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5TID 4148



July 17, 1992

18106,012.04

Blue Print Services Company 149 Second Street San Francisco, California 94105

Attention:

Mr. Paul Koze

Gentlemen:

Quarterly Report
April 1 through June 30, 1992
City Blue Groundwater Treatment System
1700 Jefferson Street
Oakland, California

This letter presents the results of sampling and analysis from the groundwater treatment system at the City Blue Production facility at 1700 Jefferson Street in Oakland, California for the period from April 1 through June 30, 1992.

BACKGROUND

Three underground storage tanks were removed from the northwestern portion of the property in June 1987 (Plate 1). Monitoring wells were installed on the property to evaluate the distribution of petroleum hydrocarbons in the soil and groundwater and determine the direction of groundwater flow.

Petroleum hydrocarbons as gasoline, were found floating on the groundwater in Monitoring Well MW-1. In January 1988, two additional monitoring wells (MW-1A and MW-4) were installed by HLA at the facility (Plate 1). One offsite monitoring well (MW-5) was installed by HLA in August 1988.

HLA performed additional investigations in 1989 and performed an aquifer testing and groundwater treatment feasibility study in 1990. The groundwater treatment feasibility study identified biodegradation as the most appropriate treatment for the City Blue site.

July 17, 1992 18106,012.04 Mr. Paul Koze Blue Print Services Company Page 2

PROCESS DESCRIPTION

Groundwater containing elevated concentrations of petroleum hydrocarbons is being collected from two onsite extraction wells. Maximum average system flow rates are 2 to 5 gallons per minute (gpm). Air pumps installed in the wells extract water and convey it through above-ground and underground piping to the treatment system. The treatment system is comprised of three modules: pretreatment (oil/water separation), treatment (biotreatment), and post-treatment (filtration and carbon bed polishing modules). The pretreatment module is a vapor-tight oil/water separator; the treatment module consists of a bioreactor, a vapor phase carbon adsorption unit, and the associated nutrient and caustic feed systems. The post-treatment module consists of a sand filter and two liquid phase carbon beds. Effluent from the carbon bed is discharged to the sanitary sewer drain onsite. Vapor from the bioreactor is passed through the vapor phase carbon adsorption unit before being released to the atmosphere.

The treatment system has been permitted by the Bay Area Quality Management District (BAAQMD) and the East Bay Municipal Utilities District (EBMUD).

TREATMENT SYSTEM SAMPLING

Water and air samples have been collected from the treatment system and analyzed by EPA Test Method 8015 for total petroleum hydrocarbons as gasoline (TPH-G) and by EPA Test Method 8020 for benzene, toluene, ethyl benzene, and xylenes (BTEX). Water samples were collected from the bioreactor effluent before the carbon beds and from the carbon bed effluent before discharge to the sanitary sewer. Air samples were collected from the influent to and the effluent from the vapor phase carbon bed. Water samples were decanted from sampling ports into 40-milliliter volatile organic analysis (VOA) vials. Air samples were collected into 1-liter Tedlar bags with a vacuum box sampler. The air and water samples were stored in coolers on ice and submitted to Superior Analytical Laboratory in San Francisco under chain-of-custody protocols for analysis. The chain-of-custody records are included in the appendix.

In addition to sampling air and groundwater, the system is inspected for leaks and other problems. Copies of the inspection logs are included in the appendix.

July 17, 1992 18106,012.04 Mr. Paul Koze Blue Print Services Company Page 3

SAMPLING SCHEDULE

The air and water samples were collected one hour after the system started on June 16, 1992; every 24 hours for the first three days after the system started; weekly for the first three weeks of operation; and will be collected monthly thereafter.

ANALYTICAL RESULTS

The results of chemical analyses are presented in Table 1. The laboratory reports are in the appendix. The results indicate that no detectable concentrations of TPH-G or BTEX are in effluent water being discharged to the sanitary sewer. Sample Number 92061905, 92070205, and 92071005 were analyzed to determine the concentrations of TPH-G and BTEX going into the bioreactor. The sample results indicate that the bioreactor treatment is degrading approximately 99 percent of the TPH-G and BTEX concentrations before post-treatment polishing by the carbon beds.

Based on current loading data we estimate that the primary carbon bed will not allow a breakthrough of detectable TPH-G or BTEX until May 1993.

The analytical results of the air samples (Table 1) also indicate that no detectable concentrations of TPH-G or BTEX are in the air being released from the vapor phase carbon adsorption unit. However, detectable concentrations of BTEX were found in the vapor phase carbon effluent sample from June 18, 1992. Analytical results from air samples taken the following day and following weeks showed no detectable concentrations of TPH-G or BTEX in the vapor phase carbon effluent samples. We believe that the BTEX concentrations detected in the effluent sample from June 18, 1992 were due to cross contamination during sampling. Cross contamination may have occurred by sampling the influent to the vapor phase carbon unit before sampling the effluent, and using the same tubing to draw both samples.

HLA is continuing to monitor and sample the groundwater treatment system at City Blue. The third week of sampling was performed on July 10, 1992. The sampling will now be performed monthly and the results presented in the next quarterly report in October 1992.

July 17, 1992 18106,012.04 Mr. Paul Koze Blue Print Services Company Page 4

If you have any questions, please contact either of the undersigned.

Yours very truly,

HARDING LAWSON ASSOCIATES

David F. Scrivner Project Engineer

Mark G. Filippini
Engineering Geologist

DFS/MGF/dm/B14691-CT88

Attachments: Table 1 - Results of Chemical Analyses

Plate 1 - Site Plan

Laboratory Reports and Chain-of-Custody

CERTIFIED ENGINEERING

Facility Inspection Logs

cc: East Bay Municipal Utility District

P.O. Box 24055

Oakland, California 94623-1055 Attention: Ms. Molly Ong

Bay Area Air Quality Management District

939 Ellis Street

San Francisco, California 94109

Attention: Mr. Alexander V. Saschin

Alameda County Health Care Services Department of Environmental Health Hazardous Materials Program 80 Swan Way, Room 200

Oakland, California 94621 Attention: Ms. Jennifer Eberly

Table 1. Results of Air and Groundwater Chemical Analyses Harding Lawson Associates
Groundwater Treatment System
City Blue Production Facility

					
Sample				Ethyl-	
Number	TPH-G	Benzene	Toluene	Benzene	Xylene
<u> </u>					
92061601	3300	220	460	35	290
92061602	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
92061603	110000	5200	6900	360	2200
92061603	ND<30000				
92001004	ND<20000	ND<85	ND<250	ND<65	ND<250
92061701	43000	4900	7600	500	4100
92061702	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
92061703	1300000	120000	140000	7100	40000
92061704	ND<30000	ND<85	ND<250	ND<65	ND<250
)200170 4	110130000	140405	1101230	140403	ND(2)0
92061801	4300	20	48	3.6	970
92061802	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
92061803	210000	1100	2200	240	10000
92061804	ND<30000	160	710	89	670
				•	.
92061901	1600	1.6	5.0	ND<0.3	150
92061902	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
92061903	490000	4900	5700	550	7300
92061904	ND<30000	ND<85	ND<250	ND<65	ND<250
92061905	180000	18000	31000	2200	16000
92062401	980	11	13	1.8	140
92062402	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
92062403	230000	3100	3600	380	6400
92062404	ND<30000	ND<85	ND<250	ND<65	ND<250
92070201	210	1.4	ND<0.3	ND<0.3	1.0
92070202	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
92070203	43000	140	ND<250	79	360
92070204	ND<30000	ND<85	ND<250	ND<65	ND<250
92070205	160000	14000	27000	1700	1300 0
92071001	2800	41	36	2.2	360
92071002	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3
92071003	660000	15000	23000	1900	23000
92071004	ND<30000	ND<85	ND<250	ND<65	ND<250
92071005	150000	14000	26000	1700	12000
		*			

Sample number begins with year, month, and day of sampling

Sample Sequence:

All concentrations in parts per billion (ppb).

TPH-G in air has been converted to ppb from parts per million (ppm) reported by Superior Analytical.

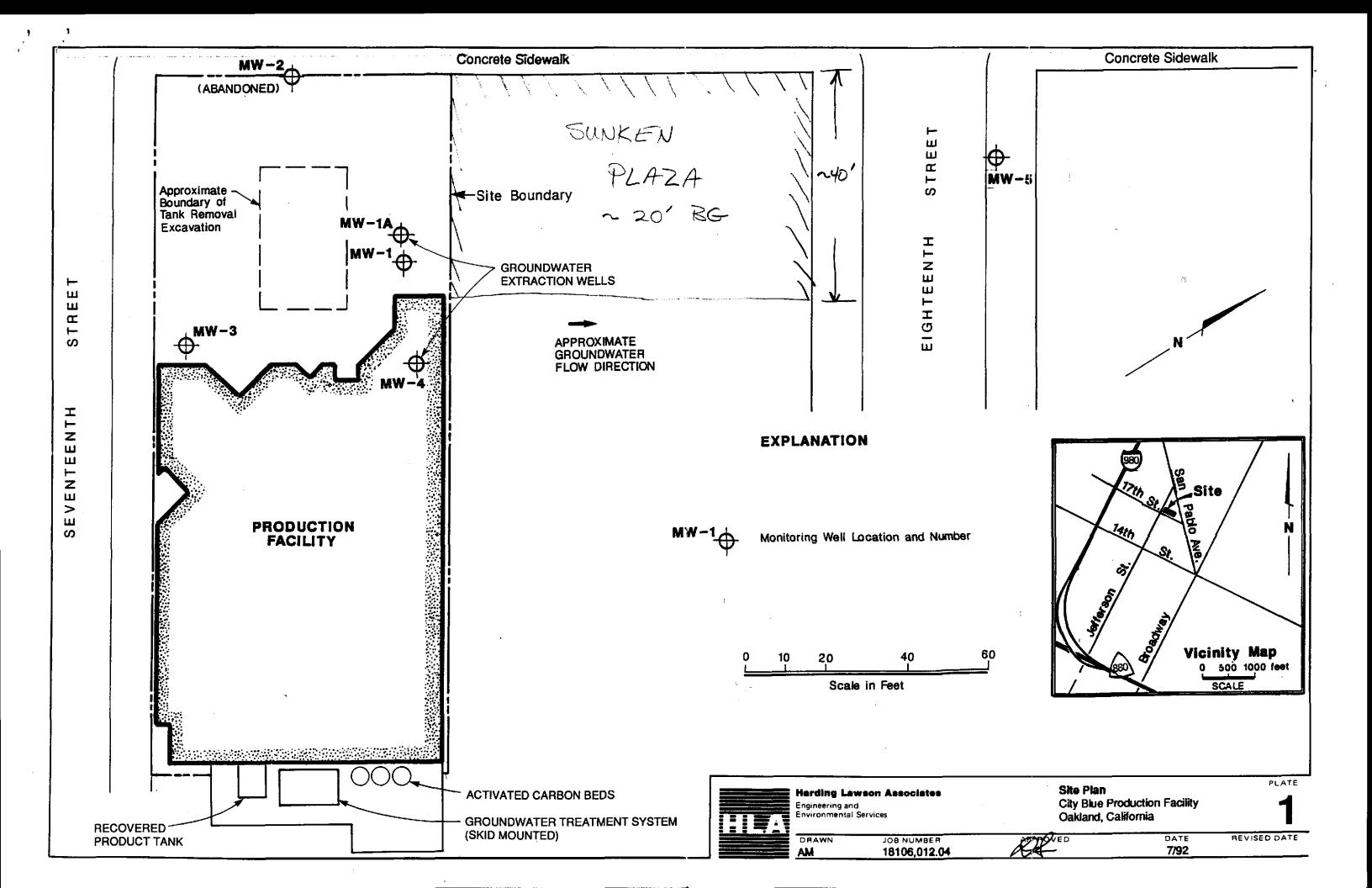
^{01 -} Bioreactor Effluent (water)

^{02 -} Carbon Bed Effluent (water)

^{03 -} Vapor Phase Carbon Influent (Air)

^{04 -} Vapor Phase Carbon Effluent (Air)

^{05 -} Bioreactor Influent (water)



Harding Lawson Associates

Appendix

LABORATORY REPORTS, CHAIN-OF-CUSTODY RECORDS, AND INSPECTION LOGS



1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54974

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/16/92

DATE REPORTED: 06/16/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range
1	92061601	3300
2	92061602	ND<50

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 93%: Duplicate RPD = 5%

Richard Srna, Ph.D.



1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54974

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/16/92

DATE REPORTED: 06/16/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB			Concentr	ation(ug/ Ethvl	L)
#	Sample Identification	Benzene	Toluene	4	Xylenes
1	92061601	220	460	35	290
2	92061602	ND<0.3	ND<0.3	ND<0.3	ND<0.3

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery = 94%: Duplicate RPD = 1%

Richard Srna, Ph.D.



Superior Precision Analytical, Inc.

1555 Burke. Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54974

CLIENT: HARDING LAWSON ASSOC.

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/16/92

DATE REPORTED: 06/16/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ppm) Gasoline Range
3	92061603	110
4	92061604	ND<30

ppm - parts per million in air Minimum Detection Limit for Gasoline in Air: 30 ppm Concentration of gasoline in air is calculated based on 20 C and 1 ATM and an assumed molecular weight of hexane. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 2mg/L: %DIFF Gasoline = <15 MS/MSD Average Recovery = 96%: Duplicate RPD = 4%

Richard Srna, Ph.D.

Coup A Noon (for)
Laboratory Director

RECEIVED

JUN 18 1992 Harding Lawson Associates



1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54974

CLIENT: HARDING LAWSON ASSOC.

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/16/92 DATE REPORTED: 06/16/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB			Concentr	ation(ppb)
#	Sample Identification	Benzene	Toluene	Ethyl Benzene	Xylenes
3 4	92061603 92061604	5200 ND<85	6900 ND<250	360 ND<65	2200 ND<250

ppb - parts per billion in air

Minimum Detection Limit for Benzene in air = 85 ppb
Minimum Detection Limit for Toluene and Xylenes in air = 250 ppb
Minimum Detection Limit for Ethyl Benzene in air = 65 ppb
Concentration of BTXE in air is calculated based on 20 C and 1 ATM.
Reported as volume to volume.

QAQC Summary:

Daily Standard run at 20ug/L: %DIFF 8020 = <15% MS/MSD Average Recovery = 98% : Duplicate RPD = 3%

Richard Srna, Ph.D.

Harding Lawson Associates Marathon Plaza 303 Second Street, Suite 630 North San Francisco, CA 94107 (415) 543-8422 • (415) 777-9706 Telecopy Job Number: 1295-017 Job Number: 1295-017	S REGUESTED	
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1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54979

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/17/92

DATE REPORTED: 06/18/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range		
1	92061701	43000		
2	92061702	ND<50		

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 102%: Duplicate RPD = 7%

Richard Srna, Ph.D.



Superior Precision Analytical, Inc.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

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ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB			Concentr	ation(ug/ Ethyl	L)
# 	Sample Identification	Benzene	Toluene	4	Xylenes
1 2	92061701 92061702	4900 ND<0.3	7600 ND<0.3	500 ND<0.3	4100 ND<0.3

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery = 99%: Duplicate RPD = 3%

Richard Srna, Ph.D.



LABORATORY NO.: 54979

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/17/92

DATE REPORTED: 06/18/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ppm) Gasoline Range		
3	92061703	1300		
4	92061704	ND<30		

ppm - parts per million in air Minimum Detection Limit for Gasoline in Air: 30 ppm Concentration of gasoline in air is calculated based on 20 C and 1 ATM and an assumed molecular weight of hexane. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 2mg/L: %DIFF Gasoline = <15% MS/MSD Average Recovery = 97%: Duplicate RPD = 7%

Richard Srna, Ph.D.



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LAB			Concentr	ation(ppb Ethyl)
#	Sample Identification	Benzene	Toluene	Benzene	Xylenes
3	92061703	120000	140000	7100	40000
4	92061704	ND<85	ND<250	ND<65	ND<250

ppb - parts per billion in air

Minimum Detection Limit for Benzene in air = 85 ppb Minimum Detection Limit for Toluene and Xylenes in air = 250 ppb Minimum Detection Limit for Ethyl Benzene in air = 65 ppb Concentration of BTXE in air is calculated based on 20 C and 1 ATM. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 20ug/L: %DIFF 8020 = <15% MS/MSD Average Recovery = 93% : Duplicate RPD = 4%

Richard Srna, Ph.D.



Harding Lawson Associates 866 Howard Street, Third Floor San Francisco, California 94105 415/543-8422 Telecopy: 415/777-9706	CI	HAIN OF CUSTO	DY FORM 54979	Lab: Superior ANALYSIS REQUESTED
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1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54990

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/18/92

DATE REPORTED: 06/19/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range
1	92061801	4300
2	92061802	ND<50

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 102%: Duplicate RPD = 4%

Richard Srna, Ph.D.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54990

DATE RECEIVED: 06/18/92

CLIENT: Harding Lawson Associates

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ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB			Concentr	ation(ug/ Ethyl	L)
#	Sample Identification	Benzene	Toluene	Benzene	Xylenes
					
1	92061801	20	48	3.6	970
2	92061802	ND<0.3	ND<0.3	ND<0.3	ND<0.3

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery =100%: Duplicate RPD = 5.5%

Richard Srna, Ph.D.



LABORATORY NO.: 54990

DATE RECEIVED: 06/18/92

CLIENT: Harding Lawson Associates

DATE REPORTED: 06/19/92

CLIENT JOB NO.: 11295-017

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ppm) Gasoline Range
3	92061803	210
4	92061804	ND<30

ppm - parts per million in air Minimum Detection Limit for Gasoline in Air: 30 ppm Concentration of gasoline in air is calculated based on 20 C and 1 ATM and an assumed molecular weight of hexane. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 2mg/L: %DIFF Gasoline = <15% MS/MSD Average Recovery = 107 %: Duplicate RPD = 3.3 %

Richard Srna, Ph.D.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54990

DATE RECEIVED: 06/18/92

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DATE REPORTED: 06/19/92

CLIENT JOB NO.: 11295-017

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

			Concentr	ation(ppb)
LAB # 	Sample Identification	Benzene	Toluene	Ethyl Benzene	Xylenes
3	92061803	1100	2200	240	10000
4	92061804	160	710	89	670

ppb - parts per billion in air

Minimum Detection Limit for Benzene in air = 85 ppb Minimum Detection Limit for Toluene and Xylenes in air = 250 ppb Minimum Detection Limit for Ethyl Benzene in air = 65 ppb Concentration of BTXE in air is calculated based on 20 C and 1 ATM. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 20ug/L: %DIFF 8020 = <15% MS/MSD Average Recovery = 94 % : Duplicate RPD = 2.2 %

Laboratory Director

Richard Spna, PM:

Certified Laboratories



CHAIN OF CUSTODY FORM Samplers: Dave Sowner

54990

Lab: Superior

ANALYSIS REQUESTED

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Superior Precision Analytical, Inc.

1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54996

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/19/92 DATE REPORTED: 06/22/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range
1	92061901	1600
2	92061902	ND<50
5	92061905	180000

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 94%: Duplicate RPD =0.7%

Richard Srna, Ph.D.



1555 Burke, Unit 1 • San Francisco. California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54996

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/19/92

DATE REPORTED: 06/22/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB			Concentr	Concentration(ug/L) Ethyl						
#	Sample Identification	Benzene	Toluene	Benzene	Xylenes					
1	92061901	1.6	5.0	ND<0.3	150					
2	92061902	ND<0.3	ND<0.3	ND<0.3	ND<0.3					
5	92061905	18000	31000	2200	16000					

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery =93%: Duplicate RPD = 1.6%

Richard Srna, Ph.D.



Superior Precision Analytical, Inc.

1555 Burke, Unit L. San Francisco, California 94124 (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54996

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/19/92

DATE REPORTED: 06/22/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ppm) Gasoline Range
	- 	
3	92061903	490
4	92061904	ND<30

ppm - parts per million in air Minimum Detection Limit for Gasoline in Air: 30 ppm Concentration of gasoline in air is calculated based on 20 C and 1 ATM and an assumed molecular weight of hexane. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 2mg/L: %DIFF Gasoline = <15% MS/MSD Average Recovery = 107%: Duplicate RPD = 3.3%

Richard Srna, Ph.D.



1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 54996

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/19/92

DATE REPORTED: 06/22/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB # 	Sample Identification	Benzene	Concentr Toluene	ation(ppb Ethyl Benzene	Xylenes
3	92061903	4900	5700	550	7300
4	92061904	ND<85	ND<250	ND<65	ND<250

ppb - parts per billion in air

Minimum Detection Limit for Benzene in air = 85 ppb Minimum Detection Limit for Toluene and Xylenes in air = 250 ppb Minimum Detection Limit for Ethyl Benzene in air = 65 ppb Concentration of BTXE in air is calculated based on 20 C and 1 ATM. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 20ug/L: %DIFF 8020 = <15% MS/MSD Average Recovery = 94% : Duplicate RPD = 2.2%

Kh I HOU I L

Laboratory Director

Richard, Srna,

Certified Laboratories



CHAIN OF CUSTODY FORM

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Superior Precision Analytical, Inc.

1555 Burke, Unit 1 • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55145

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/25/92 DATE REPORTED: 07/01/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range
1	92062401	980
2	92062402	ND<50

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 100%: Duplicate RPD = 6%

Richard Srna, Ph.D.



1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55145

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/25/92

DATE REPORTED: 07/01/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB			Concentration(ug/L) Ethyl		
#	Sample Identification	Benzene	Toluene	Benzene	Xylenes
1	92062401	11	13	1.8	140
2	92062402	ND<0.3	ND<0.3	ND<0.3	ND<0.3

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery =94%: Duplicate RPD = 7%

Richard Srna, Ph.D.



1555 Burke, Unit F. San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55145

DATE RECEIVED: 06/25/92

CLIENT: Harding Lawson Associates

DATE REPORTED: 07/01/92

CLIENT JOB NO.: 11295-017

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ppm Gasoline Range		
	7			
3	92062403	230		
4	92062404	ND<30		

ppm - parts per million in air Minimum Detection Limit for Gasoline in Air: 30 ppm Concentration of gasoline in air is calculated based on 20 C and 1 ATM and an assumed molecular weight of hexane. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 2mg/L: %DIFF Gasoline = <15% MS/MSD Average Recovery = 95 %: Duplicate RPD = 3.8%

Richard Srna, Ph.D.

1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55145

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 06/25/92 DATE REPORTED: 07/01/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB		Concentration(ppb) Ethyl				
#	Sample Identification	Benzene	Toluene	Benzene	Xylenes	
					•	
3	92062403	3100	3600	380	6400	
4	92062404	ND<85	ND<250	ND<65	ND<250	

ppb - parts per billion in air

Minimum Detection Limit for Benzene in air = 85 ppb
Minimum Detection Limit for Toluene and Xylenes in air = 250 ppb
Minimum Detection Limit for Ethyl Benzene in air = 65 ppb
Concentration of BTXE in air is calculated based on 20 C and 1 ATM.
Reported as volume to volume.

QAQC Summary:

Daily Standard run at 20ug/L: %DIFF 8020 = <15% MS/MSD Average Recovery = 90 % : Duplicate RPD = 4.3 %

Richard Srna, Ph.D.

Gun A Nwo (fr.)
Laboratory Director

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LABORATORY NO.: 55195

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 07/02/92 DATE REPORTED: 07/10/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ug/L) Gasoline Range
1	92070201	210
2	92070202	ND<50

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery =104%: Duplicate RPD = 8%

Richard Srna, Ph.D.

LABORATORY NO.: 55195

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 07/02/92 DATE REPORTED: 07/10/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB		Concentration(ug/L) Ethyl			
#	Sample Identification	Benzene	Toluene	Benzene	Xylenes
1	92070201	1.4	ND<0.3	ND<0.3	1.0
2	9207020) 2	ND<0.3	ND<0.3	ND<0.3	ND<0.3
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ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15 MS/MSD Average Recovery = 96%: Duplicate RPD = 0.7%

Richard Srna, Ph.D.



LABORATORY NO.: 55195

CLIENT: HARDING LAWSON ASSOCIATES

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 07/02/92

DATE REPORTED: 07/06/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ppm) Gasoline Range
3	92070203	43
4	92070204	ND<30

ppm - parts per million in air Minimum Detection Limit for Gasoline in Air: 30 ppm Concentration of gasoline in air is calculated based on 20 C and 1 ATM and an assumed molecular weight of hexane. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 2mg/L: %DIFF Gasoline = <15 MS/MSD Average Recovery = 91%: Duplicate RPD = 2%

Richard Srna, Ph.D.



1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55195

DATE RECEIVED: 07/02/92

CLIENT: HARDING LAWSON ASSOCIATES

DATE REPORTED: 07/06/92

CLIENT JOB NO.: 11295-017

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB # 	Sample Identification	Benzene	Concentr Toluene	ation(ppb Ethyl Benzene 	Xylenes
3	92070203	140	ND<250	79	360
4	92070204	ND<85	ND<250	ND<65	ND<250

ppb - parts per billion in air

Minimum Detection Limit for Benzene in air = 85 ppb
Minimum Detection Limit for Toluene and Xylenes in air = 250 ppb
Minimum Detection Limit for Ethyl Benzene in air = 65 ppb
Concentration of BTXE in air is calculated based on 20 C and 1 ATM.
Reported as volume to volume.

QAQC Summary:

Daily Standard run at 20ug/L: %DIFF 8020 = <15% MS/MSD Average Recovery = 92% : Duplicate RPD = 4%

Richard Srna, Ph.D.



1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55211

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 07/07/92 DATE REPORTED: 07/14/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range
1	92070205	160000

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 89%: Duplicate RPD = 3

Richard Srna, Ph.D.

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55211

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 07/07/92

DATE REPORTED: 07/14/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

Concentration (ug/L)

LAB # 	Sample Identification	Benzene		Ethyl Benzene	,
1	92070205	14000	27000	1700	13000

ug/L - parts per billion (ppb)
Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery =96%: Duplicate RPD = 3

Richard/Syna, Ph.D.



CHAIN OF CUSTODY FORM

Lab: Superior

Job Number:_ Name/Location: City Blue Project Manager: <a>C

Recorder:

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Harding Lawson Associates Marathon Plaza 303 Second Street, Suite 630 North San Francisco, CA 94107 (415) 543-8422 + (415) 777-9706 Telecopy

CHAIN OF CUSTODY FORM

Lab: Superior

ANALYSIS REQUESTED

ANALYSIS REQUESTED

Job Number: 1/295-017
as a serious Catty River
Project Manager: Chery! Nelson
Project Manager.

Recorder:

(Signature Required) #CONTAINERS & PRESERV. SAMPLE NUMBER MATRIX DATE OR Sediment Soil Oil A-1 R Unpres. H₂ SO₄ SOURCE CODE LAB NUMBER Water Мо Dy Time Wk Sea N

White

STATION DESCRIPTION/

NOTES

+ BTEX EPA 602/8020 EPA 624/8240 EPA 625/8270 ICP METAL S EPA 8015M/TPH TPH-6AS EPA 601/8010

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1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55213

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-017

DATE RECEIVED: 07/10/92

DATE REPORTED: 07/13/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range
1	92071001	2800
2	92071002	ND<50

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 99%: Duplicate RPD = 5%

Richard Srna, Rh.D

1555 Burke, Unit L • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55213

DATE RECEIVED: 07/10/92

CLIENT: Harding Lawson Associates

DATE REPORTED: 07/13/92

CLIENT JOB NO.: 11295-017

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

			Concentr	ation(ug/	L)
LAB # 	Sample Identification	Benzene	Toluene	Ethyl Benzene	Xylenes
1	92071001	41	36	2.2	360
2	92071002	ND<0.3	ND<0.3	ND<0.3	ND<0.3

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery =95%: Duplicate RPD = 2%

Laboratory Manager

Richard Srnam



CERTIFICATE OF ANALYSIS

LABORATORY NO.:55213

CLIENT: Harding Lawson Associates

CLIENT JOB NO.:11295-017

DATE RECEIVED: 07/10/92

DATE REPORTED: 07/13/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ppm) Gasoline Range
3	92071003	660
4	92071004	ND<30

ppm - parts per million in air Minimum Detection Limit for Gasoline in Air: 30 ppm Concentration of gasoline in air is calculated based on 20 C and 1 ATM and an assumed molecular weight of hexane. Reported as volume to volume.

QAQC Summary:

Daily Standard run at 2mg/L: %DIFF Gasoline = <15 MS/MSD Average Recovery =92%: Duplicate RPD = 2%

Richard Srna, Ph.D.

Certified Laboratories

1555 Burke, Unit 1 • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.:55213

CLIENT: Harding Lawson Associates

CLIENT JOB NO.:11295-017

DATE RECEIVED: 07/10/92

DATE REPORTED: 07/13/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES by EPA SW-846 Methods 5030 and 8020

LAB			Concentr	ation(ppb)
# 	Sample Identification	Benzene	Toluene	Ethyl Benzene	Xylenes
3 4	92071003 92071004	15000 ND<85	23000 ND<250	1900 ND<65	23000 ND<250

ppb - parts per billion in air

Minimum Detection Limit for Benzene in air = 85 ppb
Minimum Detection Limit for Toluene and Xylenes in air = 250 ppb
Minimum Detection Limit for Ethyl Benzene in air = 65 ppb
Concentration of BTXE in air is calculated based on 20 C and 1 ATM.
Reported as volume to volume.

QAQC Summary:

Daily Standard run at 20ug/L: %DIFF 8020 = <15 MS/MSD Average Recovery =94 % : Duplicate RPD = 0.5%

Richard, Srna, Ph.D.

Laboratory Director

1555 Burke, Unit 1 • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55223

CLIENT: Harding Lawson Associates

CLIENT JOB NO.: 11295-016

DATE RECEIVED: 07/10/92

DATE REPORTED: 07/15/92

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS by Modified EPA SW-846 Method 5030 and 8015

LAB # 	Sample Identification	Concentration (ug/L) Gasoline Range
1	92071005	150000

ug/L - parts per billion (ppb)

Method Detection Limit for Gasoline in Water: 50 ug/L

QAQC Summary:

Daily Standard run at 2mg/L: %Diff Gasoline = <15 MS/MSD Recovery = 110%: Duplicate RPD = 5.7

1211DI

Richard Srna,

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 55223

55223

CLIENT: Harding Lawson Associates
CLIENT JOB NO.: 11295-016

DATE RECEIVED: 07/10/92

DATE REPORTED: 07/15/92

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES

by EPA SW-846 Methods 5030 and 8020

LAB			Concentr	ation(ug/ Ethyl	L)
#	Sample Identification	Benzene	Toluene	Benzene	Xylenes
1	92071005	14000	26000	1700	12000

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: %Diff 8020 = <15% MS/MSD Average Recovery =95%: Duplicate RPD = 3.4

Richard Srna, Ph.D.



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HLA	Harding Lawson Associate 666 Howard Street, Third Floor San Francisco, California 94105 415/543-8422 Tetecopy: 415/777-9706
Job Nu Name/l	mber: //29

CHAIN	OF	CUSTODY	FORM	-5
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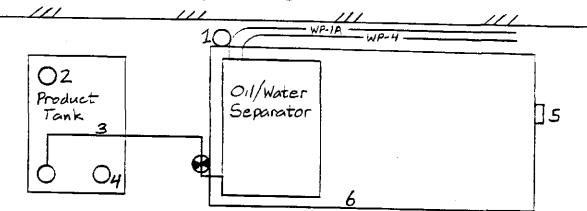
Job Numb	Howard Si Francisco 543-8422 copy: 415/2 Der:	//295- n: City B er: Ches	ryl Nelson		STODY FORM 5523 Avd Scrivner	
SOURCE CODE Water Sediment		Unpress & Land Wash	SAMPLE NUMBER OR LAB NUMBER Yr Wk Seq	DATE Yr Mo Dy Time	STATION DESCRIPTION/ NOTES	EPA 601/8010 EPA 602/8020 EPA 624/8240 EPA 625/8270 ICP METALS EPA 8015M/TPH TPH-CAS
\(\frac{1}{2}\)				9207/00900		

LAB NUMBER	DEPTH COL	QA CODE	MISCELLANEOUS	A CHAIN O	F CUST	ODY RECORD	
Yr Wk Seq	FEET CD			RECHNOUISHED BY: (Signature)	BECEN	VED BY: (Signature)	DATE/TIME
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SHEET	OF
JOB NO.	
DATE	
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City Blue, 1700 Jefferson St SUBJECT Gasoline Product Inspection Log CHECKED BY

CITY BLUE BLOG



- 1 Infinent from wells WP-1A and WP-4 to OII / Water Secarator
- 2 Convanlt Product Tank Dispenser
- 3 Recovered Product Line from Oil/Water Separator to Convault Product Tank TE No. O start Contact If Any Questions Contact:
- 4 Fuel Level Gauge

Cheryl Nelson (415) 543-8422

5 - Control Panel

OR David Scrivner (415) 543-842

6 - Secondary Containment

OR Dan Johnson (415) 892-08.

	_	_		LHECKP	OINTS		
DATE	INITIALS	#1	#2	#3	#4	#5	#6
6/16/92	Sit	· /	V	V	1/8	V	Dry
6/17/92	22	V	V	V	1/8	V	Dry
6/18/92	Af	V	V	V	1/8-1/4	V	Small
6/19/92	DI	V	V	V	1/4	V	Small Leale
6/24/92	22	V	V	V	-5/16	V	Small
Comments	5 ;			-			



SHEET	OF	
	295-01	<u> </u>
DATE	18-92	
_ COMPUTED B	Y DES	
011501455		

PROJECT City Blue, 1700 Jefferson Street SUBJECT General Inspection Log

General System Inspection Log To Be Completed By HLA Personnel visiting the site.

- 1-Gasoline Product Inspection Log-Perform visual inspection as detailed on the log sheet and check that City Blue personnel are performing same check.
- 2- Natrient and Caustie Supply Tank Levels
- 3-Sand Filters Record pressure differential
- 4- Control Panel-Are any indicator lights on, record if any.
- 5- SCFM Gauge Check that gauge reads 1.0 SCFM
- 6- Pumps P-1, P-2, P-3, P-4 Check that pumps are in the "ON" or "AUTO" position, are pumps running.
- 7- Flow Totalizer Record total Flow of effluent to sanitary sewer.
- 8-B10-Reactor Level Visually check the water level.

Date	Initials	1	2	3	4	15	1 6	7	1 8	1
6/16/92	Def	/	Full	10psi	No	V	V	1000 gals	Full	System Start-Up
6/17/12	DE	V	Full	10psi	No	V	~	2920gals	Full	Onsite All day
6/18/92	Ref	V	Full -z-	10psi	No	~	/	4280 gals	-4"	
6/19/92	Df	V	Full -3-	10psi	No	V	V	5650gals	-17"	
6/24/92	AS	V	-4+	10 psi	BR-1 High	up to		6830 gals 7208 gals	-19= Full	
7/2/92		V	-5=	15psi	BR-1 High	2.0		13040gals	G.JI	
Notes	/ Commen	<u> 43:</u>				·			l	'

6/30/92 record on segurate sheet



SHEET	OF	
JOB NO//	295-01	2
DATE _ 6	-18-92	
COMPUTED B	Y DES	
CHECKED BY		

PROJECT City Blue, 1700 Jefferson Street SUBJECT General Inspection Log

General System Inspection Log To Be Completed By HLA Personnel Visiting the site.

- 1-Gasoline Product Inspection Log-Perform visual inspection as detailed on the log sheet and check that City Blue personnel are performing same check.
- 2 Natrient and Constie Supply Tank Levels
- 3-Sand Filters Record pressure differential
- 4-Control Panel-Are any indicator lights on, record if any.
- 5- SCFM Gauge Check that gauge reads 1.0 SCFM
- 6- Pumps P-1, P-2, P-3, P-4 Check that pumps are in the "ON" or "AUTO" position, are pumps running.
- 7- Flow Totalizer Record total Flow of effluent to sanitary sewer.

8-B10-Reactor Level - Visually check the water level.

Date.	Initials	1	1 2 1	2	1 4	5	6	7 1	8 1	
6/3/92	77.	Vot	C-154* N-43"	V10	BR-1 High, SF-1 High	7		11,180gals	-94"	
7/2/92	DS	AA			BR-1 High, SF-1 High	'	/	13,040 pds	₩şħ	
7/7/92		V Rd	C-15* N-39*		BR-1 High	V	V	13,670gals		
7/10/92	RS	V,	C-15" N-160gg	Bpsi, 100si	BR-1 High	1	~	14,470gds		
]	<u> </u>
Note:	s/Commen	MS:								
								·		