.21 a	2.7
	8-Mar-91	0.52 a	0.057 a	0.020 a	0.083 a	1.40 b
MW-20	15-Dec-89	ND	ND	ND	ND	ND
	3-Jan-90	0.0004	0.0004	ND	0.0008	ND
	1-Feb-90	ND	0.0014	ND	0.0005	ND
	28-Feb-90	ND	ND	ND	0.0005	ND
	11-Apr-90	0.0028	0.0110	0.0011	0.0066	ND
	18-May-90	ND	ND	ND	ND	ND
	12-Sep-90	ND	ND	ND	ND	NT
	3-Dec-90	ND	0.0002 †	ND	ND	ND
	8-Mar-91	ND	ND	ND	ND	ND
MW-21	27-Aug-90	ND	ND	ND	ND	NT
	12-Sep-90	ND	ND	ND	ND	NT
	3-Dec-90	ND	0.0005 †	ND	0.0011 †	ND
	8-Mar-91	ND	ND	ND	ND	ND
MW-22	27-Aug-90	ND	ND	ND	ND	NT
	13-Sep-90	ND	ND	ND	ND	NT
	4-Dec-90	ND	0.0002 †	ND	0.0002 †	ND
	8-Mar-91	ND	ND	ND	ND	ND

Table 3. RESULTS OF ORGANIC CHEMICAL ANALYSES OF GROUNDWATER SAMPLES FROM MONITORING WELLS
Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
rod	(mg/l)	0.0005	/0.0002 *	0.0005/	0.0002 *	0.25/0.05**
MW-23	27-Aug-90	ND	ND	ND	ND	NT
	13-Sep-90	ND	ND ND	ND	ND	NT
	4-Dec-90	ND	0.0002 †	ND	ND	ND
	8-Mar-91	ND	ND	ND	ND	ND
					•	
BLANK	5-Apr-89	0.5	ND	ND	ND	ND
	1-May-89	ND	ND	NĎ	ND	ND
	6-Jun-89	ND	ND	ND	ND	ND
	6-Jul-89	ND	ND	ND	ND	ND
	1-Aug-89	ND	NĎ	ND	ND	ND
	2-Aug-89	ND	ND	ND	ND	ND
	3-Aug-89	ND	ND	ND	ND	ND
	6-Sep-89	ND	ND	ND	ND	ND
	7-Sep-89	ND	ND	ND	ND	ND
	4-Oct-89	ND	ND	ND	ND	ND
	2-Nov-89	ND	ND	ND	ND	ND
	5-Dec-89	ND	ND	ND	ND	ND
	3-Jan-90	ND	0.0006	ND	0.0017	ND
	13-Sep-90	ND	ND	ND	ND	NT
	11-Feb-91	ND	ND	ND	ND	NT
	8-Mar-91	ND	ND	ND	ND	ND

Results reported in milligrams per liter (mg/l); equivalent to parts per million. Analyses performed by PACE Laboratories, Inc., Novato, California.

LOD: Limit of Detection.

ND: Not detected at or above LOD.

NT: Not tested.

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

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

†: PACE laboratory reported toluene and total xylenes in the method blanks analyzed along with the samples.

@: Two values indicate results of duplicate analyses.

LT: Less than the concentration indicated.

a: Method detection limit is 0.004 mg/l.

b: Method detection limit is 1.0 mg/l.

Table 4. TREATMENT SYSTEM WATER ANALYSIS: INFLUENT SAMPLES

LA SAMPLE ID# ATE	9011IN00 26-Nov-90	9011IN01 28-Nov-90	90120405 4-Dec-90	91011101 11-Jan-91	91011102 (dup) (k 11-Jan-91
EST METHOD/ COMPOUNDS					
PA 8020					
Benzene	ND < 0.2	21	18	0.4	15
Toluene	ND < 0.2	110	12	ND < 0.2	7.3
Ethylbenzene	ND < 0.2	0.40	1.3	ND < 0.2	ND < 0.2
Xylenes	ND < 0.2	130	36	0.2	8.6
All other 8020 compounds	NT	NT	NT	NT	ND
PA 8015					
TPH (Gasoline)	ND < 50	470	250	ND < 50	NT
PA 8010					
Chiorobenzene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Chioroform	3.7	4.2	1.5	2.1	ND < 0.5
1,2-Dichloroethane	ND < 0.5	1.0	3.1	4.6	3.3
1,2-Dichloroethylene*	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	3.6
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Tetrachloroethylene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,1,1-Trichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Trichloroethene	ND < 0.5	0.9	8.1	21	15
All other 8010 compounds	ND	ND	ND	ND	ND
PA 504					
Ethylene dibromide	ND < 0.05	0.21	0.48	NT	0.14
tandard Method 408E					
Residual chlorine (mg/l)	ND < 0.05	NT	ND < 0.05	ND < 0.05	NT
PA 360.2			- •		
Dissolved oxygen (mg/l)	8.8	NT	8.9	5.9	NŤ

Table 4. TREATMENT SYSTEM WATER ANALYSIS: INFLUENT SAMPLES

HLA SAMPLE ID # DATE	91021103 11-Feb-91	91022103 (k) 11-Feb-91	91033001 8-Mar-91	91033002 (dup) 8-Mar-91	91033007 (k) 8-Mar-91
TEST METHOD/ COMPOUNDS					
EPA 8020					
Benzene	12	8.4	2.0	2.0	NT
Toluene	0.7	0.2	0.5	0.5	NT
Ethylbenzene	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	NT
Xylenes	0.3	1.2	ND < 0.2	ND < 0.2	NT
All other 8020 compounds	NT	NT	NT	NT	NT
EPA 8015					
TPH (Gasoline)	72	NT	ND < 50	ND < 50	NT
EPA 8010					
Chlorobenzene	ND < 0.5	NT	ND < 0.5	NT	NT
Chloroform	1.0	NT	ND < 0.5	NT	NT
1,2-Dichloroethane	4.1	NT	2.5	NT	NT
1,2-Dichloroethylene *	ND < 0.5	NT	ND < 0.5	NT	NT
Methylene chloride	ND < 0.5	NT	ND < 0.5	NT	NT
Tetrachloroethylene	ND < 0.5	NT	ND < 0.5	NT	NT
1,1,1-Trichloroethane	ND < 0.5	NT	ND < 0.5	NT	NT
Trichloroethene	110	NT	49	<b>N</b> T	NT
All other 8010 compounds	ND	NT	ND	NT	ТИ
EPA 504					
Ethylene dibromide	NT	0.033	NT	NT	0.10
Standard Method 408E					
Residual chlorine (mg/l)	0.10	NT	1.0	NT ·	ИТ
EPA 360.2					
Dissolved oxygen (mg/l)	5.6 (h)	5.6 (h)	9.2 (h)	9.2 (h)	9.2 (h)

### Notes:

All results reported in micrograms per liter (ug/l) (equivalent to parts per billion) except where indicated. All laboratory analysis performed by PACE Inc., Novato, California, except where indicated.

ND: Not detected at stated detection limit.

NT: Not tested

k: Laboratory analysis performed by Kennedy/Jenks/Chilton, Laboratory Division, San Francisco, California.

h: Dissolved oxygen measured by HLA in the field.

<sup>\*:</sup> PACE reports trans-1,2-Dichloroethylene and KJC reports the combined concentrations of cis-1,2-Dichloroethylene and trans-1,2-Dichloroethylene.

Table 5. TREATMENT SYSTEM WATER ANALYSIS: INTERMEDIATE SAMPLES

HLA SAMPLE ID # DATE	90120406 4-Dec-90	91011103 11-Jan-91	91021104 11-Feb-91	91033003 8-Mar-91
TEST METHOD/COMPOUNDS				
EPA 8020				
Benzene	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
Ethylbenzene	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
All other 8020 compounds	NT	ND	NT	NT
EPA 8015				
TPH (Gasoline)	ND < 50	NT	NT	NT
EPA 8010				
Chloroform	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,2-Dichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	1.5
Trichloroethene	ND < 0.5	ND < 0.5	1.0	2,2
All other 8010 compounds	ND	ND	ND	ND

All results reported in micrograms per liter (ug/l) (equivalent to parts per billion) except where indicated. All laboratory analysis performed by PACE Inc., Novato, California.

ND: Not detected at stated detection limit.

NT: Not tested.

Table 6. TREATMENT SYSTEM WATER ANALYSIS: EFFLUENT SAMPLES

ILA SAMPLE ID # DATE	9011EF01 26-Nov-90	9011EF02(Dup) 26-Nov-90	9011EF03 28-Nov-90	90120407 4-Dec-90	90120408(Dup) 4-Dec-90	91011104 11-Jan-91
EST METHOD/COMPOUNDS						
PA 8020						
Benzene	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	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
Xylenes	ND < 0.2	ND < 0.2	ND < 0.2	0.2	ND < 0.2	ND < 0.2
All other 8020 compounds	M	NT	NT	NT	NT	NT
PA 8015						
TPH (Gasoline)	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50	ND < 50
PA 8010						
Chloroform	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
1,2-Dichloroethane	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Methylene chloride	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Trichloroethene	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
All 8010 compounds	ND	ND	NT	ND	ND	ND
PA 504						
Ethylene dibromide	0.11	0.10	ND < 0.05	0.23	ND < 0.05	ND < 0.01 (k)
tandard Method 408E						
Residual chlorine (mg/l)	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05	ND < 0.05
PA 360.2						
Dissolved oxygen (mg/l)	7	6.8	0.8	1	1	1.3

Table 6. TREATMENT SYSTEM WATER ANALYSIS: EFFLUENT SAMPLES

HLA SAMPLE ID # DATE	91021105 11-Feb-91	91021106 (dup) 11-Feb-91	91022105 (k) 11-Feb-91	91022106 (dup) (k) 11-Feb-91
TEST METHOD/COMPOUNDS				
EPA 8020				
Benzene	ND < 0.2	ND < 0.2	NT	M
Toluene	0.3	ND < 0.2	NT	NT
Ethylbenzene	ND < 0.2	ND < 0.2	NT	NT
Xylenes	ND < 0.2	ND < 0.2	NT	NT
All other 8020 compounds	NT	NT	NT	NT
EPA 8015				
TPH (Gasoline)	ND < 50	ND < 50	NT	NT
EPA 8010				
Chloroform	ND < 0.5	ND < 0.5	NT	NT
1,2-Dichloroethane	ND < 0.5	ND < 0.5	NT	NT
Methylene chloride	ND < 0.5	ND < 0.5	NT	NT
Trichloroethene	ND < 0.5	ND < 0.5	NT	NT
All 8010 compounds	ND	ND	M	NT
EPA 504				
Ethylene dibromide	NT	NT	ND < 0.02	ND < 0.02
Standard Method 408E				
Residual chlorine (mg/l)	ND < 0.05	NT	NT	NT
EPA 360.2				
Dissolved oxygen (mg/l)	4.4 (h)	4.4 (h)	4.4 (h)	4.4 (h).

Table 6. TREATMENT SYSTEM WATER ANALYSIS: EFFLUENT SAMPLES

HLA SAMPLE ID # DATE	91033004 8-Mar-91	91033005 (dup) 8-Mar-91	91033008 (k) 8-Mar-91	91033009 (dup) (k 8-Mar-91
TEST METHOD/COMPOUNDS				
EPA 8020				
Benzene	ND < 0.2	ND < 0.2	NT	NT
Toluene	ND < 0.2	ND < 0.2	NT	NT
Ethylbenzene	ND < 0.2	ND < 0.2	NT	NT
Xylenes	ND < 0.2	ND < 0.2	NT	NT
All other 8020 compounds	NT	NT	NT	NT
EPA 8015				
TPH (Gasoline)	ND < 50	ND < 50	NT	NT
EPA 8010				
Chloroform	ND < 0.5	ND < 0.5	NT	ML
1,2-Dichloroethane	ND < 0.5	ND < 0.5	NT	NT
Methylene chloride	2.1 *	ND < 0.5	NT	NT
Trichloroethene	ND < 0.5	ND < 0.5	NT	NT
All 8010 compounds	ND < 0.5	ND	и	NT
EPA 504				
Ethylene dibromide	NT	NΤ	ND < 0.01	ND < 0.01
Standard Method 408E				
Residual chlorine (mg/l)	ND < 0.05	NT	NT	NT
EPA 360.2				
Dissolved oxygen (mg/l)	6.0 (h)	6.0 (h)	6.0 (h)	6.0 (h)

All results reported in micrograms per liter (µg/l) (equivalent to parts per billion) except where indicated. All laboratory analysis performed by PACE Inc., Novato, California, except where indicated.

ND: Not detected at stated detection limit.

NT: Not tested.

k: Sample analyzed by Kennedy/Jenks/Chilton, Laboratory Division, San Francisco, California.

h: Dissolved oxygen measured by HLA in the field.

<sup>\*:</sup> Methylene chloride present in laboratory blank at 3.3µg/L.

Table 7. TREATMENT SYSTEM WATER ANALYSIS: SAMPLES FROM RELEASES AND INDIVIDUAL INFLUENT SOURCES

HLA SAMPLE ID # SAMPLE LOCATION DATE	91020501 Baker Tank 5-Feb-91	91020601 Franklin Street Sumps 6-Feb-91	91020602 9th Street Sumps 6-Feb-91	91022109 (k) 9th Street Wells and Sumps 11-Feb-91	91022108 (k) Webster Street Sumps 11-Feb-91
TEST METHOD/ COMPOUNDS					
EPA 8020					
Benzene	45	ND < 0.2	620	2	47
Toluene	6.2 (f)	0.4	3.1	0.3	0.7
Ethylbenzene	ND < 1.0	ND < 0.2	1.6 (f)	ND < 0.2	0.3
Xylenes	29	ND < 0.2	27	11	2.4
All other 8020 compounds	2.6 (f) *	ND	2.9 (t) *	NT	NT
EPA 8015					
TPH (Gasoline)	NT	NT	NT	NT	NT
EPA 8010					
Chlorobenzene	ND < 2.5	ND < 0.5	ND < 0.5	ND < 0.5	2.2
Chloroform	ND < 2.5	ND < 0.5	1.7 (f)	0.7	0.8
1,2-Dichloroethane	2.5 (f)	ND < 0.5	4.1 (f)	6.2	4.4
1,2-Dichloroethylene	ND < 2.5	ND < 0.5	ND < 0.5	1.8	29
Methylene chloride	5.5	ND < 0.5	ND < 0.5	0.6	ND < 0.5
Tetrachloroethylene	ND < 2.5	ND < 0.5	ND < 0.5	ND < 0.5	0.7
1,1,1-Trichloroethane	ND < 2.5	ND < 0.5	1.4 (f)	ND < 0.5	ND < 0.5
Trichloroethene	180	0.6	ND < 0.5	14	310
All other 8010 compounds	ND	NO	ND	ND	ND
EPA 504					
Ethylene dibromide	NT	NT	NT	0.08	0.10
Standard Method 408E					
Residual chlorine (mg/l)	NT	NT	NT	NT	NT
EPA 360.2					
Dissolved oxygen (mg/l)	NT	NT	NT	NT	NT

Table 7. TREATMENT SYSTEM WATER ANALYSIS: SAMPLES FROM RELEASES AND INDIVIDUAL INFLUENT SOURCES

HLA SAMPLE ID # SAMPLE LOCATION DATE	91021201 (k) Franklin Street Sumps 12-Feb-91	91021202 (k) Wells DW-1 to DW-11 12-Feb-91
TEST METHOD/ COMPOUNDS		
EPA 8020		
Benzene	31	1.5
Toluene	29	2.6
Ethylbenzene	14	0.9
Xylenes	47	3.8
All other 8020 compounds	NT	NT
EPA 8015		
TPH (Gasoline)	NT	NT
EPA 8010		
Chlorobenzene	1.2	ND < 0.5
Chloroform	ND < 0.5	ND < 0.5
1,2-Dichloroethane	4.4	4.6
1,2-Dichloroethylene	59	2.4
Methylene chloride	ND < 0.5	ND < 0.5
Tetrachloroethylene	ND < 0.5	ND < 0.5
1,1,1-Trichloroethane	ND < 0.5	ND < 0.5
Trichloroethene	140	13
All other 8010 compounds	ND	ND
EPA 504		
Ethylene dibromide	0.04	ND < 0.2
Standard Method 408E		
Residual chlorine (mg/l)	NT	NT
EPA 360.2		
Dissolved oxygen (mg/l)	NT	NT

### Notes:

All results reported in micrograms per liter (µg/l) (equivalent to parts per billion) except where indicated.

All laboratory analysis performed by PACE Inc., Novato, California, except where indicated.

ND: Not detected at stated detection limit.

NT: Not tested.

<sup>\*:</sup> Total combined concentrations of 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, and 1,4-Dichlorobenzene are shown.

k: Sample analyzed by Kennedy/Jenks/Chilton, Laboratory Division, San Francisco, California.

f: Compound cannot be confirmed due to dilution.

Table 8. TREATMENT SYSTEM WATER ANALYSIS: BLANK SAMPLES

HLA SAMPLE ID # DATE	91022107 (trip blank) (k) 11-Feb-91	91021107 (trip blank) 11-Feb-91	911092 (trip blank) (k) 12-Feb-91	91033006 (field blank) 8-Mar-91	91033010 (field blank) (k 8-Mar-91
TEST METHOD/COMPOUNDS					
EPA 8020					
Benzene	NT	ND < 0.2	ND < 0.2	ND < 0.2	NT
Toluene	NT	ND < 0.2	ND < 0.2	ND < 0.2	NT
Ethylbenzene	NT	ND < 0.2	ND < 0.2	ND < 0.2	NT
Xylenes	NT	ND < 0.2	ND < 0.2	ND < 0.2	NT
All other 8020 compounds	NT	NT	М	NT	NT
EPA 8015					
TPH (Gasoline)	NT	NT	NT	ND < 50	NT
EPA 8010					
Chloroform	NT	ND < 0.5	ND < 0.5	ND < 0.5	NT
1,2-Dichloroethane	NT	ND < 0.5	ND < 0.5	ND < 0.5	NT
Methylene chloride	NT	0.5	ND < 0.5	ND < 0.5	NT
Trichloroethene	NT	ND < 0.5	ND < 0.5	ND < 0.5	NT
All 8010 compounds	NT	ND	ND	ND	NT
EPA 504					
Ethylene dibromide	ND < 0.02	NT	ND < 0.02	ИТ	ND < 0.01

All results reported in micrograms per liter (µg/l) (equivalent to parts per billion) except where indicated. All laboratory analysis performed by PACE Inc., Novato, California, except where indicated.

ND: Not detected at stated detection limit.

NT: Not tested.

k: Sample analyzed by Kennedy/Jenks/Chilton, Laboratory Division, San Francisco, California.

Table 9. TREATMENT SYSTEM WATER ANALYSIS: BIENNIAL ANALYSIS FOR METALS IN INFLUENT AND EFFLUENT SAMPLES

HLA SAMPLE ID # SAMPLE LOCATION DATE	RWQCB * SHALLOW WATER DISCHARGE LIMIT	METHOD DETECTION LIMIT	91011101 INFLUENT 11-Jan-91	91011104 EFFLUENT 11-Jan-91
METALS				
Arsenic	0.020	0.005	ND	NO
Mercury	0.001	0.0002	ND	ND
Selenium	NA	0.005	ND	ND
Antimony	NA	0.06	ND	, NO
Beryllium	NA	0.01	ND	NO
Cadmium	0.010	0.005	ND	ND
Chromium	0.011	0.01	0.02	ND
Copper	0.020	0.01	ND	ND
Lead (reanalysis)	0.0056	0.1 0.003	ND ND	ND 0.006
Nickel (reanalysis)	0.0071	0.02 0.001	ND 0.017	ND 0.005
Silver (reanalysis)	0.0023	0.01 0.0002	D D	ND ND
Thallium	NA	0.2	NO	, ND
Zinc	0.058	0.01	0.02	0.01

<sup>\*:</sup> California Regional Water Quality Control Board, San Francisco Bay Region, 1986. Water Quality Control Plan. December.

ND: Not detected NA: Not applicable

**Harding Lawson Associates** 

RESULTS OF LABORATORY ANALYSIS OF TREATMENT SYSTEM SAMPLES
JANUARY 1991



TREATHER SYSTEM

1-11-91

January 30, 1991

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

RE: PACE Project No. 410111.506

9382,039.02PRP/0k1nd

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received January 11, 1991.

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

Sincerely,

Project Manager

**Enclosures** 

Tampa, Florida

Iowa City, Iowa

San Francisco, California

Kansas City, Missouri



Harding Lawson Associates 200 Rush Landing Road Novato, CA 94945

January 30, 1991 PACE Project Number: 410111506

Attn: M	lr. Dav	id Le	land
---------	---------	-------	------

		•				
	9382,039.02PRP/Ok1nd			Influent	Intermediate	Eff luent
	PACE Sample Number: Date Collected:				70 0003970 01/11/91	
ŗ	Date Received: Parameter	Units	MDL	01/11/91 91011101	01/11/91 91011103	01/11/91 91011104
1	INORGANIC ANALYSIS	—. <del>—.</del>				
	INDIVIDUAL PARAMETERS					
	Arsenic (EPA Method 7060, Furnace AAS) Chlorine, Total Residual	mg/L mg/L	0.005 0.05	ND ND	-	ND ND
	Mercury (EPA Method 7470, Cold Vapor AA)	mg/L	0.0002		-	ND ·
	Oxygen, Dissolved Selenium (EPA Method 7740, Furnace AAS)	mg/L mg/L	0.1 0.005	5.9 ND	-	1.3
	•	g/ C	0.003	ND	-	ND
!	METALS IN AQUEOUS MATRIX, ICP SCAN Antimony (EPA Method 6010/200.7, ICP)	mg/L	0.06	ND		NO
ì	Beryllium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND		ND ND
	Cadmium (EPA Method 6010/200.7, ICP) Chromium (EPA Method 6010/200.7, ICP)	mg/L	0.005	ND		ND
	Copper (EPA Method 6010/200.7. ICP)	mg/L mg/L	0.01 0.01	0.02 ND		ND ND
	Lead (EPA Method 6010/200.7, ICP)	mg/L	0.1	ND	-	ND
	Nickel (EPA Method 6010/200.7, ICP)	mg/L	0.02	ND		ND
	Silver (EPA Method 6010/200.7, ICP) Thallium (EPA Method 6010/200.7, ICP)	mg/L	0.01	ND	-	ПD
ı	Zinc (EPA Method 6010/200.7, ICP)	mg/L mg/L	0.2	ND 0.02		ND
1	ORGANIC ANALYSIS	g/ L	0.01	0.02	-	0.01
	ORGANIC ANACISIS			-		- -
	PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT):		:			• •
ŀ		mg/L	0.05	ND -	<del>-</del> i	ND
ŀ	Benzene	mg/L	0.0002	0.0004	<del>-</del> -	- ND
1	Ethylbenzene Ethylbenzene	ma /1	0.0000	NID.		::=

Ethy1benzene

Xylenes, Total

Toluene

Method Detection Limit Not detected at or above the MDL.

mg/L

mg/L

mg/L

0.0002 ND

0.0002 ND

0.0002 0.0002

ND

ND

ND



	Mr. David Leland Page 2				30, 1991 oject Number	^: 410111506
	9382,039.02PRP/Oklnd					
1	PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	70 0003962 01/11/91 01/11/91 91011101	70 0003970 01/11/91 01/11/91 91011103	70 0003989 01/11/91 01/11/91 91011104
	ORGANIC ANALYSIS				•	
1	HALOGENATED VOLATILE COMPOUNDS EPA 8010 Dichlorodifluoromethane Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane (Freon 11)	ug/L ug/L ug/L ug/L ug/L ug/L	2.0 2.0 2.0 2.0 2.0 2.0	ND ND ND ND ND ND	- - - -	ND ND ND ND ND
	1,1-Dichloroethene Methylene Chloride trans-1,2-Dichloroethene 1,1-Dichloroethane Chloroform 1,1,1-Trichloroethane (TCA)	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND 2.1 ND	- - - -	ND ND ND ND ND ND
	Carbon Tetrachloride 1,2-Dichloroethane (EDC) Trichloroethene (TCE) 1,2-Dichloropropane Bromodichloromethane 2-Chloroethylvinyl ether	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND 4.6 21 ND ND ND	- - - -	ND ND ND ND ND ND
	cis-1,3-Dichloropropene trans-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene Dibromochloromethane Chlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	- - - -	ND ND ND ND ND ND
	Bromoform 1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND ND	- - - -	ND ND ND ND ND

11 Digital Drive Novato, CA 94949 TEL: 415-883-6100 FAX: 415-883-2673

Method Detection Limit

Not detected at or above the MDL.

MDL

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Los Angeles, California Charlotte, North Carolina Asheville, North Carolina New York, New York Pittsburgh, Pennsylvania

An Equal Opportunity Employer



Mr. David Leland January 30, 1991 Page PACE Project Number: 410111506 9382,039.02PRP/0k1nd PACE Sample Number: 70 0003962 70 0003970 70 0003989 Date Collected: 01/11/91 01/11/91 01/11/91 Date Received: 01/11/91 01/11/91 01/11/91 Parameter MDL 91011101 91011103 91011104 Units ORGANIC ANALYSIS HALOGENATED VOLATILE COMPOUNDS EPA 8010 Bromochloromethane (Surrogate Recovery) 112% 97% 1,4-Dichlorobutane (Surrogate Recovery) 99% 104% **VOLATILE HALOCARBONS AND AROMATICS VOLATILE HALOCARBONS BY EPA 8010** Dichlorodifluoromethane ug/L 2.0 ND Chloromethane ug/L 2.0 ND Vinyl Chloride 2.0 ND ug/L Bromomethane 2.0 ND ug/L Chloroethane 2.0 ND ug/L Trichlorofluoromethane (Freon 11) ug/L 2.0 ND 1,1-Dichloroethene 0.5 ND ug/L Methylene Chloride 0.5 ND ug/L trans-1,2-Dichloroethene 0.5 ND ug/L 1,1-Dichloroethane ug/L 0.5 ND Chloroform 0.5 ND ug/L 1,1,1-Trichloroethane (TCA) 0.5 ND uq/L Carbon Tetrachloride 0.5 ND ug/L 1,2-Dichloroethane (EDC) ug/L 0.5 ND Trichloroethene (TCE) 0.5 ND ug/L 1,2-Dichloropropane 0.5 ND ug/L Bromodichloromethane 0.5 ND ug/L 2-Chloroethylvinyl ether 0.5 ug/L ND cis-1,3-Dichloropropene 0.5 ND ug/L trans-1,3-Dichloropropene 0.5 ND ug/L 1,1,2-Trichloroethane 0.5 ND ug/L Tetrachloroethene 0.5 ND ug/L Dibromochloromethane 0.5 ug/L ND

MDL ND

Chlorobenzene

Method Detection Limit

Not detected at or above the MDL.

Kansas City, Missouri

ug/L

0.5

ND



Mr. David Leland Page 4	January 30, 1991 PACE Project Number: 410111506				
9382,039.02PRP/0klnd					
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	70 0003962 01/11/91 01/11/91 91011101	70 0003970 01/11/91 01/11/91 91011103	70 0003989 01/11/91 01/11/91 91011104
ORGANIC ANALYSIS					
VOLATILE HALOCARBONS AND AROMATICS Bromoform 1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Bromochloromethane (Surrogate Recovery)	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	- - - -	ND ND ND ND ND 90%	- - -
1,4-Dichlorobutane (Surrogate Recovery) VOLATILE AROMATICS BY EPA 8020 Benzene Toluene	ug/L ug/L	0.2 0.2	- - -	83% - ND ND	- · · · · · · · · · · · · · · · · · · ·
Chlorobenzene Ethylbenzene	ug/L ug/L	0.2 0.2	-	ND ND	<del>-</del>
Xylenes, Total 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Fluorobenzene (Surrogate Recovery)	ug/L ug/L ug/L ug/L	0.2 0.2 0.2 0.2	- - - -	ND ND ND ND 102%	- - - -
MDL Method Detection Limit ND Not detected at or above the MD	L.				

Tampa, Florida

lowa City, Iowa

San Francisco, California Kansas City, Missouri



Mr. David Leland Page

9382,039.02PRP/0k1nd

January 30, 1991 PACE Project Number: 410111506

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

Marilyn R. Arsenault

Acting Inorganic Chemistry Manager

Ruth J. Siegmund

Organic Chemistry Manager

Ruth Sigmund

	7655 Redwood P.O. Box 578 Novato, Californ	•	TAIN OF CU	STODY FORM	Lab: PACE
· · · · · · · · ·	415/892-0821 Telecopy: 415/8	92-08317	Samplers: To	M M. DRINKARD	ANALYSIS REQUESTED
Job	Number:	9382,039.02		<u> </u>	-    -
Nam	ne/Location	: PRP / DAKLAND			CBTEX (Xylene Irocarb.
		er: DAVID LEAND	_ Recorder: <u>T</u>	on Juhard nature Required)	1. Metals 10 (E) 10 (E) 10 (A)
	MATRIX ,	#CONTAINERS SAMPLE			11일(양양) 왕인 왕의 학생 나는 나는 나는
GE	ent	OR LAB	DATE	STATION DESCRIPTION/ NOTES	EPA 601 (801) EPA 602 (802) EPA 624/824 EPA 624/824 Priority Plifnt Benzene/Tolu Total Petrol. I CHLOLINE EPA 8015 01550   Vel
SOURCE CODE	Water Sediment Soil Oil	NUMBER  SOON TO SEE YOUR SEQ Y	Mo Dy Time	A Same	EPA EPA EPA Prior EPA EPA EPA EPA EPA
ار ا ا ا		4 1 63 19 101 110191	1011111120	396.2	
23	X	3 3 11 1103	11155	397.0	
23		4 1 31 - 11 04 -	1245		
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,					
<del></del>	,	parenter standing 10			*April 1987 Acres
Al	A LAB NUMBER	DEPTH COL QA IN MTD CODE MISCE	ELLANEOUS	CHAIN OF	CUSTODY RECORD
Υr	Wk Seq			IELINQUISHED BY: (Signature)	RECEIVED BY: (Signature) A PATE/TIME
			-	Tom Omband	Jan W. [ d 1/1971 13:00
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42 Hangar Way Watsonville, CA 95076

(408) 724-4522

FAX (408) 724-3188

9381,458.02

# RECEIVED

JAN 23 1991

22 January 1991

Kennedy/Jenks/Chilton 674 Harrison St. San Francisco, CA 94107

KENNEDY/JENKS/CHILTON LABORATORY DIVISION

ATTN: Greg Bryden

From 12 to 16 January 1991, ToxScan, Inc. conducted a bioassay evaluation of a sample received from Kennedy/Jenks/Chilton. The sample was identified as 910191. The sample was described as water. Upon arrival at ToxScan, the sample was assigned identification number T-7137.

The objective of the bioassay was to determine its toxicity to aquatic organisms. The toxicity test was conducted with fathead minnows, Pimephales promelas. Testing was performed under EPA guidelines for acute toxicity testing as presented in Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA 600/4-85/013, March 1985. Test duration was 96 h; mortality assessment and water quality monitoring were performed each day coincident with renewal of test solution with a new effluent sample. All samples for renewals were received at one with no sampling date information, therefore, no specific sequence of sample use was employed. Dilution water was EPA moderately hard made with E-pure water.

Testing was conducted at five standard concentrations of the sample, i.e. 100%, 50%, 25%, 12.5%, and 6.25%. Test tanks were prepared with appropriate amounts of sample and the bioassay was initiated by the random addition of fathead minnows to each tank. Fish were 4-week-old juveniles from our in-house cultures.

Twenty fish were exposed to each test concentration. Survival of test animals was 100% at all concentrations. Results of this bioassay indicate that the LC50 of this sample was greater than 100% sample, and that its toxicity was seen to be 0.0 Toxic Units.

Raymond P. Markel, Ph.D. Director, Bioassay Division

**TEST SPECIFICATIONS:** 

Date Started:

Time Started:

Date Completed:

Time Completed:

Test Species:

Age of fish: Mean Weight:

Mean Loading:

# Organisms/Tank:

Volume/Tank:

Test Material Concentrations:

Replicates/Concentration:

12 January 1991

10:00

16 January 1991

10:00

Fathead Minnow (Pimephales promelas)

4 weeks
0.01 grams
0.1 gram/liter

10

l liter

100%, 50%, 25%, 12.5%, 6.25%, 0% (control)

2

#### TEST RESULTS:

Test			Number o	of Fish Su	rviving	
Concentration	Replicate	0 h	24 h	48 h	72 h	96 h
Control	1	10	10	10	10	10
(0 ppm)	2	10	10	10	10	10
	1	10	10	10	10	10
6.25%	2	10	10	10	10	10
	1 1	10	10	10	10	10
12.5%	2	10	10	10	10	10
	1	10	10	10	10	10
25%	2	10	10	10	10	10
	1	10	10	10	10	10
50%	2	10	10	10	10	10
	1	10	10	10	10	10
100%	2	10	10	10	10	10

ENVIRONMENTAL MONITORING DATA:	Mean	Std. Dev.	Maximum	Minimum
Dissolved Oxygen (mg/L)				
Controls	8.1	0.22	8.3	7.8
Test Tanks	7.9	0.83	8.7	4.9
Temperature (°C)				
Controls	25.5	0.58	26.0	25.0
Test Tanks	25.5	0.55	26.0	24.5
pH (Units)				
Controls	7.8	0.05	7.9	7.8
Test Tanks	7.7	0.14	7.9	7.4

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TREATHENT SYSTEM METALS 1/11/91

February 13, 1991

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

RE: PACE Project No. 410201.503 PRP Oakland

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received January 11, 1991.

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

Sincerely,

ńsa J. Petersen Project Manager

**Enclosures** 



Harding Lawson Associates 200 Rush Landing Road Novato, CA 94945 February 13, 1991

PACE Project Number: 410201503

Attn: Mr. David Leland

PRP Oakland

INFLUENT EPPLUENT

PACE Sample Number: Date Collected:

70 0012910 70 0012929 01/11/91 01/11/91 01/11/91

Date Received:

01/11/91 01/11/91 91011101 91011104

<u>Parameter</u>

Units MDL (396.2)

(398.9)

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Lead (EPA Method 7421, Graphite Furnace) mg/L Nickel (EPA Method 7521, Furnace AAS) mg/L

0.003 ND 0.001 0.017 0.006

Silver (EPA Method 7761, Furnace AAS)

0.001 0.0 0.0002 ND 0.005 ND

MDL ND Method Detection Limit

Not detected at or above the MDL.

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

mq/L

Marilyn R. Arsenault

Acting Inorganic Chemistry Manager



**CHAIN-OF-CUSTODY RECORD Analytical Request** 

THE ADDRESS OF SHAFFE	(COChry potagi) i		Analytical Request
Client HLA	<u> </u>	Report To: David Leland	Pace Client No.
Address	welling in the continue of	Bill To:	Pace Project Manager
radices	7000 1000 1000 1000 1000 1000 1000 1000	P.O. # / Billing Reference 9362, 039,02	Pace Project Ne 10201,503
Phone	7 at Impregness on the 19	Project Name / No. PRP/Oakland	*Requested Due Date: 2/15
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Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

415-362-6065

01/11/91

01/24/91

For:

Harding Lawson Associates

Attention:

David Leland

Address:

Source:

200 Rush Landing Road

Novato, CA 94948

PRP/Oakland, Job No. 9382,039.02

Lab. No.:

910190

Sample I.D.:

91011102

Influent

Matrix:

Water

Depth:

**--**

Date Collected: Time Collected:

01/11/91 1130

Collected by:

HLA

Date Extracted:

01/11/91

Date Analyzed:

EPA Analytical Method

0010

EPA Analytical Method:		8010		·
Analysis	Units		Analytical Results	Det. Lim.
chloromethane	ug/L	<0.5		0.5
bromomethane	ug/L	<0.5		0.5
vinyl chloride	ug/L	<0.5		0.5
chioroethane	ug/L	<0.5		0.5
methylene chloride	ug/L	<0.5		0.5
trichlorofluoromethane	ug/L	<0.5		0.5
1,1-dichloroethylene	ug/L	<0.5		0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	3.6		0:5
chloroform	ug/L	<0.5		0.5
1,1,2-trichloro-				
1,2,2-trifluoroethane	ug/L	<0.5		0.5
1,2-dichloroethane	ug/L	3.3		0.5
1,1,1-trichloroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
bromodichloromethane	ug/L	<0.5		0.5
1,2-dichloropropane	ug/L	<0.5		0.5
cis-1,3-dichloropropylene	ug/L	<0.5		0.5
trichloroethylene	ug/L	15	•	0.5
1,1,2-trichloroethane	ug/L	<0.5		0.5
chlorodibromomethane	ug/L	<0.5		0.5
trans-1,3-dichloropropylene	ug/L	<0.5		0.5
2-chloroethylvinyl ether **	ug/L	<0.5		0.5
bromoform	ug/L	<0.5		0.5
tetrachloroethylene	ug/L	<0.5		0.5
1,1,2,2-tetrachloroethane	ug/L	<0.5		0.5
chlorobenzene	ug/L	<0.5		0.5
dichlorodifluoromethane	ug/L	<0.5		0.5

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

Analyst Tina Mal

Tina Mah, Kevin Draper

Manager

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

For:

Harding Lawson Associates

Attention:

David Leland

Address:

bromodichloromethane

cis-1,3-dichloropropylene

trans-1,3-dichloropropylene

2-chloroethylvinyl ether \*\*

1,1,2,2-tetrachloroethane

dichlorodifluoromethane

1,2-dichloropropane

1,1,2-trichloroethane

tetrachloroethylene

chlorobenzene

chlorodibromomethane

trichloroethylene

bromoform

200 Rush Landing Road

Novato, CA 94948

Received --

Reported 01/24/91

**Quality Control Page** 

Source:		==		
Lab. No.:		Method Blank		
Sample I.D.:		Reagent Water		
Matrix:		Water		
Depth:				
Date Collected:				
Time Collected:				
Collected by:		K/J/C	•	
Date Extracted:				
Date Analyzed:		01/11/91		
EPA Analytical Method:		8010		
Analysis	Units	Analytical R	esults	Det. Lim.
chloromethane	ug/L	<0.5		0.5
bromomethane	ug/L	<0.5		0.5
vinyl chloride	ug/L	<0.5		0.5
chloroethane	ug/L	<0.5		0.5
methylene chloride	ug/L	<0.5		0.5
trichlorofluoromethane	ug/L	<0.5		0.5
1,1-dichloroethylene	ug/L	<0.5		0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	<0.5		0.5
chloroform	ug/L	<0.5		0.5
1,1,2-trichloro-				
1,2,2-trifluoroethane	ug/L	<0.5		0.5
1,2-dichloroethane	ug/L	<0.5		0.5
1,1,1-trichloroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
	-			

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

ug/L

<0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

Analyst Tina Mah, Kevin Draper Manager Control

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents, and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

415-362-6065 01/11/91

01/24/91

For:

Harding Lawson Associates

Attention:

David Leland

Address:

Source:

200 Rush Landing Road

Novato, CA 94948

PRP/Oakland, Job No. 9382,039.02

910190

Lab. No.: Sample I.D.:

91011102 Influent

Matrix:

Water

Depth: Date Collected:

01/11/91

Time Collected:

1130

Collected by:

HLA

Date Extracted:

01/21/91

Date Analyzed: EPA Analytical Method:

8020

El minalyadar monioa.		0020		
Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	15		0.2
toluene	ug/L	7.3		0.2
ethylbenzene	ug/L	<0.2		0.2
chlorobenzene	ug/L	<0.2		0.2
1,4-dichlorobenzene	ug/L	<0.2		0.2
1,3-dichlorobenzene	ug/L	<0.2		0.2
1,2-dichlorobenzene	ug/L	<0.2		0.2
p-xylene	ug/L	1.5		0.2
m-xylene	ug/L	1.6		0.2
o-xylene	ug/L	5.5		0.2

Comments: Results reported in micrograms per liter.

Analyst

Tina Mah, Kevin Draper

Manager

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issues. The issues assumes all liability for the further distribution of this report or its contents, and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received

Reported

01/24/91

**Quality Control Page** 

Source: Lab. No.: Method Blank Sample I.D.: Reagent Water

Matrix: Water Depth: Date Collected: Time Collected: Collected by: K/J/C Date Extracted: Date Analyzed:

01/21/91

EPA Analytical Method:		8020		
Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	<0.2		0.2
toluene	ug/L	<0.2		0.2
ethylbenzene	ug/L	<0.2		0.2
chlorobenzene	ug/L	<0.2		0.2
1,4-dichlorobenzene	ug/L	<0.2		0.2
1,3-dichlorobenzene	ug/L	<0.2		0.2
1,2-dichlorobenzene	ug/L	<0.2		0.2
p-xylene	ug/L	<0.2		0.2
m-xylene	ug/L	<0.2		0.2
o-xylene	ug/L	<0.2		0.2

Comments:	Results reported in microg	rams per liter.	
			11
Analyst	Tina Mah, Kevin Draper	Manager	Great Smith

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

Received 01/11/91 01/24/91 Reported

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Source:

Lab. No.: Sample I.D.:

Matrix: Depth:

Date Collected: Time Collected:

Collected by: Date Extracted: Date Analyzed:

EPA Analytical Method: **Analysis** 

PRP/Oakland, Job No. 9382,039.02

910189 91011101 Water

01/11/91

1120 HLA 01/14/91 01/14/91

**Analytical Results** 

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

Units

0.14

504

0.01

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Joseph Samoy

Manager

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents, and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

415-362-6065 I 01/11/91

01/24/91

For:

Harding Lawson Associates

Attention:

David Leland

Address:

Source:

200 Rush Landing Road

Novato, CA 94948

PRP/Oakland, Job No. 9382,039.02

Lab. No.:

91011104

Matrix:

Sample I.D.:

Water

910191

Depth:

\_\_

Date Collected:

01/11/91

Time Collected: Collected by:

1245 HLA

Date Extracted:

01/14/91 01/14/91

Date Analyzed: EPA Analytical Method:

504

Analysis

Units

**Analytical Results** 

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

< 0.01

0.01

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Joseph Samoy

Manager

them Herrich

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

Received For: Harding Lawson Associates 01/11/91 David Leland Attention: Reported 01/24/91 200 Rush Landing Road Address: Novato, CA 94948 **Quality Control Page** PRP/Oakland, Job No. 9382,039.02 Source: Lab. No.: 910191 91011104 Sample I.D.: Matrix: Water Depth: Date Collected: 01/11/91 Time Collected: 1245 HLA Collected by: 01/14/91 Date Extracted: 01/14/91 Date Analyzed: 504 EPA Analytical Method: Analysis Units Replicate **Analytical Results** Det. Lim. < 0.01 < 0.01 Spike recovery 84% 0.01 1,2-dibromoethane (EDB) ug/L

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Joseph Samoy

Manager

Teneral Smith

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

C	
FOC:	

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received

**Quality Control Page** 

Reported

01/24/91

Source: --

Lab. No.:

Method Blank and Spike

Sample I.D.:

Reagent Water

Matrix:

Water

Depth:

--

Date Collected: Time Collected:

--

Collected by:

K/J/C

Date Extracted:
Date Analyzed:

01/14/91 01/14/91

EPA Analytical Method:

504

Analysis Units

Analytical Results

1,2-dibromoethane (EDB)

ug/L

< 0.01

Spike recovery 93%

0.01

Det. Lim.

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

contents, and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Analyst

Joseph Samoy

Manager

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its

**Harding Lawson Associates** 

RESULTS OF LABORATORY ANALYSIS OF TREATMENT SYSTEM AND GROUNDWATER SAMPLES FROM MONITORING WELLS FEBRUARY 1991



WFLVENT -BALERTANK

February 08, 1991

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

RE: PACE Project No. 410205.502 PRP Oakland

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received February 05, 1991.

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

Sincerely,

isa<sup>7</sup>J. Petersen Project Manager

**Enclosures** 



Harding Lawson Associates 200 Rush Landing Road Novato, CA 94945

4.

January 30, 1991 PACE Project Number: 410111506

Attn: Mr. David Leland

ı		•				
Ē.	9382,039.02PRP/Oklnd			Influent	Intermediate	Eff/uent
	PACE Sample Number: Date Collected: Date Received: Parameter INORGANIC ANALYSIS	Units	MDL		<del>-</del>	70 0003989 01/11/91 01/11/91 91011104
	INDIVIDUAL PARAMETERS Arsenic (EPA Method 7060, Furnace AAS) Chlorine, Total Residual Mercury (EPA Method 7470, Cold Vapor AA) Oxygen, Dissolved Selenium (EPA Method 7740, Furnace AAS)	ma/l	0.005 0.05 0.0002 0.1 0.005	ND ND ND 5.9 ND	- - - -	ND ND ND 1.3
	METALS IN AQUEOUS MATRIX, ICP SCAN Antimony (EPA Method 6010/200.7, ICP) Beryllium (EPA Method 6010/200.7, ICP) Cadmium (EPA Method 6010/200.7, ICP) Chromium (EPA Method 6010/200.7, ICP) Copper (EPA Method 6010/200.7, ICP) Lead (EPA Method 6010/200.7, ICP)	mg/L mg/L mg/L mg/L mg/L mg/L	0.06 0.01 0.005 0.01 0.01	ND ND ND 0.02 ND ND	- - -	ND ND ND ND ND ND
	Nickel (EPA Method 6010/200.7, ICP) Silver (EPA Method 6010/200.7, ICP) Thallium (EPA Method 6010/200.7, ICP) Zinc (EPA Method 6010/200.7, ICP)	mg/L mg/L mg/L mg/L	0.01 0.2	ND ND ND 0.02	. · - -	ND ND ND 0.01
	ORGANIC ANALYSIS					٠,
	PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Total Purgeable Fuels, as Gasoline PURGEABLE AROMATICS (BTXE BY EPA 8020): Benzene Ethylbenzene Toluene		0.05 0.0002 0.0002 0.0002	ND -	<del>-</del> - - (	ND - ND ND ND
ļ	Xylenes, Total	mg/L	0.0002	0.0002 -	- 1	ND

MDL

Method Detection Limit

Not detected at or above the MDL.

Job		leT Mu		1052 <b>Г</b>	3	2	2=	_		_	٠ <u>٢</u>	50	)						·		-							<i>Z</i> :		•	4/	40	<u>=</u> 5	1	<u>/</u>	, 	A			Ē,	7			 T	 						S F	EC	UE	ST	ΕD			 
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SOURCE CODE		Sediment				Unpres.	T	Τ		ER:		Yr	1		MB OR AB MB	EF ER				Υr	1,	Mo	<del>-,</del>	D <sub>1</sub>	TE		Tin	(								DE VO			PTI	ON/			EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pilint Metale	Renzene/Tolingo/Videa	Total Petrol Hudrogarh	141 1 211 11 11 11								
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				†-  -												).  -	7			1)	_				<i>Μ</i> .	./	c1  -		_				ED										EIV		>									DA <sup>*</sup>				
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SUMP WATER

February 08, 1991

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

RE: PACE Project No. 410206.503 PRP Oakland

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received February 06, 1991.

If you have any questions concerning this report, please feel free

Sincerely,

Lisa J. Petersen Project Manager

**Enclosures** 



Harding Lawson Associates 200 Rush Landing Road Novato, CA 94945

February 08, 1991

PACE Project Number: 410206503

Attn:	Mr.	David	Leland
-------	-----	-------	--------

ŀ					_
ì	PRP Oakland			Franklin Street	9th Street
į	PACE Sample Number:			70 0013801	<b>70 0</b> 013810
	Date Collected:			02/06/91	02/06/91
ı	Date Received:			02/06/91	02/06/91
	<u>Parameter</u>	<u>Units</u>	MDL	91020601	91020602
•	ORGANIC ANALYSIS				
	VOLATILE HALOCARBONS AND AROMATICS				
	VOLATILE HALOCARBONS BY EPA 8010			_	<del>-</del>
	Dichlorodifluoromethane	ug/L	2.0	ND	ND
,	Chloromethane	ug/L	2.0	ND	ND
	Vinyl Chloride	ug/L	2.0	ND	ND
	Bromomethane Chloroethane	ug/L	2.0	ND	ND
	chioroechane	ug/L	2.0	ND	ND
	Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	ND
	1,1-Dichloroethene	ug/L ug/L	0.5	ND	ND ND
٨	Methylene Chloride	ug/L	0.5	ND	ND
	trans-1,2-Dichloroethene	ug/L	0.5	ND	ND
	1,1-Dichloroethane	ug/L	0.5	ND	ND
	Chloroform	ug/L	0.5	ND	1.7 (*)
	I,1,1-Trichloroethane (TCA)	u	٥. ٢	MD	• • • • • •
	Carbon Tetrachloride	ug/L	0.5	ND	1.4 (*)
	1,2-Dichloroethane (EDC)	ug/L ug/L	0.5 0.5	ND ND	ND
	Trichloroethene (TCE)	ug/L ug/L	0.5	0.6	4.1 (*)
	1,2-Dichloropropane	ug/L	0.5	ND	ND ND
	Bromodichloromethane	ug/L	0.5	ND	ND ND
	2.663	- <b>5</b> r -	•••		ND
	2-Chloroethylvinyl ether	ug/L	0.5	ND	ND
	cis-1,3-Dichloropropene	ug/L	0.5	ND	ND
	trans-1,3-Dichloropropene 1,1,2-Trichloroethane	ug/L	0.5		ND
	Tetrachloroethene	ug/L	0.5		ND
	Dibromochloromethane	ug/L	0.5		ND
	2.2. Simplified Officerratio	ug/L	0.5	ND	ND
	Chlorobenzene	ug/L	0.5	ND	ND.
	Bromoform	ug/L	0.5		ND ND
		-31 -		110	עוו

MDL

Method Detection Limit

ND Not detected at or above the MDL.

Compound cannot be confirmed due to dilution.



Mr. David Leland

# REPORT OF LABORATORY ANALYSIS

ļ	Mr. David Leland Page 2			Februa PACE P	ry 08, 1991 roject Number: 410206503
1	PRP Oakland				15500 Namber : 410200505
	PACE Sample Number: Date Collected: Date Received: Parameter  ORGANIC ANALYSIS	Units	MDL	70 001380 02/06/91 02/06/91 91020601	1 70 0013810 02/06/91 02/06/91 91020602
	VOLATILE HALOCARBONS AND AROMATICS 1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Bromochloromethane (Surrogate Recovery) 1,4-Dichlorobutane (Surrogate Recovery)	ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND 112% 95%	ND ND ND ND 113% 108%
	VOLATILE AROMATICS BY EPA 8020 Benzene Benzene Toluene Chlorobenzene Ethylbenzene	ug/L ug/L ug/L ug/L ug/L	0.2 5.0 0.2 0.2 0.2	_ ND - 0.4 ND ND	- 620 3.1 ND 1.6 (*)
	Xylenes, Total 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Fluorobenzene (Surrogate Recovery)	ug/L ug/L ug/L ug/L	0.2 0.2 0.2 0.2	ND ND ND ND 102%	27 0.6 (*) 0.2 2.1 (*) 87%

MDL Method Detection Limit

ND Not detected at or above the MDL.

Compound cannot be confirmed due to dilution. (\*)

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

Ruth J. Siegmund

Organic Chemistry Manager

Ruch Diegnund

87%

	N	'.O. Bo lovato,	edwoo x 578 Califo 2-082	ornia 9			DCI						•			Č	H	İΑ	IN	] (	ÖF	= (	Cί	S	STODY FO	RM	206	•	<b>5</b> Ç	àb	, } ;			4	$\in$	E				
Job	T.	elecop elex: 3	by: 415 140523	/892 3		1 [38	スプ	7	_	) <u>5</u>	<b>7</b>		<b>~</b> ``	<b>-</b>										- 1	AMESH		NDE							IAL	.YSI	S RI	QU	ESTI	D	
Nam	e/L	oca	itio	n:_		Ł	Z	P	_/					N.	<u>)</u>						7	<u>-</u>	1			<u> </u>			.					9						
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		ATR		#1	CON & PI	VTA RES	ERV	RS V.		·	SAI	MPL MBE OR	E	-	T				DA	TE			7	1	STATION	DESCRI	IPTION/			2 0	240	EPA 625/8270	tut. M	oluene						
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🗔 February 27, 1991

TREATHENT SYSTEM FEBRUARY 11, 1991

EB 91 9: 18

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

RE: PACE Project No. 410211.505

PRP 09382,039.02

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received February 11, 1991.

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

Sincerely

Petersen Profiect Manager

**Enclosures** 



Harding Lawson Associates 200 Rush Landing Road Novato, CA 94945

February 27, 1991

PACE Project Number: 410211505

Attn: Mr. David Leland

	PRP 09382,039.02  PACE Sample Number: Date Collected: Date Received: Parameter  INORGANIC ANALYSIS	<u>Units</u>	MDL	MW-7 70 0016118 02/11/91 02/11/91 91021101	MW-19 70 0016126 02/11/91 02/11/91 91021102	Influent 70 0016134 02/11/91 02/11/91 91021103
	INDIVIDUAL PARAMETERS Chlorine, Total Residual ORGANIC ANALYSIS	mg/L	0.05	-	_	0.10
	PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Total Purgeable Fuels, as Gasoline Total Purgeable Fuels, as Gasoline PURGEABLE AROMATICS (BTXE BY EPA 8020): Benzene Benzene	mg/L mg/L mg/L mg/L	0.05 0.050 0.0002 0.0040		- 2.7 - 0.45	0.072
	Toluene Toluene Ethylbenzene Xylenes, Total Xylenes, Total	mg/L mg/L mg/L mg/L mg/L	0.0002 0.0040 0.0002 0.0002 0.0040	ND ND	0.12 0.086 - 0.21	0.0007 - ND 0.0003
i	HALOGENATED VOLATILE COMPOUNDS EPA 8010 Dichlorodifluoromethane Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane (Freon 11)	ug/L ug/L ug/L ug/L ug/L ug/L	2.0 2.0 2.0 2.0 2.0 2.0	- - - -	- - -	ND ND ND ND ND ND
_	<pre>1,I-Dichloroethene Methylene Chloride trans-1,2-Dichloroethene 1,1-Dichloroethane</pre>	ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	- - -	- -	ND ND ND ND

MDL

Method Detection Limit

Not detected at or above the MDL.



	Mr. David Leland Page 2			Februar PACE Pr	y 27, 1991 oject Numbe	r: 410211505
	PRP 09382,039.02					
=	PACE Sample Number: Date Collected:			70 0016118 02/11/91	70 0016126 02/11/91	70 0016134 02/11/91
1	Date Received: Parameter	lludd a	***	02/11/91	02/11/91	02/11/91
	<del></del>	<u>Units</u>	MDL	91021101	91021102	91021103
	ORGANIC ANALYSIS					
-	HALOGENATED VOLATILE COMPOUNDS EPA 8010					
	Chloroform	ug/L	0.5	-	-	1.0
	1,1,1-Trichloroethane (TCA)	ug/L	0.5	-	-	ND
	Carbon Tetrachloride	ug/L	0.5	-	_	ND
_	1,2-Dichloroethane (EDC)	ug/L	0.5	_	_	4.1
	Trichloroethene (TCE)	ug/L	0.5	<del>-</del>	_	110
-	1,2-Dichloropropane	ug/L	0.5	-	-	ND
	Bromodichloromethane	ug/L	0.5	-	-	ND
	2-Chloroethylvinyl ether	ug/L	0.5	_	_	ND
	cis-1,3-Dichloropropene	ug/L	0.5	-	_	ND
á	trans-1,3-Dichloropropene	ug/L	0.5	_	_	ND
	1,1,2-Trichloroethane	ug/L	0.5	_	_	ND
	Tetrachloroethene	ug/L	0.5	-	-	ND
4	Dibromochloromethane	ug/L	0.5	_	_	ND
	Chlorobenzene	ug/L	0.5	_	_	ND
	Bromoform	ug/L	0.5	_	_	ND
	1,1,2,2-TetrachToroethane	ug/L	0.5	_	_	ND
	1,3-Dichlorobenzene	ug/L	0.5	_	_	ND
_	1,4-Dichlorobenzene	ug/L	0.5	_	_	ND
		-5/-	J.J		_	שא
	1,2-Dichlorobenzene	ug/L	0.5	-	-	ND
-	Bromochloromethane (Surrogate Recovery)			-	_	116%
<u> </u>	1,4-Dichlorobutane (Surrogate Recovery)			-	-	94%

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

San Francisco, California

Kansas City, Missouri



# REPORT OF LABORATORY ANALYSIS

Mr. David Leland Page 3			Februar PACE Pr	y 27, 1991 oject Numbe	er: 410211505
PRP 09382,039.02			Intermodiate	Effluent	Effluent G
PACE Sample Number: Date Collected: Date Received: Parameter	Units	MDL		70 0016150 02/11/91 02/11/91 91021105	70 0016169 02/11/91 02/11/91 91021106
INORGANIC ANALYSIS			-		·
INDIVIDUAL PARAMETERS Chlorine, Total Residual	mg/L	0.05	-	0.05	-
ORGANIC ANALYSIS					
PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Total Purgeable Fuels, as Gasoline PURGEABLE AROMATICS (BTXE BY EPA 8020):	mg/L	0.05	- - -	ND -	- ND -
Benzene Toluene	mg/L	0.0002		ND	ND
Ethylbenzene	mg/L mg/L	0.0002 0.0002		0.0003 ND	ND ND
Xylenes, Total	mg/L	0.0002	ND	ND	ND
HALOGENATED VOLATILE COMPOUNDS EPA 8010 Dichlorodifluoromethane					
<pre>Chloromethane</pre>	ug/L ug/L	2.0 2.0	ND ND	ND ND	ND
Vinyl Chloride	ug/L	2.0	ND	ND ND	ND ND
Bromomethane	ug/L	2.0	ND	ND	ND
Chloroethane	ug/L	2.0	ND	ND	ND
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	ND	ND
1,I-Dichloroethene	ug/L	0.5	ND	ND	ND
Methylene Chloride	ug/L	0.5	ND	ND	ND
trans-1,2-Dichloroethene	ug/L		ND	ND	ND
I,l-Dichloroethane Chloroform	ug/L		ND	ND	ND
1,1,1-Trichloroethane (TCA)	ug/L		ND		ND
, -,-,- ii ionioi bechane (ICA)	ug/L	0.5	ND	ND	ND
Carbon Tetrachloride	ug/L	0.5	ND	ND	ND
1,2-Dichloroethane (EDC)	ug/L	0.5			ND
Trichloroethene (TCE)	ug/L	0.5	1.0		ND
1,2-Dichloropropane	ug/L	0.5	ND		ND

Method Detection Limit

Not detected at or above the MDL.

MDL

<sup>11</sup> Digital Drive Novato, CA 94949 TEL: 415 883 6100 FAX: 415-883-2673



Mr. David Leland Page

February 27, 1991

PACE Project Number: 410211505

PRP 09382,039.02

	PACE Sample Number: Date Collected: Date Received: Parameter  ORGANIC ANALYSIS	<u>Units</u>	_MDL_	70 0016142 02/11/91 02/11/91 91021104	70 0016150 02/11/91 02/11/91 91021105	70 0016169 02/11/91 02/11/91 91021106
	HALOGENATED VOLATILE COMPOUNDS EPA 8010 Bromodichloromethane 2-Chloroethylvinyl ether cis-1,3-Dichloropropene trans-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	ND ND ND ND ND ND	ND ND ND ND ND ND
•	Dibromochloromethane Chlorobenzene Bromoform 1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene 1,4-Dichlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	ND ND ND ND ND ND	ND ND ND ND ND ND
	1,2-Dichlorobenzene Bromochloromethane (Surrogate Recovery) 1,4-Dichlorobutane (Surrogate Recovery)	ug/L	0.5	ND 107% 90%	ND 102% 91%	ND 103% 94%

MDL ND

Method Detection Limit

Not detected at or above the MDL.



	Mr. David Leland Page 5			February 27, 1991 PACE Project Number: 410211505
	PRP 09382,039.02			Trip Blank
1	PACE Sample Number: Date Collected: Date Received: Parameter	Units	MDL	70 0016177 02/11/91 02/11/91 91021107
	ORGANIC ANALYSIS			
	PURGEABLE FUELS AND AROMATICS PURGEABLE AROMATICS (BTXE BY EPA 8020): Benzene Toluene Ethylbenzene Xylenes, Total	mg/L mg/L mg/L <b>m</b> g/L	0.0002 0.0002 0.0002 0.0002	ND ND
1	HALOGENATED VOLATILE COMPOUNDS EPA 8010 Dichlorodifluoromethane Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane (Freon 11)	ug/L ug/L ug/L ug/L ug/L ug/L	2.0 2.0 2.0 2.0 2.0 2.0	ND ND ND ND ND ND
•	1,1-Dichloroethene Methylene Chloride trans-1,2-Dichloroethene 1,1-Dichloroethane Chloroform 1,1,1-Trichloroethane (TCA)	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5	ND O.5 ND ND ND ND
	Carbon Tetrachloride 1,2-Dichloroethane (EDC) Trichloroethene (TCE) 1,2-Dichloropropane Bromodichloromethane 2-Chloroethylvinyl ether	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND ND ND
	cis-1,3-Dichloropropene trans-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene Dibromochloromethane	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5	ND ND ND ND ND

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



Mr. David Leland Page 6			February 27, 1991 PACE Project Number: 410211505
PRP 09382,039.02			
PACE Sample Number: Date Collected: Date Received: Parameter	<u>Units</u>	MDL	70 0016177 02/11/91 02/11/91 91021107
ORGANIC ANALYSIS			· · · · · · · · · · · · · · · · · · ·
HALOGENATED VOLATILE COMPOUNDS EPA 8010 Chlorobenzene Bromoform 1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
Bromochloromethane (Surrogate Recovery) 1,4-Dichlorobutane (Surrogate Recovery)			107% 95%

Method Detection Limit Not detected at or above the MDL.

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

Marilyn R. Arsenault

Acting Inorganic Chemistry Manager

Ruth J. Siegmund

Organic Chemistry Manager

Kansas City, Missouri

	200 Rusi 200 Rusi P.O. Box Novato ( 415/892-	h Land 6107 Californ	ing Road	d	ocia		ļ			C				STODY FORM		Lab:	4	1-7	52 2	Hee	. 5	, O.	5
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Proje	ct Mar						<u>e</u>	k	nd_	<del></del>	Rec	order:	(Sign	LUMMTINAU		BTEX out		etals	Benzene/Toluene/Xylene Total Petrol. Hydrocarb.				
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Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

INFLUENT

415-362-6065 02/11/91

02/14/91

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

Source:

Lab. No.:

200 Rush Landing Road

Novato, CA 94948

\_\_\_\_

PRP, Job No. 09382,039.02 911060

Sample I.D.:

91022103

Matrix: Depth:

Water

Date Collected: Time Collected:

02/11/91

Collected by:

1530 HLA

Date Extracted:
Date Analyzed:

02/11/91 02/11/91

EPA Analytical Method:

504

Aпalysis

Units

**Analytical Results** 

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

0.033

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

Ceneral Smith

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issues. The issues assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received 02/11/91 Reported 02/14/91

**Quality Control Page** 

Source:

PRP, Job No. 09382,039.02

Lab. No.:

911060

Sample I.D.:

91022103

Matrix:

Water

Depth:

**Analysis** 

**Date Collected:** Time Collected:

02/11/91

Collected by:

1530 HLA

Date Extracted: Date Analyzed:

02/11/91 02/11/91

**EPA Analytical Method:** 

504

Replicate

**Analytical Results** 

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

Units

0.0431

0.0229

Spike Recovery 103%

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issues. The issues assumes all liability for the further distribution of this report or its contents, and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North

San Francisco, CA 94107

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

415-362-6065 Received 02/11/91

Reported

EFFLUELT

02/14/91

Source:

PRP, Job No. 09382,039.02

Lab. No.:

911061

Sample I.D.:

91022105 Water

Matrix: Depth:

**Analysis** 

Date Collected:

02/11/91

Time Collected: Collected by:

1715 HLA

Date Extracted: Date Analyzed:

02/11/91 02/11/91

EPA Analytical Method:

504

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

Units

<0.02

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

**Analytical Results** 

Greath Smith

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issues. The issues assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

EFFLUENT (dup)

415-362-6065 02/11/91

02/14/91

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

Source:

Lab. No.:

200 Rush Landing Road

Novato, CA 94948

PRP, Job No. 09382,039.02

911062

91022106

Matrix:

Water

Depth: Date Collected:

Sample I.D.:

02/11/91 1730 HLA

Collected by:
Date Extracted:
Date Analyzed:

Time Collected:

02/11/91 02/11/91 504

EPA Analytical Method:
Analysis

Analytical Results

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

Units

< 0.02

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

**Analyst** 

Lynn Perrine, Joseph Samoy

Manager

Grevett South

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

Received ---

Reported

02/14/91

**Quality Control Page** 

Source:

Lab. No.:

Method Blank and Spike

Sample I.D.:

Reagent Water

Matrix:

Water

Depth:

--

**Date Collected:** 

--

Time Collected: Collected by:

K/J/C

Date Extracted: Date Analyzed:

02/11/91 02/11/91

EPA Analytical Method:

504

Analysis

Units Analytical Results

Det. Lim,

1,2-dibromoethane (EDB)

ug/L

< 0.02

Spike Recovery 109%

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

415-362-6065 02/11/91

02/14/91

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

PRP, Job No. 09382,039.02

Source: Lab. No.:

911063 91022107

TRIP BLANK

Sample I.D.:

91022 Water

Matrix: Depth:

Depth: Date Collected:

Time Collected: Collected by: 02/11/91 1745 HLA 02/12/91

Date Extracted:
Date Analyzed:
EPA Analytical Method:

02/12/91 504

Analysis

Units

Analytical Results Det. Lim.

1,2-dibromoethane (EDB)

ug/L

< 0.02

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

Tenerett Smith

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issues. The issues assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received ---

Reported

02/14/91

**Quality Control Page** 

Source:

Lab. No.: Sample I.D.: Method Blank and Spike

Reagent Water

Matrix:

Water

Depth:

**Analysis** 

--

Date Collected: Time Collected:

--

Collected by: Date Extracted:

K/J/C 02/12/91

Date Analyzed:

02/12/91

EPA Analytical Method:

504

Analytical Results Det. Lim.

1,2-dibromoethane (EDB)

ug/L

Units

< 0.02

Spike Recovery 106%

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

tenerett Smith

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the Issuee. The issuee assumes all liability for the further distribution of this report or its contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North

San Francisco, CA 94107

415-362-6065

Received 02/11/91 Reported 02/14/91

Corrected 02/27/91

MAR 91 9: 08

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Source:

Lab. No .:

Sample I.D.:

Matrix: Depth:

Date Collected: Time Collected:

Collected by: Date Extracted:

Date Analyzed:

EPA Analytical Method:

PRP, Job No. 09382,039.02

Influent

911060

91022103

Water

02/11/91

1530

HLA

02/11/91 8020

El A Analytical Metilou.		6020		
Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	8.4		0.2
toluene	ug/L	0.2		0.2
ethylbenzene	ug/L	<0.2		0.2
total xylenes	ug/L	1.2		0.2

Comments: Results reported in micrograms per liter.

Analyst

Kevin Draper, Tina Mah

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107 415-362-6065

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Raod

Novato, CA 94948

Received --

Reported 02/14/91

**Quality Control Page** 

Source:

Lab. No.:

Method Blank

Sample I.D.:

Reagent Water

Matrix:

Water

Depth:

--

Date Collected: Time Collected: --

Collected by:

K/J/C

Date Extracted:

--

Date Analyzed: EPA Analytical Method: 02/11/91 8020

Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	<0.2		0.2
toluene	ug/L	<0.2		0.2
ethylbenzene	ug/L	<0.2		0.2
total xylenes	ug/L	<0.2		0.2

Comments: Results reported in micrograms per liter.

Analyst

Kevin Draper, Tina Mah

Manager

Generalt Smith

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

415-362-6065 02/11/91

02/13/91

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

PRP, Job No. 09382,039.02

Source: Lab. No.:

911058

Sample I.D.:

91022108

Webster Street

Matrix:

Water

Depth:
Date Collected:

02/11/91

Time Collected: Collected by:

1749 HLA

Collected by: Date Extracted: Date Analyzed:

02/11/91 02/11/91

**EPA Analytical Method:** 

504

Analysis Units

Analytical Results Det. Lim.

1,2-dibromoethane (EDB)

ug/L

0.10

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

terent Smith

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North

Received

Reported

San Francisco, CA 94107

415-362-6065 02/11/91

02/13/91

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

PRP, Job No. 09382,039.02

Source: Lab. No .:

911059

Sample I.D.:

91022109 Water

Matrix:

Depth:

Time Collected: Collected by:

Date Collected:

02/11/91 1800 HLA 02/11/91 02/11/91

Date Extracted: Date Analyzed: **EPA Analytical Method:** 

504

**Analysis** 

Units

**Analytical Results** 

9th Street

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

0.08

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

Received

Reported

02/13/91

Quality Control Page

Source:

Lab. No.:

Method Blank and Spike

Sample I.D.:

Reagent Water

Matrix:

Water

Depth:

Date Collected: Time Collected:

Collected by:

K/J/C

Date Extracted: Date Analyzed:

02/11/91 02/11/91

**EPA Analytical Method:** 

504

Analysis Units **Analytical Results** 

1,2-dibromoethane (EDB)

ug/L

< 0.02

Spike Recovery 109%

0.02

Det. Lim.

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

415-362-6065 02/11/91

02/13/91

For:

**Harding Lawson Associates** 

Attention:

David Leland

Address:

Source:

200 Rush Landing Raod

Novato, CA 94948

PRP, Job No. 09382,039.02

Lab. No.:

911058

Sample I.D.:

91022108

Webster Street

Matrix:

Water

Depth:
Date Collected:

--

Time Collected: Collected by: 02/11/91 1749 HLA

Date Extracted:

--

Date Analyzed: EPA Analytical Method:

02/11/91

		6020		
Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	47		0.2
toluene	ug/L	0.7		0.2
ethylbenzene	ug/L	0.3		0.2
total xylenes	uġ/L	2.4		0.2

Comments: Results reported in micrograms per liter.

Analyst

Kevin Draper, Tina Mah

Manager

or terret Inth

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

Received

02/11/91

Reported 02/13/91 **Quality Control Page** 

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Raod

Novato, CA 94948

Source: Lab. No.:

Sample I.D.:

Matrix:

Depth:

**Date Collected:** Time Collected: Collected by:

Date Extracted: Date Analyzed: EPA Analytical Method: PRP, Job No. 09382,039.02

Webster Street

911058

91022108

Water

02/11/91 1749

HLA

02/11/91 2020

er rerailary to de terotino d.		8020			
Analysis	Units	Replicate	Analytica	l Results	Det. Lim.
benzene	ug/L	46	48	Spike Recovery 69%	0.2
toluene	ug/L	0.7	0.7	Spike Recovery 100%	0.2
ethylbenzene	ug/L	0.3	0.3		0.2
total xylenes	ug/L	2.5	2.4		0.2

Comments: Results reported in micrograms per liter.

Analyst

Kevin Draper, Tina Mah

Manager

contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received Reported 02/13/91

415-362-6065

02/11/91

For:

**Harding Lawson Associates** 

Attention:

David Leland

Address:

200 Rush Landing Raod

Novato, CA 94948

Source: PRP, Job No. 09382,039.02

Lab. No .:

Sample I.D.:

911059

Water

9th Street 91022109

Matrix:

Depth: **Date Collected:** 

02/11/91

Time Collected: Collected by: Date Extracted:

1800 HLA

Date Analyzed: **EPA Analytical Method:** 

02/11/91 გივი

Er A Analytical Method.		8020		
Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	2.0		0.2
toluene	ug/L	0.3		0.2
ethylbenzene	ug/L	<0.2		0.2
total xylenes	ug/L	11		0.2

Comments: Results reported in micrograms per liter.

Analyst

Kevin Draper, Tina Mah

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

**Harding Lawson Associates** 

Attention:

**David Leland** 

Address:

200 Rush Landing Raod

Novato, CA 94948

Received --

Reported 02/13/91

Quality Control Page

Source:

Lab. No.:

Sample I.D.:

Method Blank Reagent Water

Matrix:

Water

Depth:

--

Date Collected: Time Collected:

--

Collected by: Date Extracted: K/J/C

Date Analyzed:

02/11/91

**EPA Analytical Method:** 

8020

El A Allarytical Metriou.		8020		
Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	<0.2		0.2
toluene	ug/L	<0.2		0.2
ethylbenzene	ug/L	<0.2		0.2
total xylenes	ug/L	<0.2		0.2

Comments: Results reported in micrograms per liter.

**Analyst** 

Kevin Draper, Tina Mah

Manager

Generall South

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

02/11/91

Received

Reported

02/13/91

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

Source: PRP, Job No. 09382,039.02 Lab. No.:

911058

Sample I.D.: Webster Street 91022108

Matrix: Water

Depth: Date Collected: 02/11/91 Time Collected: 1749 Collected by: HLA

Date Extracted:

Date Analyzed: 02/11/91

EPA Analytical Method:		8010		
Analysis	Units		Analytical Results	Det. Lim.
chloromethane	ug/L	<0.5	· ····································	0.5
bromomethane	ug/L	<0.5		0.5 0.5
vinyl chloride	ug/L	<0.5		
chloroethane	ug/L	<0.5		0.5
methylene chloride	ug/L	<0.5		0.5
trichlorofluoromethane	ug/L	<0.5		0.5
1,1-dichloroethylene	ug/L	<0.5		0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	29		0.5
chloroform	ug/L	0.8		0.5
1,1,2-trichloro-	·	32		0.5
1,2,2-trifluoroethane	ug/L	<0.5		<b>^</b> -
1,2-dichloroethane	ug/L	4.4		0.5
1,1,1-trichloroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
bromodichloromethane	ug/L	<0.5		0.5
1,2-dichloropropane	ug/L	<0.5		0.5
cis-1,3-dichloropropylene	ug/L	<0.5		0.5
trichloroethylene	ug/L	310		0.5
1,1,2-trichloroethane	ug/L	<0.5		0.5
chlorodibromomethane	ug/L	<0.5		0.5
trans-1,3-dichloropropylene	ug/L	<0.5		0.5
2-chloroethylvinyl ether **	ug/L	<0.5		0.5
bromoform	ug/L	<0.5		0.5
tetrachloroethylene	ug/L	0.7		0.5
1,1,2,2-tetrachloroethane	ug/L	<0.5		0.5
chlorobenzene	ug/L	2.2		0.5
dichlorodiffuoromethane	ug/L	<0.5		0.5
		70.3		0.5

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

Analyst William Svoboda, Tina Mah

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

Received 02/11/91 Reported 02/13/91

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

Source: PRP, Job No. 09382,039.02

Lab. No .: 911059 Sample I.D.:

91022109

Water

Matrix:

Depth: \_\_\_

**Date Collected:** 02/11/91 Time Collected: 1800

Collected by: HLA Date Extracted:

Date Analyzed: 02/11/91

EPA Analytical Method:		8010		
Analysis	Units		Analytical Results	Det. Lim.
chloromethane	ug/L	<0.5	The state of the s	0.5
bromomethane	ug/L	<0.5		0.5
vinyl chloride	ug/L	<0.5		0.5 0.5
chloroethane	ug/L	<0.5		0.5 0.5
methylene chloride	ug/L	0.6		0.5 0.5
trichlorofluoromethane	ug/L	<0.5		0.5 0.5
1,1-dichloroethylene	ug/L	<0.5		0.5 0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	1.8		0.5
chloroform	ug/L	0.7		
1,1,2-trichloro-	-	·		0.5
1,2,2-trifluoroethane	ug/L	<0.5		0.5
1,2-dichloroethane	ug/L	6.2		0.5
1,1,1-trichtoroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
bromodichloromethane	ug/L	<0.5		0.5
1,2-dichloropropane	ug/L	<0.5		0.5
cis-1,3-dichloropropylene	ug/L	<0.5		0.5
trichloroethylene	ug/L	14		0.5
1,1,2-trichloroethane	ug/L	<0.5		0.5
chlorodibromomethane	ug/L	<0.5		0.5
trans-1,3-dichloropropylene	ug/L	<0.5		0.5
2-chloroethylvinyl ether **	ug/L	<0.5		0.5
bromoform	ug/L	<0.5		0.5
tetrachloroethylene	ug/L	<0.5		0.5
1,1,2,2-tetrachloroethane	ug/L	<0.5		0.5
chlorobenzene	ug/L	<0.5		0.5
dichlorodifluoromethane	ug/L	<0.5		0.5
Comments: Posulte reported				0.5

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

Analyst William Svoboda, Tina Mah

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

Spike Recovery 111%

Spike Recovery 111%

Spike Recovery 112%

Received 02/11/91 Reported 02/13/91

**Quality Control Page** 

For: Harding Lawson Associates

Attention: David Leland

Source:

Address: 200 Rush Landing Road

Novato, CA 94948

Source:		ource: PRP, Job No. 09382,039.02			
Lab. No.: Sample I.D.: Matrix: Depth:		911059 91022109 Water	9+4	Street	
Date Collected:		02/11/91			
Time Collected:		1800			
Collected by:		HLA			
Date Extracted:		TILA			
Date Analyzed:		02/11/91			
EPA Analytical Method:		8010			
Analysis	Units		Analytica	ıl Results	Det. Lim.
chloromethane	ug/L	<0.5	<0.5		0.5
bromomethane	ug/L	<0.5	<0.5		0.5
vinyl chloride	ug/L	<0.5	<0.5		0.5
chloroethane	ug/L	<0.5	<0.5		0.5
methylene chloride	ug/L	0.6	0.6		0.5
trichlorofluoromethane	ug/L	<0.5	<0.5		0.5
1,1-dichloroethylene	ug/L	<0.5	<0.5	Spike Recovery 120%	0.5
1,1-dichloroethane	ug/L	<0.5	<0.5	,	0.5
1,2-dichloroethylene	ug/L	1.7	1.8		0.5
chloroform	ug/L	8.0	0.6		0.5
1,1,2-trichloro-					
1,2,2-trifluoroethane	ug/L	<0.5	<0.5	Spike Recovery 139%	0.5
1,2-dichloroethane	ug/L	6.1	6.2		0.5
1,1,1-trichloroethane	ug/L	<0.5	<0.5	Spike Recovery 114%	0.5
carbon tetrachloride	ug/L	<0.5	<0.5		0.5
bromodichloromethane	ug/L	<0.5	<0.5	·	0.5
1,2-dichloropropane	ug/L	<0.5	<0.5		0.5

< 0.5

14

< 0.5

< 0.5

<0.5

< 0.5

< 0.5

<0.5

< 0.5

<0.5

DDD 1-1-1- 00000 000 00

ug/L < 0.5 <0.5 Spike Recovery 84% Comments: Results reported in micrograms per liter. \*\* Unstable compound.

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

< 0.5

14

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

Analyst William Svoboda, Tina Mah

cis-1,3-dichloropropylene

trichloroethylene

bromoform

1,1,2-trichloroethane

tetrachioroethylene

chlorobenzene

chlorodibromomethane

trans-1,3-dichloropropylene

2-chloroethylvinyl ether \*\*

1,1,2,2-tetrachloroethane

dichlorodifluoromethane

Manager This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its

contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

For:

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Harding Lawson Associates 415-362-6065
Received --

Attention: David Leland
Address: 200 Rush Landing Road

Outsity Costrol Road

200 Rush Landing Road Quality Control Page
Novato, CA 94948

Source: \_\_\_ Lab. No.: Method Blank

Sample I.D.: Reagent Water Matrix: Water

Depth: \_\_ Date Collected: \_\_

Time Collected: \_\_\_
Collected by: K/J/C

Date Extracted: ——
Date Analyzed: 02/11/91

EPA Analytical Method:		8010		
Analysis	Units		Analytical Results	Det. Lim.
chioromethane	ug/L	<0.5	-	0.5
bromomethane	ug/L	<0.5		0.5
vinyl chloride	ug/L	<0.5		0.5
chloroethane	ug/L	<0.5		0.5
methylene chloride	ug/L	<0.5		0.5
trichlorofluoromethane	ug/L	<0.5		0.5
1,1-dichloroethylene	ug/L	<0.5		0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	<0.5		0.5
chloroform	ug/L	<0.5		0.5
1,1,2-trichloro-				
1,2,2-trifluoroethane	ug/L	<0.5		0.5
1,2-dichloroethane	ug/L	<0.5		0.5
1,1,1-trichloroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
bromodichloromethane	ug/L	<0.5		0.5
1,2-dichloropropane	ug/L	<0.5		0.5
cis-1,3-dichloropropylene	ug/L	<0.5		0.5
trichloroethylene	ug/L	<0.5		0.5
1,1,2-trichloroethane	ug/L	<0.5		0.5
chlorodibromomethane	ug/L	<0.5		0.5
trans-1,3-dichloropropylene	ug/L	<0.5		0.5
2-chloroethylvinyl ether **	ug/L	<0.5		0.5
bromoform	ug/L	<0.5		0.5
tetrachloroethylene	ug/L	<0.5		0.5
1,1,2,2-tetrachloroethane	ug/L	<0.5		0.5
chlorobenzene	ug/L	<0.5		0.5
dichlorodifluoromethane	ug/L	<0.5		0.5

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

Analyst William Svoboda, Tina Mah

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

**Harding Lawson Associates** 

Attention:

**David Leland** 

Address:

Source:

Lab. No .:

Sample I.D.:

Date Extracted: Date Analyzed:

bromodichloromethane

cis-1,3-dichloropropylene

1,2-dichloropropane

1,1,2-trichloroethane

tetrachloroethylene

chlorobenzene

chlorodibromomethane

trans-1,3-dichloropropylene

2-chloroethylvinyl ether \*\*

1,1,2,2-tetrachloroethane

dichlorodifluoromethane

trichloroethylene

bromoform

200 Rush Landing Road

Novato, CA 94948

Received Reported

02/12/91 02/13/91

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

PRP/Oakland, Job No. 09382.050.02

911090

91021201

Franklin Street

Matrix: Water

Depth:

Date Collected: Time Collected: Collected by:

02/12/91 1440 HLA

02/12/91

ORIGINAL

EPA Analytical Method:		8010		
Analysis	Units		Analytical Results	Det. Lim
chloromethane	ug/L	<0.5		0.5
bromomethane	ug/L	<0.5		0.5
vinyl chloride	ug/L	<0.5		0.5
chloroethane	ug/L	<0.5		0.5
methylene chloride	ug/L	<0.5		0.5
trichlorofluoromethane	ug/L	<0.5		0.5
1,1-dichloroethylene	ug/L	<0.5		0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	59		0.5
chloroform	ug/L	<0.5		0.5
1,1,2-trichloro-				
1,2,2-trifluoroethane	ug/L	<0.5		0.5
1,2-dichloroethane	ug/L	4.4		0.5
1,1,1-trichloroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
	_			- <del>-</del>

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

< 0.5

< 0.5

< 0.5

140

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

1.2

< 0.5

Analyst Tina Mah, Kevin Draper Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

Received 02/12/91 Reported 02/13/91

For: Harding Lawson Associates

Attention: David Leland

Source:

Address: 200 Rush Landing Road

Novato, CA 94948

		· · · · · · · · · · · · · · · · · · ·	a, 000 110. 00002.000.02	
Lab. No.:		911091		,
Sample I.D.:		91021202	wells DW-1 to DW-11	
Matrix:		Water		
Depth:				
Date Collected:		02/12/91		
Time Collected:		1450		
Collected by:		HLA		
Date Extracted:				
Date Analyzed:		02/12/91		
EPA Analytical Method:		8010		
Analysis	Units		Analytical Results	Det. Lim.
chloromethane	ug/L	<0.5	-	0.5
bromomethane	ug/L	<0.5		0.5
vinyl chloride	ug/L	<0.5		0.5
chloroethane	ug/L	<0.5		0.5
methylene chloride	ug/L	<0.5		0.5
trichlorofluoromethane	ug/L	<0.5		0.5
1,1-dichloroethylene	ug/L	<0.5		0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	2.4		0.5
chloroform	ug/L	<0.5		0.5
1,1,2-trichloro-				
1,2,2-trifluoroethane	ug/L	<0.5		0.5
1,2-dichloroethane	ug/L	4.6		0.5
1,1,1-trichioroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
bromodichloromethane	ug/L	<0.5		0.5
1,2-dichloropropane	ug/L	<0.5		0.5
cis-1,3-dichloropropylene	ug/L	<0.5		0.5
trichloroethylene	ug/L	13		0.5
4 4 6 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1	**			

PRP/Oakland, Job No. 09382.050.02

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

< 0.5

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Analyst \_\_Tina Mah, Kevin Draper

1,1,2-trichloroethane

tetrachloroethylene

chlorobenzene

bromoform

chlorodibromomethane

trans-1,3-dichloropropylene

2-chloroethylvinyl ether \*\*

1,1,2,2-tetrachloroethane

dichlorodifluoromethane

Manager

teneral Smith

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

0.5

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

For:

**Harding Lawson Associates** 

Attention:

David Leland

Address:

200 Rush Landing Road

415-362-6065 Received 02/12/91

Reported

02/13/91

Novato, CA 949	948			Quali	ty Control Page		
Source:		PRP/Oakland, Job No. 09382.050.02					
Lab. No.:		91109	1				
Sample I.D.:		91021	202	wells Dw-1 + DW-2			
Matrix:		Water					
Depth:							
Date Collected:		02/12/	91				
Time Collected:		1450					
Collected by:		HLA					
Date Extracted:							
Date Analyzed:		02/12/	91				
EPA Analytical Method:		8010					
Analysis	Units	Rep	licate	Analytical Results	Det. Lim.		
chloromethane	ug/L	<0.5	<0.5	<del>-</del>	0.5		
bromomethane	ug/L	<0.5	<0.5		0.5		
vinyl chloride	ug/L	<0.5	<0.5		0.5		
chloroethane	υg/L	<0.5	<0.5		0.5		
methylene chloride	ug/L	<0.5	<0.5		0.5		
trichlorofluoromethane	ug/L	<0.5	<0.5		0.5		
1,1-dichloroethylene	ug/L	<0.5	<0.5	Spike recovery 122%	0.5		
1,1-dichloroethane	ug/L	<0.5	<0.5	,	0.5		
1,2-dichloroethylene	ug/L	2.4	2.4		0.5		
chloroform	ug/L	<0.5	<0.5		0.5		
1,1,2-trichloro-	_						
1,2,2-trifluoroethane	ug/L	<0.5	<0.5	Spike recovery 140%	0.5		
1,2-dichloroethane	ug/L	4.9	4.3		0.5		
1,1,1-trichloroethane	ug/L	<0.5	<0.5	Spike recovery 119%	0.5		
carbon tetrachloride	ug/L	<0.5	<0.5	•	0.5		
bromodichloromethane	ug/L	<0.5	<0.5		0.5		
1,2-dichloropropane	ug/L	<0.5	<0.5		0.5		
cis-1,3-dichloropropylene	ug/L	<0.5	<0.5		0.5		
trichloroethylene	ug/L	14	12	Spike recovery 102%	0.5		
1,1,2-trichloroethane	ug/L	<0.5	<0.5	,	0.5		
chlorodibromomethane	ug/L	<0.5	<0.5		0.5		
trans-1,3-dichloropropylene	ug/L	<0.5	<0.5		0.5		
2-chloroethylvinyl ether **	ug/L	<0.5	<0.5		0.5		
bromoform	ug/L	<0.5	<0.5		0.5		
tetrachioroethylene	ug/L	<0.5	<0.5	Spike recovery 106%	0.5		
1,1,2,2-tetrachloroethane	ug/L	<0.5	<0.5	=p	0.5		
chlorobenzene	ug/L	<0.5	<0.5	Spike recovery 110%	0.5		
dichlorodifluoromethane	ug/L	<0.5	<0.5	Spike recovery 86%	0.5		

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

Analyst Tina Mah, Kevin Draper Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

Received 02/12/91 Reported 02/13/91

For: Harding Lawson Associates

Attention: David Leland

Address: 200 Rush Landing Road

Address: 200 Rush Landi	-		•	
Novato, CA 949	948			
Source:		PRP/Oakland	Job No. 09382.050.02	
Lab. No.:		911092	1 41 1	
Sample I.D.:		Travel Blank	Travel Blank	
Matrix:		Water		
Depth:		_		
Date Collected:				
Time Collected:				
Collected by:		HLA		
Date Extracted:				
Date Analyzed:		02/12/91		
EPA Analytical Method:		8010		
Analysis	Units		Analytical Results	Det. Lim.
chloromethane	ug/L	<0.5		0.5
bromomethane	ug/L	<0.5		0.5
vinyl chloride	ug/L	<0.5		0.5
chloroethane	ug/L	<0.5		0.5
methylene chloride	ug/L	<0.5		0.5
trichlorofluoromethane	ug/L	<0.5	·	0.5
1,1-dichloroethylene	ug/L	<0.5		0.5
1,1-dichloroethane	ug/L	<0.5		0.5
1,2-dichloroethylene	ug/L	<0.5		0.5
chloroform	ug/L	<0.5		0.5
1,1,2-trichloro-				
1,2,2-trifluoroethane	ug/L	<0.5		0.5
1,2-dichloroethane	ug/L	<0.5		0.5
1,1,1-trichloroethane	ug/L	<0.5		0.5
carbon tetrachloride	ug/L	<0.5		0.5
bromodichloromethane	ug/L	<0.5		0.5
1,2-dichloropropane	ug/L	<0.5		0.5
cis-1,3-dichloropropylene	ug/L	<0.5		0.5
trichloroethylene	ug/L	<0.5		0.5
1,1,2-trichloroethane	ug/L	<0.5		0.5
chlorodibromomethane	ug/L	<0.5		0.5
trans-1,3-dichloropropylene	ug/L	<0.5		0.5
2-chloroethylvinyl ether **	ug/L	<0.5		0.5
bromoform	ug/L	<0.5		0.5
tetrachioroethylene	ug/L	<0.5		0.5
1,1,2,2-tetrachioroethane	ug/L	<0.5		0.5
chlorobenzene	ug/L	<0.5		0.5
dichlorodifluoromethane	ug/L	<0.5		0.5

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

Analyst Tina Mah, Kevin Draper Manager Full Smills

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

415-362-6065 Received --Reported 02/13/91

**Quality Control Page** 

Source:	<del></del>
Lab. No.:	Method Blank
Sample I.D.:	Reagent Water
Matrix:	Water

Depth:

Date Collected: Time Collected:

Collected by: Date Extracted:

Date Analyzed: EPA Analytical Method: Water

K/J/C

02/12/91 8010

Analysis         Units         Analytical Results         Det. Lim.           chloromethane         ug/L         <0.5         0.5           bromomethane         ug/L         <0.5         0.5           vinyl chloride         ug/L         <0.5         0.5           chloroethane         ug/L         <0.5         0.5           methylene chloride         ug/L         <0.5         0.5           trichiorofiluoromethane         ug/L         <0.5         0.5           1,1-dichloroethylene         ug/L         <0.5         0.5           1,2-dichloroethylene         ug/L         <0.5         0.5           1,2-dichloroethylene         ug/L         <0.5         0.5           1,2-dichloroethylene         ug/L         <0.5         0.5           1,2-dichloroethane         ug/L         <0.5         0.5           1,2-dichloroethane         ug/L         <0.5         0.5           1,1-trichloroethane         ug/L         <0.5         0.5           1,1-dichloropropylene         ug/L         <0.5         0.5           1,1-dichloropropylene         ug/L         <0.5         0.5           1,2-dichloropropylene         ug/L         <0.5         0.5	EPA Analytical Method:		8010		
bromomethane         ug/L         <0.5	Analysis	Units		Analytical Results	Det. Lim.
vinyl chloride         ug/L         <0.5	chloromethane	ug/L	<0.5		0.5
chloroethane         ug/L         <0.5           methylene chloride         ug/L         <0.5	bromomethane	ug/L	<0.5		0.5
methylene chloride         ug/L         <0.5	vinyl chloride	ug/L	<0.5		0.5
trichlorofluoromethane         ug/L         <0.5           1,1-dichloroethylene         ug/L         <0.5	chloroethane	ug/L	<0.5		0.5
1,1-dichloroethylene       ug/L       <0.5	methylene chloride	ug/L	<0.5		0.5
1,1-dichloroethane       ug/L       <0.5	trichlorofluoromethane	ug/L	<0.5		0.5
1,2-dichloroethylene       ug/L       <0.5	1,1-dichloroethylene	ug/L	<0.5		0.5
chloroform       ug/L       <0.5       0.5         1,1,2-trichloro-       1,2,2-trifluoroethane       ug/L       <0.5	1,1-dichloroethane	ug/L	<0.5		0.5
1,1,2-trichloro-       1,2,2-trifluoroethane       ug/L       <0.5	1,2-dichloroethylene	ug/L	<0.5		0.5
1,2,2-trifluoroethane       ug/L       <0.5	chloroform	ug/L	<0.5		0.5
1,2-dichloroethane       ug/L       <0.5	1,1,2-trichloro-				
1,1,1-trichloroethane $ug/L$ $<0.5$ 0.5carbon tetrachloride $ug/L$ $<0.5$ 0.5bromodichloromethane $ug/L$ $<0.5$ 0.51,2-dichloropropane $ug/L$ $<0.5$ 0.5cis-1,3-dichloropropylene $ug/L$ $<0.5$ 0.5trichloroethylene $ug/L$ $<0.5$ 0.51,1,2-trichloroethane $ug/L$ $<0.5$ 0.5chlorodibromomethane $ug/L$ $<0.5$ 0.5trans-1,3-dichloropropylene $ug/L$ $<0.5$ 0.52-chloroethylvinyl ether ** $ug/L$ $<0.5$ 0.5bromoform $ug/L$ $<0.5$ 0.5tetrachloroethylene $ug/L$ $<0.5$ 0.51,1,2,2-tetrachloroethane $ug/L$ $<0.5$ 0.5chlorobenzene $ug/L$ $<0.5$ 0.5	1,2,2-trifluoroethane	ug/L	<0.5		0.5
carbon tetrachloride       ug/L       <0.5	1,2-dichloroethane	ug/L	<0.5		0.5
bromodichloromethane         ug/L         <0.5	1,1,1-trichloroethane	ug/L	<0.5		0.5
1,2-dichloropropane       ug/L       <0.5	carbon tetrachloride	ug/L	<0.5		0.5
cis-1,3-dichloropropylene       ug/L       <0.5	bromodichloromethane	ug/L	<0.5		0.5
trichloroethylene       ug/L       <0.5	1,2-dichloropropane	ug/L	<0.5		0.5
1,1,2-trichloroethane       ug/L       <0.5	cis-1,3-dichloropropylene	ug/L	<0.5		0.5
chlorodibromomethane         ug/L         <0.5	trichloroethylene	ug/L	<0.5		0.5
trans-1,3-dichloropropylene       ug/L       <0.5	1,1,2-trichloroethane	ug/L	<0.5		0.5
2-chloroethylvinyl ether **       ug/L       <0.5	chlorodibromomethane	ug/L	<0.5		0.5
bromoform         ug/L         <0.5	trans-1,3-dichloropropylene	ug/L	<0.5		0.5
tetrachloroethylene ug/L <0.5 0.5  1,1,2,2-tetrachloroethane ug/L <0.5 0.5  chlorobenzene ug/L <0.5 0.5	2-chloroethylvinyl ether **	ug/L	<0.5		0.5
1,1,2,2-tetrachloroethaneug/L<0.5chlorobenzeneug/L<0.5	bromoform	ug/L	<0.5		0.5
chlorobenzene ug/L <0.5 0.5	tetrachloroethylene	ug/L	<0.5		0.5
	1,1,2,2-tetrachloroethane	ug/L	<0.5		0.5
dichlorodifluoromethane ug/L <0.5 0.5	chlorobenzene	ug/L	<0.5		0.5
	dichlorodifluoromethane	ug/L	<0.5		0.5

Comments: Results reported in micrograms per liter. \*\* Unstable compound.

Analyst Tina Mah, Kevin Draper Manager There

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065 Received 02/12/91 Reported 02/13/91

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

Source: PRP/Oakland, Job No. 09382.050.02

Lab. No .:

Sample I.D.:

911090 91021201

Water

Franklin Street

Matrix:

Depth:

Date Collected: Time Collected: Collected by:

Date Extracted: Date Analyzed:

02/12/91

1440 HLA

02/12/91

2020

EPA Analytical Method:		8020		
Analysis	Units	· · · · · · · · · · · · · · · · · · ·	Analytical Results	Det. Lim.
benzene	ug/L	31		0.2
toluene	ug/L	29		0.2
ethylbenzene	ug/L	14		0.2
total xylenes	ug/L	47		0.2

Comments: Results reported in micrograms per liter.

Analyst

Tina Mah, Kevin Draper

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received 02/12/91 Reported 02/13/91

**Quality Control Page** 

Source: Lab. No.: PRP/Oakland, Job No. 09382.050.02

Sample I.D.:

911090 91021201

Water

1440

HLA

Franklin Street

Matrix:

Depth: **Date Collected:** 

Time Collected:

Collected by: Date Extracted:

Date Analyzed: EPA Analytical Method: 02/12/91

02/12/91

8020

EPA Analytical Method:		802	J		
Analysis	Units	A	eplicate	Analytical Results	Det. Lim.
benzene	ug/L	33	30	Spike recovery 107%	0.2
toluene	ug/L	30	28	Spike recovery 86%	0.2
ethylbenzene	ug/L	15	13		0.2
total xylenes	uġ/L	51	43		0.2

Comments: Results reported in micrograms per liter.

Analyst

Tina Mah, Kevin Draper

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

Matrix:

200 Rush Landing Road

Novato, CA 94948

Received 02/12/91 Reported 02/13/91

Source: PRP/Oakland, Job No. 09382.050.02 Lab. No.: 911091 DW-1 to DW-2 wells Sample I.D.: 91021202

Water

Depth: **Date Collected:** 02/12/91 Time Collected: 1450 Collected by: HLA

Date Extracted:

Date Analyzed: 02/12/91 EPA Analytical Method: 8020

Units **Analytical Results** Det. Lim. **Analysis** 0.2 benzene ug/L 1.5 0.2 toluene 2.6 ug/L 0.2 ethylbenzene ug/L 0.9 total xylenes 0.2 3.8 ug/L

Comments: Results reported in micrograms per liter.

Analyst Tina Mah, Kevin Draper

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

Received 02/12/91 Reported 02/13/91

Source: PRP/Oakland, Job No. 09382.050.02 Lab. No .:

911092

Travel Blank

Travel Blank

Matrix: Water

Depth:

Sample I.D.:

**Date Collected:** Time Collected: Collected by:

Date Extracted: Date Analyzed:

**EPA Analytical Method:** 

HLA

02/12/91

8020

Analysis	Units		Analytical Results	Det. Lim.
benzene	ug/L	<0.2		0.2
toluene	ug/L	<0.2		0.2
ethylbenzene	ug/L	<0.2		0.2
total xylenes	ug/L	<0.2		0.2

Comments: Results reported in micrograms per liter.

Analyst

Tina Mah, Kevin Draper

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received
Reported 0

02/13/91

Quality Control Page

Source:

Lab. No.: Sample I.D.: Method Blank Reagent Water

Matrix:

Water

Depth:

--

Date Collected:

--

Time Collected: Collected by:

K/J/C

Date Extracted:

--02/12/91

Date Analyzed: EPA Analytical Method:

8020

Analysis	Units	A	nalytical Results	Det. Lim.	
benzene	ug/L	<0.2		0.2	
toluene	ug/L	<0.2		0.2	
ethylbenzene	ug/L	<0.2		0.2	
total xylenes	ug/L	<0.2		0.2	

Comments: Results reported in micrograms per liter.

Analyst

Tina Mah, Kevin Draper

Manager

contents and by making such distribution agrees to hold the laboratory harmless against all claims of persons so informed of the contents hereof.

This report applies only to the sample investigated and is not necessarily indicative of the quality of apparently identical or similar samples. The liability of the laboratory is limited to the amount paid for the report by the issuee. The issuee assumes all liability for the further distribution of this report or its

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received Reported

02/12/91 02/13/91

Source:

Lab. No.:

Sample I.D.: Matrix:

Depth:

**Date Collected:** 

Time Collected: Collected by:

Date Extracted: Date Analyzed:

**EPA Analytical Method: Analysis** 

PRP/Oakland, Job No. 09382.050.02

911090

Franklin Street 91021201

Water

02/12/91

1440 HLA 02/12/91

> 02/12/91 504

Units

**Analytical Results** 

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

0.04

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received 02/12/91

Reported 02/13/91

Source:

Sample I.D.:

PRP/Oakland, Job No. 09382.050.02

Lab. No.:

911091

91021202

Wells PW-1 to PW-2

Matrix:

Water

Depth:

Date Collected:

02/12/91

Time Collected: Collected by:

1450

Date Extracted:

HLA 02/12/91

Date Analyzed:

02/12/91

EPA Analytical Method:

504

**Analysis** Units **Analytical Results** Det. Lim.

1,2-dibromoethane (EDB)

ug/L

< 0.02

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

**Harding Lawson Associates** 

Attention:

**David Leland** 

Address:

200 Rush Landing Road

Novato, CA 94948

Received 02/12/91 Reported 02/13/91

**Quality Control Page** 

Source: Lab. No.:

PRP/Oakland, Job No. 09382.050.02

Sample I.D.:

Matrix:

Depth:

**Date Collected:** 

Time Collected: Collected by: Date Extracted:

Date Analyzed: **EPA Analytical Method:**  911091 DW-1 to DW-1 Wells

91021202

Water

02/12/91 1450 HLA 02/12/91

> 02/12/91 504

**Analysis** 

Units

Replicate

**Analytical Results** 

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

< 0.02

< 0.02

Spike recovery 99%

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

Received

Reported

415-362-6065 02/12/91

02/13/91

For:

Harding Lawson Associates

Attention:

David Leland

Address:

Source:

Lab. No.:

200 Rush Landing Road

Novato, CA 94948

PRP/Oakland, Job No. 09382.050.02

911092

Sample I.D.:

Travel Blank

Travel

Blank

Matrix:

Water

Depth: Date Collected:

Analysis

--

Time Collected: Collected by: --HLA

Date Extracted: Date Analyzed:

02/12/91 02/12/91

EPA Analytical Method:

504

Analytical Results Det. Lim.

1,2-dibromoethane (EDB)

ug/L

Units

< 0.02

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

ger terlett mit

Kennedy/Jenks/Chilton, Laboratory Division 303 Second Street, Tenth Floor North San Francisco, CA 94107

415-362-6065

For:

Harding Lawson Associates

Attention:

David Leland

Address:

200 Rush Landing Road

Novato, CA 94948

Received

Reported 02/13/91

**Quality Control Page** 

Method Blank and Spike

Reagent Water

Water

K/J/C

02/12/91

02/12/91

Source:

Lab. No.:

Sample I.D.:

Matrix:

Depth:

Date Collected: Time Collected:

Collected by: Date Extracted:

Date Analyzed: **EPA Analytical Method:** 

1,2-dibromoethane (EDB)

Analysis

Units

ug/L

504

<0.02

Spike recovery 106%

**Analytical Results** 

Det. Lim.

0.02

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst

Lynn Perrine, Joseph Samoy

Manager

**Harding Lawson Associates** 

RESULTS OF LABORATORY ANALYSIS OF TREATMENT SYSTEM AND GROUNDWATER SAMPLES FROM MONITORING WELLS
MARCH 1991



TREATHERT SYSTEM

3-8-91

March 25, 1991

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

RE: PACE Project No. 410308.504

PRP Oak 09382.039.02

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received March 08, 1991.

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

Sincerely,

Lisa J. Petersen Project Manager

**Enclosures** 



Harding Lawson Associates 200 Rush Landing Road Novato, CA 94945

March 25, 1991

PACE Project Number: 410308504

Attn: N	۱r.	David	Leland
---------	-----	-------	--------

PRP Oak 09382.039.02			Influen+	Influent (dup)	Intermedia
PACE Sample Number: Date Collected: Date Received: Parameter	Units	_MDL	70 0024323 03/08/91 03/08/91 91033001	70 0024331 03/08/91 03/08/91 91033002	70 0024340 03/08/91 03/08/91 91033003
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS Chlorine, Total Residual	mg/L	0.05	1.0	_	-
ORGANIC ANALYSIS					
PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Total Purgeable Fuels, as Gasoline PURGEABLE AROMATICS (BTXE BY EPA 8020):	ug/L	50	- ND -	ND -	- - -
Benzene Toluene Ethylbenzene	ug/L ug/L ug/L	0.20 0.20 0.20	2.0 0.5 ND	2.0 0.5 ND	ND ND ND
Xylenes, Total	ug/L	0.20	ND	ND	ND
HALOGENATED VOLATILE COMPOUNDS EPA 8010 Dichlorodifluoromethane Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane (Freon II)	ug/L ug/L ug/L ug/L ug/L ug/L	2.0 2.0 2.0 2.0 2.0 2.0	ND ND ND ND ND ND	- - - -	ND ND ND ND ND ND
1,1-Dichloroethene Methylene Chloride trans-1,2-Dichloroethene 1,1-Dichloroethane Chloroform 1,1,1-Trichloroethane (TCA)	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	- - - -	ND ND ND ND ND ND
Carbon Tetrachloride	ug/L	0.5	ND	-	ND

MDL

Method Detection Limit

Not detected at or above the MDL.



Mr. David Leland Page 2

March 25, 1991

PACE Project Number: 410308504

ND

ND

ND

139%

123%

PRP Oak 09382.039.02

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,2-Dichlorobenzene

PACE Sample Number: Date Collected: Date Received: Parameter	Units	MDL	70 0024323 03/08/91 03/08/91 91033001	70 0024331 03/08/91 03/08/91 91033002	70 0024340 03/08/91 03/08/91 91033003
ORGANIC ANALYSIS					<del></del>
HALOGENATED VOLATILE COMPOUNDS EPA 8010 1,2-Dichloroethane (EDC) Trichloroethene (TCE) 1,2-Dichloropropane Bromodichloromethane 2-Chloroethylvinyl ether cis-1,3-Dichloropropene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	2.5 49 ND ND ND ND	- - - -	1.5 2.2 ND ND ND ND
trans-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene Dibromochloromethane Chlorobenzene Bromoform	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND	- - - -	ND ND ND ND ND ND
I,1,2,2-Tetrachloroethane	ug/L	0.5	ND	-	ND

ug/L

ug/L

ug/L

0.5

0.5

0.5

ND

ND

ND

95%

112%

MDL ND

Method Detection Limit

Bromochloromethane (Surrogate Recovery) 1,4-Dichlorobutane (Surrogate Recovery)

Not detected at or above the MDL.



Mr. David Leland

# REPORT OF LABORATORY ANALYSIS

March 25, 1991

Page 3			PACE Project Number: 410308504			
PRP Oak 09	9382.039.02			Eff luent	Effluent (Dup)	Field Blank
PACE Sampl Date Colle Date Recei Parameter	ected:	<u>Units</u>	_MDL_	70 0024358 03/08/91 03/08/91 91033004	70 0024366 03/08/91 03/08/91 91033005	
INORGANIC	ANALYSIS					
	PARAMETERS Total Residual	mg/L	0.05	ND	-	-
ORGANIC AN	MALYSIS					
TOTAL FUEL Total Purg	FUELS AND AROMATICS HYDROCARBONS, (LIGHT): peable Fuels, as Gasoline AROMATICS (BTXE BY EPA 8020):	ug/L	50	- ND -	ND -	ND
Benzene	,	ug/L	0.20	ND	ND	ND
Toluene		ug/L	0.20	ND	ND	ND
Ethylbenze 	ne	ug/L	0.20	ND	ND	ND
Xylenes, T	otal	ug/L	0.20	ND	ND	ND
HALOGENATE	D VOLATILE COMPOUNDS EPA 8010					
	fluoromethane	ug/L	2.0	ND	ND	ND
Chlorometh		ug/L	2.0	ND	ND	ND
Vinyl Chlo		ug/L	2.0	ND	ND	ND
Bromometha		ug/L	2.0	ND	ND	ND
' Chloroetha		ug/L	2.0	ND	ND	ND
irichiorof	Tuoromethane (Freon 11)	ug/L	2.0	ND	ND	ND
1,1-Dichlo	roethene	ug/L	0.5	ND	ND	ND
Methylene	Chloride	ug/L	0.5	2.1(*)	ND	ND
trans-1,2-	Dichloroethene	ug/L	0.5	ND	ND	ND
1,1-Dichlo	roethane	ug/L	0.5	ND	ND	ND
Chloroform		ug/L	0.5	ND	ND	ND
	hloroethane (TCA)	ug/L	0.5	ND	ND	ND
Carbon Tet	rachloride	ug/L	0.5	ND	ND	ND
	roethane (EDC)	ug/L	0.5	ND	ND	ND
Trichloroe	thene (TCE)	ug/L	0.5	ND	ND	ND
1,2-Dichlo		ug/L	0.5	ND	ND	ND
		<del>-</del> -				

11 Digital Drive Novato, CA 94949 TEL: 415-883-6100 FAX: 415-883-2673

Method Detection Limit

Not detected at or above the MDL.

MDL

ND

(\*)

Methylene Chloride present in blank at 3.3ug/L.

Offices Serving: Minneapolis, Minnesota Tampa, Florida Iowa City, Iowa San Francisco, California Kansas City, Missouri Los Angeles, California

Charlotte, North Carolina Asheville, North Carolina New York, New York Pittsburgh, Pennsylvania Denver, Colorado

An Equal Opportunity Employer



Mr. David Leland March 25, 1991 Page PACE Project Number: 410308504 PRP Oak 09382.039.02 PACE Sample Number: 70 0024358 70 0024366 70 0024374 Date Collected: 03/08/91 03/08/91 03/08/91 Date Received: 03/08/91 03/08/91 03/08/91 Parameter MDL Units 91033004 91033005 91033006 ORGANIC ANALYSIS HALOGENATED VOLATILE COMPOUNDS EPA 8010 Bromodichloromethane ug/L 0.5 ND ND ND 2-Chloroethylvinyl ether ug/L 0.5 ND ND ND cis-1,3-Dichloropropene 0.5 ug/L ND ND ND trans-1,3-Dichloropropene 0.5 ug/L ND ND ND 1,1,2-Trichloroethane 0.5 uq/L ND ND ND Tetrachloroethene ug/L 0.5 ND ND ND Dibromochloromethane ug/L 0.5 ND ND ND Chlorobenzene 0.5 ug/L ND ND ND Bromoform 0.5 ug/L ND ND ND 1,1,2,2-Tetrachloroethane ug/L 0.5ND ND ND 1,3-Dichlorobenzene ug/L 0.5 ND ND ND 1.4-Dichlorobenzene 0.5 ug/L ND ND ND 1,2-Dichlorobenzene 0.5 ug/L ND ND ND Bromochloromethane (Surrogate Recovery) 110% 98% 93% 1,4-Dichlorobutane (Surrogate Recovery) 123% 107% 119%

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

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

Marilyn R. Arsenault

Acting Inorganic Chemistry Manager

LUMO

Frank J. Besnick for Ruth J. Siegmund

Organic Chemistry Manager



Mr. David Leland Page

QUALITY CONTROL DATA

March 26, 1991

PACE Project Number: 410308504

PRP Oak 09382.039.02

Chlorine, Total Residual Batch: 70 01983

Chlorine, Total Residual

<u>Parameter</u>

Samples: 70 0024323, 70 0024358

METHOD BLANK AND SAMPLE DUPLICATE:

Duplicate

Method 70 0024358 of Sample

70 0024358 Units MDL Blank | RPD 91033004  $\overline{0.05}$ ND  $\overline{\mathsf{ND}}$ mg/L  $\overline{\mathsf{ND}}$ 0%

Method Detection Limit MDL

ND Not detected at or above the MDL.

RPD Relative Percent Difference

Los Angeles, California



Mr. David Leland

QUALITY CONTROL DATA

March 26, 1991

PACE Project Number: 410308504

Page PRP Oak 09382.039.02

**VOLATILE HALOCARBONS AND AROMATICS** 

Batch: 70 02206

Samples: 70 0024323, 70 0024340, 70 0024358

#### METHOD BLANK:

Parameter VOLATILE HALOCARBONS BY EPA 8010	Units	MDL	Method Blank
Dichlorodifluoromethane	ug/L	2.0	ND
Chloromethane	ug/L	2.0	ND
Vinyl Chloride	ug/L	2.0	ND
Bromomethane	ug/L	2.0	ND
Chloroethane	ug/L	2.0	ND
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND
1,1-Dichloroethene	ug/L	0.5	ND
Methylene Chloride	ug/L	0.5	1.1
trans-1,2-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
Chlaroform	ug/L	0.5	ND
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND
Carbon Tetrachloride	ug/L	0.5	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	ND
Trichloroethene (TCE)	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
2-Chloroethylvinyl ether	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ŇD
1,1,2-Trichloroethane	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
1,3-Dichlorobenzene	ug/L	0.5	ND
1,4-Dichlorobenzene	ug/L	0.5	ND
1,2-Dichlorobenzene	ug/L	0.5	ND

MDL ND

Method Detection Limit

Not detected at or above the MDL.



Mr. David Leland Page 7 QUALITY CONTROL DATA

March 26, 1991

PACE Project Number: 410308504

PRP Oak 09382.039.02

**VOLATILE HALOCARBONS AND AROMATICS** 

Batch: 70 02206

Samples: 70 0024323, 70 0024340, 70 0024358

#### METHOD BLANK:

<u>Parameter</u>	<u>Units</u>	<u>MDL</u>	Method Blank
VOLATILE HALOCARBONS AND AROMATICS Bromochloromethane (Surrogate Recover 1,4-Dichlorobutane (Surrogate Recover VOLATILE AROMATICS BY EPA 8020 Benzene Toluene Chlorobenzene	ug/L ug/L ug/L	0.3 0.3 0.5	95% 103% - ND ND ND
Ethylbenzene Xylenes, Total 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Fluorobenzene (Surrogate Recovery)	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5	ND ND ND ND ND ND

#### SPIKE AND SPIKE DUPLICATE:

						Spike	ı
					Spike	Dupl	
Parameter	Units	MDL	70 0024994	Spike	Recv	Recv	RPD
1,1-Dichloroethane	<u>ug/L</u>	$\overline{0.5}$	1.9	10.00	63%	57%	10%
Trichloroethene (TCE)	ug/L	0.5	1.0	10.00	78%	74%	5%
trans-1,3-Dichloropropene	ug/L	0.5	ND	5.00	101%	96%	5%
Tetrachloroethene	ug/L	0.5	1.3	10.00	104%	92%	12%
Benzene	ug/L	0.3	ND	10.00	68%	65%	4%
Toluene	ug/L	0.3	ND	10.00	79%	78%	1%
Xylenes, Total	ug/L	0.5	ND	30.00	99%	101%	2%

MDL

Method Detection Limit

ND Not detected at or above the MDL.

RPD

Relative Percent Difference



Mr. David Leland Page 8

QUALITY CONTROL DATA

March 26, 1991

PACE Project Number: 410308504

PRP Oak 09382.039.02

**VOLATILE HALOCARBONS AND AROMATICS** 

Batch: 70 02248

Samples: 70 0024366, 70 0024374

#### **METHOD BLANK:**

Parameter VOLATILE HALOCARBONS BY EPA 8010	Units	MDL	Method Blank
Dichlorodifluoromethane Chloromethane Vinyl Chloride Bromomethane Chloroethane	ug/L ug/L ug/L ug/L ug/L	2.0 2.0 2.0 2.0 2.0	ND ND ND ND ND ND
Trichlorofluoromethane (Freon 11) 1,1-Dichloroethene Methylene Chloride trans-1,2-Dichloroethene 1,1-Dichloroethane Chloroform	ug/L ug/L ug/L ug/L ug/L ug/L	2.0 0.5 0.5 0.5 0.5	ND ND O.8 ND ND ND
1,1,1-Trichloroethane (TCA) Carbon Tetrachloride 1,2-Dichloroethane (EDC) Trichloroethene (TCE) 1,2-Dichloropropane Bromodichloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND ND
2-Chloroethylvinyl ether cis-1,3-Dichloropropene trans-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene Dibromochloromethane	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND ND ND
Chlorobenzene Bromoform 1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene	ug/L ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND ND 0.8 1.3 0.9

MDL ND Method Detection Limit

Not detected at or above the MDL.

Los Angeles California



Mr. David Leland Page 9

QUALITY CONTROL DATA

March 26, 1991

PACE Project Number: 410308504

PRP Oak 09382.039.02

**VOLATILE HALOCARBONS AND AROMATICS** 

Batch: 70 02248

Samples: 70 0024366, 70 0024374

#### METHOD BLANK:

Parameter	Units	MDL	Method Blank
VOLATILE HALOCARBONS AND AROMATICS Bromochloromethane (Surrogate Recover 1,4-Dichlorobutane (Surrogate Recover VOLATILE AROMATICS BY EPA 8020 Benzene			90% 115%
Toluene	ug/L ug/L	0.3 0.3	ND ND
Chlorobenzene	ug/L ug/L	0.5	ND ND
Ethylbenzene Xylenes, Total 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Fluorobenzene (Surrogate Recovery)	ug/L ug/L ug/L ug/L ug/L	0.5 0.5 0.5 0.5 0.5	ND ND 0.9 1.1 0.8 94%

#### SPIKE AND SPIKE DUPLICATE:

					Spike	Spike Dupl	!
Parameter	<u>Units</u>	MDL	70 0028647	Spike	Recv	Recv	RPD
1,1-Dichloroethane	ug/L	0.5	ND	10.00	59%	64%	8%
Trichloroethene (TCE)	ug/L	0.5	ND	10.00	64%	95%	38%
trans-1,3-Dichloropropene	ug/L	0.5	ND	5.00	113%	113%	0%
Tetrachloroethene	ug/L	0.5	ND	10.00	110%	110%	0%
Benzene	ug/L	0.3	ND	10.00	56%	62%	10%
Toluene	ug/L	0.3	ND	10.00	82%	88%	7%
Xylenes, Total	ug/L	0.5	ND	30.00	117%	120%	2%

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

RPD

Relative Percent Difference

SOURCE CODE

Û

flarding Lawson Associates

7655 Redwood Boulevard P.O. Box 578

Job Number: \_\_\_\_

MATRIX

Soil

Sediment

Water

CHAIN OF CUSTODY FORM 1 0 3 0 8 . 504

37EX

EPA 602/8020

EPA 601/8010

625/8270

624/8240

EPA

RECEIVED BY: (Signature)

RECEIVED BY : [Signature]

RECEIVED BY: (Signature)

RECEIVED BY: (Signature)

8015M/TPH

EPA ၀

METALS

**ANALYSIS REQUESTED** 

Novato, California 94948 415/892-0821 Telecopy: General: 415/892-0831 Accounting: 415/898-1052

02382 03902

SAMPLE

NUMBER

OR

LAB NUMBER

Seq

00691

Υr

10

WK

PRP - OAKland Name/Location:\_\_\_\_

Project Manager: David Leland

Unpres. H<sub>2</sub> SO<sub>4</sub>

CONTAINERS & PRESERV.

Samplers: Dave Evans Doug Lund

Recorder:	ture Required)
DATE	STATION DESCRIPTION/ NOTES
Mo Dy Time	

	LA NUM				t	PTH N		М1			QA ODE				MI	SCI	ELL	AN	ΕO	US			
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6/2,H/1	
,	CHAIN OF CUSTODY RECORD

ELINQUISHED BY Signature ELINOUISHED BY: (Signature)

RELINQUISHED BY: (Signature)

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DISPATCHED BY (Signature)

DATE/TIME

RECEIVED FOR LAB BY:

DATE/TIME

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DATE/TIME

"DATE/TIME

DN

METHOD OF SHIPMENT

M. Egbert

#### PACIFIC ENVIRONMENTAL LABORATORY

674 Harrison Street San Francisco, CA 94107

415-243-2580

For Attention

Harding Lawson Associates

David Leland

Address

200 Rush Landing Road Novato, CA 94948 Received 03/08/91 Reported 03/22/91

Source:

Lab. No.:

Sample I.D.: Matrix:

Depth:

Date Collected: Time Collected: Collected by:

Date Extracted: Date Analyzed:

EPA Analytical Method:

PRP Oakland, Job No. 09382,039.02

911787

91033007 Influent

Water

--02 /09 /6

03/08/91 0955

HLA

03/15/91 03/18/91

504

Analysis

Units

Analytical Results

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

0.10

0.01

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst Lynn Perrine, Joseph Samoy

Manager\_

PACIFIC ENVIRONMENTAL LABORATORY

674 Harrison Street San Francisco, CA 94107

415-243-2580

For Attention Address Harding Lawson Associates

David Leland

s 200 Rush Landing Road

Novato, CA 94948

Received 03/08/91 Reported 03/22/91

Quality Control Page

Source:

Lab. No.: Sample I.D.:

Matrix: Depth:

Date Collected: Time Collected: Collected by:

Date Extracted: Date Analyzed:

EPA Analytical Method:

PRP Oakland, Job No. 09382,039.02

911787 91033007 Water

--

03/08/91

0955 HLA

ньа 03/15/91

03/18/91

504

Analysis

Units

Replicate Analytical Results Det. Lim.

1,2-dibromoethane (EDB) ug/L 0.093 0.105 Spike rec. 56% 0.01

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst Lynn Perrine, Joseph Samoy

Manager

Tensett South

PACIFIC ENVIRONMENTAL LABORATORY

674 Harrison Street San Francisco, CA 94107 415-243-2580

For Attention Harding Lawson Associates

David Leland

Address

200 Rush Landing Road Novato, CA 94948

Received 03/08/91 Reported 03/22/91

Source:

Lab. No.: Sample I.D.:

Matrix: Depth:

Date Collected: Time Collected:

Collected by: Date Extracted:

Date Analyzed: EPA Analytical Method: PRP Oakland, Job No. 09382,039.02 Effluent

911788

91033008

Water

03/08/91 1040

HLA

03/15/91 03/18/91

504

<0.01

Analysis

Units

Analytical Results

Det. Lim.

1,2-dibromoethane (EDB) ug/L

0.01

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst Lynn Perrine, Joseph Samoy

Manager\_

PACIFIC ENVIRONMENTAL LABORATORY

674 Harrison Street San Francisco, CA 94107 415-243-2580

For

Harding Lawson Associates

Attention David Leland

Address

200 Rush Landing Road Novato, CA 94948 Received 03/08/91 Reported 03/22/91

Source:

Lab. No.: Sample I.D.:

Matrix: Depth:

Depth:
Date Collected:
Time Collected:

Collected by:
Date Extracted:
Date Analyzed:

EPA Analytical Method:

PRP Oakland, Job No. 09382,039.02

911789 91033009

Water

03/08/91

1050 HLA 03/15/91 03/18/91

504

Analysis

Units Analytical Results

Det. Lim.

1,2-dibromoethane (EDB) ug/L <0.01

0.01

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst Lynn Perrine, Joseph Samoy

Manager\_

Tenerett Smith

PACIFIC ENVIRONMENTAL LABORATORY 674 Harrison Street

San Francisco, CA 94107

415-243-2580

For Attention Harding Lawson Associates

David Leland

Address

200 Rush Landing Road

Novato, CA 94948

Received 03/08/91 **Reported 03/22/91** 

Source: Lab. No.:

Sample I.D.:

Matrix: Depth:

Date Collected: Time Collected: Collected by: Date Extracted:

Date Analyzed:

EPA Analytical Method:

PRP Oakland, Job No. 09382,039.02

911790

91033010 Water

03/08/91

1100 HLA

03/15/91 03/18/91

504

Analysis

Units

Analytical Results

Det. Lim.

1,2-dibromoethane (EDB) ug/L <0.01

0.01

Analysis by microextraction and gas chromatography. Comments: Results reported in micrograms per liter.

Analyst Lynn Perrine, Joseph Samoy

Manager

PACIFIC ENVIRONMENTAL LABORATORY

674 Harrison Street San Francisco, CA 94107

415-243-2580

For Attention

Harding Lawson Associates

David Leland

Address

200 Rush Landing Road Novato, CA 94948 Received --Reported 03/22/91

Quality Control Page

Source:

Lab. No.:

Sample I.D.:

Matrix:

Depth:

Date Collected: Time Collected: Collected by:

Date Extracted: Date Analyzed:

EPA Analytical Method:

Method Blank and Spike

Reagent Water

Water

--

--PEL

03/15/91 03/18/91

504

Analysis

Units

Analytical Results

Det. Lim.

1,2-dibromoethane (EDB)

ug/L

<0.01

Spike rec. 76%

0.01

Comments: Analysis by microextraction and gas chromatography. Results reported in micrograms per liter.

Analyst Lynn Perrine, Joseph Samoy

Manager

torset Det



M. Egbert

91 <u>a:</u> 51 March 22, 1991

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

RE: PACE Project No. 410308.505

PRP Oak 09382.039.02

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received March 08, 1991.

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

Sincerely,

Lisa J. Petersen Project Manager

Enclosures



Harding Lawson Associates 200 Rush Landing Road Novato, CA 94945

March 22, 1991

PACE Project Number: 410308505

Attn: Mr. David Leland

PRP Oak 09382.039.02

MW-19 MW-22 MW-23 PACE Sample Number: 70 0024390 70 0024404 70 0024412 Date Collected: 03/08/91 03/08/91 03/08/91 Date Received: 03/08/91 03/08/91 03/08/91 Parameter MDL Units 91030201 91030202 91030203

ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Total Purgeable Fuels, as Gasoline ug/L 1000 1400 PURGEABLE AROMATICS (BTXE BY EPA 8020): Benzene ug/L 0.20 ND ND Benzene ug/L 4.0 520 Toluene ug/L 0.20 ND ND Toluene 4.0 ug/L 57 **Ethylbenzene** uq/L 0.20 ND ND Ethylbenzene 4.0 20 ug/L Xylenes, Total ug/L 0.20 ND ND Xylenes, Total 4.0 ug/L 83

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

Kansas City, Missouri

ths Anneles California



MW-18

91030204

Mr. David Leland

Page

March 22, 1991

PACE Project Number: 410308505

MW-20

PRP Oak 09382.039.02

PACE Sample Number: Date Collected: Date Received: Parameter

70 0024420 70 0024439 70 0024447 03/08/91 03/08/91

MDL

03/08/91 03/08/91 03/08/91 03/08/91 91030205 91030206

MW-21

ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Total Purgeable Fuels, as Gasoline 50 ND ug/L ND ND PURGEABLE AROMATICS (BTXE BY EPA 8020): Benzene ug/L 0.20 0.9 ND ND Toluene 0.20 ug/L 0.3 ND ND Ethylbenzene ug/L 0.20 ND ND ND Xylenes, Total 0.20 ug/L ND ND ND

Units

MDL Method Detection Limit ND

Not detected at or above the MDL.

Los Angeles California



Mr. David Leland Page

March 22, 1991

PACE Project Number: 410308505

PRP Oak 09382.039.02

MW-7

Mw-3 70 0024455 70 0024471 70 0027250

PACE Sample Number: Date Collected: Date Received:

03/08/91 03/08/91 03/08/91 03/08/91 03/08/91 03/08/91

Lab

Control Parameter Units MDL 91030207 91030209 Blank

#### ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-	-
Total Purgeable Fuels, as Gasoline PURGEABLE AROMATICS (BTXE BY EPA 8020):	ug/L	50	ND	ND	-
Benzene	ug/L	0.20	- ND	- ND	<u>-</u>
Toluene	ug/L	0.20	ND	ND	_
Ethylbenzene	ug/L	0.20	ND	ND	-
Xylenes, Total	ug/L	0.20	ND	ND	_

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

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

Frank J. Bearick for

Ruth J. Siegmund

Organic Chemistry Manager

Los Appeles, California

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