

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES



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Transmittal/Memorandum

To: Mr. Gil Wistar
Alameda County Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

From: Paul Supple *BS*

Date: September 12, 1991

Subject: Third Quarter Ground Water Monitoring
Harcros Pigments Plant
4650 Shellmound Street
Emeryville, California *7/26/08*

Job No.: HP19801W

Remarks: Enclosed is one copy of the subject report for your files.

cc: Mr. Mike Herzog, Harcros Pigments, Inc.
Mr. Lester Feldman, Regional Water Quality Control Board

91 SEP 20 AM 11:59

**THIRD QUARTER
GROUND WATER MONITORING**

**Harcros Pigments Plant
4650 Shellmound Street
Emeryville, California**

September 12, 1991

Prepared for:

**Harcros Pigments Plant
Emeryville, California**

Prepared by:

**ROUX ASSOCIATES
1350 Arnold Drive, Suite 201
Martinez, CA 94553
(415) 370-2275**

TITLE: Third Quarter Ground Water Monitoring
Harcros Pigments Plant
4650 Shellmound Street
Emeryville, California

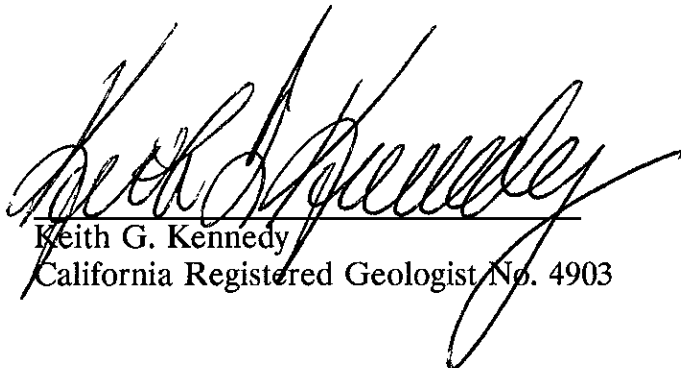
DATE: September 12, 1991

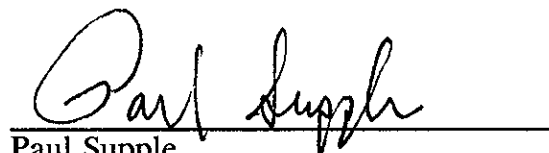
PROJECT NO: HP19801W

SUBMITTED BY: Roux Associates
1350 Arnold Drive, Suite 201
Martinez, California 94553

This work was done under the direction of the undersigned California Registered Geologist.

PREPARED BY:


Keith G. Kennedy
California Registered Geologist No. 4903


Paul Supple
Senior Hydrogeologist

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1.0 INTRODUCTION

This report presents the findings of the July, 1991 quarterly ground water monitoring activities conducted by Roux Associates (Roux) at the Harcros Pigments Plant located at 4650 Shellmound Street in Emeryville, California (Site, Figures 1 and 2).

The scope of work for this quarterly ground water monitoring event was to:

- collect depth to water measurements in monitoring wells RW-2, RW-3, RW-22, RW-29, RW-30 and RW-31;
- collect ground water samples from monitoring wells RW-2, RW-3, RW-22, RW-29, RW-30 and RW-31;
- submit the ground water samples for analysis of total petroleum hydrocarbons as diesel by United States Environmental Protection Agency (USEPA) Method 8015 and volatile organic compounds by USEPA Method 624.

2.0 SITE SETTING

The Harcros Pigments Plant, formerly Pfizer Pigments Plant, is located in a predominantly industrial area of Emeryville, California (Figure 1). The plant produces iron oxide pigments and has been in operation since 1925. The Site is on the east side of San Francisco Bay at an elevation of about seven feet above mean sea level. The current bay shoreline is about 1,000 feet west of the Harcros Pigments property (USGS, 1980). A 1936 aerial photograph of the plant shows the former shoreline located along the eastern edge of present day Shellmound Street. The Site is underlain by estimated low permeability sandy clay to clay (Roux, 1990a). The regional direction of ground water flow is westerly, towards San Francisco Bay (Roux, 1990a).

3.0 BACKGROUND

A total of 12 underground storage tanks (USTs) have been removed from the Site since 1987. One 350-gallon capacity steel UST formerly contained waste oil and waste solvents and was removed from the Site in December, 1987 (Roux, 1988). The waste oil tank was located within the waste oil tank pit immediately east of Service Building No. 10 (Figure 2). A total of nine 10,000-gallon diesel tanks and one 10,000-gallon Bunker C fuel oil tank were removed from the tank pit south of Service Building No. 10 in December, 1989 (Roux, 1990a).

Two double-wall fiberglass USTs are currently in place and used at the Site. A 10,000-gallon diesel tank and one 1,000-gallon gasoline tank were installed east of Service Building No. 10 by Diablo Tank & Equipment of Martinez, California in September, 1989.

In January, 1990, Roux staff discovered diesel fuel floating on top of the water column in monitoring wells RW-4 and RW-11 (Roux, 1990b). Wells RW-4 and RW-11 were located near the northeastern corner of Service Building No. 10 (Figure 2). The monitoring wells were within a former waste oil tank pit and were adjacent to the two recently installed USTs and their associated pipelines.

In March and April, 1990, Roux conducted an additional subsurface investigation to determine the extent of diesel fuel contamination surrounding the former waste oil tank pit. The additional investigation included drilling seven soil borings, installing two monitoring wells (RW-22 and RW-23) in the area surrounding the former waste oil tank pit where free

phase product was detected, and collecting ground water samples from the wells at the Site. The analytical results of the soil and ground water sampling analyzed indicated that the presence of diesel fuel was restricted to the soil and ground water around the former waste oil tank pit (Roux, 1990b). In August, 1990, the soil with concentrations of diesel fuel in the former tank pit area were excavated and transported to a Class II disposal facility (Roux, 1991a). Monitoring wells RW-4 and RW-11, located in the former tank pit, were abandoned prior to soil excavation. At the request of the Alameda County Department of Environmental Health, two additional monitoring wells, RW-30 and RW-31, were installed in December, 1990. These wells were installed for the purpose of monitoring ground water quality in the vicinity of the former waste oil tank pit.

Total petroleum hydrocarbon as diesel, benzene, toluene, ethylbenzene, xylenes and volatile organic compounds were reported as below the laboratory detection limit for all targeted constituents during the first two quarterly ground water sampling events. However, unknown hydrocarbons were reported in monitoring wells RW-2, RW-3 and RW-29 during the second quarter sampling event (Roux, 1991b).

4.0 GROUND WATER FLOW

Figure 3 shows the direction of ground water flow at the Site on July 11, 1991. The direction of ground water flow beneath the Site was determined from the depth to water measurements collected on July 11, 1991. The depth to water measurements and water elevations during the three ground water sampling events are summarized on Table 1. Water elevations were calculated from the depth to water data. The water elevations were contoured to evaluate the direction of flow at the Site. Ground water beneath the Site on July 11, 1991 flowed towards the southwest at a gradient of about 0.015. The flow direction to the southwest is different than the regional flow direction to the west. The flow direction may be locally influenced by Temescal Creek, located about 170 feet south of service building No. 10. Water elevations decreased about 0.5 feet at the Site from April 19 to July 11, 1991 (Table 1).

5.0 GROUND WATER SAMPLING

On July 11, 1991, depth to ground water measurements were collected from monitoring wells RW-2, RW-3, RW-22, RW-29, RW-30 and RW-31. From these data, calculations were made of the volume of water needed to purge prior to sampling. A minimum of three well casing volumes of water was removed from each well with the use of either a PVC or teflon bailer. All ground water samples were submitted to Curtis & Tompkins Ltd. Analytical Laboratory in Berkeley, California. The ground water samples were analyzed for total petroleum hydrocarbon as diesel (TPH-D) and volatile organic compounds (VOCs) by USEPA Methods 8015 and 624, respectively.

Ground water samples were collected with a bailer and poured into one liter glass bottles for analysis of TPH-D and into 40 milliliter glass bottles for analysis of VOCs. Visual observations of the ground water samples, the measurement of pH and temperature at the time of sample collection were recorded on well sampling forms (Appendix A). The sample bottles were then labeled, stored on ice in a cooler until delivery to the laboratory. A Chain-of-Custody document was maintained for the samples (Appendix B).

6.0 ANALYTICAL RESULTS

The analytical reports for the ground water samples are in Appendix C. Analytical results are summarized in Table 2. Laboratory analysis of ground water samples reported concentrations of TPH-D as below the limit of detection for all samples analyzed. Concentration of VOCs were reported as below the laboratory detection limit from all the ground water samples except RW-22. Analysis of a sample from RW-22 detected cis-1,2-dichloroethene at a concentration of 5.2 $\mu\text{g}/\text{L}$ (parts per billion). No other VOCs were detected in the ground water sample.

7.0 CONCLUSIONS

Previous investigations conducted at the Site by Roux indicated that the hydrocarbons detected in ground water samples collected from the monitoring wells was limited to former UST complexes. This quarterly ground water sampling event supports the previous findings.

Petroleum hydrocarbons were not detected in any monitoring wells. The unknown petroleum hydrocarbons detected in the second quarter analytical data were not detected in this sampling event. Monitoring well RW-22 indicated cis-1,2-dichloroethene at a concentration of 5.2 $\mu\text{g/L}$.

The fourth quarter ground water monitoring sampling event is tentatively scheduled during the first complete week of October, 1991. During the fourth sampling event, ground water samples will be analyzed for TPH-D, benzene, toluene, ethylbenzene and xylenes by USEPA Methods 8015 and 8020. In addition, monitoring well RW-22 will be sampled for VOCs by USEPA Method 624. The need for continued ground water monitoring at the Site will be evaluated after the fourth quarter analytical data has been reviewed.

8.0 REFERENCES

- Roux Associates West, Inc. 1988. Underground Storage Tank Site Investigation, Pfizer Pigments Plant, Emeryville, California. August 12, 1988.
- Roux Associates West, Inc. 1990a. Diesel Fuel Site Investigation, Pfizer Pigments Plant, Emeryville, California. May 2, 1990.
- Roux Associates West, Inc. 1990b. Work Plan, Site Investigation and Fuel Recovery, Pfizer Pigments Plant, Emeryville, California. March 8, 1990.
- Roux Associates West, Inc. 1991a. Soil Remediation Report, Harcos Pigments Plant, Emeryville, California. May 6, 1991.
- Roux Associates Inc. 1991b. Second Quarter Ground Water Monitoring, Harcos Pigments Plant, Emeryville, California. May 13, 1991.
- United States Geologic Survey. 1980. Oakland West Quadrangle, California Photo Revised 1980.

**Table 1. Summary of Ground Water Elevation Data
Harcros Pigments Plant
4650 Shellmound Street
Emeryville, California**

Monitoring Well Number	Date	Measuring Point (1) Elevation	Depth to Water (2)	Ground Water (1) Elevation
RW-2	1/08/91	6.84	4.93	1.91
	4/09/91	6.84	3.50	3.34
	7/11/91	6.84	4.05	2.79
RW-3	1/08/91	7.38	4.00	3.38
	4/09/91	7.38	3.13	4.25
	7/11/91	7.38	3.58	3.80
RW-22	1/08/91	7.42	4.04	3.38
	4/09/91	7.42	3.53	3.89
	7/11/91	7.42	4.02	3.40
RW-29	1/08/91	7.01	5.68	1.33
	4/09/91	7.01	3.95	3.06
	7/11/91	7.01	4.63	2.38
RW-30	1/08/91	7.51	4.23	3.28
	4/09/91	7.51	3.24	4.27
	7/11/91	7.51	3.80	3.71
RW-31	1/08/91	7.08	3.43	3.65
	4/09/91	7.08	2.57	4.51
	7/11/91	7.08	3.07	4.01

Footnotes:

- (1) Depth in feet relative to Emeryville datum
(2) Depth in feet below measuring point

Table 2.

Summary of Ground Water Analytical Data
 Harcros Pigments Plant
 4650 Shellmound Street
 Emeryville, California

Monitoring Well Number	Date	TPH-K	TPH-D	TPH-M	Volatile Organic Compounds	Oil and Grease
RW-2	1/08/91	ND	ND	NA	ND	NA
	4/09/91	ND	ND	ND	ND	NA
	7/11/91	ND	ND	NA	ND	NA
RW-3	1/08/91	ND	ND	NA	ND	NA
	4/09/91	ND	ND	ND	ND	NA
	7/11/91	ND	ND	NA	ND	NA
RW-22	1/08/91	ND	ND	NA	ND	NA
	4/09/91	ND	ND	ND	ND	NA
	7/11/91	ND	ND	NA	5.2*	NA
RW-29	1/08/91	NA	NA	NA	ND	NA
	4/09/91	ND	ND	ND	ND	ND
	7/11/91	ND	ND	NA	ND	NA
RW-30	1/08/91	NA	NA	NA	ND	NA
	4/09/91	ND	ND	ND	ND	NA
	7/11/91	ND	ND	NA	ND	NA
RW-31	1/08/91	NA	NA	NA	ND	NA
	4/09/91	ND	ND	ND	ND	NA
	7/11/91	ND	ND	NA	ND	NA

Footnotes:

- TPH-K = Total Petroleum Hydrocarbons as Kerosene
 TPH-D = Total Petroleum Hydrocarbons as Diesel
 TPH-M = Total Petroleum Hydrocarbons as Motor Oil
 ND = Not Detected at or above reporting limit (For reporting limits, see Laboratory Reports, Appendix C.)
 NA = Not Analyzed
 * = VOC identified as cis-1,2-dichloroethene (No other VOCs were detected.)
 All detected concentrations are reported in $\mu\text{g/L}$ (ppb)



SOURCE:

USGS 7.5 MINUTE QUADRANGLE
OAKLAND WEST, CALIFORNIA, 1980.



TITLE

LOCATION OF SITE

PREPARED FOR

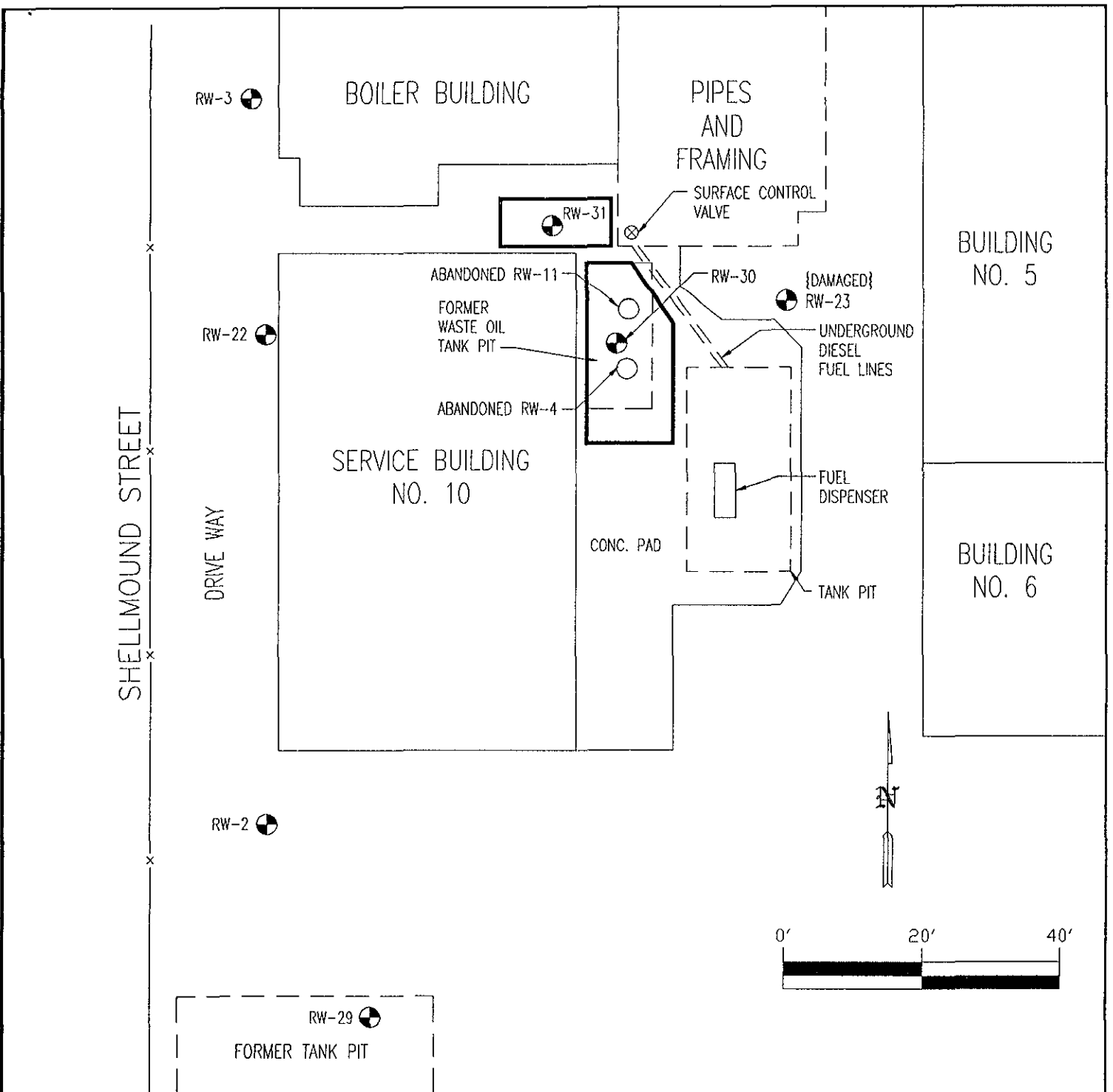
HARCROS PIGMENTS, INC.

ROUX
ROUX ASSOCIATES
ENVIRONMENTAL CONSULTING
& MANAGEMENT

COMPILED BY:	B.T.	DATE:	02/91
PREPARED BY:	R.P.	SCALE:	AS SHOWN
PROJECT MANAGER:	B.T.	REVISION:	0
PROJECT NO:	19801WO1	FILE #:	HCRSTOPO

FIGURE

1



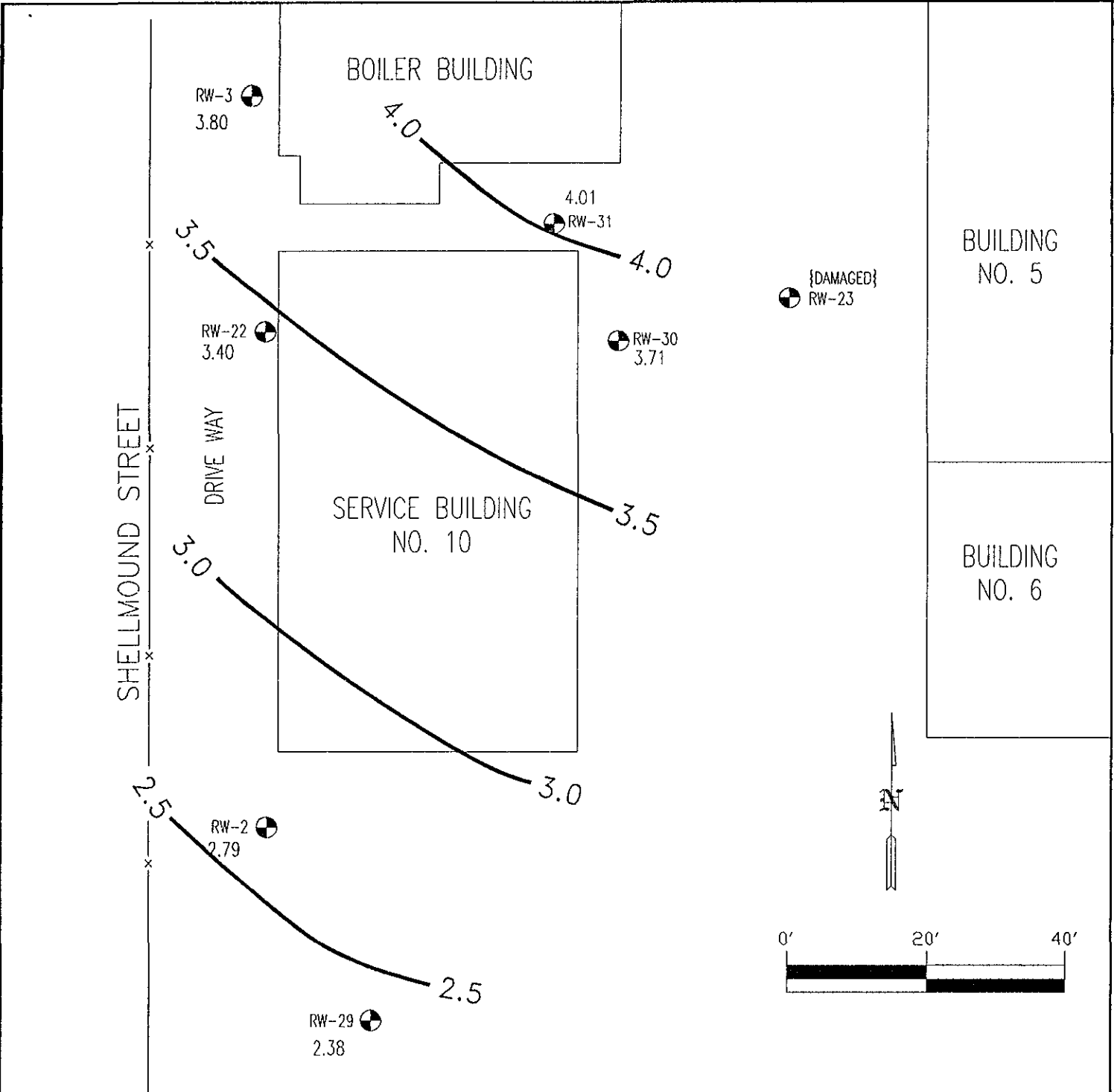
EXPLANATION

- RW-2 MONITORING WELL LOCATION AND DESIGNATION
- RW-11 FORMER MONITORING WELL LOCATION AND DESIGNATION
- APPROXIMATE AREA OF EXCAVATION


TITLE:
LOCATION OF MONITORING WELLS AND FORMER TANK PITS

PREPARED FOR:
HARCROS PIGMENT, INC.

 ROUX ASSOCIATES <small>ENVIRONMENTAL CONSULTING & MANAGEMENT</small>	COMPILED BY: B.T.	DATE: 01/91	FIGURE 2
	PREPARED BY: R.P.	SCALE: AS SHOWN	
	PROJECT MANAGER: B.T.	REVISION: 0	
	PROJECT NO. 19801W01	FILE #: 19801W01	



EXPLANATION

- RW-2  MONITORING WELL LOCATION AND DESIGNATION
- 4.01 GROUND-WATER ELEVATION (FEET)
- 3.0- LINE OF EQUAL GROUND-WATER ELEVATION (FEET) RELATIVE TO EMERYVILLE DATUM

TITLE:

ELEVATION OF GROUND WATER
JULY 11, 1991

PREPARED FOR:

HARCROS PIGMENT, INC.

ROUX
ROUX ASSOCIATES
ENVIRONMENTAL CONSULTING
& MANAGEMENT

COMPILED BY:	B.T.	DATE:	02/91
PREPARED BY:	R.P.	SCALE:	AS SHOWN
PROJECT MANAGER:	B.T.	REVISION:	0
PROJECT NO.	19801W	FILE #:	19801W01

FIGURE
3

APPENDIX A
Well Sampling Forms

WELL SAMPLING DATA FORM

CLIENT: HARCROS PIGMENTS

PROJECT NO.: HP19801W

LOCATION: 4650 Shellmound Street, Emeryville, California

WELL NUMBER: RW-2

TYPE OF WELL: 2-inch Diameter Monitoring Well

DATE: July 11, 1991

STORAGE TANK: _____

WEATHER: Sunny, clear skies and warm

TIME OF START: 1304

SAMPLED BY: Jonathan Florez

TIME OF FINISH: 1323

DEPTH TO BOTTOM OF WELL: 17.26 FT.

DEPTH TO WATER: 4.05 FT.

WATER COLUMN: 13.21 FT.

VOLUME OF WATER IN WELL: 2.16 GAL.

VOLUME OF WATER TO REMOVE: 6.47 GAL.

VOLUME REMOVED: 8.0 GAL.

RATE OF PURGE: 0.42 gallons per minute

METHOD OF PURGE: Teflon bailer

PHYSICAL APPEARANCE/COMMENTS:

Water is light grey, slightly turbid, no odor. Conductivity probe was not functioning.

FIELD MEASUREMENTS:

TIME: 1339

pH: 6.81

COND: N.M.

TEMP: 22° C

TURB: N.M.

Eh: N.M.

O₂: N.M.

TYPES OF SAMPLES COLLECTED:

Two amber 40 cc. vials analyzed for EPA 624 (volatile organic compounds) and one liter amber bottle analyzed for EPA 8015 (TPH-Diesel).

LABORATORY NAME & LOCATION:

Curtis and Thompkins, 2323 Fifth Street, Berkeley, California

NOTE: N.M. = Not Measured

WELL SAMPLING DATA FORM

CLIENT: HARCROS PIGMENTS

PROJECT NO.: HP19801W

LOCATION: 4650 Shellmound Street, Emeryville, California

WELL NUMBER: RW-3

TYPE OF WELL: 2-inch Diameter Monitoring Well

DATE: July 11, 1991

STORAGE TANK: _____

WEATHER: Sunny, clear skies and warm

TIME OF START: 1648

SAMPLED BY: Jonathan Florez

TIME OF FINISH: 1705

DEPTH TO BOTTOM OF WELL: 17.62 FT.

DEPTH TO WATER: 3.58 FT.

WATER COLUMN: 14.04 FT.

VOLUME OF WATER IN WELL: 2.29 GAL.

VOLUME OF WATER TO REMOVE: 6.87 GAL.

VOLUME REMOVED: 8.0 GAL.

RATE OF PURGE: 0.47 gallons per minute

METHOD OF PURGE: Teflon bailer

PHYSICAL APPEARANCE/COMMENTS:

Water is light grey, slightly turbid, no odor. Conductivity probe was not functioning.

FIELD MEASUREMENTS:

TIME: 1705

pH: 6.70

COND: N.M.

TEMP: 24 C

TURB: N.M.

Eh: N.M.

O²: N.M.

TYPES OF SAMPLES COLLECTED:

Two amber 40 cc. vials analyzed for EPA 624 (volatile organic compounds) and one liter amber bottle analyzed for EPA 8015 (TPH-Diesel).

LABORATORY NAME & LOCATION:

Curtis and Thompkins, 2323 Fifth Street, Berkeley, California

NOTE: N.M. = Not Measured

WELL SAMPLING DATA FORM

CLIENT: HARCROS PIGMENTS
PROJECT NO.: HP19801W
LOCATION: 4650 Shellmound Street, Emeryville, California

WELL NUMBER: RW-22 TYPE OF WELL: 4-inch Diameter Monitoring Well
DATE: July 11, 1991 STORAGE TANK: _____
WEATHER: Sunny, clear skies and warm TIME OF START: 1609
SAMPLED BY: Jonathan Florez TIME OF FINISH: 1627

DEPTH TO BOTTOM OF WELL: 13.90 FT.
DEPTH TO WATER: 4.02 FT.
WATER COLUMN: 9.88 FT.
VOLUME OF WATER IN WELL: 6.45 GAL.
VOLUME OF WATER TO REMOVE: 19.35 GAL.
VOLUME REMOVED: 19.5 GAL.

RATE OF PURGE: 1.08 gallons per minute
METHOD OF PURGE: PVC bailer

PHYSICAL APPEARANCE/COMMENTS:

Water is tan-grey with slight to moderate turbidity, no odor. Conductivity probe was not functioning.

FIELD MEASUREMENTS:

TIME: 1625
pH: 6.71
COND: N.M.
TEMP: 22° C
TURB: N.M.
Eh: N.M.
O₂: N.M.

TYPES OF SAMPLES COLLECTED:

Two amber 40 cc. vials analyzed for EPA 624 (volatile organic compounds) and one liter amber bottle analyzed for EPA 8015 (TPH-Diesel).

LABORATORY NAME & LOCATION:

Curtis and Thompkins, 2323 Fifth Street, Berkeley, California

NOTE: N.M. = Not Measured

WELL SAMPLING DATA FORM

CLIENT: HARCROS PIGMENTS

PROJECT NO.: HP19801W

LOCATION: 4650 Shellmound Street, Emeryville, California

WELL NUMBER: RW-29

TYPE OF WELL: 2-inch Diameter Monitoring Well

DATE: July 11, 1991

STORAGE TANK: _____

WEATHER: Sunny, clear skies and warm

TIME OF START: 1209

SAMPLED BY: Jonathan Florez

TIME OF FINISH: 1240

DEPTH TO BOTTOM OF WELL: 13.05 FT.

DEPTH TO WATER: 4.63 FT.

WATER COLUMN: 8.42 FT.

VOLUME OF WATER IN WELL: 1.37 GAL.

VOLUME OF WATER TO REMOVE: 4.12 GAL.

VOLUME REMOVED: 7.5 GAL.

RATE OF PURGE: 0.24 gallons per minute

METHOD OF PURGE: Teflon bailer

PHYSICAL APPEARANCE/COMMENTS:

Water is very light grey, slightly turbid, no odor. Conductivity probe was not functioning.

FIELD MEASUREMENTS:

TIME: 1240

pH: 6.84

COND: N.M.

TEMP: 23 C

TURB: N.M.

Eh: N.M.

O²: N.M.

TYPES OF SAMPLES COLLECTED:

Two amber 40 cc. vials analyzed for EPA 624 (volatile organic compounds) and one liter amber bottle analyzed for EPA 8015 (TPH-Diesel).

LABORATORY NAME & LOCATION:

Curtis and Thompkins, 2323 Fifth Street, Berkeley, California

NOTE: N.M. = Not Measured

WELL SAMPLING DATA FORM

CLIENT: HARCROS PIGMENTS

PROJECT NO.: HP19801W

LOCATION: 4650 Shellmound Street, Emeryville, California

WELL NUMBER: RW-30

TYPE OF WELL: 4-inch Diameter Monitoring Well

DATE: July 11, 1991

STORAGE TANK: _____

WEATHER: Sunny, clear skies and warm

TIME OF START: 1413

SAMPLED BY: Jonathan Florez

TIME OF FINISH: 1442

DEPTH TO BOTTOM OF WELL: 13.50 FT.

DEPTH TO WATER: 3.80 FT.

WATER COLUMN: 9.70 FT.

VOLUME OF WATER IN WELL: 6.33 GAL.

VOLUME OF WATER TO REMOVE: 19.00 GAL.

VOLUME REMOVED: 19 GAL.

RATE OF PURGE: 0.66 gallons per minute

METHOD OF PURGE: PVC bailer

PHYSICAL APPEARANCE/COMMENTS:

Water is light brown-grey, moderately turbid, no odor. Conductivity meter was not functioning.

FIELD MEASUREMENTS:

TIME: 1442

pH: 6.87

COND: N.M.

TEMP: 22° C

TURB: N.M.

Eh: N.M.

O₂: N.M.

TYPES OF SAMPLES COLLECTED:

Two amber 40 cc. vials analyzed for EPA 624 (volatile organic compounds) and one liter amber bottle analyzed for EPA 8015 (TPH-Diesel).

LABORATORY NAME & LOCATION:

Curtis and Thompkins, 2323 Fifth Street, Berkeley, California

NOTE: N.M. = Not Measured

WELL SAMPLING DATA FORM

CLIENT: HARCROS PIGMENTS

PROJECT NO.: HP19801W

LOCATION: 4650 Shellmound Street, Emeryville, California

WELL NUMBER: RW-31

TYPE OF WELL: 4-inch Diameter Monitoring Well

DATE: July 11, 1991

STORAGE TANK: _____

WEATHER: Sunny, clear skies and warm

TIME OF START: 1511

SAMPLED BY: Jonathan Florez

TIME OF FINISH: 1530

DEPTH TO BOTTOM OF WELL: 13.00 FT.

DEPTH TO WATER: 3.07 FT.

WATER COLUMN: 9.93 FT.

VOLUME OF WATER IN WELL: 6.48 GAL.

VOLUME OF WATER TO REMOVE: 19.45 GAL.

VOLUME REMOVED: 20 GAL.

RATE OF PURGE: 1.05 gallons per minute

METHOD OF PURGE: PVC bailer

PHYSICAL APPEARANCE/COMMENTS:

Water is light brown-grey, moderately turbid, no odor. Conductivity probe was not functioning.

FIELD MEASUREMENTS:

TIME: 1539

pH: 6.78

COND: N.M.

TEMP: 22° C

TURB: N.M.

Eh: N.M.

O²: N.M.

TYPES OF SAMPLES COLLECTED:

Two amber 40 cc. vials analyzed for EPA 624 (volatile organic compounds) and one liter amber bottle analyzed for EPA 8015 (TPH-Diesel).

LABORATORY NAME & LOCATION:

Curtis and Thompkins, 2323 Fifth Street, Berkeley, California

NOTE: N.M. - Not Measured

APPENDIX B

Chain-of-Custody Documentation



CHAIN OF CUSTODY

Nº 00241W

ROUX ASSOCIATES INC

1340 ARNOLD DRIVE, SUITE 231
MARTINEZ, CALIFORNIA 94553
(415) 370-2275 FAX. (415) 370-2235

ANALYSES

PAGE OF

Consulting Ground-Water
Geologists & Engineers

PROJECT NAME

Harcros

PROJECT NUMBER

19201W

PROJECT LOCATION

Emeryville CA

SAMPLER(S)

Jonathan Flores

SAMPLE DESIGNATION/LOCATION

DATE COLLECTED

TIME COLLECTED

SAMPLE MATRIX
USE/HA Method
Volatile Organic
Compounds
USE/HA Method
2015 TPH-Diesel

TOTAL BOTTLES

NOTES

SAMPLE DESIGNATION/LOCATION	DATE COLLECTED	TIME COLLECTED																	
RW-2	1	7-11-91	1339	Water	X	X													
RW-3	2	7-11-91	1710	Water	X	X													
RW-22	3	7-11-91	1630	Water	X	X													
RW-29	4	7-11-91	1245	Water	X	X													
RW-30	5	7-11-91	1450	Water	X	X													
RW-31	6	7-11-91	1540	Water	X	X													

RELINQUISHED BY: (SIGNATURE) <i>Jonathan Flores</i>	FOR Roux	DATE 7-11-91	TIME 1820	SEAL INTACT Y OR N Y	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N

DELIVERY METHOD
Hand Delivered

ANALYTICAL LABORATORY
Curtis & Tompkins

COMMENTS
packed on ice. Standard Turnaround Time

APPENDIX C

Laboratory Analytical Reports



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 07/11/91

DATE REPORTED: 07/25/91


LAB NUMBER: 104473

CLIENT: ROUX ASSOCIATES

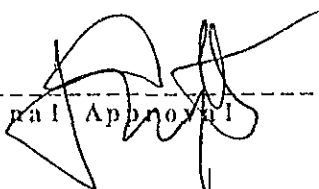
PROJECT ID: 19801W

LOCATION: HARCROS DIESEL

RESULTS: SEE ATTACHED



QA/QC Approval



Final Approval

LABORATORY NUMBER: 104473
 CLIENT: ROUX ASSOCIATES, INC.
 PROJECT ID: 19801W
 LOCATION: HARCROS DIESEL

DATE RECEIVED: 07/11/91
 DATE EXTRACTED: 07/17/91
 DATE ANALYZED: 07/20/91
 DATE REPORTED: 07/25/91

Extractable Petroleum Hydrocarbons in Aqueous Solutions
 California DOHS Method
 LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
104473-1	RW-2	ND	ND	50
104473-2	RW-3	ND	ND	50
104473-3	RW-22	ND	ND	50
104473-4	RW-29	ND	ND	50
104473-5	RW-30	ND	ND	50
104473-6	RW-31	ND	ND	50

ND = Not detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	82



LABORATORY NUMBER: 104473-1
 CLIENT: ROUX ASSOCIATES, INC.
 PROJECT ID: 19801W
 LOCATION: HARCROS DIESEL
 SAMPLE ID: RW-2

DATE RECEIVED: 07/11/91
 DATE ANALYZED: 07/16/91
 DATE REPORTED: 07/25/91

EPA METHOD 8240: VOLATILE ORGANICS IN WATER
 Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/L	Reporting Limit (ug/L)
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
acetone	ND	10
carbon disulfide	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
2-butanone	ND	10
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
vinyl acetate	ND	10
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
dibromochloromethane	ND	5.0
1,1,2-trichloroethane	ND	5.0
benzene	ND	5.0
trans-1,3-dichloropropene	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
1,1,2,2-tetrachloroethane	ND	5.0
tetrachloroethylene	ND	5.0
toluene	ND	5.0
chlorobenzene	ND	5.0
ethyl benzene	ND	5.0
styrene	ND	5.0
total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	89 %
Toluene-d8	102 %
Bromofluorobenzene	99 %



LABORATORY NUMBER: 104473-2
 CLIENT: ROUX ASSOCIATES, INC.
 PROJECT ID: 19801W
 LOCATION: HARCROS DIESEL
 SAMPLE ID: RW-3

DATE RECEIVED: 07/11/91
 DATE ANALYZED: 07/16/91
 DATE REPORTED: 07/25/91
 DATE REVISED: 07/26/91

EPA METHOD 8240: VOLATILE ORGANICS IN WATER
 Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/L	Reporting Limit (ug/L)
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
acetone	ND	10
carbon disulfide	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
2-butanone	ND	10
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
vinyl acetate	ND	10
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
dibromochloromethane	ND	5.0
1,1,2-trichloroethane	ND	5.0
benzene	ND	5.0
trans-1,3-dichloropropene	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
1,1,2,2-tetrachloroethane	ND	5.0
tetrachloroethylene	ND	5.0
toluene	ND	5.0
chlorobenzene	ND	5.0
ethyl benzene	ND	5.0
styrene	ND	5.0
total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	92 %
Toluene-d8	106 %
Bromofluorobenzene	96 %

LABORATORY NUMBER: 104473-3
 CLIENT: ROUX ASSOCIATES, INC.
 PROJECT ID: 19801W
 LOCATION: HARCROS DIESEL
 SAMPLE ID: RW-22

DATE RECEIVED: 07/11/91
 DATE ANALYZED: 07/16/91
 DATE REPORTED: 07/25/91
 DATE REVISED: 07/26/91

EPA METHOD 8240: VOLATILE ORGANICS IN WATER
 Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/L	Reporting Limit (ug/L)
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
acetone	ND	10
carbon disulfide	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	5.2	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
2-butanone	ND	10
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
vinyl acetate	ND	10
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
dibromochloromethane	ND	5.0
1,1,2-trichloroethane	ND	5.0
benzene	ND	5.0
trans-1,3-dichloropropene	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
1,1,2,2-tetrachloroethane	ND	5.0
tetrachloroethylene	ND	5.0
toluene	ND	5.0
chlorobenzene	ND	5.0
ethyl benzene	ND	5.0
styrene	ND	5.0
total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	97 %
Toluene-d8	107 %
Bromofluorobenzene	96 %

LABORATORY NUMBER: 104473-4
 CLIENT: ROUX ASSOCIATES, INC.
 PROJECT ID: 19801W
 LOCATION: HARCROS DIESEL
 SAMPLE ID: RW-29

DATE RECEIVED: 07/11/91
 DATE ANALYZED: 07/16/91
 DATE REPORTED: 07/25/91

EPA METHOD 8240: VOLATILE ORGANICS IN WATER
 Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/L	Reporting Limit (ug/L)
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
acetone	ND	10
carbon disulfide	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
2-butanone	ND	10
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
vinyl acetate	ND	10
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
dibromochloromethane	ND	5.0
1,1,2-trichloroethane	ND	5.0
benzene	ND	5.0
trans-1,3-dichloropropene	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
1,1,2,2-tetrachloroethane	ND	5.0
tetrachloroethylene	ND	5.0
toluene	ND	5.0
chlorobenzene	ND	5.0
ethyl benzene	ND	5.0
styrene	ND	5.0
total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	106 %
Toluene-d8	108 %
Bromofluorobenzene	102 %



LABORATORY NUMBER: 104473-5
CLIENT: ROUX ASSOCIATES, INC.
PROJECT ID: 19801W
LOCATION: HARCROS DIESEL
SAMPLE ID: RW-30

DATE RECEIVED: 07/11/91
DATE ANALYZED: 07/23/91
DATE REPORTED: 07/25/91

EPA METHOD 8240: VOLATILE ORGANICS IN WATER
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/L	Reporting Limit (ug/L)
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
acetone	ND	10
carbon disulfide	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
2-butanone	ND	10
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
vinyl acetate	ND	10
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
dibromochloromethane	ND	5.0
1,1,2-trichloroethane	ND	5.0
benzene	ND	5.0
trans-1,3-dichloropropene	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
1,1,2,2-tetrachloroethane	ND	5.0
tetrachloroethylene	ND	5.0
toluene	ND	5.0
chlorobenzene	ND	5.0
ethyl benzene	ND	5.0
styrene	ND	5.0
total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	106 %
Toluene-d8	97 %
Bromofluorobenzene	87 %



LABORATORY NUMBER: 104473-6
 CLIENT: ROUX ASSOCIATES, INC.
 PROJECT ID: 19801W
 LOCATION: HARCROS DIESEL
 SAMPLE ID: RW-31

DATE RECEIVED: 07/11/91
 DATE ANALYZED: 07/16/91
 DATE REPORTED: 07/25/91

EPA METHOD 8240: VOLATILE ORGANICS IN WATER
 Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/L	Reporting Limit (ug/L)
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
acetone	ND	10
carbon disulfide	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
2-butanone	ND	10
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
vinyl acetate	ND	10
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
dibromochloromethane	ND	5.0
1,1,2-trichloroethane	ND	5.0
benzene	ND	5.0
trans-1,3-dichloropropene	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
2-hexanone	ND	10
4-methyl-2-pentanone	ND	10
1,1,2,2-tetrachloroethane	ND	5.0
tetrachloroethylene	ND	5.0
toluene	ND	5.0
chlorobenzene	ND	5.0
ethyl benzene	ND	5.0
styrene	ND	5.0
total xylenes	ND	5.0

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	111 %
Toluene-d8	108 %
Bromofluorobenzene	98 %