BASELINE
ENVIRONMENTAL CONSULTING

6 March 1995
92404-F0

Mr. Andrew Clark-Clough
City of Oakland
Environmental Services
1333 Broadway Suite 330
Oakland, CA 94612

Subject: Report on Quarterly Groundwater Monitoring at 2662 Fruitvale Avenue, Oakland, California

Dear Andrew:

This report documents the December 1994 groundwater sampling event performed at the City of Oakland's property located at 2662 Fruitvale Avenue in Oakland, California (Figure 1). The purpose of the groundwater monitoring is to identify any changes in shallow groundwater quality at the site.

Background

A Phase I site assessment conducted at the site indicated that a service station, which included an auto repair facility, was present on the site from the 1940s to the 1980s. In 1983, the City of Oakland purchased the site from Texaco. The site was subsequently rented for use as a produce stand and Christmas tree sales lot.

In January and August 1993, BASELINE performed soil and groundwater investigations at the site. The results of these investigations identified the presence of petroleum hydrocarbons at varying concentrations in the soil throughout the site. The groundwater investigation which included installation of three monitoring wells (MW-F1, MW-F2, and MW-F3) indicated that groundwater quality beneath the site was not significantly impacted. Following the completion of these investigations, the City of Oakland demolished the structures on-site.

In September, 1994, BASELINE installed a fourth monitoring well, MW-F4, and five soil borings on-site, and two well points, HP-F1 and HP-F3, off-site. Petroleum hydrocarbons were detected in the groundwater samples from MW-F4, HP-F1, and HP-F3. Oil and grease were detected in soil samples collected in the vicinity of a former sump location. An off-site well, MW-13, installed by others to investigate a release of petroleum hydrocarbons at 2681 Fruitvale Avenue, was monitored. Approximately 0.5 feet of floating product was identified by BASELINE in this well following purging of the well.

5900 Hollis Street, Suite D • Emeryville, CA 94608 • (510) 420-8686 • FAX (510) 420-1707
Emeryville Petaluma

Groundwater Sampling Activities, December 1994

Groundwater samples were collected from monitoring wells MW-F1, MW-F2, MW-F3, MW-F4, and the off-site well, MW-13, on 21 December 1994 (Figure 2). The presence of floating product was checked and water levels were measured in each of the wells using a dual-interface probe prior to sampling activities. The probe was decontaminated by washing in a trisodium phosphate solution and rinsing in deionized water. Approximately 0.25 inch of product was detected in MW-13. Floating product was not detected in any on-site wells. Approximately three to five well volumes were slowly purged from each well using a double-diaphragm pump and new disposable polyethylene tubing. The temperature, pH, and electrical conductivity of the groundwater were monitored during purging until they appeared to have stabilized. Water levels were measured again following purging. All decontamination rinsate and purged groundwater were stored on-site in sealed drums pending laboratory analysis.

A new disposable PVC bailer was used to collect a groundwater sample from each well. The samples were decanted from the bailer using a volatile organic compound (VOC) attachment to minimize volatilization into 40-ml glass VOA sample bottles provided by the laboratory. The sample bottles were labeled, placed in a cooler containing ice, and transported using chain-of-custody procedures to Curtis & Tompkins, Ltd., a California certified laboratory. The groundwater samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline and benzene, toluene, xylenes, and ethyl benzene (BTXE). Groundwater sampling forms that document the December 1994 sampling activities are included as Attachment A.

Analytical Results

TPH as gasoline and BTXE were not identified in the groundwater sample collected from monitoring well MW-F1. Low concentrations of TPH as gasoline were detected in samples from MW-F2 (0.096 mg/L) and MW-F3 (0.13 mg/L). TPH as gasoline was detected in samples from MW-F4 (37 mg/L) and MW-13(3.3 mg/L). The sample from MW-F3 also contained toluene (0.0013 mg/L) and the samples from MW-F4 and MW-13 contained detectable volatile organic compounds. The analytical results are summarized in Table 1; the laboratory report for the December 1994 sampling event is included in Attachment B.

Groundwater Flow Direction and Gradient

The depth to groundwater measured in December 1994 in the four on-site monitoring wells ranged from 8.0 to 10.34 feet below ground surface. The direction of groundwater at the site was calculated to be toward the southwest (S47W), with a gradient magnitude of 0.028. Groundwater elevation data and calculated flow directions are summarized in Table 2 and shown on Figure 2.

Conclusions

- The groundwater quality at the southwestern corner of the site has been impacted by a release of gasoline. The concentration of petroleum hydrocarbons detected in samples from MW-F4 increased significantly since the last sampling period. The increase in petroleum hydrocarbons may be related to increased groundwater elevation. The raised groundwater level may place groundwater in contact with soils containing elevated concentrations of petroleum hydrocarbons.

- Floating product has been identified for a second consecutive monitoring event at the off-site well MW-13, downgradient of the project site. The detection of floating products confirms the presence of a thin layer of non-aqueous phase liquid on the groundwater.

Recommendations

- Petroleum hydrocarbons have not been detected in groundwater samples from MW-F1 for the past four monitoring periods. We recommend discontinuing collecting samples from this well. However, the well should continue to be used as a monitoring point for water level data.

- Quarterly groundwater sampling should be continued at MW-F2, MW-F3, MW-F4, and MW-13 to monitor changes in groundwater quality and the thickness of floating product in MW-13.

- As previously recommended, two additional groundwater monitoring wells should be installed downgradient of MW-13 to assess the extent of gasoline downgradient of the site. Installation of the wells should occur in March 1995 to coincide with the next quarterly monitoring event.

Copies of this report should be submitted to Mr. Barney Chan of the Alameda County Department of Environmental Health and Mr. Richard Hiett of the San Francisco Bay Regional Water Quality Control Board. Please contact us at your convenience if you have any questions regarding this report.

Sincerely,

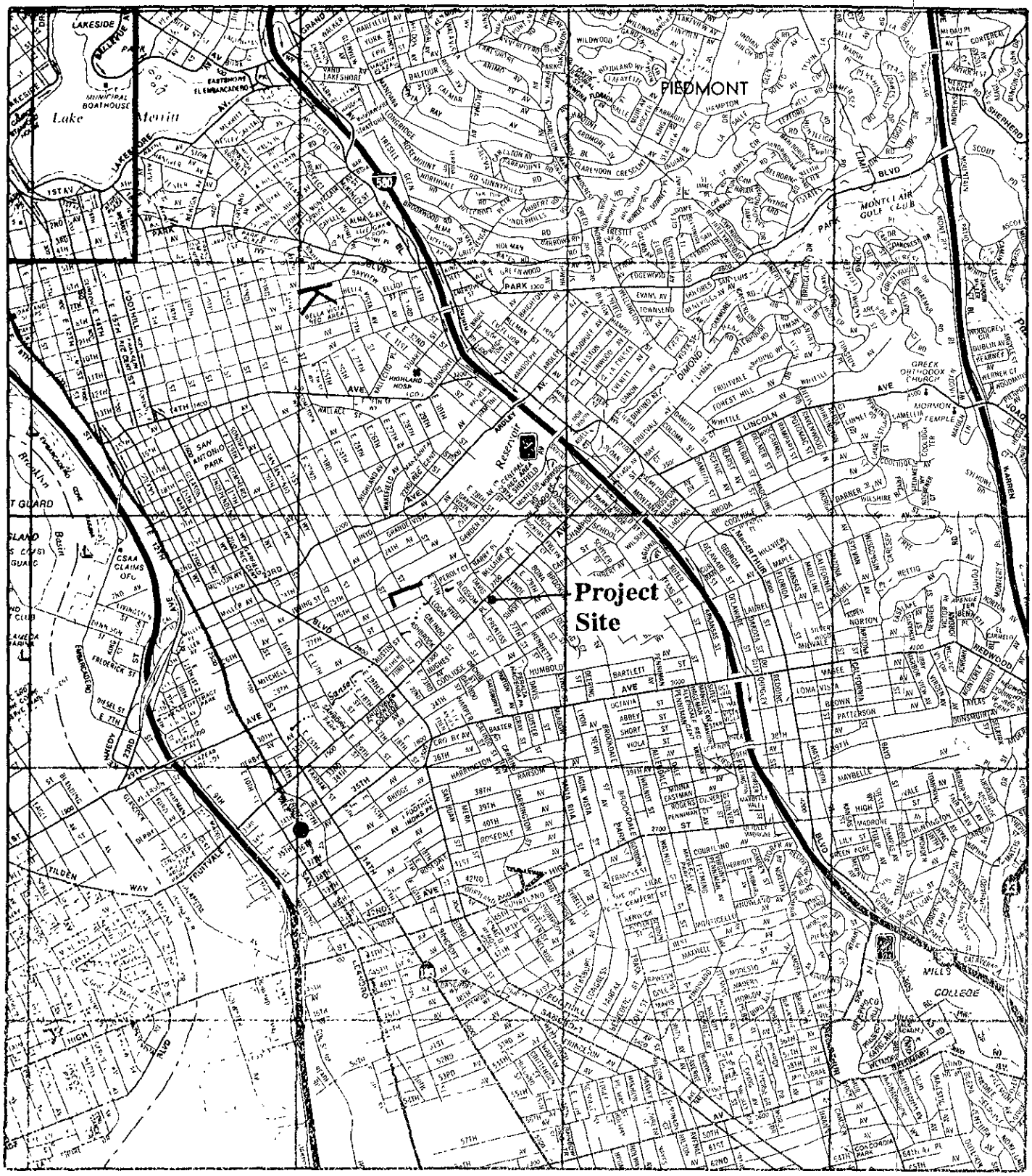
Yane Nordhav
Principal
Reg. Geologist No. 4009

Kevin O'Dea
Senior Geologist

YN/KOD/dh
Attachment

REGIONAL LOCATION

Figure 1



2662 Fruitvale Avenue
Oakland, California

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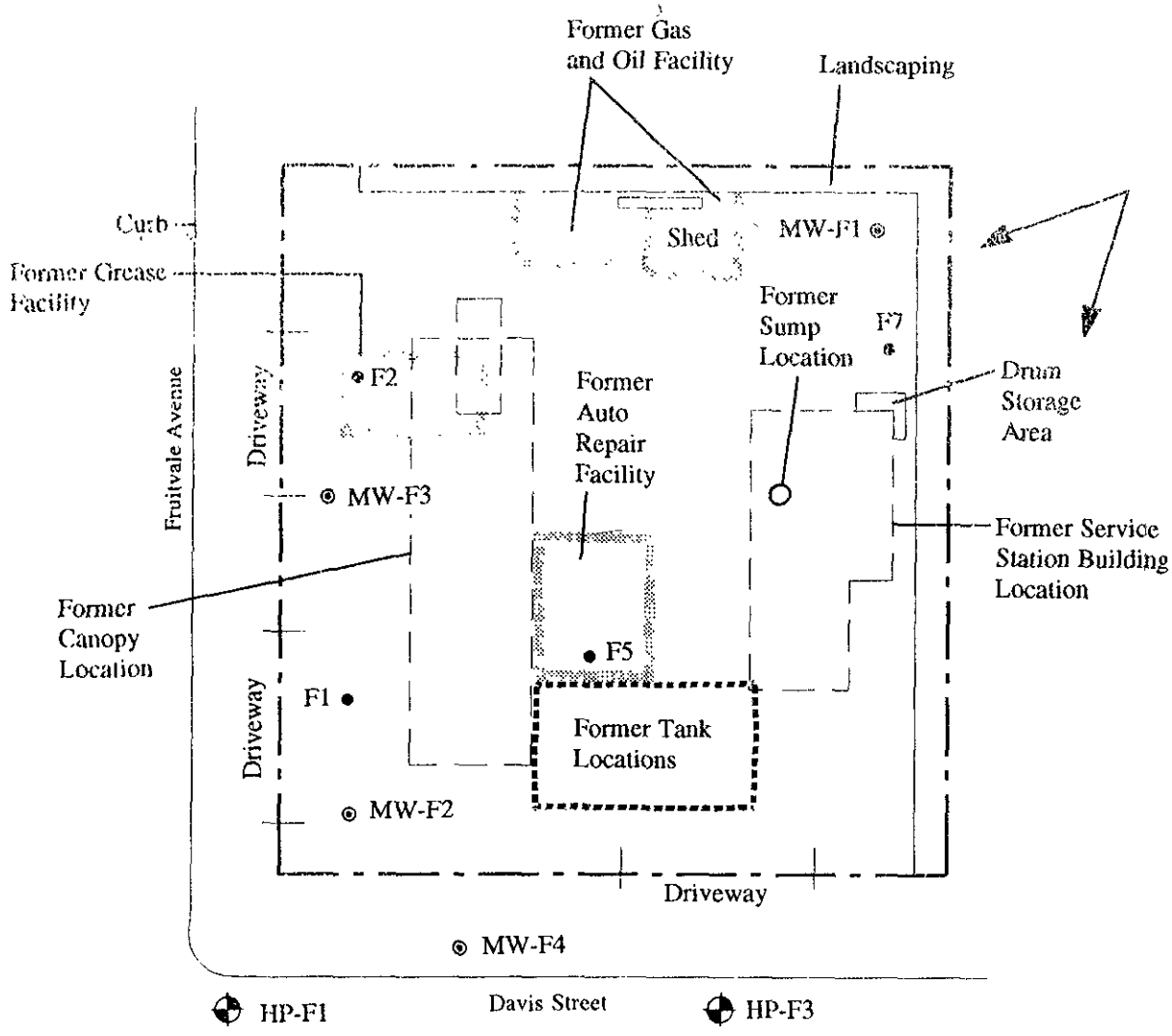
92404-AO.01 4/28/92

SITE PLAN

Figure 2



Legend

F1 • Soil Boring Water Sample Location

MW-F2 ◉ Monitoring Well Location

HP-F1 ⊕ Temporary Well Location

Range of calculated groundwater flow directions between 8/93 - 12/94 (Based on water level elevations measured in MW-F1, MW-F2, and MW-F3).

Project Site Boundary

0 30 Feet

2662 Fruitvale Avenue
Oakland, California

BASELINE

92404-AO.03 2/23/95 Cadd-File Q

TABLE 1

SUMMARY OF ANALYTICAL RESULTS, GROUNDWATER
2662 Fruitvale Avenue
Oakland, California

(mg/L)

Sample Location	Sample Date	TPH as Gasoline[1]	TPH as Motor Oil[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Xylenes[3]
Monitoring Wells							
MW-F1	08-16-93[4]	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F2	08-16-93[4]	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	**0.0011**	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	**0.096**	--	<0.0005	<0.0005	<0.0005	<0.0005
MW-F3	08-16-93[4]	**0.1**	<0.5	<0.002	<0.002	<0.002	<0.002
	06-29-94	<0.05	--	<0.0005	**0.0029**	<0.0005	<0.0005
	09-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
	12-21-94	**0.13**	--	<0.0005	**0.0013**	<0.0005	<0.0005
MW-F4	09-09-94	**3.4/3.5**	--	**0.029/0.028**	**0.0030/0.0028**	**0.038/0.033**	**0.094/0.099**
	12-21-94	**37**	--	**0.66**	<0.1	**2.3**	**5.9**
Off-Site Well							
MW-13	12-21-94	**3.3**	--	**0.33**	<0.013	**0.024**	**0.24**

92404T2.131

(Continued)

Table 2 - Summary of Analytical Results, Groundwater (*continued*)

Sample Location	Sample Date	TPH as Gasoline[1]	TPH as Motor Oil[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Xylenes[3]
Soil Borings							
F1[5]	1-20-93	**13**	<0.5	**0.610**	<0.018	**0.830**	**0.046**
F2[5,6]	1-20-93	**6.8**	<0.5	**0.011**	<0.002	**0.016**	<0.002
F5	1-20-93	<0.05	--	--	--	--	--
F7	1-20-93	<0.05	<0.5	--	--	--	--
Hydropunch							
HP-F1	9-09-94	**26**	--	**0.46**	**0.16**	**1.5**	**4.4**
HP-F3	9-09-94	**0.21**	--	**0.0009**	**0.0007**	**0.0049**	**0.02**

Notes: <x.x = Compound not identified above reporting limits.
x.x = Bold values indicate compound identified above reporting limits.
x.x/x.x = Analytical testing results for duplicate samples.
-- = Compound not analyzed.
TPH = Total Petroleum Hydrocarbons.
Sample locations are shown on Figure 2.
Laboratory reports for December 1994 groundwater analyses are included in Attachment B.

1 Test Method = EPA 5030/8015.
2 Test Method = EPA 3510/8015.
3 Test Method = EPA 602 or 624.
4 Sample also analyzed for volatile organic compounds (EPA 624); none detected above reporting limit.
5 Sample also analyzed for Title 26 metals; all metal concentrations less than STLC.
6 Sample contained trans-1,3-dichloropropene.

TABLE 2

GROUNDWATER ELEVATION DATA AND GRADIENT DETERMINATION
***2662* Fruitvale Avenue, Oakland, California**

Monitoring Well	Date	TOC Elevation (feet)[1]	Depth to Groundwater (feet)	Groundwater Elevation (feet)[1]	Groundwater Gradient	
					Direction	Magnitude
MW-F1	08/16/93	104.41	11.13	93.28	S88W	0.025
	06/29/94		10.38	93.53	N87W	0 026
	09/09/94		11.56	92.85	S82W	0.03
	12/21/94		8.96	95.45	S47W	0.028
MW-F2	08/16/93	102.22	12.15	90.07		
	06/29/94		11.74	90.48		
	09/09/94		12.21	90.01		
	12/21/94		10.34[4]	91.88		
MW-F3	08/16/93	102.42	11.99	90.43		
	06/29/94		11.40	91.02		
	09/09/94		12.39	90.03		
	12/21/94		9.32	93.10		
MW-F4	09/09/94	101.56	11.21	90.35		
	12/21/94		8.00	93.56		
MW-I3[2]	9/09/94[3]	101.20	12.27	88.93		
	12/21/94		9.32	91.92		

[1]Elevations are presented as feet above City of Oakland datum.
[2]Monitoring well installed by Resna for investigation of 2681 Fruitvale Avenue.
[3]Free product detected by dual interface probe.
[4]Groundwater level had not completely stabilized prior to measurement.
[5]Approximately 0.25 inch free product detected.

ATTACHMENT A

GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.:	MW-F1 Date: 12/21/94
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	25.11
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2
	Oakland, CA	Screened interval from TOC (feet):	8.5-25.11
Recorded by:	WKS	TOC elevation (feet):	104.41 (City of Oakland datum)
Weather:	Sunny	Water level from TOC (feet):	8.96 Time 8:27
Precip in past		*Product level from TOC (feet):*	None Time 8:27
5 days (inch):	None	Water level device:	Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(25.11 ft) - (8.96 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

2.6 gallons in one well volume
13.0 gallons in 5 well volumes
13.5 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	8:15	12.5	7.00-10.01	1,000
Before Purging:	8:16	12.5	7.00-10.01	900
After Purging:	11:56	13.3	6.93-10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
8:54	17.1	6.96	280	1.5	Clear
9:02	17.1	6.91	470	2.5	Clear
9:10	12.2	6.85	450	5	Clear
9:15	17.3	6.88	420	7.5	Clear
9:20	17.6	6.86	450	10.5	Clear
9:24	17.4	6.84	450	13.5	Clear

Water level after purging prior to sampling (feet):	8.97		Time 12:05
Appearance of sample:	Clear		Time 12:10
Duplicate/blank number	None		Time --
Purge method:	Double diaphragm pump		
Sampling equipment:	Disposable PVC bailer	VOC attachment:	Used for VOC sample
Sample containers:	2 40-ml VOAs, 1 one-liter amber glass		
Sample analyses:	TPH as gasoline, BTXE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	Drum FW3

92404DEC.XLW (2/23/95)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.: MW-F3	Date: 12/21/94
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	8.5-24.45
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2
	Oakland, CA	Screened interval from TOC (feet):	8.5-24.45
Recorded by:	WKS	TOC elevation (feet):	102.42 (City of Oakland datum)
Weather:	Sunny	Water level from TOC (feet):	9.32 Time: 8:28
Precip in past		*Product level from TOC (feet):*	None Time: 8:25
5 days (inch):	None	Water level device:	Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(24.45 ft) - (9.32 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

2.4 gallons in one well volume
12.0 gallons in 5 well volumes
10.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	8:15	12.5	7.00-10.01	1,000
Before Purging:	8:16	12.5	7.00-10.01	900
After Purging:	11:56	13.3	6.93-10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
9:35	17.5	6.89	550	1	Clear
9:38	17.9	6.86	600	2.5	Clear
9:48	17.9	6.85	610	5.0	Clear
9:55	18.3	6.93	610	7.0	Clear
10:04	18.5	6.88	610	10.0	Clear

Water level after purging prior to sampling (feet):	11.58		Time: 12:25
Appearance of sample:	Clear		Time: 12:30
Duplicate/blank number:	None		Time: --
Purge method:	Double diaphragm pump		
Sampling equipment:	Disposable PVC bailer	VOC attachment:	Used for VOC sample
Sample containers	2 40-ml VOAs, 1 one-liter amber glass		
Sample analyses:	TPH as gasoline, BTXE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	Drum FW3

92404DEC.XLW (2/23/95)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.: MW-F4	Date: 12/21/94
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	16.9
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2
	Oakland, CA	Screened interval from TOC (feet):	8.5 - 16.84
Recorded by:	WKS	TOC elevation (feet):	101.56 (City of Oakland datum)
Weather:	Sunny	Water level from TOC (feet):	8.00 Time 9:45
Precip in past		Product level from TOC (feet):	None Time 9:45
5 days (inch):	None	Water level device:	Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(16.84 ft) - (8.00 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

1.4 gallons in one well volume
7 gallons in 5 well volumes
5.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	8:15	12.5	7.00-10.01	1,000
Before Purging:	8:16	12.5	7.00-10.01	900
After Purging:	11:56	13.3	6.93-10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
10:25	17.7	6.96	700	0.5	Clear, petroleum odor
10:29	18.3	6.91	650	1.5	Clear, petroleum odor
10:40	18.1	7.00	650	5.0	Clear, petroleum odor
	WELL PUMPED DRY				

Water level after purging prior to sampling (feet):	12.95			Time 12:55
Appearance of sample:	Clear			Time 13:00
Duplicate/blank number:	None			Time
Purge method:	Double diaphragm pump			
Sampling equipment:	Disposable PVC bailer	VOC attachment:	Used for VOC sample	
Sample containers:	2 40-ml VOAs, 1 one-liter amber glass			
Sample analyses:	TPH as gasoline, BTXE	Laboratory:	Curtis & Tompkins	
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	Drum FW3	

92404DEC.XLW (2/23/95)

GROUNDWATER SAMPLING

Project no.:	92404-D0	Well no.:	MW-13 (Chevron) Date: 12/21/94
Project name:	Fruitvale Avenue	Depth of well from TOC (feet):	24.13 (Soft bottom detected)
Location:	2662 Fruitvale Avenue	Well diameter (inch):	2
	Oakland, CA	Screened interval from TOC (feet):	14.5 - 24.5
Recorded by:	WKS	TOC elevation (feet):	101.24 (City of Oakland datum)
Weather:	Sunny	Water level from TOC (feet):	9.32 Time 10:35
Precip in past		Product level from TOC (feet):	~0.25 inch* Time 10:32
5 days (inch):	None	Water level device:	Dual interface probe

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(24.13 ft) - (9.32 ft)] × (0.083 ft)² × 3.14 × 7.48 =
Well depth Water level Well radius

2.4 gallons in one well volume
12.0 gallons in 5 well volumes
7.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:	8:15	12.5	7.00-10.01	1,000
Before Purging:	8:16	12.5	7.00-10.01	900
After Purging:	11:56	13.3	6.93-10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
11:13	18.4	6.62	700	1	Strong petroleum odor
11:17	18.6	6.72	700	2	Clear, strong petroleum odor
11:21	19.2	6.69	700	4	Clear, strong petroleum odor
11:23	19.2	6.70	700	5	Clear, strong petroleum odor
11:35	18.2	6.75	700	7	Clear, strong petroleum odor

* Note: Dual interface probe not picking up hydrocarbon. ~0.25 inch thickness estimated from bailer.

Water level after purging prior to sampling (feet):	10.71		Time 11:40
Appearance of sample:	Clear		Time 11:45
Duplicate/blank number:	N/A		Time
Purge method:	Double diaphragm pump		
Sampling equipment:	Disposable PVC bailer	VOC attachment:	Used for VOC sample
Sample containers:	2 40-ml VOAs, 1 one-liter amber glass		
Sample analyses:	TPH as gasoline, BTXE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	Drum FW4

92404DEC.XLW (2/23/95)

ATTACHMENT B

LABORATORY REPORTS

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 119227
CLIENT: BASELINE ENVIRONMENTAL
PROJECT ID: 92404-00
LOCATION: FRUITVALE
BATCH NO: 18370

DATE SAMPLED: 12/21/94
DATE RECEIVED: 12/21/94
DATE ANALYZED: 01/04/95
DATE REPORTED: 01/09/95

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
119227-1	MW-13	3,300	330	ND(13)	24	240
119227-2	MW-F1	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
119227-3	MW-F3	130	ND(0.5)	1.3	ND(0.5)	ND(0.5)
METHOD BLANK		ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	101

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 119227
CLIENT: BASELINE ENVIRONMENTAL
PROJECT ID: 92404-00
LOCATION: FRUITVALE
BATCH NO: 18352

DATE SAMPLED: 12/21/94
DATE RECEIVED: 12/21/94
DATE ANALYZED: 12/31/94
DATE REPORTED: 01/09/95

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
119227-4	MW-F2	96	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
119227-5	MW-F4	37,000	660	ND(100)	2,300	5,900
METHOD BLANK		ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	92

BASELINE
3900 Hollis Street, Suite D
Emeryville, CA 94608
(510) 420-8686

CHAIN OF CUSTODY RECORD

Turn-around Time: Normal
Lab: Curtis & Tompkins
BASELINE Contact Person: Kevin Olson

Project No.	Project Name and Location
92404-00	Fruitvale

Samplers: (Signature) William K Seuss

Analysis columns: TEH; as Gasoline (TPH with BTX&E); Oil & Grease; HOLD TB 12-21-94 (Motor Oil, crossed out); PNAs; Title 22 Metals; Total Lead

Sample ID No. Station		Date	Time	Media	Depth	No. of Containers	TEH	as Gasoline (TPH with BTX&E)	Oil & Grease	~~Motor Oil~~ HOLD TB 12-21-94	PNAs	Title 22 Metals	Total Lead	Remarks/ Composite	Detection Limit
MW-13	-1	12-21-94	11:45	Water		3		X		+					
MW-F1	-2	↓	12:10	↓		↓		X		X					
MW-F3	-3		12:30					X		X					
MW-F2	-4		12:40					X		X					
MW-F4	-5	12-21-94	13:00					X		X					

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	
				Conditions of Samples Upon Arrival at Laboratory: cold
				Remarks:
William K Seuss	13:36 / 13:36	Tracy Babjar	1:40 12/21/94	