

ALAMEDA COUNTY  
HEALTH CARE SERVICES

AGENCY  
DAVID J. KEARS, Agency Director



7

March 3, 2006

Mr. Mark Gomez  
City of Oakland  
250 Frank Ogawa Plaza, 4<sup>th</sup> Floor  
Oakland, CA 94612

ENVIRONMENTAL HEALTH SERVICES  
ENVIRONMENTAL PROTECTION  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577  
(510) 567-6700  
FAX (510) 337-9335

Dear Mr. Gomez:

Subject: Fuel Leak Site Case Closure, City of Oakland, 2662 Fruitvale Ave., Oakland, CA 94601;  
Case No. RO0000238

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with Chapter 6.75 (Article 4, Section 25299.37[h]). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Environmental Health (ACEH) is required to use this case closure letter for all UST leak sites. We are also transmitting to you the enclosed case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site. The subject fuel leak case is closed.

**SITE INVESTIGATION AND CLEANUP SUMMARY**

Please be advised that the following conditions exist at the site:

- Up to 2100 ppm TPHg, 650 ppm TPH as kerosene, 1600 ppm TPH as motor oil, 1.7 ppm benzene, 11 ppm toluene, 66 ppm ethyl benzene and 230 ppm xylenes remain in soil at the site.
- Up to 6300 ppb TPHg, 48 ppb benzene, 5.6 ppb toluene, 680 ppb ethyl benzene and 12.4 ppb xylenes remain in groundwater at the site.

If you have any questions, please call Barney Chan at (510) 567-6765. Thank you.

Sincerely,

Donna L. Drogos, P.E.  
LOP and Toxics Program Manager

Enclosures:

1. Remedial Action Completion Certificate
2. Case Closure Summary

cc:

Ms. Cherie Mc Caulou  
SF- Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

Mr. Toru Okamoto (w/enc)  
State Water Resources Control Board  
UST Cleanup Fund  
P.O. Box 944212  
Sacramento, CA 94244-2120

B. Chan (w/orig enc), D. Drogos (w/enc), R. Garcia (w/enc)

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250 Frank Ogawa Plaza, 4<sup>th</sup> Floor  
Oakland, CA 94612

Dear Mr. Gomez:

Subject: Fuel Leak Site Case Closure, City of Oakland, 2662 Fruitvale Ave., Oakland, CA 94601;  
Case No. RO0000238

This letter confirms the completion of a site investigation and remedial action for the four underground storage tanks, 2-10,000 gallon, 1-7000 gallon and 1-285 gallon, formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank(s) are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25299.37 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.77 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

This notice is issued pursuant to subdivision (h) of Section 25299.37 of the Health and Safety Code.

Please contact our office if you have any questions regarding this matter.

Sincerely,

Mee Ling Tung  
Director  
Alameda County Environmental Health

**CASE CLOSURE SUMMARY  
LEAKING UNDERGROUND FUEL STORAGE TANK - LOCAL OVERSIGHT PROGRAM**

**I. AGENCY INFORMATION**

Date: 10/8/04

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502-6577	Phone: (510) 567-6765
Responsible Staff Person: Barney Chan	Title: Hazardous Materials Specialist

**II. CASE INFORMATION**

Site Facility Name: City of Oakland Site		
Site Facility Address: 2662 Fruitvale Ave., Oakland, CA 94601		
RB Case No.: ---	Local Case No.: STID 4457	LOP Case No.: RO0000238
URF Filing Date: 4/26/93	SWEEPS No.: ---	APN: 27-846-16-1
Responsible Parties	Addresses	Phone Numbers
City of Oakland Mr. Mark Gomez	250 Frank Ogawa Plaza, Suite 5301 Oakland, CA 94612-2034	510-238-7314

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
1-3	2-10,000 1-7,000	gasoline	removed	4/28/78
4	1-285	Presumed waste oil	removed	4/28/78
Piping			Presumed removed w/ USTs	1978

**III. RELEASE AND SITE CHARACTERIZATION INFORMATION**

Cause and Type of Release: unknown		
Site characterization complete? Yes	Date Approved By Oversight Agency: ----	
Monitoring wells installed? Yes	Number: 7	Proper screen interval? *
Highest GW Depth Below Ground Surface: 6.61' bgs	Lowest Depth: 12.39' bgs	Flow Direction: southwest
Most Sensitive Current Use: Potential drinking water source.		

\* MW-F1 through MW-F6 screened from 8.5 or 9' to 17-25' bgs., however, MW-13 was installed by the neighboring site (former Chevron station, 2681 Fruitvale Ave., RO0001085) and is screened from 14.5-25' bgs.

Summary of Production Wells in Vicinity: no wells identified within a ¼ mile radius of site according to DWR report and a door to door survey within 200' radius of site.	
Are drinking water wells affected? No	Aquifer Name: Oakland Sub Area, East Bay Plain
Is surface water affected? No	Nearest SW Name: Sausal Creek is located approximately 500' west of site and Peralta Creek is located 1500' east- southeast of site

Summary of Production Wells in Vicinity: no wells identified within a ¼ mile radius of site according to DWR report and a door to door survey within 200' radius of site.

Are drinking water wells affected? No

Aquifer Name: Oakland Sub Area, East Bay Plain

Is surface water affected? No

Nearest SW Name: Sausal Creek is located approximately 500' west of site and Peralta Creek is located 1500' east- southeast of site

Off-Site Beneficial Use Impacts (Addresses/Locations): none identified

Reports on file? Yes

Where are reports filed? Alameda County Environmental Health and City of Oakland Fire Department

**TREATMENT AND DISPOSAL OF AFFECTED MATERIAL**

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tanks	2-10,000 1-7000 1-285 gallon	Disposed, location undocumented	4/78
Piping	Not Reported	Presumed disposed w/ USTs	4/78
Liquid from sump	150 gallons	Disposed @ Evergreen, Newark, CA	1993
Soil	~ 30 cy	Disposed @ W. Contra Costa Landfill, Richmond, CA	12/11/01
ORC treatment	400 pounds 500 pounds	Treatment Treatment	10/30/98 12/11/01
7% hydrogen peroxide	87.5 gallons	Treatment of MW-F4 and MW-13	5/02-6/02

**MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS BEFORE AND AFTER CLEANUP**  
(Please see Attachments for additional information on contaminant locations and concentrations)

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After
TPH (Gas)	2100	2100	26000	6300
TPH (Kerosene)	650	650	---	---
TPH (Diesel)	ND	ND	ND	ND
Oil & Grease	1600	1600	---	---
TPH (Motor Oil)	940	ND	ND	ND
Benzene	1.7	1.7	970	48
Toluene	11	11	160	5.6
Ethyl Benzene	66	66	1500	680
Xylenes	230	230	4400	12.4
Metals	110 ***	110 +	40 ++	40 ++
MTBE (if not analyzed, explain below)	---	---	----	<25 *
Other (8240/8270)	ND, ND	ND, ND	ND **	ND **

\* MTBE is the only oxygenate analyzed, analysis for TBA, TAME, ETBE, DIPE, EtOH, EDB & EDC not performed

\*\* VOCs detected in the sample collected from the sump: 1.1ppm 1,2-DCE, 1.2ppm 1,2-dichloro benzene, & 4.2 ppm acetone (not a soil sample)

\*\*\* Cd ND, Cr 80, Pb 480, Ni 110 and Zn 75

+ Cd ND, Cr 80, Pb 28, Ni 110, Zn 75

++ Cd ND, Cr ND, Pb ND, Ni 40, Zn 20

## Site History and Description of Corrective Actions:

This site is located at the northeast corner of Fruitvale Avenue and Davis St. in Oakland. See Attachment 1. Results of a Phase I site assessment indicated that past land uses included as a residence and storage facility in the early 1900s and as a service station from about the 1940's to the 1980's. In 1963, records indicate that the City issued a permit for service station reconfiguration. The City of Oakland purchased the property from Texaco in 1983 and used the property thereafter as a produce stand and Christmas tree lot. City of Oakland FD records indicate that three gasoline tanks (2-10,000 gallon and 1-7000 gallon) and 1-285 gallon, possibly waste oil, were removed on 4/28/78. No records or reports are available regarding the tank removals. There are no records indicating whether additional USTs existed at the site prior to the 1963 reconfiguration.

During a geotechnical investigation in 1986, four soil borings were drilled north of the presumed location of the former USTs. In two of these borings, gasoline odors were observed. No samples were collected for analysis. A Phase II investigation was performed in January 1993. Eight borings (F1-F8) were drilled to depths ranging from 9-13' bgs. The soils encountered were clay until approximately 9', where groundwater was encountered in gravelly clayey sand. Soil samples from varying depths were collected for analysis. In four of these samples, groundwater samples were also collected. Up to 810 ppm gasoline, 3.4 and 17 ppm ethyl benzene and xylenes, respectively and 940 ppm motor oil were detected in the soil samples. Up to 13,000 ppb TPHg and 610, 18, 830, 46 ppb, BTEX, respectively was exhibited in the grab groundwater samples. Soil samples were also analyzed for heavy metals. Lead detected at 480 ppm appeared to be the only metal of potential concern. The material from the sump contained 11% oil and grease, 3 ppm toluene, 0.95 ethyl benzene, 2.6 ppm xylenes, 1.1 ppm 1,2-DCE, 1.2 ppm 1,2-dichlorobenzene and 4.2 ppm acetone. See Attachment 2 and analytical result tables and boring logs.

In August 1993, six additional borings, F9 through F14, and three monitoring wells, MW-F1 through MW-F3 were installed at the site. The soil borings were advanced to 10.5-12' bgs and the wells were advanced to depths of 20-26' bgs. Vadose soil samples were collected from the borings for analysis along with soil samples near the groundwater interface at ~10' bgs. The most contaminated soil samples were exhibited in borings F13 and F14, where up to 1600 ppm TPHg, 650 ppm TPH as kerosene and 0.3, 3.7, 8.8, 8.1 ppm BTEX, respectively was found. The initial results from the monitoring wells indicated no TPHg or BTEX in the perimeter wells. Typical soils encountered beneath the asphalt cap varied from silty or sandy clay, lenses of silty sand, clayey sand and sandy gravel. Groundwater was encountered at depths ranging from 14-16' bgs and equilibrated at about 11-12' bgs. The sump was cleaned and 150 gallons of liquid waste generated and disposed. However, after the sump was rinsed, petroleum liquid appeared to ooze through the seam of the sump, indicating that a possible leak to the subsurface had occurred. The sump was later removed during the demolition of the onsite buildings. See Attachments 3 & 4, analytical result tables and boring logs.

On September 7 & 8, 1994, five borings (FS-1 through FS-5) were drilled and sampled in the area of the former sump. Shallow soil samples were collected from each boring from 4.5 to 6.0' bgs and a deeper sample collected from a depth of 11' bgs. The sample from beneath the center of the former sump, FS-2, was analyzed for TPHg, TPHmo, BTEX, oil and grease, soluble lead and volatile organics. The other samples were analyzed for oil and grease based upon the lack of detection of the other analytes in FS-2. The 6' sample from FS-2 detected 1600 ppm oil and grease and 640 ppm TPHmo, while the 11' sample was ND for both O&G and TPHmo. No VOCs were detected in either the 6 or 11' samples. The other samples surrounding FS-2 were either ND or exhibited low levels of oil and grease. This soil was not excavated. See Attachment 5.

At this time, the former Chevron station at 2681 Fruitvale Ave. located to the west and directly across Fruitvale Ave. had installed well MW-13 located down-gradient of both the Chevron and the City of Oakland sites. MW-13 had detected free product, whereas the up-gradient wells from the former Chevron site had not. Chevron believed that the free product in MW-13 had originated from the City of Oakland site. To investigate this hypothesis, MW-F4 was installed between MW-13 and the City's site. In addition, two hydropunches, HP-F1 and HP-F3 were advanced within Davis Street, also down-gradient of the City of Oakland site to depths of 15-16' bgs. HP-F2 was not advanced due to the existence of subsurface utilities. Because of slow recharge in these hydropunches, a slotted casing, sand pack and bentonite seal was placed in these borings. The hydropunches and MW-F4 were sampled. Groundwater sample from HP-F1 detected 26,000 ppb TPHg, and 0.46, 0.16, 1.5, 4.4 ppm BTEX, respectively. The water sample from MW-F4 detected 3,500 ppb TPHg and 0.028, 0.0028, 0.033, 0.099 ppm BTEX, respectively. Although groundwater immediately down-gradient of the City's site was contaminated it was still not clear if contamination observed in MW-13 was partially or solely from this site. See Attachment 5

On April 27, 1995, MW-F5 was installed southwest of the site on the east side of Fruitvale Ave., further down-gradient of MW-13. On June 26, 1995, MW-F6 was installed on the west side of Fruitvale Ave. also down-gradient of MW-13. Two soil samples were collected from each of these wells, at 5' and just above groundwater, 9.5-11.0'. These samples were ND for TPHg and BTEX. Initial sampling from these wells detected 100 ppb to ND for TPHg and ND for BTEX suggesting the limits of the plume had been determined. A mixture of the petroleum hydrocarbon product and water was collected from MW-13 and sent to the laboratory of Friedman and Bruya for analysis. This product was determined to be degraded gasoline without any BTEX constituents. Semi-annual monitoring was initiated at the site, including MW-13. Groundwater contamination appeared localized near the southwest corner of the site and extending just beyond MW-13. A thin, but measurable layer of free product remained present in MW-13 and elevated dissolved TPHg was present in MW-F4. See Attachment 6, analytical result tables and boring logs.

On October 30, 1998 ten soil borings were advanced along the down-gradient edge of the site. The total depth of the borings was approximately 20', extending approximately 10' below the top of groundwater. Approximately 40 pounds of ORC grout was injected under pressure into each boring. In addition, an absorbent sock was installed into MW-13 for free product removal. At this same time, the Chevron site at 2681 Fruitvale had received site closure and the ownership of MW-13 transferred to the City of Oakland. See Attachment 7 for these boring locations.

During the period between May through June 2002, 7% hydrogen peroxide was added to wells MW13 and MW-F4 as a means of oxidizing dissolved or separate phase hydrocarbons and further oxygenate groundwater. Overall a total of 23 gallons of peroxide was added to MW-F4 and 64.5 gallons into MW-13 to increase dissolved oxygen in the two highest impacted wells. DO increased in the wells, however, sheen and small measurable amounts of free product continued to be present in MW-13. See Attachment 8 for a table of the quantity of peroxide additions made to each well and the corresponding DO reading.

Limited over-excavation and enhanced bio-remediation was proposed for the site. On December 11, 2001, limited shallow excavation was performed in the area around former sample F4-2', which had detected 480 ppm lead and 940 ppm TPHmo. Approximately 10 cy of soil was excavated from an area approximately 5' by 5' by 3' deep. Confirmation samples were collected from the sidewalls (samples TP-1 through TP-4) and from the bottom, TP-5. These samples were ND for TPHmo and the lead concentration ranged from 7.3-28 ppm. Additional ORC was introduced into a trench, which was installed along the down-gradient edge of the property, between the former tank pit and MWF-4. The trench, approximately 20'x 2'x10.5' depth, was excavated and 500 pounds of ORC placed within the saturated zone, 8-10' bgs. See Attachment 8 for the locations of the ORC trench and the over-excavated soils and the analytical results table

A utility and conduit study was performed. The primary utility, which could be impacted from the plume is the sanitary sewer, which runs down Fruitvale Ave. Based on the historic depth to groundwater, the sewer invert may intersect the plume during the rainy season when the groundwater table rises, but would be below the rest of the year. An off-site well and basement survey was performed by questionnaires and personal interviews. No wells or basements were identified through this survey. The nearest surface water body, Sausal Creek is located approximately 500' west of the site and would not be expected to be impacted. No schools or hospitals were noted within a ¼ mile radius. See Attachment 9.

In January 2002 a Risk Management Plan, RMP, was prepared for the site. The RMP includes notification to ACEH and the City of Oakland Community and Economic Development Agency should land use change or future construction activities occur on and offsite. A Risk Evaluation prepared by the consultant determined that residual pollution did not pose a threat to future residents and the site was subsequently developed into single-family residences. The RMP is attached.

Residual pollution exists in Davis Street, down-gradient of this site. The site is to be listed in the City of Oakland Permit Tracking System to protect workers and the public if future subsurface activities occur.

On 2/13/2004 wells MW-F4 and MW-13 were sampled. TPHg up to 6,300 ppb and BTEX up to 48, 5.6, 680, 12.4 ppb, respectively were detected in these wells. TPHg concentrations have gone up slightly in MW-F4 and gone down in MW-13. The plume appears stable. See Attachment 10 for Groundwater Analytical Data.

**IV. CLOSURE**

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes No		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes No		
Does corrective action protect public health for current land use? Alameda County Environmental Health staff does not make specific determinations concerning public health risk. However, based upon the information available in our files to date, it does not appear that the release would present a risk to human health based upon current land use and conditions.		
Site Management Requirements: Site is to be listed in the City of Oakland Permit Tracking System. Residual pollution from the site remains in place in the city streets (Davis and Fruitvale St.). Future construction activities in these areas must observe an appropriate health and safety plan. A Risk Management Plan has been submitted to protect workers and the public if future subsurface activities occur.		
Should corrective action be reviewed if land use changes? Yes		
Monitoring Wells Decommissioned: <del>No</del> Yes	Number Decommissioned: 7	Number Retained: 0 (MW-13, MW-F4, MW-F5 and MW-F6)
List Enforcement Actions Taken: None		
List Enforcement Actions Rescinded: None		

BChang  
3/3/06

V. ADDITIONAL COMMENTS, DATA, ETC.



Considerations and/or Variances:

- No documentation regarding the removal of the former USTs exists other than a May 5, 1978 letter from Winter Petroleum Service, Inc., contractor, stating that on April 28, 1978 they removed four USTs from the site.
- Location of the 285 gallon UST, presumed to be waste oil, was not shown on any figures and is assumed to have been located next to the other USTs.
- TPHd was not run on soil or groundwater samples, which is required for a waste oil UST removal. However, since TPHd overlaps in the gas and motor oil boiling range, its presence would be detected in their analyses.
- No groundwater sample beneath the former sump ever taken. In addition, TPHmo up to 640 ppm and oil and grease up to 1600 ppm remain in place at a depth of 6' bgs in the area of former boring FS-2, located in the center of the former sump. Low levels of DCE and dichlorobenzene were detected in a sample from the sump but not analyzed in soils samples beneath the sump. However, the 11' bgs sample from beneath FS-2 was ND for TPHg, mo and oil and grease and VOCs.
- Residual pollution remains in groundwater in the southwest edge of the property and offsite beneath Davis St.
- The source of historic free product and dissolved product in off-site well MW-13 appears to be from the subject site. However, groundwater data down-gradient of MW-13 detect TPHg from ND to 100 ppb suggesting the plume is stable and attenuating.
- Analysis for EDB, EDC, TAME, ETBE, DIPE, TBA, and EtOH not performed.
- Vertical extent of soil contamination not delineated in the areas of borings F8, F13, F14 and MW-F4. The areas of F14 and MW-F4 are down-gradient of the former tank and on the property boundary. These areas have been treated with ORC and hydrogen peroxide injections and enhanced bio-remediation is expected to have occurred. Well MW-F3 was installed down-gradient of borings F8 and F13 and is screened to 26' bgs into a silty clay. TPHg concentrations have been ND in this well from 1997 -1999 when monitoring was discontinued. However, confirmation soil and groundwater sampling in the treated areas was not performed.

Conclusion:

Alameda County Environmental Health staff believe that the levels of residual contamination do not pose a significant threat to water resources, public health and safety, and the environment under the current residential land use. Residual soil and groundwater contamination in vicinity of former USTs appears localized and attenuating. Limited excavation and ORC and peroxide groundwater treatment has been performed at the site. Contaminant concentrations have decreased in wells. A risk assessment prepared for the site indicates that the site does not appear to pose a significant threat to the public under the current use. It is anticipated that bioremediation and attenuation process over time will be effective in reducing residual pollution remaining at this site. ACEH staff recommend closure for this site.

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Barney Chan	Title: Hazardous Materials Specialist
Signature: 	Date: 10/8/04
Approved by: Donna L. Drogos, P.E.	Title: Supervising Hazardous Materials Specialist
Signature: 	Date: 10/08/04

This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.

**VII. REGIONAL BOARD NOTIFICATION**

Regional Board Staff Name: Betty Graham	Title: Associate Water Resources Control Engineer
RB Response: Concur, based solely upon information contained in this case closure summary.	Date Submitted to RB: 10/8/04
Signature:	Date:

**Attachments:**

1. Site Vicinity Map
2. Borings F1-F8 and Geotechnical Borings Site Plan
3. Soil Analytical Data and Boring Logs
4. Borings F1-F14, Shallow & Deep Sample Results and Analytical Data
5. Wells MW-F1-MWF3 Site Plan and Boring Logs
6. Borings, Former Sump Samples (FS-1 through FS-4), MW-F4, MW-13 and HP-F1 & HP-F2
7. Groundwater and Soil Analytical Results and Boring Logs
8. Off-Site, On-Site and Neighboring Well Locations
9. Soil Analytical Results and Boring Logs
10. Estimated Groundwater Iso-concentration Map and Proposed ORC Injection Points
11. Hydrogen Peroxide Addition Schedule
12. Over-excavation Limits Map and ORC Trench Locations
13. Soil Analytical Data
14. Risk Management Plan
15. Utilities Location Map
16. Groundwater Analytical Data

This document and the related CASE CLOSURE LETTER, shall be retained by the lead agency as part of the official site file.



**VII. REGIONAL BOARD NOTIFICATION**

Regional Board Staff Name: Betty Graham	Title: Associate Water Resources Control Engineer
RB Response: Concur, based solely upon information contained in this case closure summary.	Date Submitted to RB: 10/8/04
Signature: <i>Betty Graham</i>	Date: 10/27/04

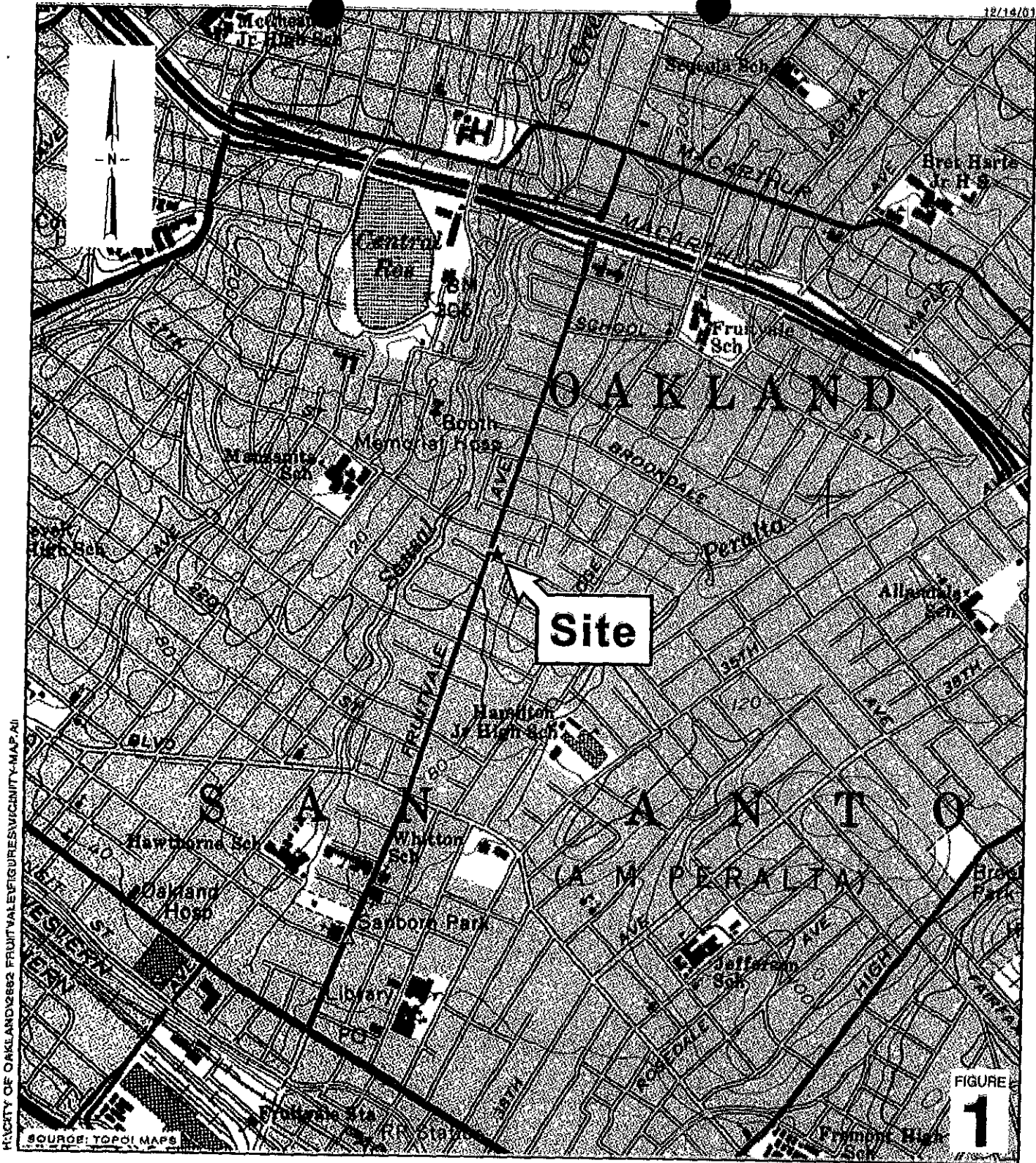
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Alameda County  
 Environmental Health  
 OCT 27 2004

Post-It® Fax Note	7671	Date	10/27/04	# of pages	1
To	Barney Chan	From	Betty Graham		
Co./Dept.		Co.			
Phone #		Phone #			
Fax #	377-9335	Fax #			



**City of Oakland**  
 2662 Fruitvale Avenue  
 Oakland, California



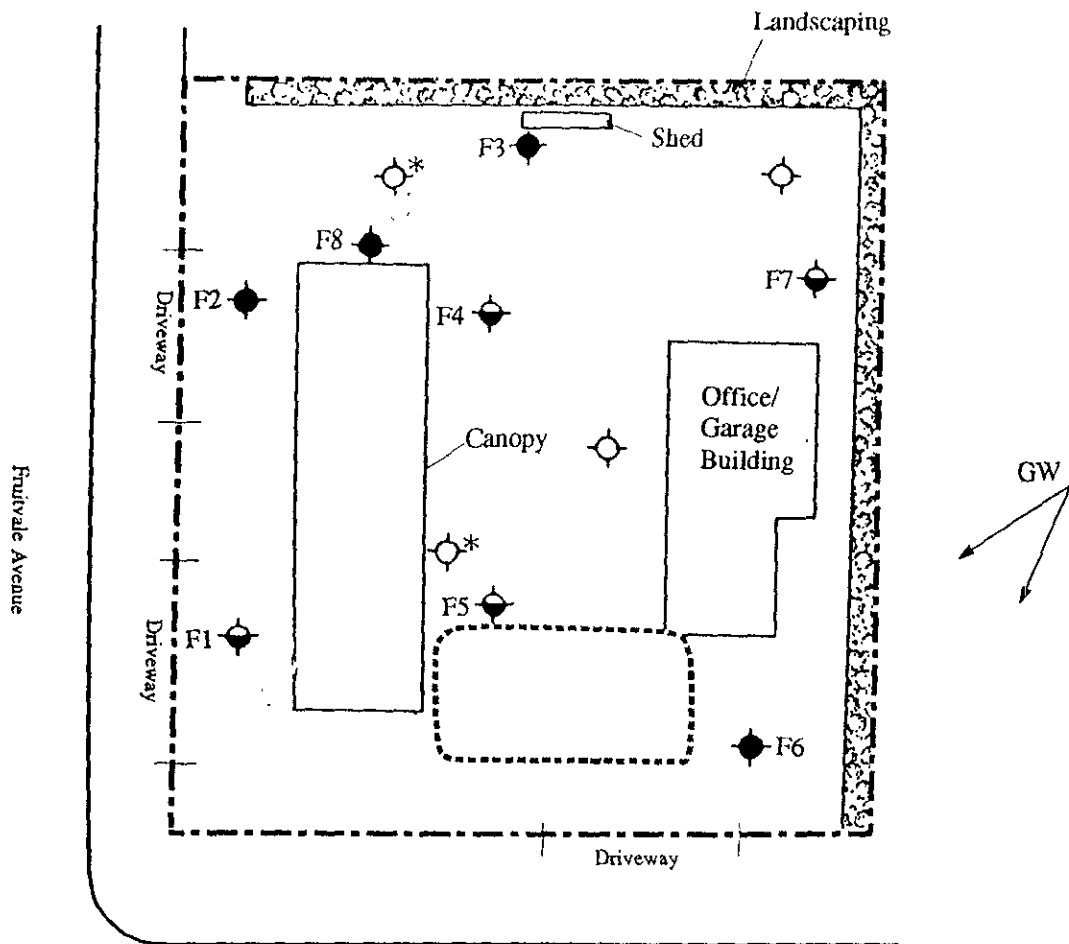
**Vicinity Map**

C /

**ATTACHMENT 1**

# SOIL BORING LOCATIONS

Figure 2



**Legend**

F2 ● Soil Boring Location (BASELINE, 1993)

F1 ⊕ Soil Boring Location Where Groundwater Sample Collected (BASELINE, 1993)

Location of Geotechnical  
 ⊕ Soil Borings (\*indicates gasoline odor noticed during drilling) (Trans Pacific, 1986)

GW ↘ Inferred Direction of Groundwater Flow (Resna, 1991)

⋯⋯⋯ Approximate Former Location of Four Underground Storage Tanks (Trans Pacific, 1986)

--- Project Site Boundary



2662 Fruitvale Avenue  
 Oakland, California

ATTACHMENT 2

BASELINE

TABLE 3

SUMMARY OF ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS, SOILS  
2662 Fruitvale Avenue, Oakland, California  
January 1993

Sample Location	Depth (feet)	Total Petroleum Hydrocarbons (mg/kg) <sup>1</sup>			Volatile Organic Compounds (µg/kg) <sup>2</sup>						
		Gasoline	Motor Oil	Oil and Grease (mg/kg)	Benzene	Toluene	Ethylbenzene	Total Xylenes	1,2-dichloroethene (total)	1,2-dichlorobenzene	Acetone
F1	2.0-2.5	<1	<10	--	<5	<5	<5	<5	--	--	--
	9.5-10.0	6	<10	--	<5	<5	14	<5	--	--	--
	11.0-11.5	66	<10	--	<5	72	260	<5	--	--	--
F2	2.0-2.5	<1	11	--	<5	<5	<5	<5	--	--	--
	8.0-8.5	11	<10	--	<5	<5	<5	<5	--	--	--
F3	2.0-2.5	--	<10	<50	--	--	--	--	--	--	--
	8.0-8.5	--	14	300	--	--	--	--	--	--	--
F4	2.0-2.5	37	940	--	<5	<5	6.4	<5	--	--	--
	10.0-10.5	15	<10	--	<5	<5	320	<5	--	--	--
F5	2.0-2.5	<1	<10	--	<5	<5	<5	<5	<5	<5	<5
	8.0-8.5	<1	<10	--	<5	<5	<5	<5	<5	<5	<5
F6	2.0-2.5	--	<10	--	<5	<5	<5	<5	<5	<5	<5
	8.0-8.5	--	<10	--	<5	<5	<5	<5	<5	<5	<5
F7	2.0-2.5	--	13	--	<5	<5	<5	<5	<5	<5	<5
	8.5-9.0	--	<10	--	<5	<5	<5	<5	<5	<5	<5
F8	2.0-2.5	220	44	--	<5	<5	3,400	17,000	--	--	--
	8.5-9.0	810	<10	--	<5	<5	5,400	<5	--	--	--
Sump		16	110,000	110,000	<5	3,000	950	2,600	1,100	1,200	4,200

Notes: Sample locations are shown in Figure 2.  
Laboratory results are included in Appendix E.  
-- indicates that sample was not analyzed for this compound.  
Refer to Table 1 for laboratory methods.

<sup>1</sup> Motor oil, kerosene, and diesel were measured, however, kerosene or diesel was not detected.

<sup>2</sup> Only those compounds that were present above detection limits are listed.

TABLE 4

SUMMARY OF ANALYTICAL RESULTS, WATER  
 2662 Fruitvale Avenue, Oakland, California  
 January 1993

( $\mu\text{g/L}$ )

Sample Location	Total Petroleum Hydrocarbons	Volatile Organic Compounds				
	Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	Trans-1,3-dichloropropene
F1	13,000	610	18	830	46	<2.0
F4	6,800	.11	<2.0	16	<2.0	7
F5	<50	--	--	--	--	--
F7	<50	--	--	--	--	--

Notes: Sample locations are shown in Figure 2.  
 Laboratory results are included in Appendix F.  
 Refer to Table 2 for laboratory methods.  
 -- indicates that sample was not analyzed for this compound.

TABLE E-1

**SUMMARY OF LABORATORY RESULTS FOR METALS<sup>1</sup> IN SOILS**  
 2662 Fruitvale Avenue, Oakland, California  
 January 1993

(mg/kg)

Sample Location	Depth (feet)	Sb	As	Ba	Be	Co	Cr	Cu	Pb <sup>2</sup>	Hg	Ni	V	Zn
F1	2.0-2.5	--	--	--	--	--	--	--	5.7	--	--	--	--
	9.5-10.0	--	--	--	--	--	--	--	<2.5	--	--	--	--
	11.0-11.5	--	--	--	--	--	--	--	<2.5	--	--	--	--
F2	2.0-2.5	--	--	--	--	--	--	--	14	--	--	--	--
	8.0-8.5	--	--	--	--	--	--	--	9.6	--	--	--	--
F4	2.0-2.5	--	--	--	--	--	--	--	480 (1.1)	--	--	--	--
	10.0-10.5	--	--	--	--	--	--	--	3.5	--	--	--	--
F5	2.0-2.5	<1.0	4.1	<0.25	0.08	4.1	18	3.0	5.1	<0.05	20	13	17
	8.0-8.5	<1.0	8.3	<0.25	0.09	4.1	18	3.4	6.2	<0.05	20	13	19
F6	2.0-2.5	<1.0	14	207	0.89	11	22	38	120 (0.6)	0.48	39	40	75
	8.0-8.5	2.8	9.0	120	0.75	14	62	29	13	0.14	110	44	55
F7	2.0-2.5	<1.0	10	150	0.62	13	80	27	13	0.120	110	29	60
	8.5-9.0	<1.0	5.3	<0.25	0.11	4.3	18	3.1	5.2	0.510	22	12	18
F8	2.0-2.5	--	--	--	--	--	--	--	48	--	--	--	--
	8.5-9.0	--	--	--	--	--	--	--	19	--	--	--	--
Sump		<1.0	2.3	150	<0.05	1.9	12	101	1,300	0.190	6.8	3.7	340

Notes: Sample locations are shown in Figure 2.  
 Laboratory results are included in Appendix E.  
 -- indicates that sample was not analyzed for this compound.  
 Refer to Table 1 for laboratory methods.

<sup>1</sup> Cadmium (Cd), Molybdenum (Mo), Selenium (Se), Silver (Ag), and Thallium (Tl) were not present above levels of detection. The detection limits are: Cd: 0.05 mg/kg; Mo: 0.25 mg/kg; Se: 0.5 mg/kg; Ag: 0.25 mg/kg; and Tl: 2.0 mg/kg.  
<sup>2</sup> Values in parentheses are soluble lead concentration presented in mg/L using Waste Extraction Method.

# DRILLING LOG

**BASELINE**  
 5900 Hollis Street, Suite D  
 Emeryville, CA 94608  
 (510) 420-8686

Location	2662 Fruitvale, Oakland, CA	Boring No.	F1
Driller	HEW Drilling	Project No.	92404A0.02
Method	Hollow Stem	Date	1-20-93
Logger	SP/WKS Datum _____	Bore size	7 1/4"
		Casing size	NA

Depth	Graphic	Lithology	Notes
0		Asphalt Baserock	
1		Dark gray, silty CLAY, with sand. Low-medium plasticity, soft-firm, moist.	HNu = 0 ppm in breathing zone 3-3-6
2			
3			
4		Dark brown CLAY, trace gravel, low plasticity, moist.	
5			
6			
7			
8		Brown, silty CLAY with gravel, veinlets of iron oxide, low plasticity, firm to stiff, moist.	5-7-9
9			
10		Increased silt.	3-6-6

Scale: 1 inch = 1.5 feet

92404A0.LOG(2/25/93)

# DRILLING LOG

BASELINE  
 5900 Hollis Street, Suite D  
 Emeryville, CA 94608  
 (510) 420-8686

Location	2662 Fruitvale, Oakland, CA		Boring No.	F1
Driller	HEW Drilling		Project No.	92404A0.02
Method	Hollow Stem		Date	1-20-93
Logger	SP/WKS	Datum	Bore size	7 3/4"
			Casing size	NA

Depth	Graphic	Lithology	Notes
10	CL		
11	SW	Dark greenish gray, gravelly clayey SAND, very fine grained, gravel, 1/4" to 1/2" subangular to subrounded clasts, firm, wet.	6-7-8
12			HNu = 1 ppm in cuttings Petroleum odor
13	▼	T.B.D./T.D. = 13 feet	<i>Bmg 12 gas.</i>
14			
15			
16			
17			
18			
19			
20			

Scale: 1 inch = 1.5 feet

92404A0.LOG(2/25/93)



DRILLING LOG

Location	2662 Fruitvale, Oakland, CA	Boring No.	F2
Driller	HEW Drilling	Project No.	92404A0.02
Method	Hollow Stem	Date	1-21-93
Logger	SP/WKS Datum _____	Bore size	7 3/4"
		Casing size	NA

Depth	Graphic	Lithology	Notes
0		Asphalt	
	GW	Baserock	
1		Dark brown, silty CLAY with sand, veinlets with iron oxide, medium-low plasticity, firm, moist.	HNu = 0 ppm in breathing zone 1 ppm in soil Hit pipe (electrical?) runs parallel to Fruitvale between light poles 5-6-7
2	CL		
3			
4		Dark gray, silty CLAY with sand, trace gravel, high-medium plasticity, soft, moist.	
5			
6	CH		0 ppm breathing zone 0.5 ppm in soil
7			
8		T.B.D. = 7.5 feet	
		Increase in gravel and sand at 8.5 feet.	
9		T.D. = 9 feet	3-3-4 1 ppm in soil 0 ppm in breathing zone
10			

Scale: 1 inch = 1.5 feet

92404A0.LOG(2/25/93)

Signature \_\_\_\_\_

# DRILLING LOG

**BASELINE**  
 5900 Hollis Street, Suite D  
 Emeryville, CA 94608  
 (510) 420-8686

Location	2662 Fruitvale, Oakland, CA	Boring No.	F3
Driller	HEW Drilling	Project No.	92404A0.02
Method	Solid Stem	Date	1-20-93
Logger	SP/WKS	Datum	
		Bore size	6"
		Casing size	NA

Depth	Graphic	Lithology	Notes
0		Asphalt	
	GW	Baseroack	
1		Very dark brown, gravelly silty CLAY, medium-low plasticity, 1/4" to 1/2", subangular clasts, firm, moist.	HNu = 0 ppm in boring 7-5-8
2	CL		
		Dark brown, silty CLAY, med to low plasticity, veinlets with red iron oxide stain, moist.	
3	CL		
4			
5			
6			
7		Light brown, clayey, gravelly SAND, very fine to fine-grained, 1/4" to 1", subrounded to subangular clasts, low to moderate plasticity clay, very loose, moist.	Drilling easiest around 7 feet  3-3-2
8	SW		
9			
		T.B.D./T.D. = 9.5 feet	
10			

Scale: 1 inch = 1.5 feet

92404A0.LOG(2/25/93)

Signature \_\_\_\_\_

# DRILLING LOG

**BASELINE**  
 5900 Hollis Street, Suite D  
 Emeryville, CA 94608  
 (510) 420-8686

Location	2662 Fruitvale, Oakland, CA	Boring No.	F4
Driller	HEW Drilling	Project No.	92404A0.02
Method	Hollow Stem	Date	1-20-93
Logger	SP/WKS Datum _____	Bore size	7 3/4"
		Casing size	NA

Depth	Graphic	Lithology	Notes
0		Asphalt	
		Baserock	
1	GW	Reddish brown, sandy GRAVEL with clay, moist.	HNu = 3 ppm in boring 0 ppm in breathing zone
2	CL	Dark gray silty CLAY, damp, some veinlets with iron oxide, soft to firm, moist.	3-4-5
3	CL	Brown, silty CLAY, medium to high plasticity, soft to firm, moist.	
4		Becoming lighter brown in color.	
5			
6			
7		Dark gray, silty CLAY, high plasticity, increase in moisture, decrease in stiffness.	Drilling became easier at about 7.5 feet Potentiometric surface at 7 feet; groundwater at 10.5 feet HNu 15 ppm in soil cuttings Petroleum odor at 7 feet
8	CH		
9		Dark gray, silty SAND with clay, very fine grained, very loose, moist. T.B.D. = 9.5 feet	1-1-6
10	SP-SC		

1 inch = 1.5 feet

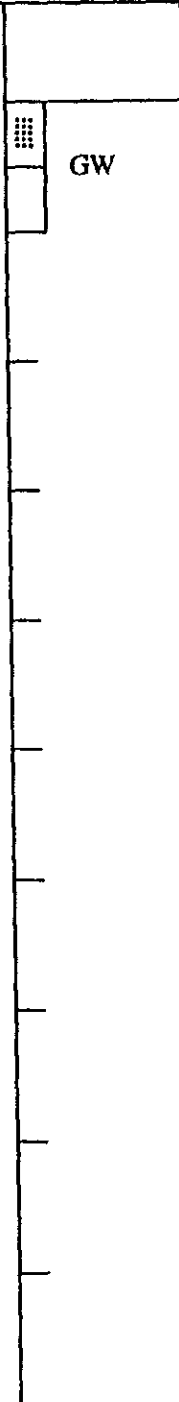
92404A0.LOG(2/25/93)

Signature \_\_\_\_\_

# DRILLING LOG

**BASELINE**  
 5900 Hollis Street, Suite D  
 Emeryville, CA 94608  
 (510) 420-8686

Location <u>2662 Fruitvale, Oakland, CA</u>	Boring No. <u>F4</u>
Driller <u>HEW Drilling</u>	Project No. <u>92404A0.02</u>
Method <u>Hollow Stem</u>	Date <u>1-20-93</u>
Logger <u>SP/WKS</u> Datum _____ Bore size <u>7 3/4"</u>	Casing size <u>NA</u>

Depth	Graphic	Lithology	Notes
10		Dark gray, clayey sandy GRAVEL, 1/8" to 3/4", subangular to angular clasts, loose, wet.  T.D. = 11 feet	Strong petroleum odor Floating product gasoline less than 1/4 inch thick Free water at 10.5 feet
11			
12			
13			
14			
15			
16			

Scale: 1 inch = 1.5 feet




92404A0.LOG(2/25/93)

Signature \_\_\_\_\_

# DRILLING LOG

**BASELINE**  
**5900 Hollis Street, Suite D**  
**Emeryville, CA 94608**  
**(510) 420-8686**

Location <u>2662 Fruitvale, Oakland, CA</u>	Boring No. <u>F5</u>
Driller <u>HEW Drilling</u>	Project No. <u>92404A0.02</u>
Method <u>Hollow Stem</u>	Date <u>1-20-93</u>
Logger <u>SP/WKS</u> Datum _____ Bore size <u>7 3/4"</u>	Casing size <u>NA</u>

Depth	Graphic	Lithology	Notes
0		Asphalt	
	GW	Baserock	
1	SP	Light brown, SAND, homogeneous, very fine to fine, dry, loose. Some wood fragments.	4-6-6 HNu = 0 ppm in cuttings
2			
3		Increase in moisture.	
4			
5			
6			
7			
8		Light brown, SAND, homogeneous, very fine to fine, loose, wet. Some wood fragments.	1-0.5-0.5 Groundwater at 8.75 feet
9			
10		T.B.D./T.D. = 10 feet	Groundwater sampled

Scale: 1 inch = 1.5 feet

92404A0.LOG(2/25/93)

Signature \_\_\_\_\_

# DRILLING LOG

BASELINE  
 5900 Hollis Street, Suite D  
 Emeryville, CA 94608  
 (510) 420-8686

Location	2662 Fruitvale, Oakland, CA		Boring No.	F6
Driller	HEW Drilling		Project No.	92404A0.02
Method	Solid Stem		Date	1-21-93
Logger	SP	Datum _____	Bore size	6"
			Casing size	NA

Depth	Graphic	Lithology	Notes
0		Asphalt	
	GW	Baseroack	HNu = 1 ppm in breathing zone
1		Dark brown, silty CLAY trace sand and gravel, medium to low plasticity, very soft, moist.	HNu = 5 ppm in boring 1-1-2
2	CL		
3			
4	CH	Dark brown, silty CLAY, trace sand and gravel, medium to high plasticity, very soft, moist.	
5			
6			
7			
		T.B.D. = 7.5 feet	
8	GC	Brown, gravelly CLAY with sand, medium plasticity, 1/4" to 3/4" inch subrounded-rounded clasts, very soft-firm, wet.	2-4-6 Free water at 8.25 feet Potentiometric surface at 7.0 feet
9		T.D. = 9.0 feet	
10			

Scale: 1 inch = 1.5 feet

# DRILLING LOG

**BASELINE**  
**5900 Hollis Street, Suite D**  
**Emeryville, CA 94608**  
**(510) 420-8686**

Location	2662 Fruitvale, Oakland, CA	Boring No.	F7
Driller	HEW Drilling	Project No.	92404A0.02
Method	Hollow Stem	Date	1-21-93
Logger	SP/WKS Datum _____	Bore size	7 3/4"
		Casing size	NA

Depth	Graphic	Lithology	Notes
0		Asphalt	
	GW	Baserock	
1	GW-GC	Reddish brown, sandy GRAVEL with clay, very loose, moist.	2-1-2
2	SP	Light brown, SAND, fine grained, homogenous, very loose, moist.	HNu = 0 ppm Gas-tech = 0 ppm (restarted hole 1-foot to the west)
3			
4	CH	Dark brown, silty sandy CLAY, high plasticity, fine-grained, very soft, moist. Increase in plasticity.	1-2-3
5			
6		Decrease in sand.	
7	CH	Dark brown, silty CLAY, high plasticity, soft-firm, very moist.	4-4-5
8	CL	T.B.D. = 8.0 feet Dark brown, silty gravelly CLAY, medium-low plasticity, 1 1/4" angular clasts, organic material, soft-firm, moist.	3-7-4
9	SW	Light brown, clayey gravelly SAND, medium to fine grained, 1/8" - 1/2" diameter subangular clasts, very loose, loose, wet. T.D. = 9.5 feet	
10			

Scale: 1 inch = 1.5 feet

92404A0.LOG(2/25/93)

Signature \_\_\_\_\_

# DRILLING LOG

**BASELINE**  
**5900 Hollis Street, Suite D**  
**Emeryville, CA 94608**  
**(510) 420-8686**

Location <u>2662 Fruitvale, Oakland, CA</u>	Boring No. <u>F8</u>
Driller <u>HEW Drilling</u>	Project No. <u>92404A0.02</u>
Method <u>Hollow Stem</u>	Date <u>1-20-93</u>
Logger <u>SP</u> Datum _____	Bore size <u>7 3/4"</u> Casing size <u>NA</u>

Depth	Graphic	Lithology	Notes
0		Asphalt	
	GW	Baserock	
1		Dark brown, gravelly silty CLAY with sand, medium-low plasticity, 1/4" to 3/4" subangular clasts, fine-medium grained, firm-soft, moist.	
	CL		
2	█		4-6-6
	█		Petroleum odor
3		Dark gray, gravelly silty CLAY, light gray and rust stains, medium-low plasticity, 1/4" to 1/2", subangular clasts, moist. Increase in plasticity.	
	CL		
4			HNu = 1 ppm
5			
6			
7			
		T.B.D. = 7.5 feet	
8			
	GW	Dark bluish gray, clayey sandy GRAVEL, 1/4" to 1/2" subrounded to subangular clasts, very loose, wet. T.D. = 9.0 feet	0-0-4
9	█		Strong petroleum odor
10			

810 ppm  
 Soil

Scale: 1 inch = 1.5 feet

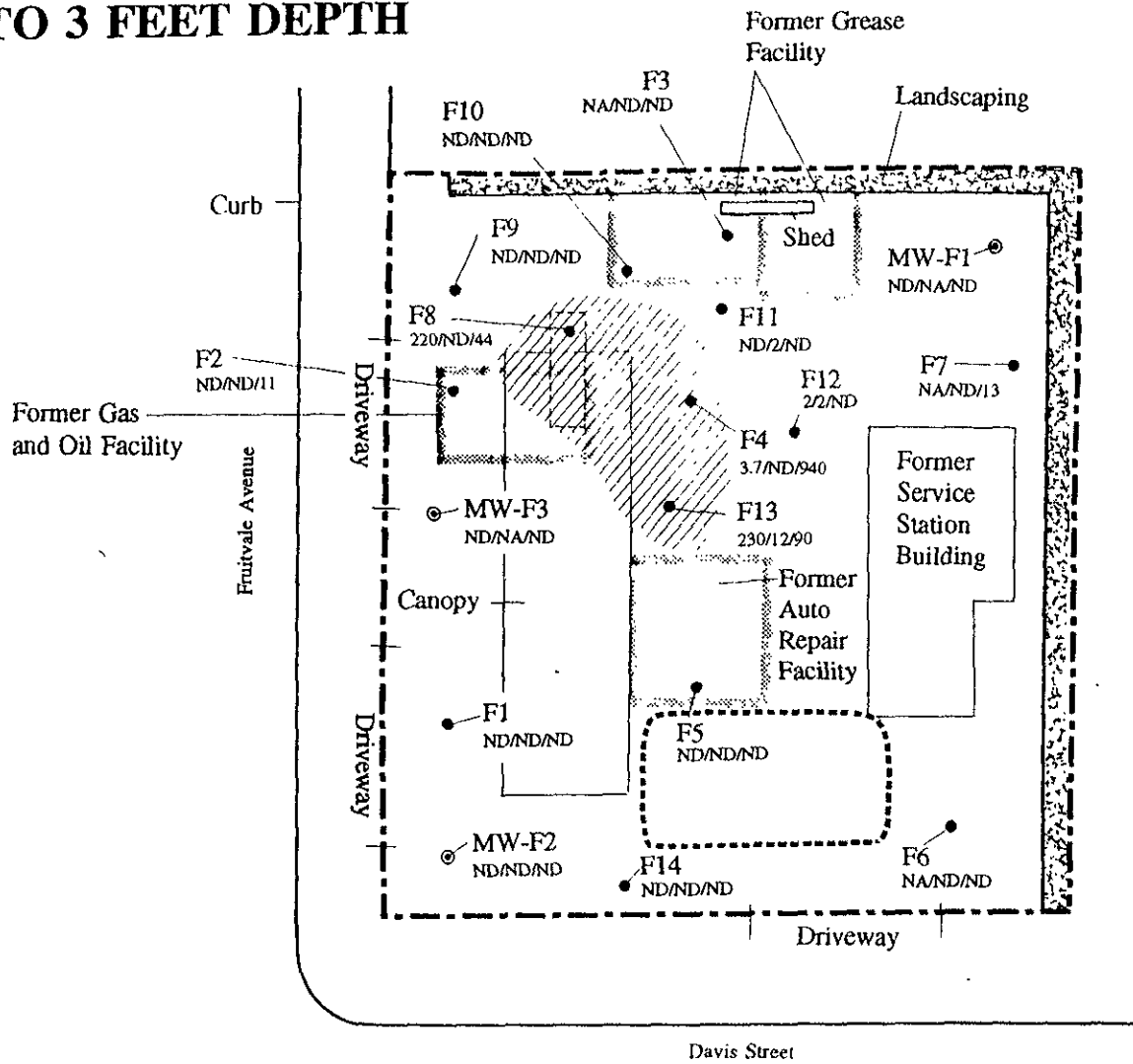
92404A0.LOG(2/25/93)

Signature \_\_\_\_\_



# TOTAL PETROLEUM HYDROCARBONS CONCENTRATIONS IN SHALLOW SOIL 2 TO 3 FEET DEPTH

Figure 3



**Legend**

TPH Concentration >100 mg/kg

F9 • Soil Boring Location

MW-F2 ⊙ Monitoring Well Location

3.7/ND/940 TPH as Gasoline/Kerosene/Motor Oil Concentrations (mg/kg)

ND Not Detected

NA Not Analyzed

Approximate Geophysical Anomaly (Possible Underground Tank) (BCA Geophysics, 1993)

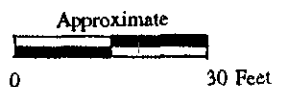
Outline of Former Service Station Facilities (1946 Sanborn Map)

Approximate Location of Tanks Removed in 1978 (Trans Pacific, 1986)

Project Site Boundary

2662 Fruitvale Avenue  
Oakland

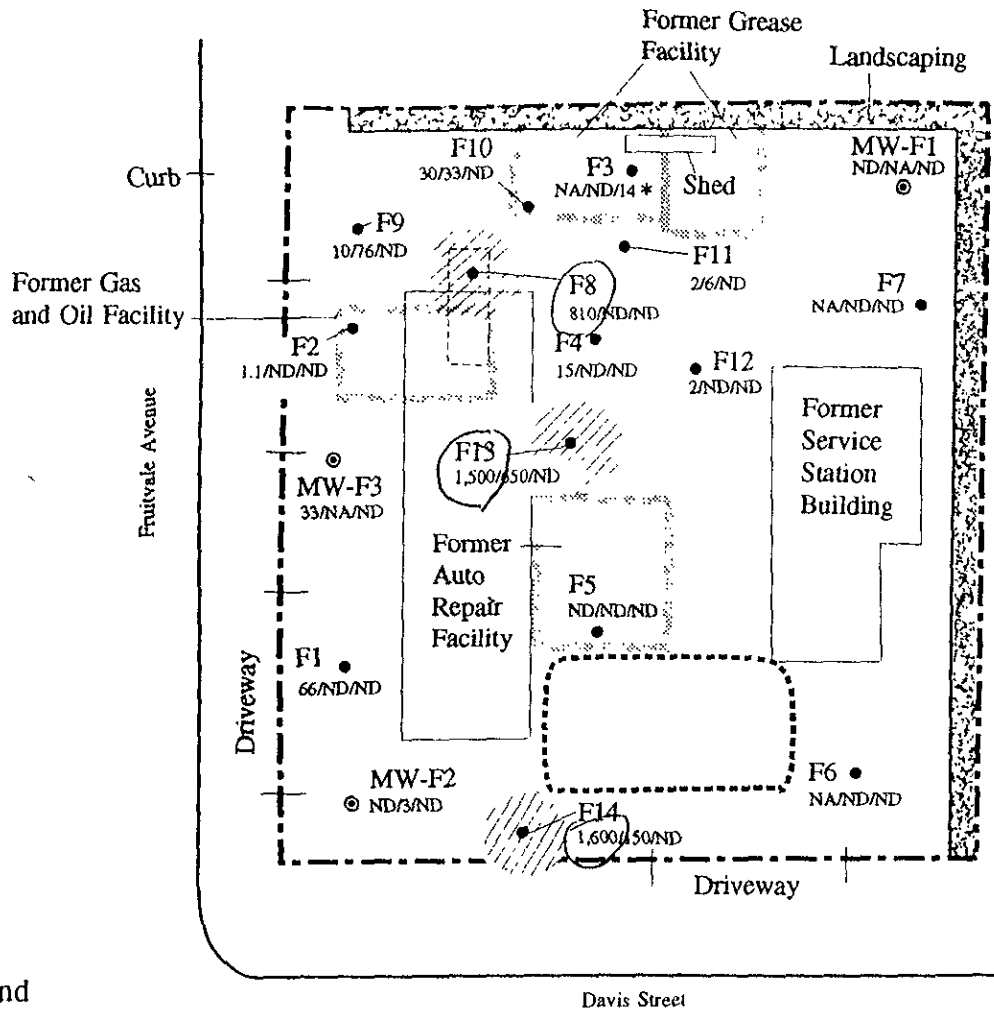
ATTACHMENT 3



BASELINE

# TOTAL PETROLEUM HYDROCARBONS CONCENTRATIONS IN DEEP SOIL 8 TO 11 FEET DEPTH

Figure 4



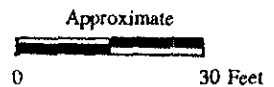
**Legend**

- Outline of Former Service Station Facilities (1946 Sanborn Map)
- Approximate Location of Tanks Removed in 1978 (Trans Pacific, 1986)
- Project Site Boundary
- F9 • Soil Boring Location
- MW-F2 ⊙ Monitoring Well Location
- TPH Concentration >100 mg/kg
- TPH as Gasoline/Kerosene/Motor Oil Concentrations (mg/kg)
- ND Not Detected
- NA Not Analyzed
- Approximate Geophysical Anomaly (Possible Underground Tank)

\* 300 ppm Oil and Grease Detected In Sample

2662 Fruitvale Avenue  
Oakland, C

ATTACHMENT 3



BASELINE

Table 1 - Summary of Analytical Results, Soil (continued)

Sample Location	Sample Date	Depth (feet)	TPH as Gasoline <sup>1</sup>	TPH as Kerosene <sup>2</sup>	TPH as Motor Oil <sup>2</sup>	Oil & Grease <sup>3</sup>	Benzene <sup>4</sup>	Toluene <sup>4</sup>	Ethylbenzene <sup>4</sup>	Xylenes <sup>4</sup>
F9	8-10-93	3.0 <sup>10</sup>	<1	<1	<30	--	<0.005	<0.005	<0.005	<0.005
		9.5 <sup>10</sup>	10	76	<30	--	<0.005	<0.005	<0.005	<0.005
F10	8-10-93	3.0 <sup>10</sup>	<1	<1	<30	<50	<0.005	<0.005	0.052	0.042
		10.0 <sup>10</sup>	30	33	<30	<50	<0.005	<0.005	<0.005	<0.005
F11	8-10-93	2.5 <sup>10</sup>	<1	2	<30	<50	<0.005	<0.005	0.073	0.250
		10.0 <sup>10</sup>	2	6	<30	<50	<0.005	<0.005	<0.005	<0.005
F12	8-10-93	2.5 <sup>10</sup>	2	2	<30	--	<0.005	0.012	<0.005	<0.005
		9.5 <sup>10</sup>	2	<1	<30	--	<0.005	0.007	<0.005	<0.005
F13	8-10-93	3.0 <sup>10</sup>	230	12	90	--	<0.005	<0.005	<0.005	<0.005
		9.5 <sup>10</sup>	1,500	650	<30	--	<0.030	0.750	0.550	1.500
F14	8-10-93	3.0 <sup>10</sup>	<1	<1	<30	--	<0.005	3.700	8.800	8.100
		10.5 <sup>10</sup>	1,600	150	<30	--	<0.005	<0.005	<0.005	<0.005
<u>Monitoring Wells</u>										
MW-F1	8-11-93	3.0 <sup>10</sup>	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
		10.0 <sup>10</sup>	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
MW-F2	8-10-93	3.0 <sup>10</sup>	<1	<1	<30	--	<0.005	<0.005	<0.005	<0.005
		12.0 <sup>10</sup>	<1	3	<30	--	<0.005	<0.005	<0.005	<0.005
MW-F3	8-11-93	3.0 <sup>10</sup>	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
		10.0 <sup>10</sup>	33	--	<10	--	<0.005	<0.005	<0.005	<0.005
							<0.015	<0.015	0.077	<0.005

# BILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	F-9
Operator	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/10/93
Operator	WKS	Datum	Bore size 7 3/4-inch
			Casing size

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt top.	
0.5	GW	Base Rock	
1.5	CL	Reddish brown/brown silty CLAY with sand and gravel, low plasticity, soft-firm, red iron oxide stained veinlets, damp.	
2.0			HNu = 0 ppm in breathing zone.
2.5			HNu = 40 ppm in borehole.
3.0			HNu = 100 ppm in sample.
3.5			3-3-5
4.0		Black to very dark brown, silty CLAY, trace sand, low plasticity, soft to firm, moist.	
5.0	CL		
6.0			
7.0			
8.0	CH	Dark gray, silty CLAY, high plasticity, soft to firm, very moist.	Petroleum odor.
8.5			HNu = 0 ppm in breathing zone.
9.0			HNu peak = 600 ppm in borehole.
9.5			2-2-1
10.0	SW	Dark Gray, silty, clayey SAND, trace gravel, very fine-grained, subangular clasts, 1/3-inch diameter, very loose, wet.	2-2-1

# LING LOG

1 2662 Fruitvale Avenue, Oakland, CA Boring no. F-9  
HEW Project no. 92404-A0.03  
Hollow-stem continuous-flight auger Date 8/10/93  
WKS Datum Bore size 7 3/4-inch Casing size

ft.)	Graphic	Lithology	Notes
1 3 4 5 16 17 18 19 20	SW	Same as above.  Total Depth = 10.5 feet.	

(92404aDL.xlw-8/16/93)

# LOG

2662 Fruitvale Avenue, Oakland, CA

Boring no. F-10

HEW

Project no. 92404-A0.03

Hollow-stem continuous-flight auger

Date 8/10/93

WKS

Datum

Bore size 7 3/4-inch

Casing size

	Graphic	Lithology	Notes
		Asphalt	
1	GW	Base Rock	
2	CL	Dark reddish-brown, silty CLAY with sand, trace gravel, soft, firm, low plasticity, damp.	
3	CL	Black, silty CLAY with sand, soft to firm, low plasticity, damp to moist.	HNu = 0 ppm in breathing zone. HNu = 700 ppm in borehole. 2-5-6
4			
5			
6			
7			
8	CH	Dark gray, silty CLAY with sand, high plasticity, soft, very moist.	
9			Petroleum odor HNu = 0 ppm in breathing zone. HNu = 100 ppm in borehole. HNu = 150 ppm in sample.
10			2-2-4

# LOG

2662 Fruitvale Avenue, Oakland, CA

Boring no. F-10

HEW

Project no. 92404-A0.03

Hollow-stem continuous-flight auger

Date \_\_\_\_\_

WKS Datum \_\_\_\_\_ Bore size 7 3/4-inch

Casing size \_\_\_\_\_

Graphic

Lithology

Notes

10

11

12

13

14

15

16

17

18

19

20

SW

Dark gray, silty SAND, with gravel and clay, fine- to very fine-grained, subangular clasts, up to 1-inch diameter, loose, wet.

2-3-4

Total Depth = 12.0 feet.

(92404aDL.xlw-8/16/93)

52 Fruitvale Avenue, Oakland, CA

Boring no. F-11

HW

Project no. 92404-A0.03

Hollow-stem continuous-flight auger

Date 8/10/93

WKS

Datum

Bore size 7 3/4-inch

Casing size

Graphic	Lithology	Notes
	Asphalt	
GW	Base Rock	
GW	Reddish-brown, clayey GRAVEL, subangular clasts, 1/2-inch diameter, loose, moist.	HNu = 0 pm in breathing zone. HNu = 20 ppm in borehole. HNu = 70 ppm in sample Petroleum odor 4-4-5
SW	Yellowish-brown, silty, gravelly SAND, fine-grained, loose, moist.	
SC	Dark gray, clayey SAND with silt, loose, damp.	
ML/CL	Dark gray, clayey SILT/silty CLAY, low plasticity, soft, moist.	
ML	Dark gray, clayey SILT with sand, soft, low plasticity, very moist. Increase in sand content at 10 feet.	
		HNu = 0 ppm in breathing zone. HNu = 190 ppm in borehole. 2-3-3



# LOG

62 Fruitvale Avenue, Oakland, CA

Boring no. F-11

HEW

Project no. 92404-A0.03

Hollow-stem continuous-flight auger

Date 8/10/93

WKS Datum \_\_\_\_\_ Bore size 7 3/4-inch

Casing size \_\_\_\_\_

Graphic

Lithology

Notes

Graphic	Lithology	Notes
10 ML	Same as above.	
11	Total Depth = 10.5 feet	
12		
13		
14		
15		
16		
17		
18		
19		
20		

# LOG

562 Fruitvale Avenue, Oakland, CA

Boring no. F-12

HEW

Project no. 92404-A0.03

Hollow-stem continuous-flight auger

Date 8/10/93

WKS

Datum

Bore size 7/8

Casing size

Graphic	Lithology	Notes
	Asphalt	
GW	Base Rock	Petroleum odor at 1.5 feet.
CL	Dark-brown/greenish gray gravelly CLAY, high plasticity, 1/2-inch subangular clasts, soft, moist.	
ML/CL	Dark gray clayey SILT/silty CLAY, low plasticity, soft, veinlets, moist.	3-3-5 petroleum odor HNu = 0 pm in breathing zone. HNu = 60 ppm in borehole. HNu = 140 ppm in sample.
CL	Dark gray to black, silty CLAY, low plasticity, soft, moist.	
SW	Dark gray to gray, clayey SAND with silt, very fine-grained, very loose, wet.	Petroleum odor HNu = 0 ppm in breathing zone. HNu = 300 ppm in borehole. HNu = 140 ppm in sample. 3-3-2

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	F-12
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/10/93
Logger	WKS	Datum	
		Bore size	
		Casing size	

Depth (ft.)	Graphic	Lithology	Notes
10	SW	Same as above.  Total Depth = 10.5 feet.	
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

# BORING LOG

2662 Fruitvale Avenue, Oakland, CA

Boring no. F-13

HEW

Project no. 92404-A0.03

Hollow-stem continuous-flight auger

Date 8/10/93

WKS

Datum

Bore size 7 3/4-inch

Casing size

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt top.	
1	GW	Base Rock with clay.	
2	SW	Greenish-gray, silty SAND with clay, fine- to medium-grained, loose, moist.	Strong petroleum odor HNu = 0 ppm in breathing zone. HNu = 50 ppm in borehole. HNu = 120 ppm in sample. 2-2-3
3			
4		Dark brown to black, silty CLAY, high plasticity, soft, moist.	
5	CH		
6			
7			
8		Dark gray SAND, fine-grained, loose, very moist.	Strong petroleum odor HNu = 3 ppm in breathing zone. HNu = 600 ppm in borehole. HNu = 150 ppm in sample. 2-2-1
9	SP		
10			

(92404aDL.xlw-8/16/93)

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	F-13
Driller	HEW		Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger		Date	8/10/93
Logger	WKS	Datum _____	Bore size	7 3/4-inch
			Casing size	_____

Depth (ft.)	Graphic	Lithology	Notes
10		Dark gray, silty CLAY, high plasticity, very soft, wet.  Total Depth = 10.5 feet.	
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

# BILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	F-14
Driller	HEW		Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger		Date	8/10/93
Logger	WKS	Datum	Bore size	7 3/4-inch
			Casing size	

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt top.	
1	GW	Base Rock.	
2	CL	Dark brown, silty CLAY with trace gravel, low plasticity, soft to firm, veinlets, iron oxide stained, damp.	HNu = 0 ppm in breathing zone. HNu = 17 ppm in borehole. 4-5-6
3			
4			
5		Becoming brown	
6			
7			
8			
9	CH	Dark gray sandy CLAY with silt, high plasticity, firm, moist.	Strong petroleum odor HNu = 0 ppm in breathing zone. HNu = 20 ppm in borehole. HNu = 130 ppm in sample. 4-6-8
10			

# BORING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	F-14
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/10/93
Logger	WKS Datum _____	Bore size	7 3/4-inch
		Casing size	_____

Depth (ft.)	Graphic	Lithology	Notes
10	CH	Dark bluish gray, gravelly SAND, trace clay, fine- to medium-grained, subrounded to rounded clasts, 1/3- to 1/2-inch diameter, medium dense, very moist.	8-11-14
11	SW		
12	CH	Mottled dark gray and brown, silty CLAY, high plasticity, stiff, moist.	
Total Depth = 12 feet			
13			
14			
15			
16			
17			
18			
19			
20			

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F1
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/11/93
Logger	WKS	Datum	104.82 ft.
		Bore size	7 3/4-inch
		Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt top	
1	GW	Base rock	
2			
3	SW	Brown, gravelly SAND with clay, fine- to medium-grained, subangular to subrounded clasts 1/3 to 3/4-inch diameter, loose, rootlets, moist to damp.	HNu = 0 ppm in breathing zone HNu = 5 ppm in borehole HNu = 10 ppm in sample 8-5-5
4		Very dark gray, silty CLAY, trace sand, low plasticity, soft to firm, moist.	
5	CL		
6			
7			
8			
9	GW	Brown, sandy GRAVEL with clay, subangular to subrounded clasts up to 1.5 inch in diameter, sandstone, shale clasts, fine- to coarse-grained sand, loose rootlets, moist to very moist (Fill).	HNu = 0 ppm in breathing zone HNu = 17 ppm in sample 7-9-9
10			



# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F1
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/11/93
Logger	WKS	Datum	104.82 ft.
		Bore size	7 3/4-inch
		Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
10		Increase in clay content	
11	GW		
12			
13			
14	CH	Mottled pale brown-gray, silty CLAY, high plasticity, soft, veinlets, wet.	HNu = 0 ppm in breathing zone HNu = 15 ppm in borehole 3-3-3 Water on tip of sampler
15			
16	GW	Brown, sandy GRAVEL, 1/3- to 1.5-inch subangular, subrounded clasts, sandstone, chert, shale clasts, loose, wet.	
17			
18			
19	SW	Brown, silty SAND, fine- to very fine-grained, very loose, wet.	HNu = 0 ppm in breathing zone 0-7-14
20	GW	Brown, sandy GRAVEL, with clay, 1/3- to 1.5-inch subangular, subrounded clasts, sandstone, chert, shale clasts, loose, wet.	

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	MW-F1
Driller	HEW		Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger		Date	8/11/93
Logger	WKS	Datum 104.82 ft.	Bore size	7 3/4-inch
			Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
20		Same as above.	
21			
22			
23		Pale brown, sandy SILT with clay, firm, wet.	
24			
25			
26			
27			H1Nu = 0 ppm in breathing zone 6-12
28			
29			
30			

Total Depth = 26 feet

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F2
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/10/93
Logger	WKS	Datum	102.42 ft.
		Bore size	7 3/4-inch
		Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt top	
	GW	Base rock	
1	CL	Dark brown, gravelly CLAY, low plasticity, subangular to subrounded clasts, 1/3- to 1/2-inch diameter, soft damp.	HNu = 0 ppm in breathing zone HNu = 70 ppm in borehole HNu = 180 ppm in sample 3-4-6
2		Dark brown-very dark gray, silty CLAY, low plasticity, firm, veinlets, damp	
3	CL		
4			
5			
6		Becoming brown, trace of sandstone clasts.	
7			
8			
9	CL	Dark greenish-gray sandy CLAY, trace gravel, high plasticity, fine-grained, 1/3-inch diameter subangular clasts, firm, veinlets, very moist.	HNu = 0 ppm in breathing zone HNu = 30 ppm in borehole HNu = 100 ppm in sample 4-8-9
10			

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F2
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/10/93
Logger	WKS Datum 102.42 ft.	Bore size	7 3/4-inch
		Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
10		Same as above.	
11	CL		
12	CL	Greenish-gray sandy CLAY, with gravel, fine- to medium-grained, subrounded to angular clasts, 1/2 to 3/4 inch in diameter, low plasticity, firm to stiff, wet.	3-5-6
13	GC	Gray, clayey GRAVEL, with sand, subangular clasts of shale, sandstone, siltstone, 1/2- to 2-inch diameter, seams of clay, wet to very moist.	
14			3-6-14
15			13-9-13
16			
17			
18	SW	Light brown, silty SAND, trace clay, very fine-grained to fine-grained, loose, medium dense, wet.	
19			HNu = 0 ppm in breathing zone 7-13-16
20		Total Depth = 20 feet	

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F3
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/11/93
Logger	WKS	Datum	102.92 ft.
		Bore size	7 3/4-inch
		Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt cover	
1	GC	Brown, clayey gravel Base Rock	
2	CL	Dark brown, silty CLAY, trace gravel, low plasticity, soft-firm, red oxide stained, veinlets, damp.	
3			HNu = 0 ppm in breathing zone. HNu = 30 ppm in borehole. HNu = 40 ppm in sample. 4-6-7
4			
5			
6		Becoming brown at 6 feet.	
7			
8	CH	Mottled olive, gray-brown sandy CLAY with silt and gravel, high plasticity, fine-grained, soft-firm, veinlets, moist.	
9			
10			HNu = 0 ppm in breathing zone. HNu = 10 ppm in borehole. HNu = 50 ppm in sample. 4-6-10

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F3
Driller	HEW	Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger	Date	8/11/93
Logger	WKS	Datum	102.92 ft.
		Bore size	7 3/4-inch
		Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
10		Decrease in sand content.	3-5-7
11			
12	CH 		
13			
14			
15			
16			
17	CL/SC 	Light brown, sandy CLAY/clayey SAND, trace gravel, red oxide stains, very fine- to fine-grained, very loose, wet.	0-2-3
18			
19	SC 	Light brown, clayey SAND, very fine-grained, very loose, wet.	
20	SC 		

# DRILLING LOG

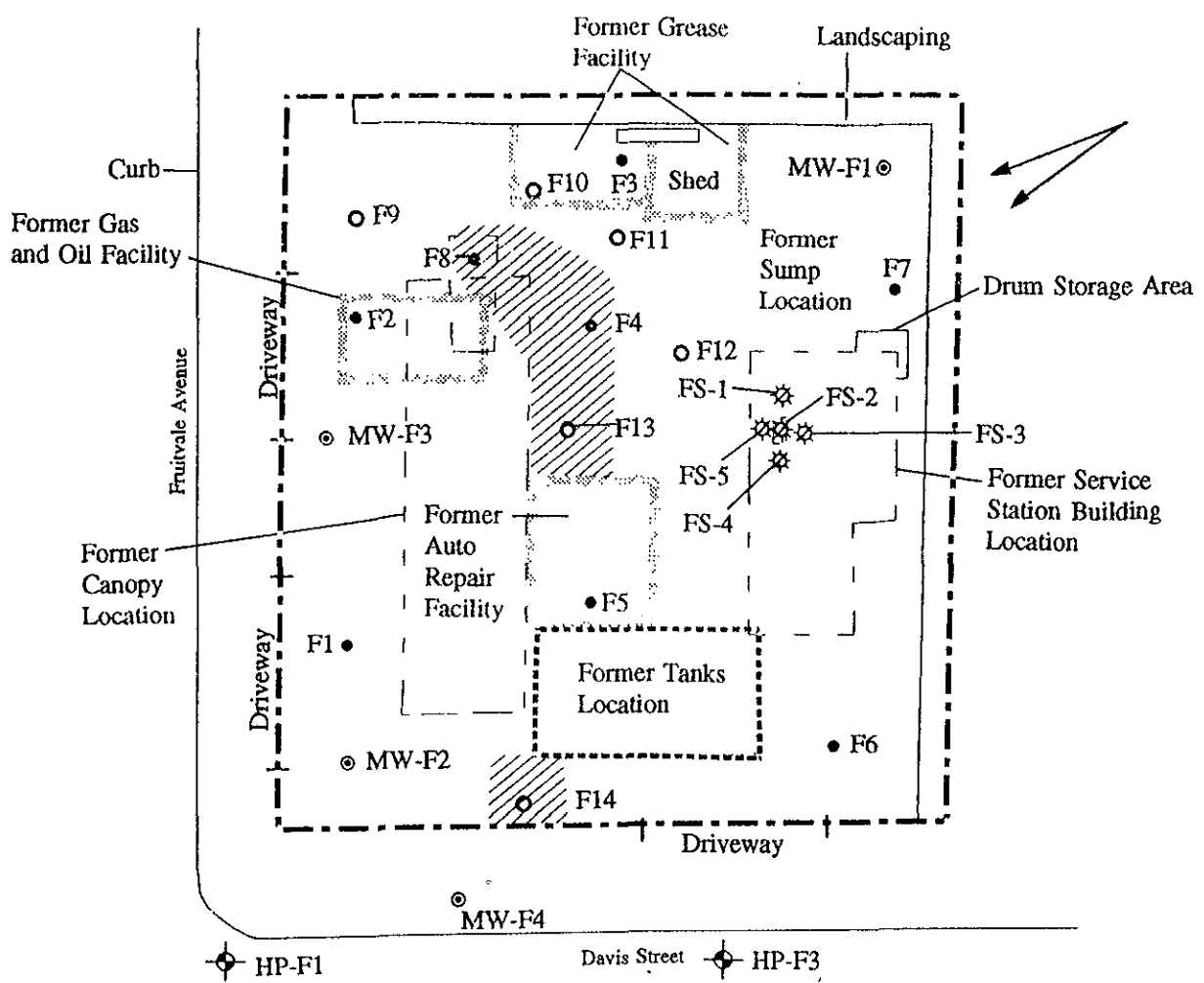
Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	MW-F3
Driller	HEW		Project no.	92404-A0.03
Method	Hollow-stem continuous-flight auger		Date	8/11/93
Logger	WKS	Datum 102.92 ft.	Bore size	7 3/4-inch
			Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
20	SC	Light brown, clayey SAND with gravel, very fine- to medium-grained, subangular to rounded clasts, up to 1 5-inch diameter, loose, wet.	4-6-4
21	SW	Light brown, silty SAND, trace clay, very fine- to fine-grained, loose to medium dense, wet.	7-16-22
22			
23			8-23-27
24		Layers of 4-inch-thick, gravelly SAND with silt, interbedded with 2-inch-thick, silty CLAY seams between 24 5 and 26 feet.	11Nu = 0 ppm in breathing zone 7-27-42
25			
26		Total Depth = 26 feet	
27			
28			
29			
30			


# SITE PLAN

Figure 2




⊙ MW-13

### Legend

-  Areas with Elevated TPH Concentrations
- F1 to F8 ● Soil Boring Location - Phase II
- F9 to F14 ○ Soil Boring Location - Phase III
- FS-1 ✱ Sump Area Boring Location
- MW-F2 ⊙ Monitoring Well Location

HP-F1  Temporary Well Location

 Range of calculated groundwater flow directions between 8/93 - 9/94. (Based on water level elevations measured in MW-F1, MW-F2, and MW-F3.)

 Project Site Boundary

**2662 Fruitvale Avenue  
Oakland, California**

**ATTACHMENT 4**



**BASELINE**



TABLE 3  
 SUMMARY OF ANALYTICAL RESULTS, GROUNDWATER  
 2662 Fruitvale Avenue  
 Oakland, California  
 January 1993 through September 1994  
 (mg/L)

Sample Location	Sample Date	TPH as Gasoline <sup>1</sup>	TPH as Motor Oil <sup>2</sup>	Benzene <sup>3</sup>	Toluene <sup>3</sup>	Ethylbenzene <sup>3</sup>	Xylenes <sup>3</sup>
<u>Monitoring Wells</u>							
MW-F1	8-16-93	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	6-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	9-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
MW-F2	8-16-93	<0.05	<0.5	<0.002	<0.002	<0.002	<0.002
	6-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	9-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
MW-F3	8-16-93	<0.1	<0.5	<0.002	<0.002	<0.002	<0.002
	6-29-94	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005
	9-09-94	<0.9	--	<0.0009	<0.0009	<0.0009	<0.0009
MW-F4	9-09-94	3.4-3.5	--	0.029/0.028	0.0030/0.0028	0.038/0.033	0.094/0.099
<u>Soil Borings<sup>4</sup></u>							
F1 <sup>5</sup>	1-20-93	13	<0.5	0.610	<0.018	0.830	0.046
F2 <sup>5,6</sup>	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	--	--	--	--
<u>Hydropunch</u>							
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

Table 2 - Summary of Analytical Results, Soil (continued)

Sample Location	Sample Date	Depth (feet)	TPH as Gasoline <sup>1</sup>	TPH as Kerosene <sup>2</sup>	TPH as Motor Oil <sup>2</sup>	Total/Nonpolar Oil & Grease <sup>3</sup>	Benzene <sup>4</sup>	Toluene <sup>4</sup>	Ethylbenzene <sup>4</sup>	Xylenes <sup>4</sup>
MW-F3	8-11-93	3.0 <sup>10</sup>	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
		10.0 <sup>10</sup>	<b>33</b>	--	<10	--	<0.015	<0.015	<b>0.077</b>	<0.005
MW-F4	9-7-94	5.5	<1	<b>37<sup>13</sup></b>	<30	--	<0.005	<0.005	<0.005	<0.005
		11.0	<b>2100<sup>12,13</sup></b>	<b>420<sup>13</sup></b>	<300	--	<b>1.7<sup>12</sup></b>	<b>11<sup>12</sup></b>	<b>66<sup>12</sup></b>	<b>230<sup>12</sup></b>

<sup>1</sup> Test Method = DOHS Method/LUFT, EPA 5030/8015.

<sup>2</sup> Test Method = DOHS Method/LUFT, EPA 3550/8015.

<sup>3</sup> Test Method = SMWW 17:5520EF for total and 5520E&F for nonpolar.

<sup>4</sup> Test Method = EPA 5030/8020.

<sup>5</sup> Sample also analyzed for lead; lead concentration less than TTLC and less than ten times STLC.

<sup>6</sup> Sample also analyzed for lead; lead concentration (480 mg/kg) less than TTLC, and greater than ten times STLC; soluble lead concentration (1.1 mg/L) less than STLC.

<sup>7</sup> Sample also analyzed for Title 26 metals; all metal concentrations less than TTLC and less than ten times STLC.

<sup>8</sup> Sample also analyzed for volatile organic compounds (EPA 8240); no compounds detected above reporting limits.

<sup>9</sup> Sample also analyzed for Title 26 metals; lead concentration (120 mg/kg) less than TTLC, and greater than ten times STLC; soluble lead concentration (0.6 mg/L) less than STLC.

<sup>10</sup> Sample also analyzed for halogenated hydrocarbons (EPA 8010); no compounds detected above reporting limits.

<sup>11</sup> Sample also analyzed for soluble lead; soluble lead not identified above reporting limits.

<sup>12</sup> Results obtained past the recommended holding time.

<sup>13</sup> Sample chromatogram does not match the pattern of the standard.

Notes: <x.x = Compound not identified above detection limits.  
x.x = Bold values indicate compound identified above detection limits.  
-- = Compound not analyzed.  
TPH = Total Petroleum Hydrocarbons.  
Sample locations are shown on Figure 2.  
Laboratory reports for September 1994 samples are included in Appendix F.  
TTLC = Total threshold limit concentration.  
STLC = Soluble threshold limit concentration.

Table 2 - Summary of Analytical Results, Soil (continued)

Sample Location	Sample Date	Depth (feet)	TPH as Gasoline <sup>1</sup>	TPH as Kerosene <sup>2</sup>	TPH as Motor Oil <sup>2</sup>	Total/ Nonpolar Oil & Grease <sup>3</sup>	Benzene <sup>4</sup>	Toluene <sup>4</sup>	Ethyl-benzene <sup>4</sup>	Xylenes <sup>4</sup>
F10	8-10-93	3.0 <sup>10</sup>	<1	<1	<30	--/ <50	<0.005	<0.005	<0.005	<0.005
		10.0 <sup>10</sup>	30	33	<30	--/ <50	<0.005	<0.005	0.073	0.250
F11	8-10-93	2.5 <sup>10</sup>	<1	2	<30	--/ <50	<0.005	<0.005	<0.005	<0.005
		10.0 <sup>10</sup>	2	6	<30	--/ <50	<0.005	0.012	<0.005	0.009
F12	8-10-93	2.5 <sup>10</sup>	2	2	<30	--	<0.005	0.007	<0.005	<0.005
		9.5 <sup>10</sup>	2	<1	<30	--	<0.005	<0.005	<0.005	<0.005
F13	8-10-93	3.0 <sup>10</sup>	230	12	90	--	<0.030	0.750	0.550	1.500
		9.5 <sup>10</sup>	1,500	650	<30	--	<0.200	3.700	8.800	8.100
F14	8-10-93	3.0 <sup>10</sup>	<1	<1	<30	--	<0.005	<0.005	<0.005	<0.005
		10.5 <sup>10</sup>	1,600	150	<30	--	0.300	3.100	5.700	6.000
F-S1	9-8-94	5.5	--	--	--	<50/ <50	--	--	--	--
F-S2	9-8-94	6.0 <sup>8,11</sup>	<1	--	650	--/ 1,600	<0.005	<0.005	<0.005	<0.005
		11.0 <sup>8,11</sup>	<1	--	<10	--/ <50	<0.005	<0.005	<0.005	<0.005
F-S3	9-8-94	5.5	--	--	--	<50/ <50	--	--	--	--
F-S4	9-8-94	4.5	--	--	--	<50/ <50	--	--	--	--
F-S5	9-8-94	5.5	--	--	--	210/200	--	--	--	--
<u>Monitoring Wells</u>										
MW-F1	8-11-93	3.0 <sup>10</sup>	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
		10.0 <sup>10</sup>	<1	--	<10	--	<0.005	<0.005	<0.005	<0.005
MW-F2	8-10-93	3.0 <sup>10</sup>	<1	<1	<30	--	<0.005	<0.005	<0.005	<0.005
		12.0 <sup>10</sup>	<1	3	<30	--	<0.005	<0.005	<0.005	<0.005

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F4
Driller	HEW	Project no.	92404-D0
Method	Hollow stem	Date	9/7/94
Logger	WKS	Datum	TOC 101.56 ft msl
		Bore size	8 inches
		Casing size	2 inches

Depth (ft.)	Graphic	Lithology	Notes
0		Concrete slab	Background HNu = 0 ppm Background LEL = 0%
1	GW	Reddish brown, GRAVEL with sand (Baserock).	HNu = 0 ppm in breathing zone LEL = 0% in borehole
2	CL	Very dark gray, silty CLAY, low plasticity, soft to firm, moist.	HNu = 0 ppm in breathing zone
3			
4	CL	Very dark brown, mottled with gray, silty CLAY, minor gravel, low plasticity, subangular to subrounded clasts, 1/3- to 1/2-inch diameter, veinlets, firm to stiff, moist.	Slight petroleum odor
5			9-11-17 HNu = 0 ppm in breathing zone HNu = 50 ppm in sample LEL = 0% in breathing zone
6			
7			
8			
9			
10			

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	MW-F4
Driller	HEW		Project no.	9/7/94
Method	Hollow stem		Date	9/8/94
Logger	WKS	Datum TOC 101.56 ft msl	Bore size	8 inches
			Casing size	2 inches

Depth (ft.)	Graphic	Lithology	Notes
10	GC/SC	Gray and greenish gray interbedding of clayey GRAVEL with sand and clayey SAND with gravel. Subrounded clasts, 1/3- to 3/4-inch diameter, fine- to coarse-grained sand, medium dense, very moist. Brown, silty clay, low plasticity, firm.	HNu = 0 ppm in breathing zone HNu = 150 ppm in borehole
11			6-12-18 HNu = 150 ppm in sample LEL = 2% in borehole
12	GC/CL	Brown, clayey GRAVEL with sand/gravelly CLAY with sand, low plasticity, subrounded to angular clasts, 1/3- to 3/4-inch diameter, loose to medium dense, interbedding of sandy clay, very moist.	8-16-24 Some wetness in the gravel lense
13			
14			
15			5-9-22 (standard pin)
16			
17		Total depth = 17.0 feet.	Something very hard at 17.0 feet. Broke drill rig U-joint and transfer. Cannot advance auger, well completed at this depth.
18			
19			
20			

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	HP-F1
Driller	HEW		Project no.	92404-DO
Method	Hollow stem		Date	9/8/94
Logger	WKS	Datum None	Bore size	6 inches
			Casing size	1-2 inches

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt Baserock	
1	CL	Very dark gray, silty CLAY, trace of gravel, low plasticity, soft to firm, moist.	
2			
3			
4			
5			
6			
7	CL	Very dark brown to brown, silty CLAY, trace of sand and gravel, firm, moist.	
8			
9			
10			

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	HP-F1
Driller	HEW		Project no.	92404-D0
Method	Hollow stem		Date	9/8/94
Logger	WKS	Datum None	Bore size	6 inches
			Casing size	1-2 inches

Depth (ft.)	Graphic	Lithology	Notes
10	GC/CL	Interbedding of clayey GRAVEL with sand and gravelly CLAY with sand, very moist to wet.	HNu = 0 ppm in breathing zone HNu = 20 ppm in borehole LEL = 0% in borehole
11			
12	CL	Brown, sandy CLAY, trace of gravel, very moist to wet.	Installed 2" PVC with #3 Lonstone sand, because no water in F-HP-3 after several hours.
13			
14			
15		Total Depth = 15.0 feet.	Water level on 9-9-94 at 8:10: 14.75 feet
16			
17			
18			
19			
0			

of 2

92404DDL.XLW (10/20/94)

# DRILLING LOG


Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	HP-F3
Driller	HEW		Project no.	92404-D0
Method	Solid flight		Date	9/8/94
Logger	WKS	Datum None	Bore size	8 inches
			Casing size	2 inches

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt cover Baserock	
1	CL	Very dark brown, silty CLAY, trace of gravel, low plasticity, firm, moist.	
2			
3			
4			
5			
6			
7			
8	CL	Very dark gray, silty CLAY, some sand, low plasticity, soft to firm, very moist.	HNu = 0 ppm in breathing zone HNu = 2 ppm in borehole LEL = 0% in borehole
9			
10			



# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	HP-F3
Driller	HEW		Project no.	92404-D0
Method	Solid flight		Date	9/8/94
Logger	WKS	Datum None	Bore size	8 inches
			Casing size	2 inches

Depth (ft.)	Graphic	Lithology	Notes
10			
11			
12			
13	CL	<p>Total boring depth = 12.5 feet.</p> <p>Brown, sandy CLAY, trace of gravel, very moist to wet.</p>	<p>Set hole at 12.5. Water level in MW-F4 was 11.2 from TOC, ground surface at F-HP3 is ~1.5 foot higher than TOC at HW-F4.</p>
14			
15			<p>Water level on 9-9-94 at 8:10: 12.10 feet</p>
16		<p>Total depth = 16.0 feet.</p>	
17			
18			
19			
20			

# SNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340  
Oakland, California

Boring No. MW-13  
Date Drilled: 10/9/91  
Logged By: B. Von Thaden

Project Number: 1907-3G

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
1				Asphalt: 4" Baserock: 3"			
2			ML	SILT, to dark brown (7.5YR 3/4), 80-90% silt, 5-15% fine-grained sand, clay binder, trace coarse-grained sand, 1-2% rootholes, low to medium plasticity, very stiff, moist			
3							
4							
5							
6	13-1	24				100	
7							
8							
9							
10							
11	13-2	19		COLOR CHANGE, mottled dark yellowish brown (10YR 4/4) with greenish gray (5BG 5/1), 1-3% fine- to medium-grained sand	11/7/91 09:21	607	
12							
13			CL	SILTY CLAY, mottled dark yellowish brown (10YR 4/4) with greenish gray (5BG 5/1), 60-70% clay, 30-40% silt, 3-5% fine- to medium-grained sand, 3-5% rootholes, medium plasticity, very moist (wet in rootholes)			
14							
15							
16	13-3	11			10/9/91 09:25	0	
17							
18							
19			SP-SM	SAND, dark greenish gray (5BG 4/1), 90-95% sand, 5-10% silt, 1-3% roots, well sorted, loose, saturated			
20							
21		6					

REVIEWED BY R.G./C.E.G.

*[Handwritten Signature]*

APPENDIX B  
APPENDIX C  
APPENDIX D

# RESNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340  
Oakland, California

Boring No. MW-13

Date Drilled: 10/9/91

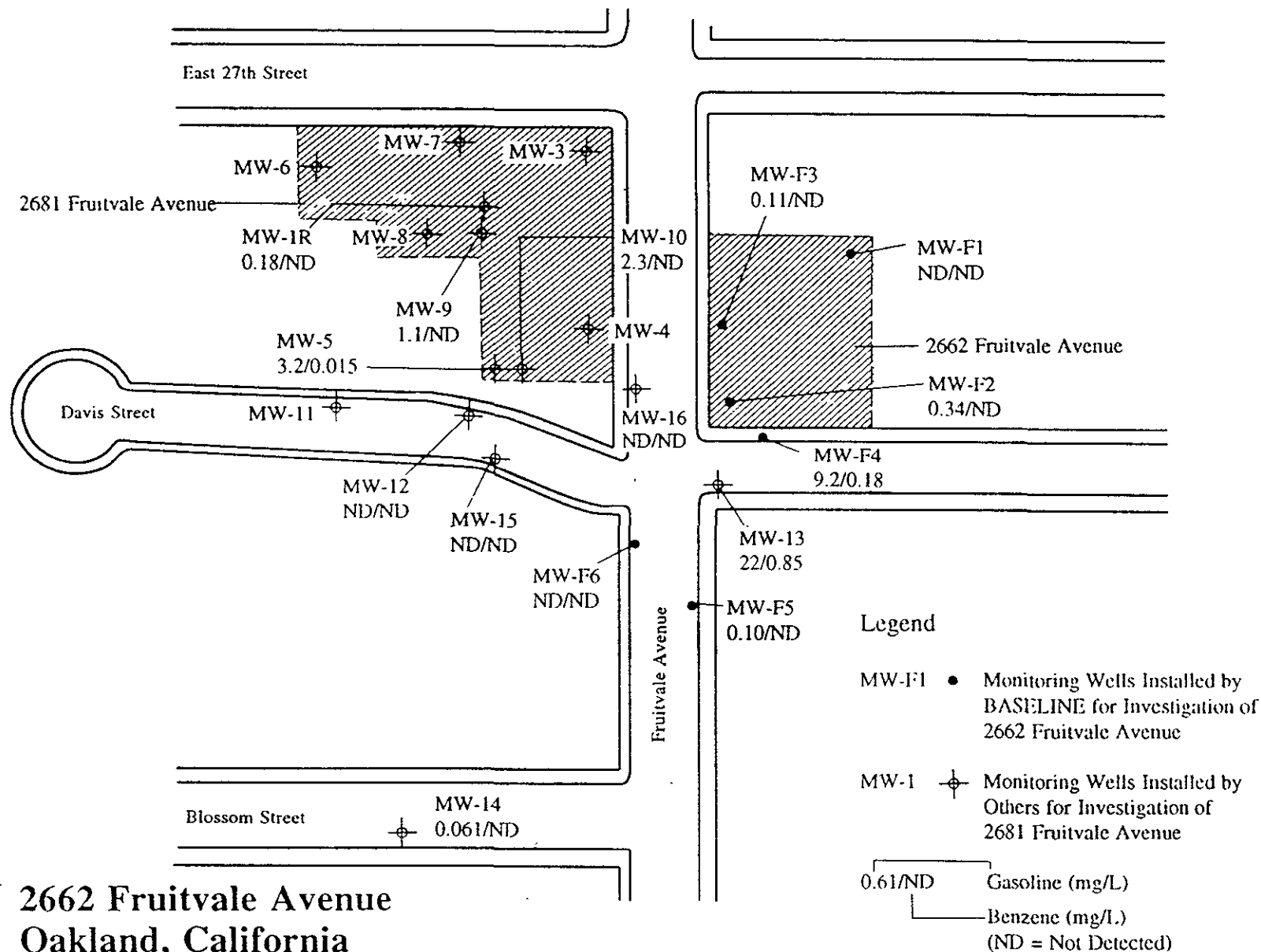
Project Number: 1907-3G

Logged By: B. Von Thaden

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
22			SP-SM	SAND, continued			
23			GW-GM	SANDY GRAVEL, dark yellowish brown (10YR 3/4), 60-70% fine to coarse gravel, 30-40% fine- to coarse-grained sand, 5-15% fines, poorly sorted, dense, saturated			
24							
25		33	ML	SILT, light yellowish brown (2.5YR 5/3), 95-100% silt, <5% fine-grained sand, low plasticity, stiff, moist			
26				Bottom of boring = 25 feet			
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							

# PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER - 30 June 1995

Figure 4



ATTACHMENT 5

Table 1 - Summary of Analytical Results, Soil (continued)




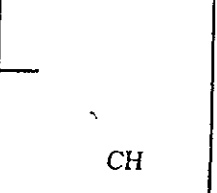


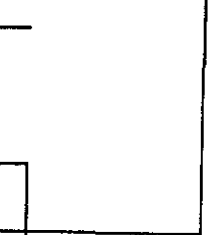




Sample Location	Sample Date	Depth (feet)	TPH as Gasoline <sup>1</sup>	TPH as Kerosene <sup>2</sup>	TPH as Motor Oil <sup>2</sup>	Total/ Nonpolar Oil & Grease <sup>3</sup>	Benzene <sup>4</sup>	Toluene <sup>4</sup>	Ethylbenzene <sup>4</sup>	Xylenes <sup>4</sup>
MW-F5	4-27-95	5.0 <sup>14</sup>	<1	--	--	--	<0.005	<0.005	<0.005	<0.005
		9.5	<1	--	--	--	<0.005	<0.005	<0.005	<0.005
MW-F6	6-26-95	5.0	<1	--	--	--	<0.005	<0.005	<0.005	<0.005
		11.0	<1	--	--	--	<0.005	<0.005	<0.005	<0.005

**Notes:** <x.x = Compound not identified above detection limits.  
**x.x** = Bold values indicate compound identified above detection limits.  
 -- = Compound not analyzed.  
 TPH = Total Petroleum Hydrocarbons.  
 Sample locations are shown on Figure 2.  
 Laboratory reports for April and June 1995 samples are included in Appendix D.  
 TTLC = Total threshold limit concentration.  
 STLC = Soluble threshold limit concentration.

- <sup>1</sup> Test Method = DOHS Method/LUFT, EPA 5030/8015.
- <sup>2</sup> Test Method = DOHS Method/LUFT, EPA 3550/8015.
- <sup>3</sup> Test Method = SMWW 17:5520EF for total and 5520E&F for nonpolar.
- <sup>4</sup> Test Method = EPA 5030/8020.
- <sup>5</sup> Sample also analyzed for lead; lead concentration less than TTLC and less than ten times STLC.
- <sup>6</sup> Sample also analyzed for lead; lead concentration (480 mg/kg) less than TTLC, and greater than ten times STLC; soluble lead concentration (1.1 mg/L) less than STLC.
- <sup>7</sup> Sample also analyzed for Title 26 metals; all metal concentrations less than TTLC and less than ten times STLC.
- <sup>8</sup> Sample also analyzed for volatile organic compounds (EPA 8240); no compounds detected above reporting limits.
- <sup>9</sup> Sample also analyzed for Title 26 metals; lead concentration (120 mg/kg) less than TTLC, and greater than ten times STLC; soluble lead concentration (0.6 mg/L) less than STLC.
- <sup>10</sup> Sample also analyzed for halogenated hydrocarbons (EPA 8010); no compounds detected above reporting limits.
- <sup>11</sup> Sample also analyzed for soluble lead; soluble lead not identified above reporting limits.
- <sup>12</sup> Results obtained past the recommended holding time.
- <sup>13</sup> Sample chromatogram does not match the pattern of the standard.
- <sup>14</sup> Unknown compound (0.53 mg/kg) was identified outside the gasoline range, as reported by the laboratory.

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	MW-F5
Driller	HEW		Project no.	92404-D0
Method	Hollow stem auger		Date	4/27/95
Logger	WKS	Datum 100.66 (City of Oakland)	Bore size	8-inch
			Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
0		Asphalt top	
1			
2		Very dark brown/brown CLAY with silt, high plasticity, stiff-very stiff, very moist.	
3			
4			
5			
6		Brown, clayey GRAVEL with sand, 1/2 - 3/4 -inch diameter subangular clasts, coarse- to fine-grained sand, high plasticity, dense, moist.	
7			
8			
9			
10			

HNu = 0 ppm in breathing zone  
 HNu = 3 ppm in hole  
 HNu = 2 ppm in sample  
 9-24-20 (blow counts)

Drilling very slow.  
 Water added to cuttings to reduce friction.

24-17-5

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F5
Driller	HEW	Project no.	92404-DO
Method	Hollow stem auger	Date	4/27/95
Logger	WKS	Datum	100.66 (City of Oakland)
		Bore size	8-inch
		Casing size	2-inch

Depth (ft.)	Graphic	Lithology	Notes
10		Interbedded CLAY with silt, 4 inches thick.	HNu = 0 ppm in breathing zone HNu = 10 ppm in hole HNu = 2 ppm in sample Gastech = 0% LEL
11		Very dark brown/brown, CLAY with silt, high plasticity, stiff-very stiff, very moist.	
12		Greenish-gray SAND with silt, fine-grained, wet.	Drilling becomes easier at approx. 12 feet.
13			
14		Brown GRAVEL with sand, trace of silt and clay, 1/2 - 2 1/2-inch diameter, subangular to subrounded clasts, fine to loose sand, medium-dense, wet.	Free water in hole 10-19-42 HNu = 0 ppm in breathing zone HNu = 4 ppm in hole Gastech = 0% LEL
15		Some interbedding of silty SAND, 2 inches thick.	
16			
17			
18			
19			
20			

# DRILLING LOG


Location 2662 Fruitvale Avenue, Oakland, CA  
 Driller HEW  
 Method Hollow stem auger  
 Logger WKS Datum 100.66 (City of Oakland) Bore size 8-inch  
 Boring no. MW-F5  
 Project no. 92404-D0  
 Date 4/27/95  
 Casing size 2-inch

Depth (ft.)	Graphic	Lithology	Notes
20	[Graphic: 2-inch wide, 1-foot high box]	Brown GRAVEL with sand, trace of silt and clay, 1/2 - 2 1/2-inch diameter, subangular to subrounded clasts, fine to loose sand, medium-dense, wet.	
21			
22	[Graphic: 2-inch wide, 1-foot high box]		
23			
24	[Graphic: 2-inch wide, 1-foot high box]		
25			
25	GW	Bluish-gray SAND with gravel and clay, fine-to medium-grained, medium-dense, wet.	25-50 (4 inches)
26	SW		
26	MC/CL	Greenish-gray, clayey SILT/Silty CLAY, wet, wood pieces.	
27		Total depth = 25.8 feet.	
28			
29			
30			



# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	MW-F6
Driller	Clear Heart Drilling		Project no.	92404-D0
Method	Hollow-stem auger		Date	6/26/95
Logger	WKS	Datum _____	Bore size	8 3/4
			Casing size	_____

Depth (ft.)	Graphic	Lithology	Notes
0		Sidewalk	
1	CH	Very dark brown-to-black, silty CLAY with trace of sand, high plasticity, stiff, very moist.	
2			
3			
4			
4		Becoming mottled with greenish gray-reddish brown, silty CLAY with trace of sub-angular gravel, 1/2- to 3/4-inch diameter, moderately plastic, stiff, very moist.	4-7-9 (blow counts)
5	CH		Benzene detector tube = ND
6			
7			
8			
9		Increase in gravel content and size.	3-6-11
10			

# DRILLING LOG

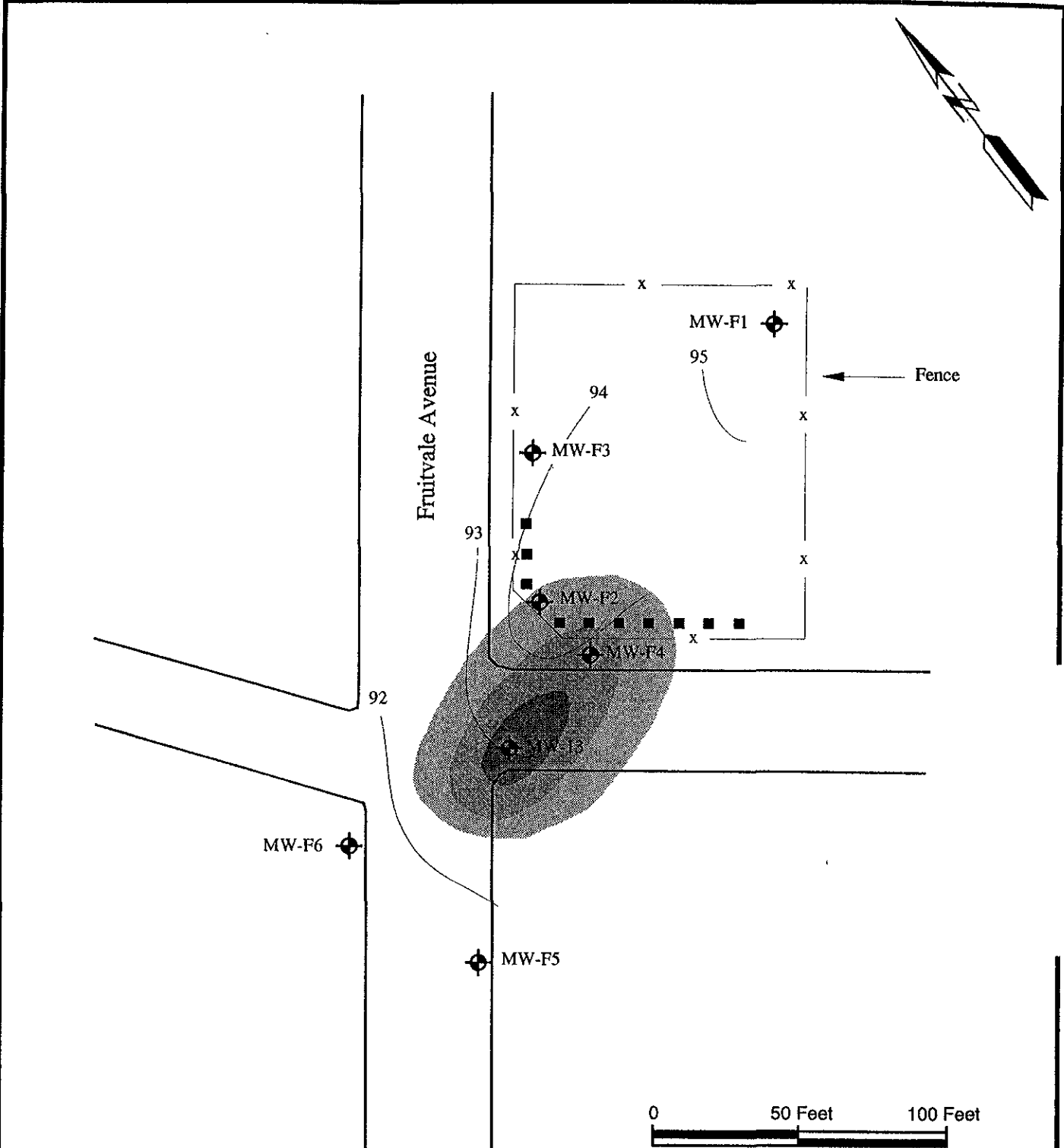
Location	2662 Fruitvale Avenue, Oakland, CA	Boring no.	MW-F6
Driller	Clear Heart Drilling	Project no.	92404-DO
Method	Hollow-stem auger	Date	6/26/95
Logger	WKS	Datum	
		Bore size	8 3/4
		Casing size	

Depth (ft.)	Graphic	Lithology	Notes
10	CH	Becoming mottled with greenish gray-reddish brown, silty CLAY with trace of sub-angular gravel, 1/2- to 3/4-inch diameter, moderately plastic, stiff, very moist.	3-8-7
11			
12	GP/GC	Brown GRAVEL with clay/clayey GRAVEL, 3/4- to 3-inch diameter, subangular sandstone and chert clasts, medium dense, high plasticity, wet.	Some free water between grains
13			
14	CH	Brown CLAY with sand and gravel, fine- to medium-grained sand, 1/2 - 1.5-inch angular clasts, firm, veinlets, wet.	
15			2-5-5 STP
16			6-inch recovery. Pushed gravel pin
17		Interbedding SAND and silty CLAY, 2-4 inches thick.	Soft, then hard drilling from 17 feet on.
18	SW/CL		
19			
20			

# DRILLING LOG

Location	2662 Fruitvale Avenue, Oakland, CA		Boring no.	MW-F6
Driller	Clear Heart Drilling		Project no.	92404-DO
Method	Hollow-stem auger		Date	6/26/95
Logger	WKS	Datum	Bore size	8 3/4
			Casing size	

Depth (ft.)	Graphic	Lithology	Notes
20		Interbedding SAND with silt and CLAY with silt, trace of gravel, fine- to medium-grained, loose, wet.	3-4-6
	SW		
		Four-inch clay layer.	
	CL		
21		Interbedding SAND with silt and CLAY with silt, trace of gravel, fine- to medium-grained, loose, wet.	
	SW		
22		Total depth = 21.5 feet	
23			
24			
25			
26			
27			
28			
29			
30			



- Legend**
- Approximate Location of Monitoring Wells
  - Approximate Location of Soil Borings
  - TPHg  $\geq 0.1$  mg/L from March 1998 Quarterly Monitoring
  - TPHg  $\geq 1$  mg/L from March 1998 Quarterly Monitoring
  - TPHg  $\geq 10$  mg/L from March 1998 Quarterly Monitoring
  - Groundwater Contours from March 1998 Quarterly Monitoring

Source: Modified from Figure 3, Groundwater Elevation Contour Map, 13 December 1996, **BASILINE**.

## ATTACHMENT 6

**APPROXIMATE LOCATIONS OF SOIL BORINGS FOR PLACEMENT OF ORC**

2662 Fruitvale Avenue  
Oakland, California



**CITY OF OAKLAND**

**INNOVATIVE TECHNICAL SOLUTIONS, INC.**

# ATTACHMENT 7

## CAMBRIA

**Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California**

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-F4	3/29/2002	12:30	7.40	--	--	--
MW-F4	5/20/2002	13:00	8.4	--	18.8	4.0
MW-F4	5/20/2002	16:20	--	3.3	19.0	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>3.3</b>		
MW-F4	5/22/2002	9:30	9.6	--	--	17.1
MW-F4	5/23/2002	9:00	9.1	--	21.9	13.6
MW-F4	5/23/2002	9:30	--	3.3	--	--
MW-F4	5/23/2002	11:00	--	--	23.1	--
MW-F4	5/23/2002	12:15	--	--	22.4	--
MW-F4	5/23/2002	13:30	--	--	23.4	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>3.3</b>		
MW-F4	5/28/2002	10:45	12.0	--	20.5	19.1
MW-F4	5/28/2002	11:20	--	2.5	--	--
MW-F4	5/28/2002	12:05	--	--	21.8	--
MW-F4	5/28/2002	12:30	--	--	21.4	--
MW-F4	5/28/2002	13:00	--	--	21.3	--
MW-F4	5/28/2002	13:30	--	--	22.8	--
MW-F4	5/28/2002	14:00	--	--	22.1	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>2.5</b>		
MW-F4	5/30/2002	12:00	12.2	--	23.1	19.8
MW-F4	5/30/2002	13:00	--	3	--	--
MW-F4	5/30/2002	13:10	--	--	24.7	--
MW-F4	5/30/2002	13:30	--	--	24.8	--
MW-F4	5/30/2002	14:00	--	--	24.6	--
MW-F4	5/30/2002	14:30	--	--	24.5	--
MW-F4	5/30/2002	15:00	--	--	24.5	--
MW-F4	5/30/2002	15:30	--	--	24.3	--
MW-F4	5/30/2002	16:00	--	--	24.1	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>3</b>		
MW-F4	6/3/2002	13:30	11.3	--	21.2	15.2
MW-F4	6/3/2002	14:00	--	2.5	--	--
MW-F4	6/3/2002	15:00	--	--	21.2	--
MW-F4	6/3/2002	15:30	--	--	24.2	--
MW-F4	6/3/2002	16:00	--	--	24.4	--
MW-F4	6/3/2002	16:30	--	--	24.4	--
MW-F4	6/3/2002	17:00	--	--	23.4	--
MW-F4	6/3/2002	17:30	--	--	24.3	--
MW-F4	6/3/2002	18:00	--	--	24.1	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>2.5</b>		
MW-F4	6/6/2002	10:30	9.2	--	21.7	12.4
MW-F4	6/6/2002	11:15	--	2.5	--	--
MW-F4	6/6/2002	11:30	--	--	25.3	--
MW-F4	6/6/2002	12:00	--	--	24.4	--
MW-F4	6/6/2002	12:30	--	--	23.7	--
MW-F4	6/6/2002	13:00	--	--	23.5	--
MW-F4	6/6/2002	13:30	--	--	23.6	--
MW-F4	6/6/2002	14:30	--	--	22.8	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>2.5</b>		

# CAMBRIA

**Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California**

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-F4	6/10/2002	11:30	10.1	--	24.1	15.4
MW-F4	6/10/2002	12:00	--	3	--	--
MW-F4	6/10/2002	12:30	--	--	24.8	--
MW-F4	6/10/2002	13:00	--	--	24.8	--
MW-F4	6/10/2002	13:30	--	--	25.6	--
MW-F4	6/10/2002	14:00	--	--	25.3	--
MW-F4	6/10/2002	15:00	--	--	25.5	--
MW-F4	6/10/2002	15:15	--	--	25.7	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>3</b>		
MW-F4	6/13/2002	10:45	9.3	--	19.4	>19.9
MW-F4	6/13/2002	11:30	--	3	--	--
MW-F4	6/13/2002	12:00	--	--	20.8	--
MW-F4	6/13/2002	12:30	--	--	22.9	--
MW-F4	6/13/2002	13:00	--	--	22.4	--
MW-F4	6/13/2002	13:30	--	--	22.2	--
MW-F4	6/13/2002	14:30	--	--	22.2	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>3</b>		
MW-F4	6/17/2002	9:20	10.9	--	--	>19.9
MW-F4	6/24/2002	12:50	10.05	--	--	>19.9
<b>Total gallons of H<sub>2</sub>O<sub>2</sub> injected In to MW-F4:</b>				<b>23.1</b>		
-----						
MW-13	3/29/2002	12:35	10.30	--	--	--
MW-13	5/20/2002	13:30	10.4	--	19.6	6.7
MW-13	5/20/2002	14:00	--	--	20.3	--
MW-13	5/20/2002	16:20	--	10	19.2	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>10</b>		
MW-13	5/22/2002	9:30	13.4	--	--	15.9
MW-13	5/23/2002	10:00	10.2	--	21.4	4.9
MW-13	5/23/2002	10:30	--	5	--	--
MW-13	5/23/2002	11:00	--	--	23.4	--
MW-13	5/23/2002	12:15	--	1	24.1	--
MW-13	5/23/2002	13:30	--	--	23.9	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>6</b>		
MW-13	5/28/2002	11:30	13.9	--	21.5	11.7
MW-13	5/28/2002	12:00	--	5	22.3	--
MW-13	5/28/2002	12:05	--	1.5	--	--
MW-13	5/28/2002	12:30	--	--	24.1	--
MW-13	5/28/2002	13:00	--	--	22.6	--
MW-13	5/28/2002	13:30	--	--	23.7	--
MW-13	5/28/2002	14:00	--	--	23.3	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>6.5</b>		

# CAMBRIA

**Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California**

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-13	5/30/2002	12:00	15.85	--	21.7	18.9
MW-13	5/30/2002	13:00	--	5	--	--
MW-13	5/30/2002	13:10	--	--	26.9	--
MW-13	5/30/2002	13:30	--	--	25.0	--
MW-13	5/30/2002	13:40	--	0.5	--	--
MW-13	5/30/2002	14:00	--	--	25.5	--
MW-13	5/30/2002	14:05	--	1.5	--	--
MW-13	5/30/2002	14:30	--	--	25.2	--
MW-13	5/30/2002	15:00	--	--	25.1	--
MW-13	5/30/2002	15:30	--	--	25.5	--
MW-13	5/30/2002	16:00	--	--	27.1	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>7</b>		
MW-13	6/3/2002	13:30	14.7	--	21.4	17.4
MW-13	6/3/2002	14:00	--	3.5	--	--
MW-13	6/3/2002	15:00	--	3	22.3	--
MW-13	6/3/2002	15:30	--	1	22.6	--
MW-13	6/3/2002	16:00	--	--	25.1	--
MW-13	6/3/2002	16:30	--	--	24.1	--
MW-13	6/3/2002	17:00	--	--	25.3	--
MW-13	6/3/2002	17:30	--	--	23.9	--
MW-13	6/3/2002	18:00	--	--	24.7	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>7.5</b>		
MW-13	6/6/2002	10:30	15.1	--	23.9	18.2
MW-13	6/6/2002	11:15	--	9	--	--
MW-13	6/6/2002	11:30	--	--	26.6	--
MW-13	6/6/2002	11:45	--	1	--	--
MW-13	6/6/2002	12:00	--	--	26.3	--
MW-13	6/6/2002	12:15	--	1	--	--
MW-13	6/6/2002	12:30	--	--	26.5	--
MW-13	6/6/2002	12:45	--	1	--	--
MW-13	6/6/2002	13:00	--	--	27.3	--
MW-13	6/6/2002	13:15	--	0.5	--	--
MW-13	6/6/2002	13:30	--	--	25.3	--
MW-13	6/6/2002	13:50	--	0.5	--	--
MW-13	6/6/2002	14:30	--	--	27.5	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>13</b>		
MW-13	6/10/2002	11:30	10.8	--	23.5	18.9
MW-13	6/10/2002	12:00	--	5	--	--
MW-13	6/10/2002	12:30	--	--	25.4	--
MW-13	6/10/2002	12:45	--	0.5	--	--
MW-13	6/10/2002	13:00	--	--	27.2	--
MW-13	6/10/2002	13:30	--	1	27.7	--
MW-13	6/10/2002	14:00	--	1	28.2	--
MW-13	6/10/2002	15:00	--	--	30.5	--
MW-13	6/10/2002	15:15	--	--	29.4	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>7.5</b>		

# CAMBRIA

**Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California**

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-13	6/13/2002	10:45	15.95	--	20.9	>19.9
MW-13	6/13/2002	11:30	--	5	--	--
MW-13	6/13/2002	12:00	--	--	21.2	--
MW-13	6/13/2002	12:15	--	1	--	--
MW-13	6/13/2002	12:30	--	--	22.7	--
MW-13	6/13/2002	12:45	--	0.5	--	--
MW-13	6/13/2002	13:00	--	--	22.9	--
MW-13	6/13/2002	13:15	--	0.5	--	--
MW-13	6/13/2002	13:30	--	--	22.8	--
<b>Gallons of H<sub>2</sub>O<sub>2</sub> injected this event:</b>				<b>7</b>		
MW-13	6/13/2002	14:30	--	--	22.0	--
MW-13	6/17/2002	9:40	14.6	--	--	>19.9
MW-13	6/24/2002	12:25	11.07	--	--	10.5
<b>Total gallons of H<sub>2</sub>O<sub>2</sub> injected in to MW-13:</b>				<b>64.5</b>		

## Abbreviations and Methods:

TOC in feet = Depth to water measured from the top of well casing in feet.

°C = degrees Celsius

mg/L = Milligrams per liter

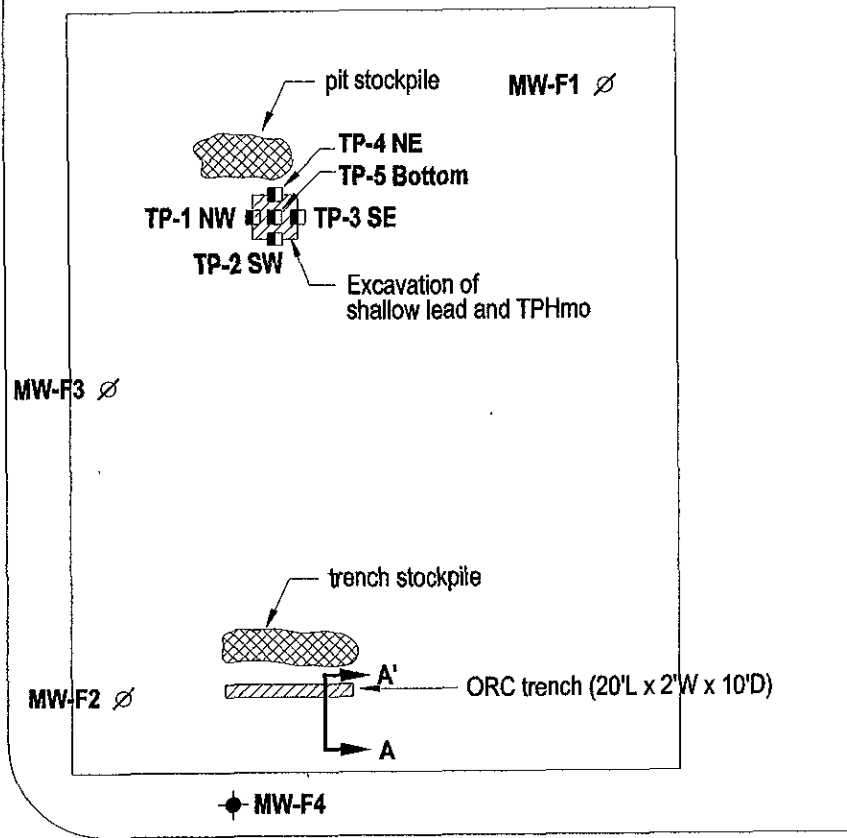
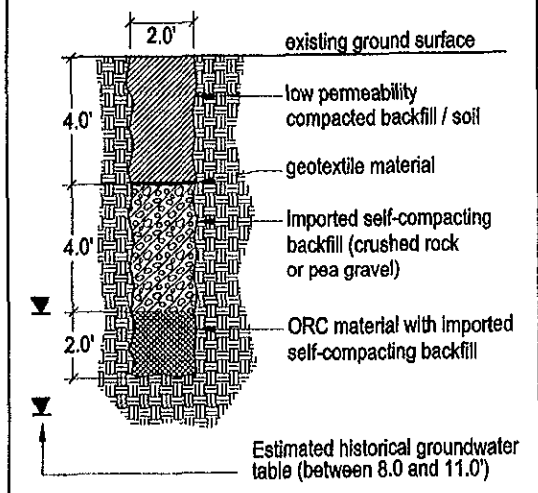
>19.9 = Dissolved oxygen concentration exceeds meter measurement limit of 19.9 mg/L.

Peroxide, H<sub>2</sub>O<sub>2</sub> = Hydrogen Peroxide



### Cross Section A - A'

Not to Scale



FRUITVALE AVENUE

DAVIS STREET

MW-13

MW-F6

Historical Groundwater Flow Direction

MW-F5

**EXPLANATION**

- MW-1 ● Monitoring well location
- MW-F1 ∅ Closed (decommissioned) well location
- P-1 NW ■ Soil sample location

FIGURE

2

## ATTACHMENT 8

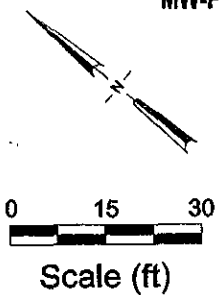
Excavation Locations



C A M B R I A

**City of Oakland**  
 2662 Fruitvale Avenue  
 Oakland, California

CITY OF OAKLAND 2662 FRUITVALE AVENUE EXC. LOC. DWG.



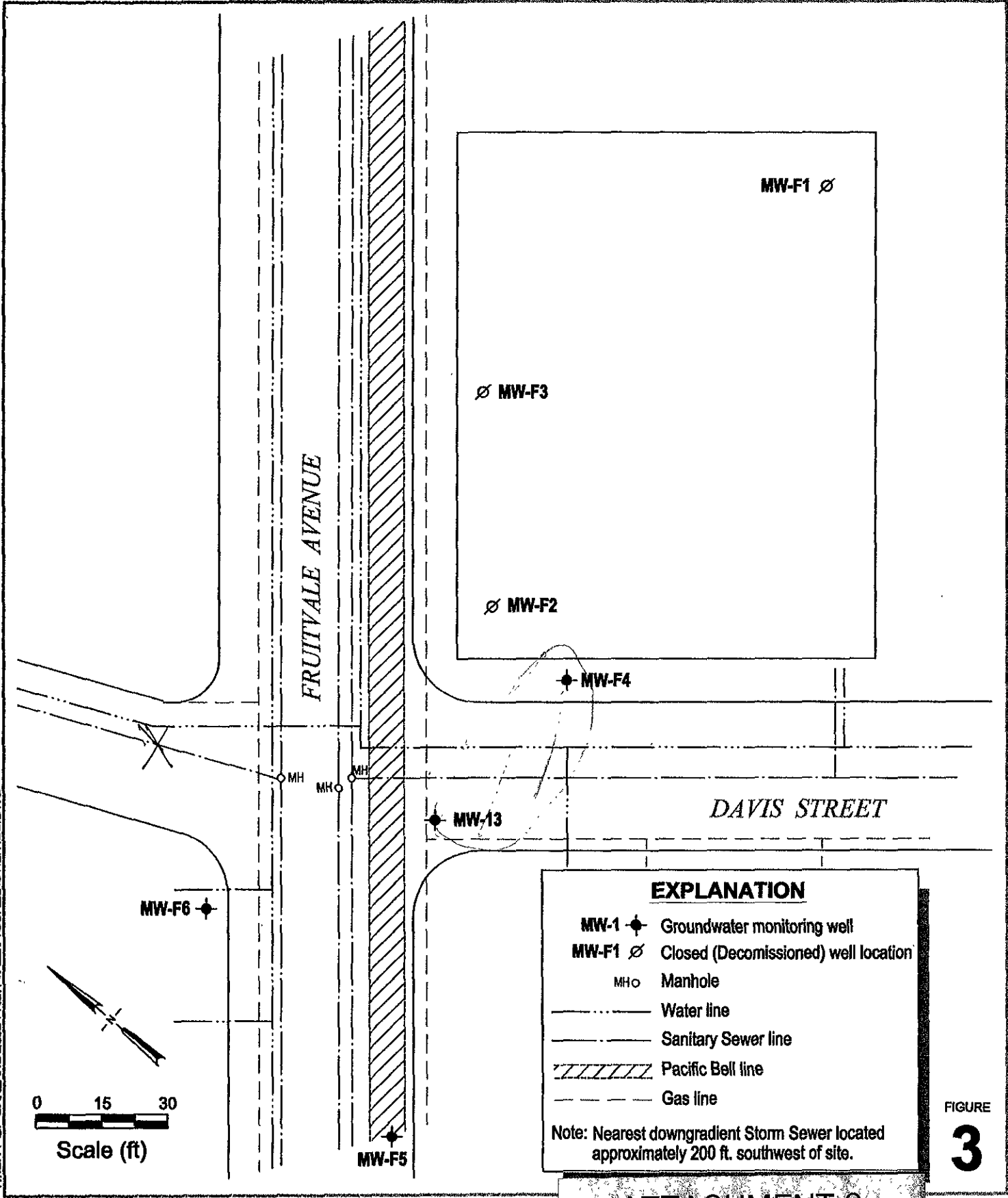
# CAMBRIA

**Table 1. Soil Analytical Data - City of Oakland, 2662 Fruitvale Avenue, Oakland, California**

Sample ID	Date Sampled	Sample Depth (ft)	mg/kg							
			TPHg	TPHk	TPHmo	Benzene	Toluene	Ethylbenzene	Xylenes	Lead
<i>Confirmation Samples</i>										
TP-1 NW	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	10
TP-2 SW	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	7.3
TP-3 SE	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	28
TP-4 NE	11/28/01	1.5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	8
TP-5 bottom	11/28/01	3.0	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	7.4
<i>Stockpile Samples</i>										
SP 1-4	11/28/01	---	<1.0	4.0	65	<0.005	<0.005	<0.005	<0.005	15
ST 1-6	11/28/01	---	33	28	5.3	<0.005	<0.005	<0.005	<0.005	9.4

**Abbreviations and Methods:**

mg/kg = Milligrams per kilogram, equivalent to parts per million (ppm)  
 TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015  
 TPHk = Total petroleum hydrocarbons as kerosene by EPA Method 8015  
 TPHmo = Total petroleum hydrocarbons as motor oil by EPA Method 8015  
 Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020  
 Lead by EPA Method 6010



FIGURE

3

# ATTACHMENT 9

**City of Oakland**

2662 Fruitvale Avenue

Oakland, California



**Underground Utility Locations**

C A M B R I A

## ATTACHMENT 10

Table 2

Summary of Laboratory Results for Groundwater Samples  
2662 Fruitvale Avenue  
Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F1	08/16/93	<0.05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	-	-	-	-	-	-	<0.10	8.5	38	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.1	<0.10	7.7	38	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.90	<0.10	11	38	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	7.1	38	
06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	30	35		
No longer part of semi-annual monitoring program											
MW-F2	08/16/93	<0.05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	0.096	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	0.34	<0.0005	<0.0005	<0.0005	0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/27/96	0.064	0.0012	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	0.06	<0.0005	<0.0005	<0.0005	<0.0005	-	0.24	0.20	8	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.1	<0.10	<0.05	7.4	
	03/11/98	0.20	0.00088	<0.0005	<0.0005	<0.0005	4.8	0.18	<0.05	7.1	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.25	<0.10	<0.05	7.8	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<1.0	<1.0	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<0.2	9	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	53	<0.10	<1.0	2	
12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	<1.0	9.9		
MW-F3	08/16/93	<0.1	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	0.13	<0.0005	0.0013	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	0.11	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	0.35	0.0008	<0.0005	0.0012	0.0007	-	-	-	-	1
	06/27/96	0.088	0.002	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	0.18	<0.0005	<0.0005	<0.0005	<0.0005	-	0.11	0.69	23	1
	6/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.46	0.16	0.70	23	
	3/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.11	0.20	2.5	28	
12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.31	0.12	0.97	30		
6/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	3	38		
No longer part of semi-annual monitoring program											

Table 2 (Continued)

Summary of Laboratory Results for Groundwater Samples  
2662 Fruitvale Avenue  
Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F4	09/09/94*	3.5	0.029	0.003	0.038	0.099	-	-	-	-	1
	12/21/94	37	0.66	28	2.3	5.9	-	-	-	-	1
	06/30/95	9.2	0.18	<0.1	0.76	1.0	-	-	-	-	1
	12/29/95	38	0.61	0.019	4.3	5.8	-	-	-	-	1
	06/27/96	6.2	0.081	0.14	0.52	0.29	-	-	-	-	1
	12/13/96	27	0.39	0.05	3.2	3.7	-	6.6	<0.05	<2	1
	06/26/97	6.2	0.16	0.018	0.71	0.32	2.4	3.1	<0.05	0.2	
	03/11/98	9.5	0.062	0.03	1.0	0.80	1.2	3.0	<0.05	<0.1	
	12/11/98	12	0.34	0.051	2.0	0.62	5.7	5.9	<0.05	1.5	
	06/29/99	10	0.23	0.032	1.6	0.30	0.93	0.90	<1.0	9	
	01/21/00	7.9	0.033	<0.005	1.0	0.25	13	2.7	<0.2	<1.0	
	06/27/00	10	0.08	<0.025	1.1	0.32	160	<0.10	<1.0	<1.0	
	10/6/00	3	0.011	0.0018	0.12	0.069	0.24	<0.10	2.1	38	
	11/13/00	3.9	0.039	0.016	0.84	0.30	0.14	<0.10	<1.0	13	
12/22/00	4.7	0.033	0.0096	0.85	0.34	0.32	0.17	<1.0	11		
MW-F5	06/30/95	0.10	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	0.0007	-	-	-	-	1
	06/27/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	6.6	45	1
	06/26/97	<0.05	0.0032	0.0064	0.0073	0.0042	0.21	<0.1	6.1	45	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	6.1	45	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.58	0.19	6.0	41	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	23	50	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.14	<0.10	5.2	42	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	60	<0.10	20	37	
12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	23	56		
MW-F6	06/30/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/27/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.10	0.44	39	1
	06/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.22	0.18	<0.05	47	
	03/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	0.14	49	
	12/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.24	0.11	0.06	43	
	06/29/99	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	0.93	<1.0	54	
	01/21/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.11	<0.10	0.5	42	
	06/27/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	10	<0.10	<1.0	9	
12/22/00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.29	0.15	1.1	61		

Table 2 (Continued)

Summary of Laboratory Results for Groundwater Samples  
2662 Fruitvale Avenue  
Oakland, California

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-13	12/21/94	3.3	0.33	<0.013	0.024	0.24	-	-	-	-	1
	06/30/95	22	0.85	<0.0005		1.6	-	-	-	-	1
	12/29/95	22	0.97	0.078		2.4	-	-	-	-	1
	06/27/96	18	0.63	0.026		1.0	-	-	-	-	1
	12/13/96	16	0.61	0.04		1.0	-	6.8	<0.05	<2	1
	6/26/97*	11	0.42	0.037	0.64	0.26	7.7	6.9	<0.05	0.3	
	3/11/98*	13	0.30	<0.025	0.43	0.51	4.3	6.7	<0.05	2.3	
	12/11/98	12	0.47	0.048		0.48	6.6	7.0	<0.05	16	
	06/29/99	7	0.54	0.13	0.44	0.11	1.3	1.3	<1.0	11	
	01/21/00	7.3	0.036	<0.005	0.62	0.22	7.3	6.9	<0.2	<1.0	
	06/27/00	6.1	0.31	<0.025	0.27	0.038	15	<0.10	1	2	
	10/6/00	4.6	0.10	<0.025	0.19	0.036	4.3	3.5	<1	5.4	
	11/13/00	6.0	0.26	0.035	0.47	0.12	4.5	1.4	1.1	1.7	
	12/22/00	9.2	0.22	0.033	0.53	0.12	6.7	6.7	1.0	<1.0	
MCL	-	-	0.001	0.150	0.700	1.75	-	-	-	-	

Note: Bold indicates detected concentrations. Shaded indicates concentrations exceeding MCLs.

1 Historical laboratory data provided by Baseline Environmental Consulting.

\* Higher concentration reported for either the sample or field duplicate sample (QC/1)

Table 3

Summary of Groundwater Analytical Data for Wells MW-4 and MW-13, February 13, 2004  
 2662 Fruitvale Avenue  
 Oakland, California

Monitoring Well ID	Date Sampled	TPHg ( $\mu\text{g/l}$ )	Benzene ( $\mu\text{g/l}$ )	Toluene ( $\mu\text{g/l}$ )	Ethylbenzene ( $\mu\text{g/l}$ )	Xylenes ( $\mu\text{g/l}$ )
MW-F4	2/13/2004	6,100	42	2.6	650	12.4
MW-F4 (duplicate)	2/13/2004	6,300	48	5.6	680	12.2
MW-13	2/13/2004	4,500	42	5.2	38	7.4
RWQCB ESLs		500	46	130	290	130
City of Oakland RBSLs for Groundwater (inhalation of outdoor air vapors)		NA	1,300,000	>SOL	>SOL	>SOL

Notes:

$\mu\text{g/l}$  = micrograms per liter

ESL = Environmental Screening Limit

RBSL = Risk-Based Screening Limit

SOL = solubility

C A M B R I A

**SITE REMEDIATION AND CLOSURE REPORT**

2662 Fruitvale Avenue  
Oakland, California 94621  
Cambria Project #153-1664-028

January 14, 2002

*Prepared for:*

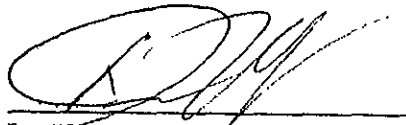
City of Oakland, Public Works Agency  
Environmental Services Division  
250 Frank H. Ogawa Plaza, Ste. 5301  
Oakland, California 94612-2034

*Prepared by:*

Cambria Environmental Technology, Inc.  
1144 65th Street, Suite B  
Oakland, California 94608



Oakland, CA  
San Ramon, CA  
Sonoma, CA

  
Ian Young  
Senior Staff Geologist

  
Bob Clark-Riddell, P.E.  
Principal Engineer

**Cambria  
Environmental  
Technology, Inc.**

1144 65th Street  
Suite B  
Oakland, CA 94608  
Tel (510) 420-0700  
Fax (510) 420-9170



# C A M B R I A

January 14, 2002

Mr. Barney Chan  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

Re: **Risk Management Plan**  
2662 Fruitvale Avenue  
Oakland, California 94621  
Cambria Project #153-1664-028



Dear Mr. Chan:

On behalf of the City of Oakland, Cambria Environmental Technology, Inc., (Cambria) is submitting this Risk Management Plan (RMP) for the above-referenced site. The Alameda County Health Care Services Agency (ACHCSA) frequently requires a RMP as a condition of regulatory case closure. The site background and the RMP are presented below.

## **SITE BACKGROUND**

*Site Location and UST Status:* The Site is located on the northeast corner of Fruitvale Avenue and Davis Street in Oakland, California. The area use is mixed commercial and residential. Cambria understands that an automobile service station occupied the Site from the 1940s until 1978. The underground storage tanks (USTs), including three gasoline USTs and one additional UST (presumably used for waste oil storage), were removed from the Site in 1978. The City of Oakland purchased the property from Texaco in 1983.

*Lithology:* The site lithology consists primarily of clays. Below approximately 8-10 ft below ground surface (bgs), sands and gravels are encountered, though in the northeastern portion of the site, sands were encountered between 1 and 4 ft bgs. Local lithologic variation is consistent with general categories for soils within the City of Oakland (Merritt sands, sandy silts, and clayey silts), as detailed in the City of Oakland 2000 *Oakland Risk-Based Corrective Action: Technical Background Document*.

*Groundwater Depth and Flow Direction:* Depth to groundwater is approximately 8 to 11 ft bgs, and groundwater flows towards the west-southwest with an approximate gradient of 0.02 ft/ft.

Oakland, CA  
San Ramon, CA  
Sonoma, CA

**Cambria  
Environmental  
Technology, Inc.**

1144 65th Street  
Suite 8  
Oakland, CA 94608  
Tel (510) 420-0700  
Fax (510) 420-9170

*Nearby Surface Water:* Sausal Creek is located approximately 500 ft west of the subject site. Peralta Creek is located approximately 1,500 ft east-southeast of the subject site.

*Investigation and Remediation:* Petroleum hydrocarbons and lead in soil and groundwater have been investigated and remediated under regulatory oversight by the ACHCSA. Additional investigation and remediation information, including a risk evaluation and remediation goals, is presented in Attachment A.



## RISK MANAGEMENT PLAN

A copy of this RMP should be provided to the City of Oakland Community and Economic Development Agency for its records. The objective of this RMP is to protect potential future site occupants, construction workers, groundwater resources, and the environment.

1. Notice of change in land use for this property should be sent to:

Alameda County Health Care Services Agency  
Environmental Health Services  
Environmental Protection (LOP)  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

2. Due to the presence of residual gasoline in the subsurface, construction workers who may handle subsurface soil (soil at depths greater than 3 ft below ground surface) during future construction activities should take appropriate precautions. A health and safety plan should be prepared that requires Level D protection for all workers as per Occupational Health and Safety Administration (OSHA) rules (29 CFR 1910.120). Level D protection generally includes gloves, work clothes, boots, and hard hats, if required. If site excavation activities encounter hydrocarbon odor, hydrocarbon staining, or any other indication of the potential presence of petroleum hydrocarbons, air quality monitoring should be performed. Until air quality in the work area is determined, construction workers should have OSHA Level C protection. Level C protection generally includes at a minimum a half-face filtering respirator with organic vapor cartridges, nitrile or latex gloves, and the protection specified in Level D. In the event that groundwater is encountered during construction activities, direct contact with the groundwater should be avoided.
3. If subsurface soil is excavated during site construction activities, a soil management plan governing sampling of excavated soil to determine disposal or reuse options should be prepared and submitted to the ACHCSA. If it becomes necessary to evacuate any

Mr. Barney Chan  
January 14, 2002

groundwater during site construction activities, such groundwater should be stored in temporary containers and analyzed for disposal options.

4. The shallow groundwater beneath the property should not be used for any purpose, unless analyzed and treated, if necessary. If shallow groundwater is proposed for use, appropriate notice should be given to the ACHCSA.


**CLOSING**

If you require any additional information, please contact Cambria at (510) 420-0700.

Sincerely,  
**Cambria Environmental Technology, Inc.**



Ian D. Young  
Senior Staff Geologist



Bob Clark-Riddell, P.E.  
Principal Engineer

Attachment: A – January 14, 2002, Site Remediation and Closure Report

cc: Mr. Joseph Cotton, R.G., City of Oakland, Public Works Agency,  
Environmental Services Division  
250 Frank H. Ogawa Plaza, Ste. 5301  
Oakland, California 94612-2034