ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

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

November 17, 2010

John Prall (*Sent via E-mail to: JPrall@portoakland.com*)
Port of Oakland
530 Water Street, 4th Floor
Oakland, CA 94607-3584

Subject: Fuel Leak Case No. RO0000019 and GeoTracker Global ID T0600101102, Port of Oakland, 801 Maritime Street, Oakland, CA 94607

Dear Mr. Prall:

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:

- Residual contamination consisting of 150 mg/kg TPH-diesel in soil and 150 µg/L TPH-diesel in groundwater remain at the site.
- Fuel oxygenates other than MTBE were not analyzed.

If you have any questions, please call Paresh Khatri at (510) 777-2478. Thank you.

Sincerely,

Donna L. Drogos, P.E.
Division Chief

Enclosures: 1. Remedial Action Completion Certificate
2. Case Closure Summary

cc:

Ms. Cherie McCaulou (w/enc)
SF- Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(Sent via E-mail to:
CMccaulou@waterboards.ca.gov)

Closure Unit (w/enc)
State Water Resources Control Board
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 94244-2120
(*Sent via E-mail*)

Paresh Khatri (w/orig enc), D. Drogos (w/enc), T. Le-Khan (w/enc)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
OFFICE OF THE DIRECTOR
1131 HARBOR BAY PARKWAY
ALAMEDA, CA 94502
(510) 567-6777
FAX (510) 337-9135

November 17, 2010

John Prall (*Sent via E-mail to: JPrall@portoakland.com*)
Port of Oakland
530 Water Street, 4th Floor
Oakland, CA 94607-3584

REMEDIAL ACTION COMPLETION CERTIFICATE

Subject: Fuel Leak Case No. RO0000019 and GeoTracker Global ID T0600101102, Port of Oakland, 801 Maritime Street, Oakland, CA 94607

Dear Mr. Prall:

This letter confirms the completion of a site investigation and remedial action for the underground storage tanks 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 25296.10 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.3 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,

Arlu Levi
Director
Alameda County Environmental Health

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

I. AGENCY INFORMATION

Date: June 24, 2010

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502-6577	Phone: (510) 777-2478
Responsible Staff Person: Paresh Khatri	Title: Hazardous Materials Specialist

II. CASE INFORMATION

Site Facility Name: Port of Oakland		
Site Facility Address: 801 Maritime Street, Oakland, California 94607		
RB Case No.: 01-1199	StID #.: 3780	LOP Case No.: RO0000019
URF Filing Date: ---	Global ID No.: T0600101102	APN: O-320-1-2

Responsible Parties	Addresses	Phone Numbers
John Prall Port of Oakland	530 Water Street, 4th Floor Oakland, CA 94607-3584	(510) 272-1100
---	---	---

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
CF-06	10,000-gallon	Diesel	Removed	2/16/1989
CF-07	10,000-gallon	Diesel	Removed	2/16/1989
CF-35	20,000-gallon	Diesel	Removed	2/16/1989
---	---	---	---	---
Piping			Removed	2/16/1989

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Unknown, USTs appeared intact upon removal		
Site characterization complete? Yes	Date Approved By Oversight Agency: ---	
Monitoring wells installed? Yes	Number: 1	Proper screened interval? Yes
Highest GW Depth Below Ground Surface: 6.66 ft bgs	Lowest Depth: 7.82 ft bgs	Flow Direction: Gradient is flat, but assumed westerly
Most Sensitive Current Use: Potential drinking water source.		

Summary of Production Wells in Vicinity: A ¼-mile radius well survey conducted at the site identified one cathodic protection well (located at the intersection of Maritime and 8th Street) up-gradient of the site. No other wells, besides monitoring wells, were identified in the well survey.	
Are drinking water wells affected? No	Aquifer Name: East Bay Plain Groundwater Basin
Is surface water affected? No	Nearest SW Name: San Francisco Bay located approximately 2,000 feet west of the site.
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Reports on file? Yes	Where are reports filed? Alameda County Environmental Health

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	Two 10,000-gallon One 20,000-gallon	Disposal, H & H Ship Service Co, San Francisco, CA	2/16/1989
Piping	120 feet	Disposal, H & H Ship Service Co, San Francisco, CA	2/16/1989
Free Product	None reported	---	---
Soil	1,500 cubic yards	Treatment	1989
Groundwater	None reported	---	---

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)	36 (RM-5-5, 3/15/2007)	36 (RM-5-5, 3/15/2007)	480 (W-1/W-2/W-3, 2/16/89)	80 (MW-1, 9/25/2008)
TPH (Diesel)	3,600 (B-2, 2/16/1989)	150 (RM-5-5, 3/15/2007)	21,000 (W-1/W-2/W-3, 2/16/89)	150 (RM-13, 9/25/2008)
TPH (Motor Oil)	NA	NA	NA	NA
Benzene	0.025 (C-1, 2/16/1989)	<0.015	19 (W-1/W-2/W-3, 2/16/89)	3.4 (MW-1, 9/25/2008)
Toluene	0.067 (RM-5-5, 3/15/2007)	0.067 (RM-5-5, 3/15/2007)	26 (W-1/W-2/W-3, 2/16/89)	1.9 (MW-1, 9/25/2008)
Ethylbenzene	0.036 (RM-5-5, 3/15/2007)	0.036 (RM-5-5, 3/15/2007)	17 (W-1/W-2/W-3, 2/16/89)	1.0 (MW-1, 9/25/2008)
Xylenes	0.045 (C-1, 2/16/1989)	0.18 (RM-5-5, 3/15/2007)	78 ((W-1/W-2/W-3, 2/16/89)	4.6 (MW-1, 9/25/2008)
MTBE	<0.05[3]	<0.05[3]	4[1] (RM-5, 3/15/2007)	4[1] (RM-5, 3/15/2007)
Heavy Metals (Cd, Cr, Pb, Ni, Zn)	NA	NA	NA	NA
Other 8240/8260	NA	NA	NA	NA

[1] Other VOCs analyzed in groundwater: 4.0 µg/L MtBE; TBA, DIPE, ETBE, TAME, EDB, 1.2-DCA all not analyzed.
[3] Other VOCs analyzed in soil: <0.05 mg/kg MTBE; TBA, DIPE, ETBE, TAME, EDB, 1.2-DCA all not analyzed
[4] Total Recoverable Petroleum Hydrocarbons
NA - Not Analyzed

Site History and Description of Corrective Actions:

The site is located at the intersection of Maritime and Petroleum streets in Oakland, California (**Figure 1**). Warehouse structures formerly located on the property were demolished and the underground storage tanks (USTs) removed in February 1989 as part of the Port of Oakland plans to redevelop the site as a container storage area.

Evan Brothers, Inc. of Livermore, California removed the two 10,000-gallon and one 20,000 gallon USTs on February 16, 1989 following the approval by a representative of Oakland Fire Department. No evidence of corrosion, punctures, or leaks were detected in the tank exteriors during and after the tank removal. However, during tank removal activities, discolored soils and petroleum odors were detected in the tank area. Water accumulated in the tank excavation exhibited a sheen, but no floating product was observed. Ten soil samples and one groundwater sample was collected from the tank excavation (**Figure 2**). Soil sample analytical results detected up to 3,600 mg/kg total extractable petroleum hydrocarbons. Groundwater sample analytical results detected 480 µg/L total volatile petroleum hydrocarbons, 21,000 µg/L total extractable petroleum hydrocarbons and 19 µg/L benzene. Petroleum hydrocarbons were detected in samples collected from the product line trenches at depths of less than 1.5 feet bgs. Soil and groundwater sample analytical results are summarized on **Table 1**.

Since the analytical results confirmed petroleum hydrocarbon impact, additional removal of soil was undertaken. The final dimensions of the excavation were 52 feet by 64 feet with a maximum depth of 12 feet bgs. The sidewalls that detected the highest hydrocarbon concentrations (samples B-2 and C-2) were excavated and stockpiled in stockpiles #2 and #5. The walls of the excavation in those areas were inaccessible for sampling after soils removal due to site constraints. Approximately 1,500 cubic yards of hydrocarbon impacted soil greater than 1,000 mg/kg in TPH concentrations were excavated and treated onsite. Stockpile soil samples #2 and #5 contained diesel range hydrocarbons from 110 mg/kg to 920 mg/kg. Petroleum hydrocarbons were not detected above the laboratory detection limit in the other stockpiled samples. After treatment, the cleaned soil was transported to the Port's Building L-615 site at the Oakland North Field Airport and used as fill at the ground surface.

On July 3, 1996, an exploratory boring was installed to a depth of 18.5 feet bgs, just west of the former excavation at the site (**Figure 3**). The boring was converted to a 2-inch diameter, Schedule 40 PVC groundwater monitoring well MW-1. Soil sample analytical results detected TPH-d at a concentration of 7.1 mg/kg and did not detect benzene above the laboratory detection limit. Groundwater sample analytical results detected TPH-g, TPH-d, and benzene at concentrations of 180 µg/L, 7,100 µg/L, and 27 µg/L, respectively. Soil and groundwater sample analytical results are summarized on **Tables 2 and 3**.

To delineate the extent of soil and groundwater contamination at the site, A total of 10 borings, designated as RM-1 through RM-10 (see Figure 3), were advanced on March 15, 2007 at locations down-gradient and up-gradient from the location of the former USTs. The boring locations were positioned to delineate the suspected location of a contaminant plume. A total of 19 soil samples and 10 grab groundwater samples were collected from the 10 borings. TPH-g was detected in soil at a maximum concentration of 36 mg/kg. Grab groundwater sample analytical results indicate that only the grab groundwater sample from Boring RM-5 had detectable concentrations of TPH-g, TPH-d, toluene, ethylbenzene, xylenes, and MTBE. Benzene was not detected in any of the water samples, including the sample from RM-5. Boring locations are illustrated on **Figures 4 and 5** and analytical results are summarized on **Tables 4 and 5**.

On September 25, 2008, a total of 5 new borings were advanced: four (designated as RM-11 through RM-14) down-gradient of former boring location RM-5, and one (designated as RM-15) in the original source area, between the February 16, 1989 soil sampling locations B-2 and C-2, since confirmation over-excavation samples were not collected. TPH-g was detected in only one of the 10 soil samples and at a concentration of 0.98 mg/kg in the soil sample collected from a depth of approximately 7 ft at boring RM-14. TPH-d was detected at concentrations ranging from 2.0 mg/kg to 140 mg/kg in soil samples collected from 4 of the 5 borings. However, the laboratory qualified these results by noting that the chromatographic patterns for these samples did not resemble the TPH-d standard. Grab groundwater sample analytical results detected TPH-g and benzene in one of the borings at concentrations of 65 µg/L and 3.3 µg/L, respectively (RM-14). Boring locations are illustrated on **Figures 4 and 5** and analytical results are summarized on **Tables 6 and 7**.

Geology & Hydrogeology:

The site is located in Oakland, California, to the east of San Francisco Bay, which is situated in the Coastal Range geomorphic province, characterized by northwesterly-trending mountains and valleys. San Francisco Bay occupies a Pliocene age structural depression. The San Francisco Bay is underlain by Late Piocene-Early Pliestocene alluvial sediment. The upper 500 feet of this coarse, poorly-sorted, sediment is derived mainly from the Sacramento-San Joaquin drainage system. Bay Mud, the youngest deposit in the San Francisco Bay, is a soft, unconsolidated sediment generally consisting of 90 percent clay and silt-size detritus and is prevalent in the area.

Soil types encountered at the site include sand, silt and clay. Silty to gravelly sands were encountered from the surface grade to approximately 8 feet bgs, which was underlain by sandy silty to sandy clay to the total depth explored at 18 feet bgs. During drilling, groundwater was observed at approximately 6 feet bgs and had stabilized at 7.36 feet below the top of the casing on July 10, 1996.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes		
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 significant risk to human health based upon current land use and conditions.		
Site Management Requirements: Case closure for this fuel leak site is granted for the current industrial land use only. If a change in land use to any commercial, residential, or other conservative land use scenario is proposed at this site, Alameda County Environmental Health (AECH) must be notified as required by Government Code Section 65850.2.2. ACEH will re-evaluate the case upon receipt of approved development/construction plans. Excavation or construction activities in areas of residual contamination require planning and implementation of appropriate health and safety procedures by the responsible party (or current property owner/developer) prior to and during excavation and construction activities. This site is to be entered into the City of Oakland Permit Tracking System due to the residual contamination on site.		
Should corrective action be reviewed if land use changes? Yes.		
Was a deed restriction or deed notification filed? No		Date Recorded: --
Monitoring Wells Decommissioned: Yes	Number Decommissioned: 1	Number Retained: 0
List Enforcement Actions Taken: None		
List Enforcement Actions Rescinded: --		

V. ADDITIONAL COMMENTS, DATA, ETC.

Considerations and/or Variances:

- Residual hydrocarbons in soil at concentrations of 150 mg/kg TPH-d and 150 µg/L TPH-d in groundwater remain at the site.
- Fuel oxygenates other than MTBE were not analyzed.

Conclusion:

Alameda County Environmental Health staff believe that the levels of residual contamination do not pose a significantly threat to water resources, public health and safety, and the environment under the current industrial land use based upon the information available in our files to date. No further investigation or cleanup for the fuel leak case is necessary unless a change in land use to any commercial, residential, or other conservative land use scenario occurs at the site. ACEH staff recommend closure for the site.

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Paresh Khatri	Title: Hazardous Materials Specialist
Signature:	Date: June 24, 2010
Approved by: Donna L. Drogos, P.E.	Title: Division Chief
Signature:	Date: 06/24/10

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: Cherie McCaulou	Title: Engineering Geologist
Notification Date: June 24, 2010	

VIII. MONITORING WELL DECOMMISSIONING

Date Requested by ACEH: NA	Date of Well Decommissioning Report: NA	
All Monitoring Wells Decommissioned: Yes	Number Decommissioned: 1	Number Retained: 0
Reason Wells Retained: All MWs decommissioned		
Additional requirements for submittal of groundwater data from retained wells: None		
ACEH Concurrence - Signature:		Date: 6/24/2010

Attachments:

1. Site Figures 1 through 8
2. Analytical Tables 1 through 7
3. Boring Logs (16 pp)

This document and the related CASE CLOSURE LETTER & REMEDIAL ACTION COMPLETION CERTIFICATE shall be retained by the lead agency as part of the official site file.

Khatri, Paresh, Env. Health

From: Cherie MCcaulou [CMccaulou@waterboards.ca.gov]
Sent: Wednesday, June 30, 2010 10:56 AM
To: Khatri, Paresh, Env. Health
Subject: Re: Fwd: FW: RO0000019; Closure Summary for Port of Oakland (T0600101102)

Paresh - Thanks for the notification. As noted below, the Port of Oakland has another site at Berth 24 that has TPH and methane issues. We have no objection to ACEH's recommendation for case closure of Case #RO00019, however, you may want to notify the interested parties below. Thanks, Cherie

Sincerely,

Cherie McCaulou
Engineering Geologist
San Francisco Bay Regional Water Quality Control Board
cmccaulou@waterboards.ca.gov
510-622-2342

>>> Cleet Carlton 6/24/2010 5:24 PM >>>
This site appears to lie immediately upgradient of the Port of Oakland, Berth 24 case (01S0370), where TPH and methane are the concern. I think it would be appropriate to let the RP and consultant know about this closure proposal and have a chance to chime in as to whether this case closure would negatively affect the Berth 24 case.

The consultant contacts are:

James C. Twiford
Acton Mickelson Environmental, Inc.
1107 Investment Blvd., Suite 290
El Dorado Hills, CA 95762
(916) 939-9107

Barbara J. Mickelson
Acton Mickelson Environmental, Inc.
1107 Investment Boulevard, Suite 290
El Dorado Hills, California 95762
Phone 916-939-7550
Facsimile 916-939-7570
Mobile 916-813-2680

Cleet Carlton, P.G.
Engineering Geologist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612
(510) 622-2374

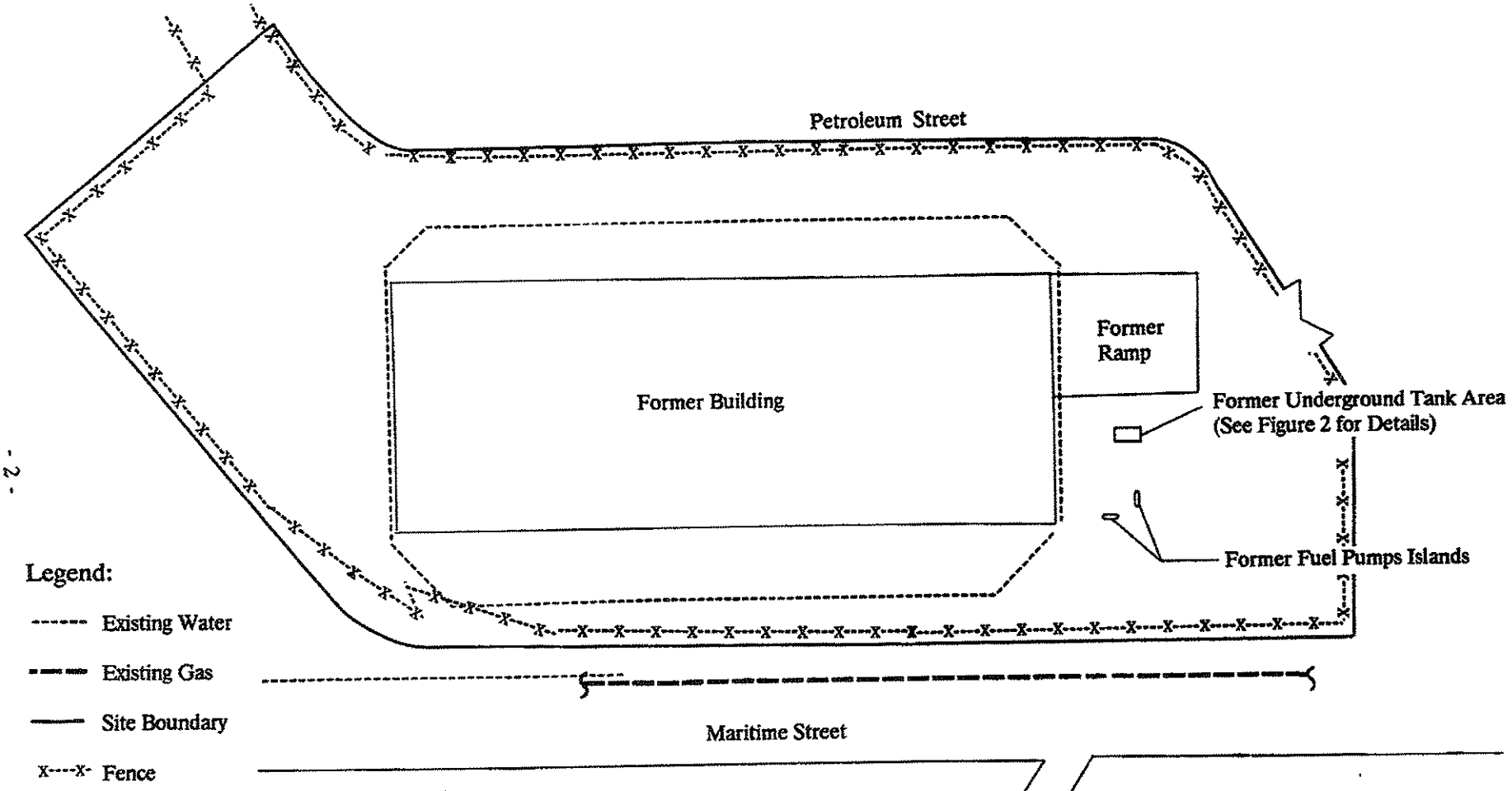
>>> Cherie MCcaulou 6/24/2010 4:08 PM >>>
Do you have any objection to closing a UST case at 801 Maritime Street in Oakland.

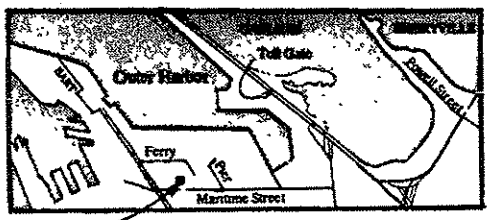
Sincerely,

Cherie McCaulou
Engineering Geologist

REGIONAL LOCATION AND SITE PLAN

Figure 1



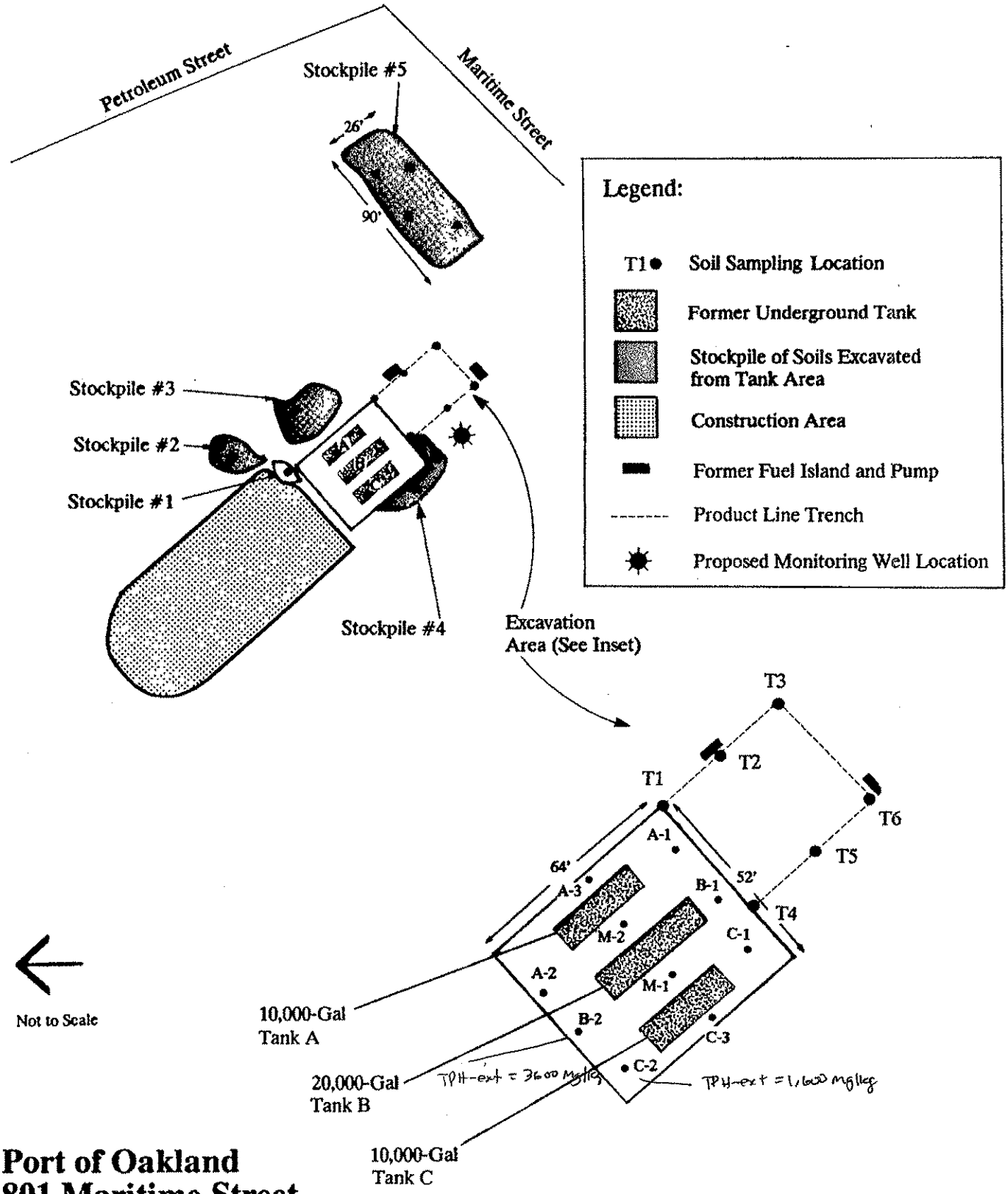


Port of Oakland
801 Maritime Street
Oakland, California

BASELINE

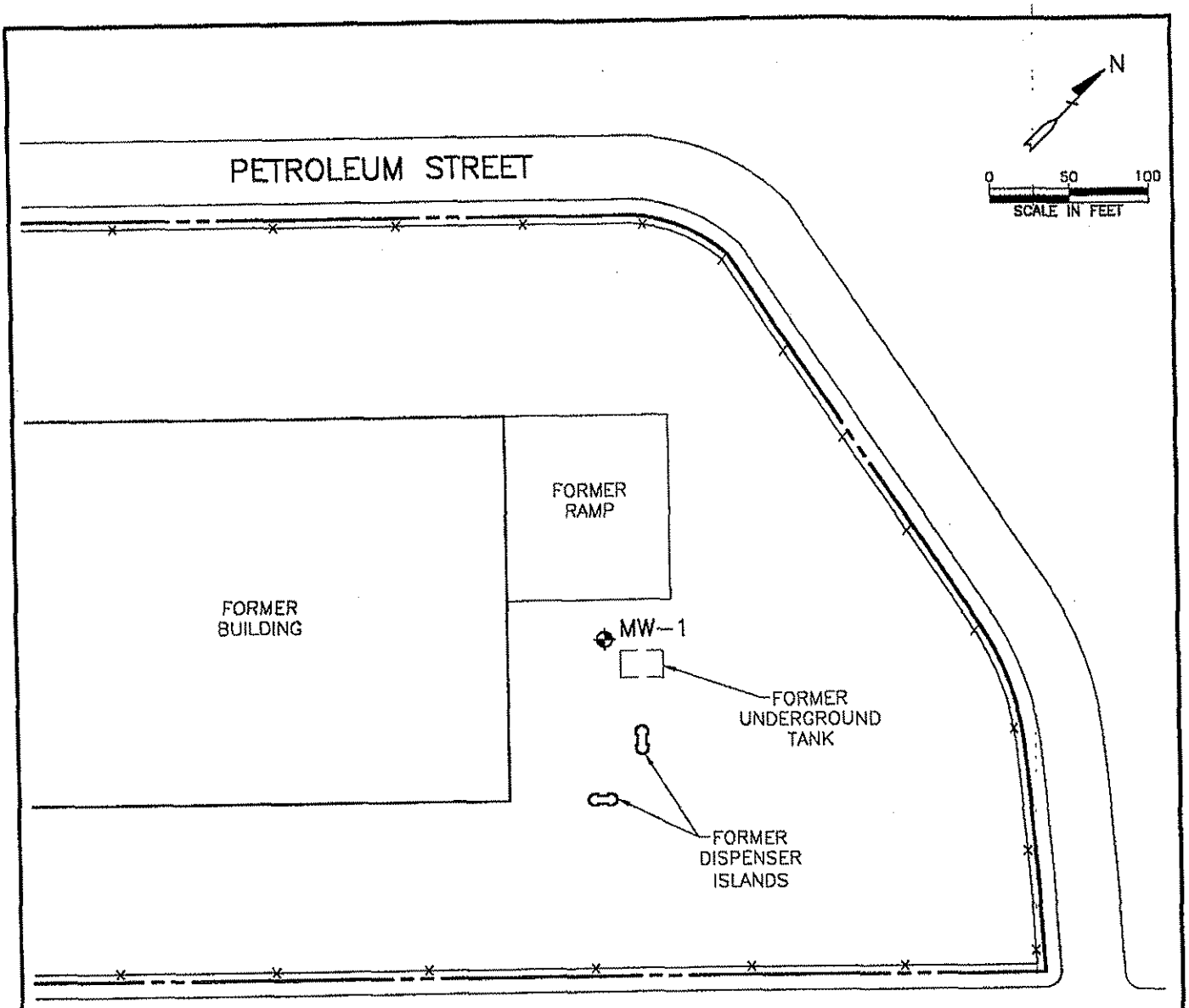
SOIL SAMPLING LOCATIONS

Figure 2



Port of Oakland
801 Maritime Street
Oakland, California

BASELINE



LEGEND

◈ GROUNDWATER MONITORING WELL

FIGURE 3

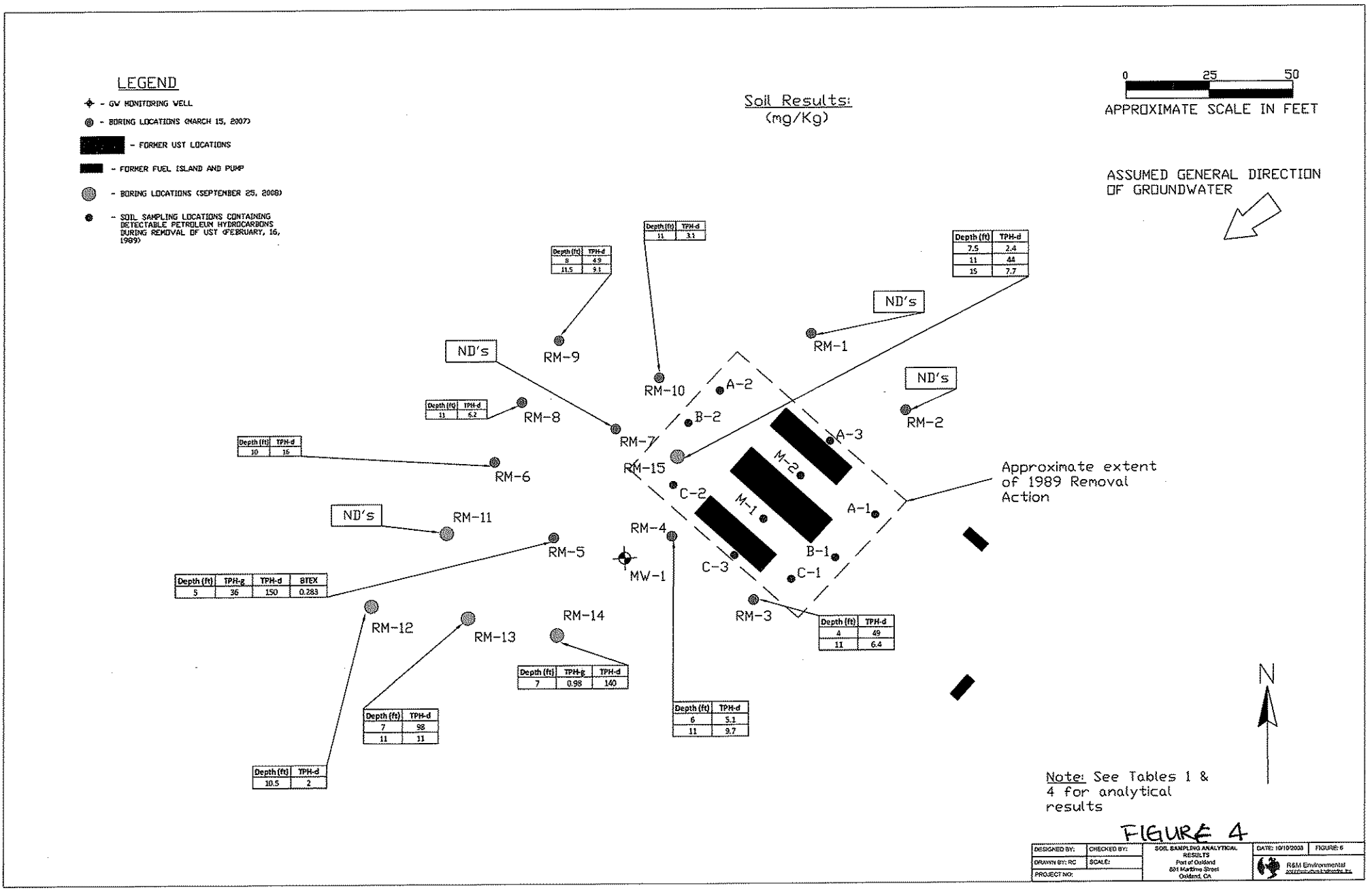
SITE PLAN

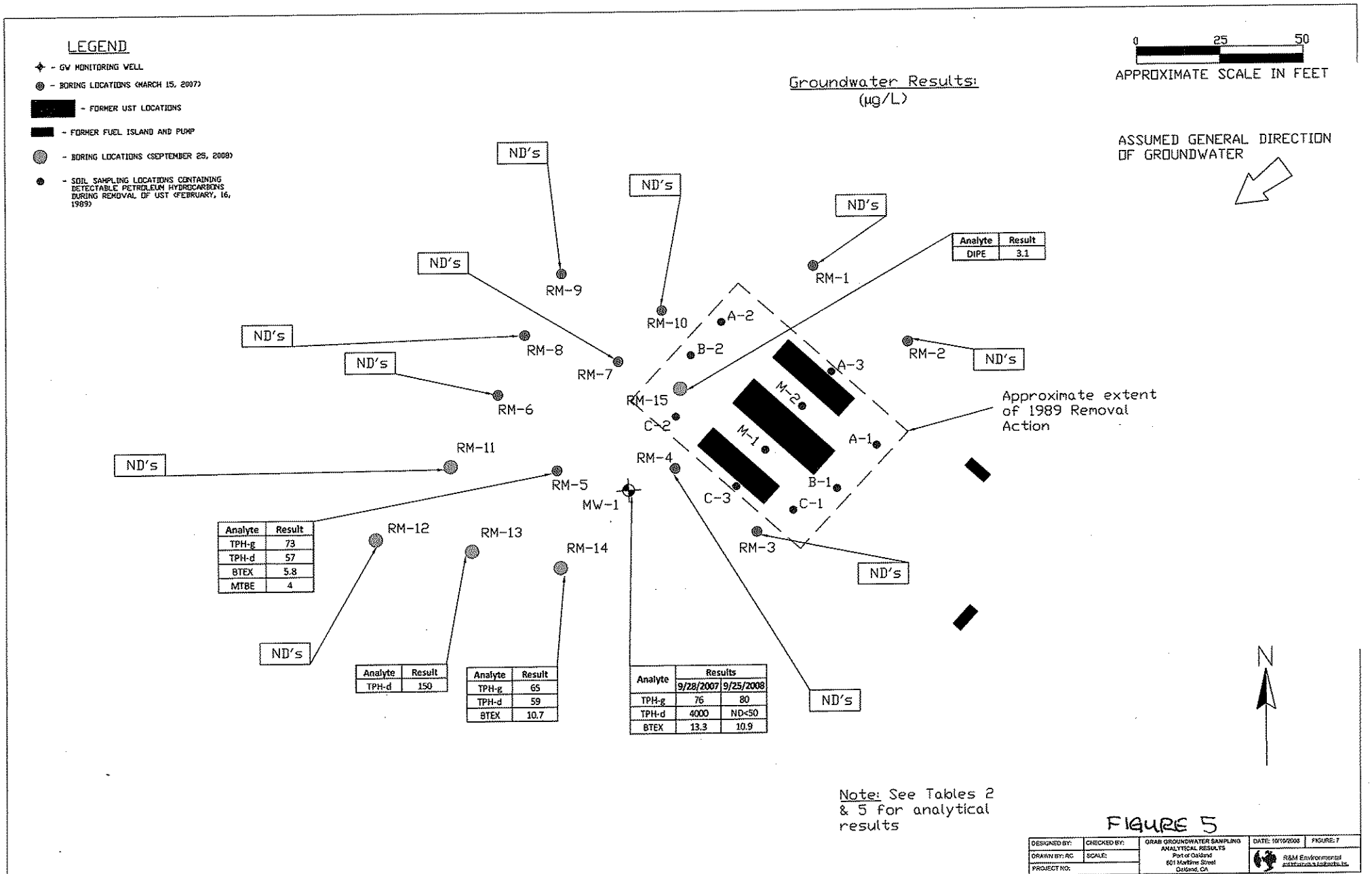
PORT OF OAKLAND
801 MARITIME STREET
OAKLAND, CALIFORNIA

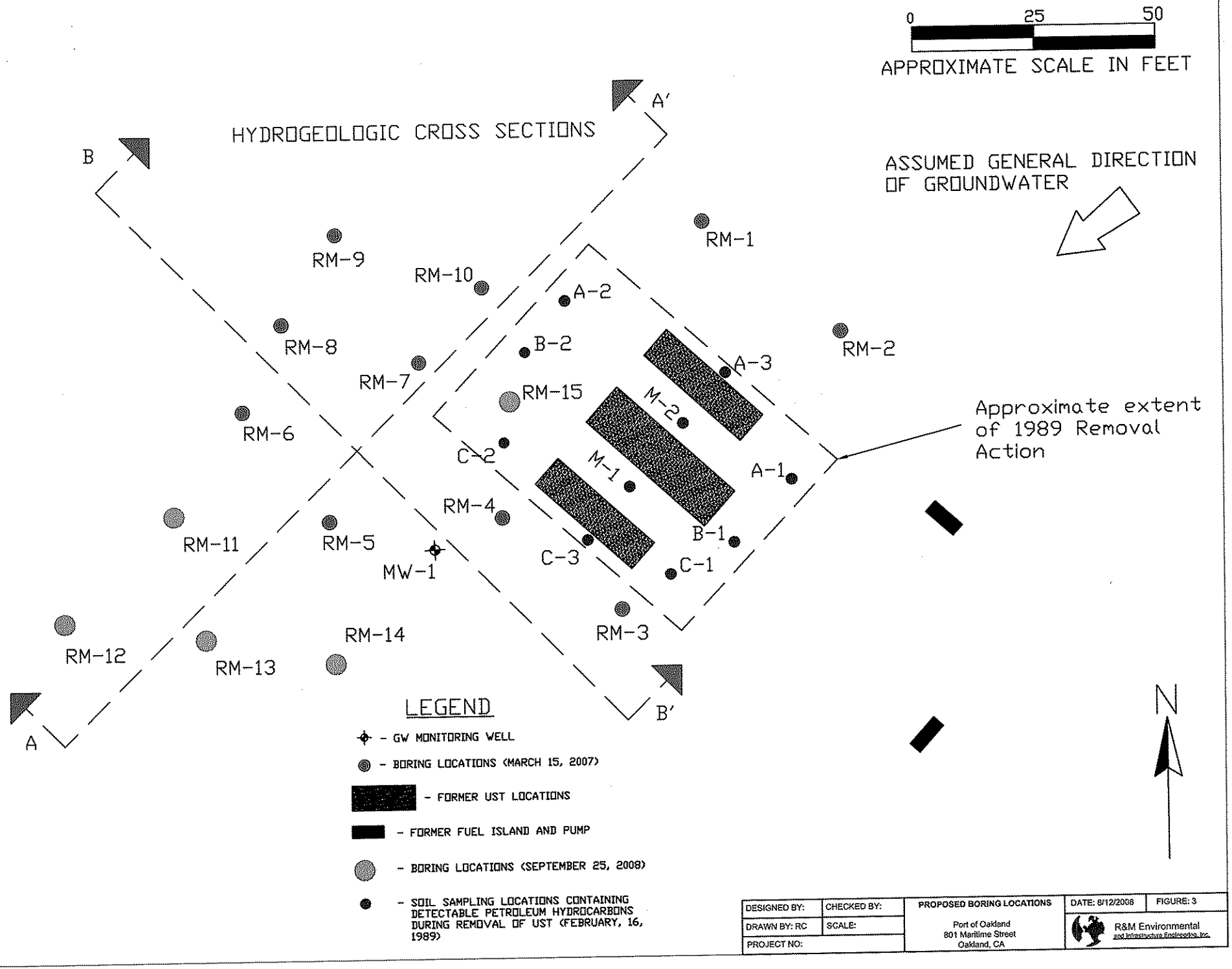
PROJECT NO. 10-339

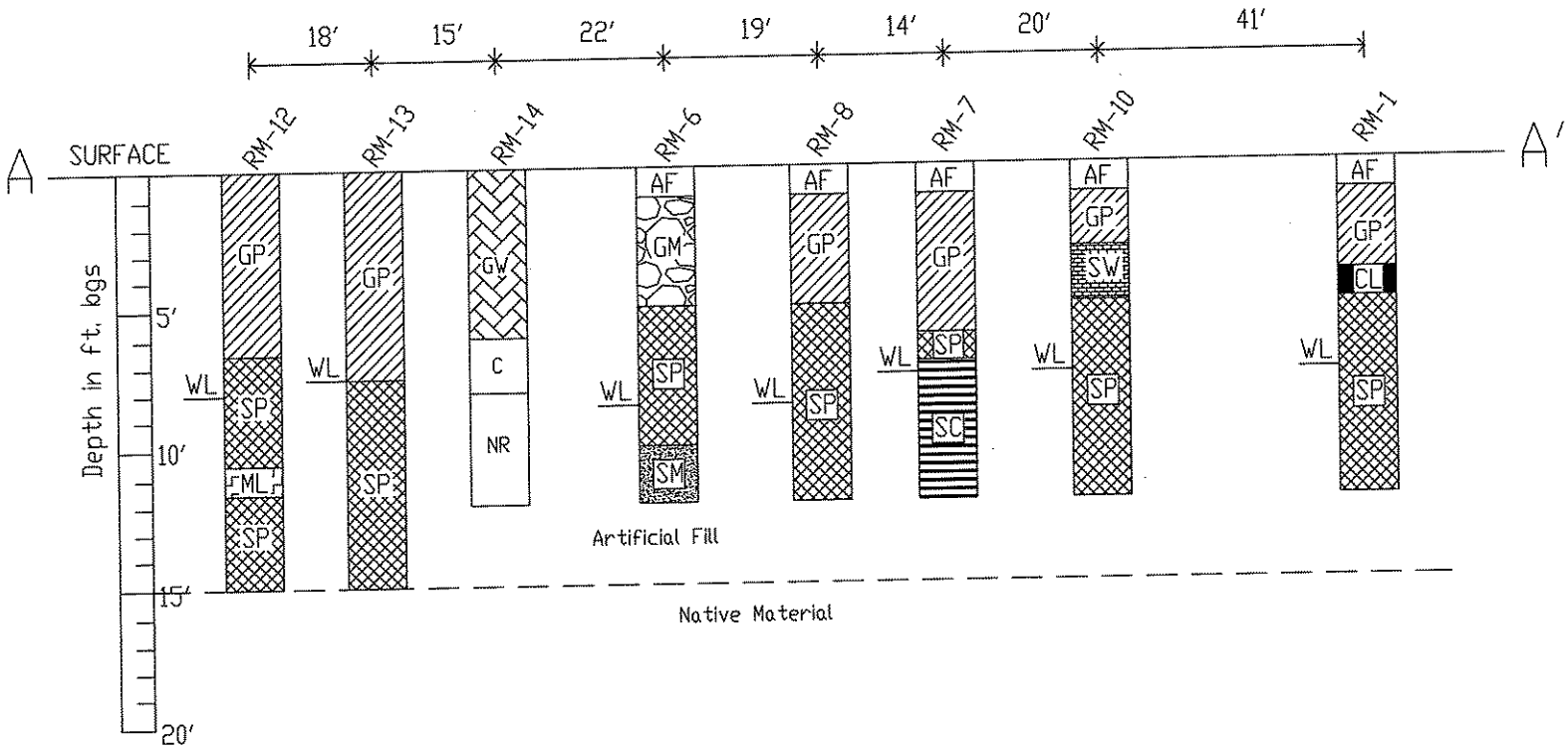
ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10339C--.DWG 8-3-98 DDM 1=100


LEGEND
- GW MONITORING WELL
- BORING LOCATIONS (MARCH 15, 2007)
- FORMER UST LOCATIONS
- FORMER FUEL ISLAND AND PUMP
- BORING LOCATIONS (SEPTEMBER 25, 2008)
- SOIL SAMPLING LOCATIONS CONTAINING DETECTABLE PETROLEUM HYDROCARBONS DURING REMOVAL OF UST (FEBRUARY, 16, 1989)
Soil Results:
(mg/Kg)
0
25
50
APPROXIMATE SCALE IN FEET
ASSUMED GENERAL DIRECTION OF GROUNDWATER
RM-1
RM-2
RM-3
RM-4
RM-5
RM-6
RM-7
RM-8
RM-9
RM-10
RM-11
RM-12
RM-13
RM-14
RM-15
MW-1
ND's
A-1
A-2
A-3
B-1
B-2
C-1
C-2
C-3
M-1
M-2
Approximate extent of 1989 Removal Action
Depth (ft) TPH-d
11 3.1
Depth (ft) TPH-d
8 4.9
11.5 9.1
Depth (ft) TPH-d
7.5 2.4
11 44
15 7.7
Depth (ft) TPH-d
11 6.2
Depth (ft) TPH-d
10 16
Depth (ft) TPH-g TPH-d BTEX
5 36 150 0.283
Depth (ft) TPH-d
10.5 2
Depth (ft) TPH-d
7 98
11 11
Depth (ft) TPH-g TPH-d
7 0.98 140
Depth (ft) TPH-d
6 5.1
11 9.7
Depth (ft) TPH-d
4 49
11 6.4
N
Note: See Tables 1 & 4 for analytical results
FIGURE 4
DESIGNED BY:
CHECKED BY:
DRAWN BY: RC
SCALE:
PROJECT NO:
SOIL SAMPLING ANALYTICAL RESULTS
Port of Oakland
601 Maritime Street
Oakland, CA
DATE: 10/10/2008
FIGURE: 6
R&M Environmental


LEGEND
- GW MONITORING WELL
- BORING LOCATIONS (MARCH 15, 2007)
- FORMER UST LOCATIONS
- FORMER FUEL ISLAND AND PUMP
- BORING LOCATIONS (SEPTEMBER 25, 2008)
- SOIL SAMPLING LOCATIONS CONTAINING DETECTABLE PETROLEUM HYDROCARBONS DURING REMOVAL OF UST (FEBRUARY, 16, 1989)
Groundwater Results: (µg/L)
0 25 50
APPROXIMATE SCALE IN FEET
ASSUMED GENERAL DIRECTION OF GROUNDWATER
ND's
RM-9
RM-10
RM-1
RM-8
RM-7
RM-2
RM-6
RM-15
RM-11
RM-5
RM-4
RM-12
RM-13
RM-14
MW-1
RM-3
A-1
A-2
A-3
B-1
B-2
C-1
C-2
C-3
M-1
M-2
Approximate extent of 1989 Removal Action
Analyte | Result
DIPE | 3.1
Analyte | Result
TPH-g | 73
TPH-d | 57
BTEX | 5.8
MTBE | 4
Analyte | Result
TPH-d | 150
Analyte | Result
TPH-g | 65
TPH-d | 59
BTEX | 10.7
Analyte | Results
9/28/2007 | 9/25/2008
TPH-g | 76 | 80
TPH-d | 4000 | ND<50
BTEX | 13.3 | 10.9
N
Note: See Tables 2 & 5 for analytical results
FIGURE 5
DESIGNED BY:
CHECKED BY:
DRAWN BY: RC
SCALE:
PROJECT NO:
GRAB GROUNDWATER SAMPLING ANALYTICAL RESULTS
Port of Oakland
601 Maritime Street
Oakland, CA
DATE: 10/10/2008
FIGURE: 7
R&M Environmental


0
25
50
APPROXIMATE SCALE IN FEET
HYDROGEOLOGIC CROSS SECTIONS
A'
B
ASSUMED GENERAL DIRECTION OF GROUNDWATER
RM-1
RM-9
RM-10
A-2
RM-8
B-2
RM-2
A-3
RM-7
RM-15
M-2
RM-6
Approximate extent of 1989 Removal Action
C-2
M-1
A-1
RM-4
B-1
RM-11
RM-5
C-3
C-1
MW-1
RM-3
RM-14
RM-12
RM-13
B'
A
N
LEGEND
- GW MONITORING WELL
- BORING LOCATIONS (MARCH 15, 2007)
- FORMER UST LOCATIONS
- FORMER FUEL ISLAND AND PUMP
- BORING LOCATIONS (SEPTEMBER 25, 2008)
- SOIL SAMPLING LOCATIONS CONTAINING DETECTABLE PETROLEUM HYDROCARBONS DURING REMOVAL OF UST (FEBRUARY, 16, 1989)
DESIGNED BY:
CHECKED BY:
DRAWN BY: RC
SCALE:
PROJECT NO:
PROPOSED BORING LOCATIONS
Port of Oakland
801 Maritime Street
Oakland, CA
DATE: 8/12/2008
FIGURE: 3
R&M Environmental
and Infrastructure Engineering, Inc.



NOTES:

AF	Aggregate Fill	SW	Gravely Sand	GW	Gravel
GM	Sandy Silty Gravel	CL	Clay	ML	Sandy Clay
SP	Fine Grained Sand				
SM	Silty Sand				
GP	Sandy Gravel				
SC	Clayey Sand				

WL = Water Level

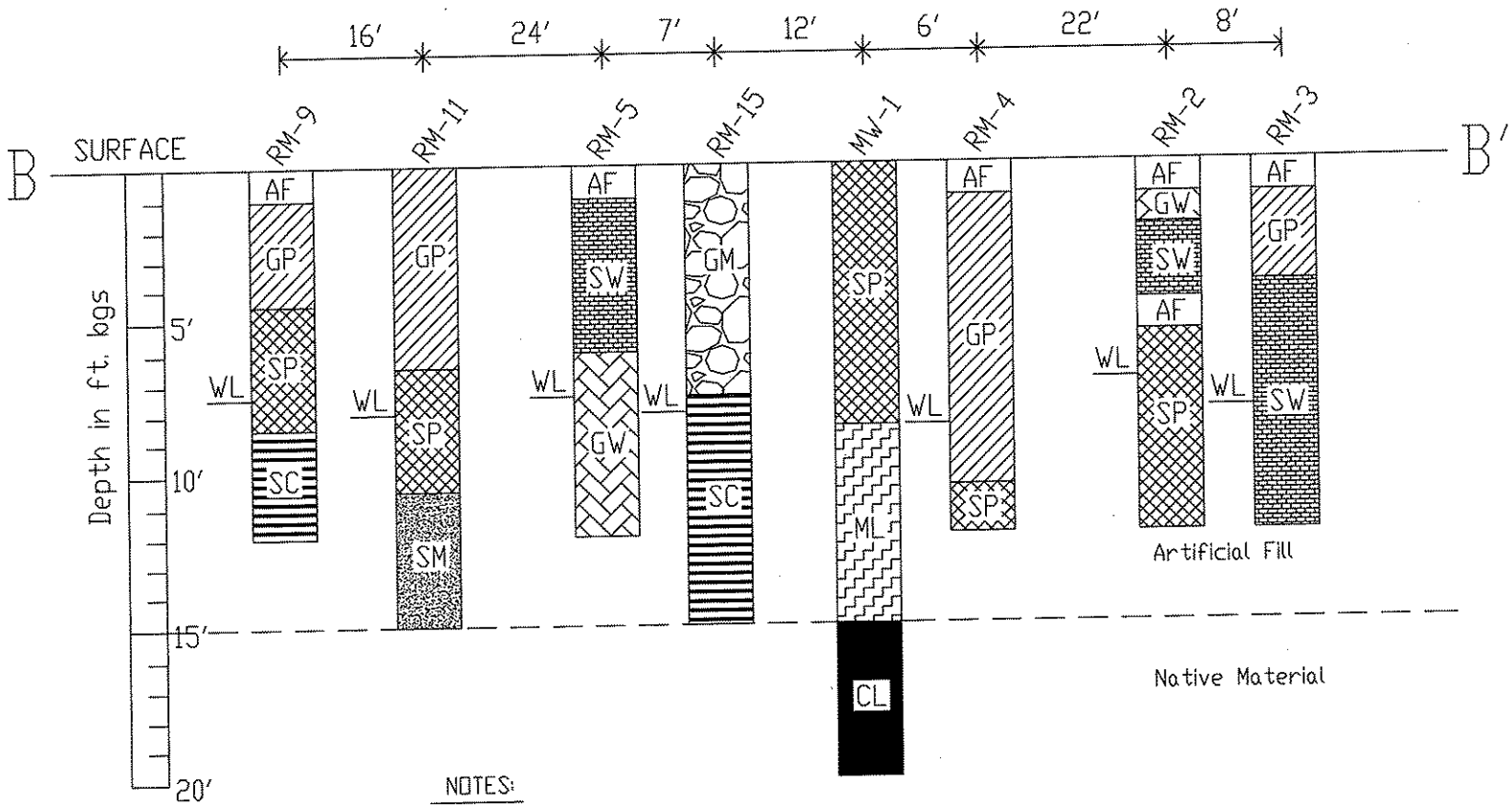
See Figure 3 for boring locations.

See Appendix D for detailed boring logs.

NR = No recovery

C = Concrete

DESIGNED BY:	CHECKED BY:	SW-NE (Parallel to Groundwater) Stratigraphic Cross Section of the Site	DATE: 3-7-2008 / FIGURE: 4
DRAWN BY: CA	SCALE:	DIAMOND MANUFACTURING 1763 & 1751 TIMOTHY DR. SAN LEANDRO, CA 94578	R&M Environmental and Infrastructure Engineering, Inc.
PROJECT NO:	1371		



NOTES:

- AF — Aggregate Fill
- GM — Sandy Silty Gravel
- SP — Fine Grained Sand
- SM — Silty Sand
- GP — Sandy Gravel
- SC — Clayey Sand
- SW — Gravely Sand
- CL — Clay
- GW — Gravel
- ML — Sandy Silt

WL = Water Level

See Figure 3 for boring locations.

See Appendix D for detailed boring logs.

DESIGNED BY:	CHECKED BY:	A NW-SE (Perpendicular to GW) Stratigraphic Cross Section of the Site	DATE: 3-7-2008 / FIGURE: 5
DRAWN BY: CA	SCALE:	DIAMOND MANUFACTURING 1763 & 1753 TIMOTHY DR. SAN LEANDRO, CA 94578	R&M Environmental and Infrastructure Engineering, Inc.
PROJECT NO: 1371			

TABLE 1

SOIL AND WATER SAMPLING ANALYTICAL RESULTS FOR UNDERGROUND TANK REMOVAL
801 Maritime Street, Oakland

Sample ID[1]	Depth (feet)	Total Volatile HC	Total Extractable HC	Benzene	Toluene	Xylenes	Ethylbenzene
Tank Area							
Soil Samples (mg/kg) (2/16/89)							
A-1	8	ND	27[2]	ND	ND	ND	ND
A-2	8	ND	ND	ND	0.017	0.029	ND
A-3	8	ND	ND	ND	ND	ND	ND
B-1	9.5	ND	ND	ND	ND	ND	ND
B-2	9.5	ND	3,600[3,9]	ND	ND	ND	ND
C-1	6	ND	ND	0.025	0.035	0.045	0.025
C-2	6	25	1,600[4,9]	<0.5	<0.5	<0.5	<0.5
C-3	6	ND	ND	ND	ND	ND	ND
M-1	10	ND	ND	ND	0.1	0.145	ND
M-2	10	10	ND	ND	0.26	0.4	0.08
Tank Area Water Sample (mg/L) (2/16/89)							
W-1/W-2/W-3		0.48	21	0.019	0.026	0.078	0.017
Stockpile Soil Samples (mg/kg) (2/16/89 and 2/21/89)							
ST-1	-	ND	ND	ND	ND	ND	ND
ST-2	-	ND	920[5]	ND	ND	ND	ND
ST-3a & b[6]	-	ND	ND	ND	ND	ND	ND
ST-4a & b[6]	-	ND	ND	ND	ND	ND	ND
ST-5a & b[6]	-	ND	110[2]	ND	ND	ND	ND
ST-5c & d[6]	-	<2.5	149	ND	ND	0.0062	ND
Product Line Trench Samples (mg/kg) (4/7/89)							
T-1	1.5	ND[7]	6.6	0.0063	ND	ND	0.0051
T-2	1	ND[7]	17.8	0.0167	ND	ND	ND
T-3	1	ND[7]	ND[8]	ND	ND	ND	ND
T-4	0.25	ND[7]	ND[8]	ND	ND	ND	ND
T-5	0.5	ND[7]	ND[8]	ND	ND	ND	ND
T-6	0.5	2.6	ND[8]	0.0165	0.0051	ND	ND
Detection Limit (mg/kg)		10	10	0.005	0.005	0.005	0.005
(mg/L)		0.05	500	0.001	0.001	0.001	0.001
EPA Method		8015/5030	8015	8020/602	8020/602	8020/602	8020/602

S19-4/13/89

TABLE 1 (continued)

---

[1] Samples collected by Baseline Environmental Consulting. See Figure 1 for soil sampling locations. Water sample was collected in tank area (in three containers).
[2] As diesel.
[3] Quantitation based on largest peaks in the C-6 to C-20 boiling range.
[4] Quantitation based on largest peaks in the C-6 to C-9 boiling range.
[5] Quantitation based on largest peaks in the C-12 to C-24 boiling range.
[6] Composite sample.
[7] Detection limit = 2.5 mg/kg.
[8] Detection limit = 5 mg/kg.
[9] Soils subsequently removed and placed in stockpiles #2 and #5.
- = Not Applicable.
NA = not analyzed.
ND = not detected.

Tank Area

Ten soil samples and one water sample were collected in the former tank area. Soil samples prefixed with A, B, and C (see Figure 2 and Table 1) were collected in the unsaturated zone using a backhoe. The analytical results indicated that: 1) releases of petroleum hydrocarbons had occurred; 2) primarily diesel hydrocarbons were released; 3) the fill ends of Tanks B and C (samples B-2 and C-2, respectively) contained the highest diesel hydrocarbon concentrations (3,600 and 1,600 mg/kg, respectively); and 4) gasoline and aromatic (BTX & E) hydrocarbons were present in the vicinity of tank C (samples C-1 and C-2). The soils containing concentrations of hydrocarbons in excess of 1,000 mg/kg were subsequently removed and stockpiled in stockpiles #2 and #5. The walls of the excavation in those areas were inaccessible for sampling after soils removal due to site constraints.

The water sample analytical results indicated the presence of 0.48 mg/L of gasoline, 21 mg/L of diesel, 0.019 mg/L of benzene, 0.026 mg/L of toluene, 0.078 mg/L of xylenes and 0.017 mg/L of ethylbenzene. The presence of hydrocarbons in the water may have been due to tank removal activities, however.

TABLE 2 - SUMMARY OF RESULTS OF SOIL SAMPLING
PORT OF OAKLAND TANKS CF-35, CF-06, and CF-07
801 MARITIME STREET, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-339

WELL ID	SAMPLE DEPTH (fbg)	DATE OF SAMPLING	TPH-G (mg/kg)	TPH-D (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	LAB
MW-1	5.5	07/03/96	ND<0.2	7.1	ND<0.001	ND<0.001	ND<0.001	ND<0.002	PACE

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
fbg	Feet below grade
mg/kg	Milligrams per kilogram
ND	Not detected above reported detection limit
PACE	Pace Analytical Services, Inc.

F:\0\10-339\SOIL.WQ2

Table 3
SEPTEMBER 25, 2008 AND PREVIOUS GROUNDWATER MONITORING RESULTS FOR MW-1
801 MARITIME STREET
OAKLAND, CA 94607

Parameters	Event												
	9/25/2008	7/10/1996	12/27/1996	3/25/1997	6/23/1997	9/30/1997	12/31/1997	4/17/2001	7/26/2001	10/21/2001	3/13/2002	4/12/2007	9/28/2007
TPH-g (µg/L)	80	180	180	180	170	190	130	160	130	160	110	62	76
TPH-d (µg/L)	ND<50	7,100	670	19	3,000	830	ND<48	59	ND<50	ND<100	ND<50	4,800 (H)	4,000 (Y)
Benzene (µg/L)	3.4	27	30	21	20	35	26	11	17	14	8.5	3.5	4.6
Toluene (µg/L)	1.9	14	15	11	11	17	14	6.2	8.7	6.9	4.2	2.2	2.4
Ethyl Benzene (µg/L)	1.0	5.4	5.8	4	4.1	5.2	4.3	2.6	3.2	2.6	1.3	1.2	1.2
Xylenes (µg/L)	4.6	23	26	17	18	22	18	11.2	14.2	11.5	7.3	5.2	5.1
MTBE (µg/L)	ND<2.0	NA	NA	NA	NA	NA	NA	ND<2.0	ND<2.0	ND<2.0	ND<5.0	ND<2.0	ND<2.0
TDS (mg/L)	1,730	NA	NA	1,840	1,320	2,020	1,880	1,860	1,880	1,860	1,100	1,560	1,650
Temp (C°)	23.83	---	---	---	---	---	---	---	---	---	---	17.76	23.36
E.C. (mS/cm)	4.777	---	---	---	---	---	---	---	---	---	---	4.489	4.672
D.O. (mg/L)	0.36	---	---	---	---	---	---	---	---	---	---	0.33	0.10
pH	11.81	---	---	---	---	---	---	---	---	---	---	12.52	12.59
ORP (mV)	-156.3	---	---	---	---	---	---	---	---	---	---	-162.5	-157.4
DTW (ft)	7.82	7.36	7.55	7.31	7.55	7.46	7.17	7.59	7.65	7.71	6.66	7.60	7.79
DTB (ft)	15.20	---	---	---	---	---	---	---	---	---	---	15.20	15.12
GW Elevation (ft AMSL)	6.36	6.45	6.26	6.50	6.26	6.09	6.38	6.59	6.53	6.47	7.52	6.58	6.39

Notes:
Analytical reports for water sample collected on 9/25/2008 are contained in Appendix B
Groundwater elevations refereneced to the Port Datum
Port Datum = Mean Sea Level - 3.20 feet
NA = Not Analyzed
DTW = Depth to water
DTB = Depth to bottom
AMSL = Above mean sea level
TPH-g = Total petroleum hydrocarbons as gasoline
TPH-d = Total petroleum hydrocarbons as diesel
MTBE = Methyl tert-butyl ether
TDS = Total dissolved solids
E.C. = Electrical conductivity
D.O. = Dissolved oxygen
ORP = Oxidation reduction potential
H = Heavier hydrocarbons contributed to the quantitation
Y = Notation by the laboratory: the sample exhibits chromatographic pattern that does not resemble standard
GW Elevations for 4/12/2007, 9/28/2007, and 9/25/2008 were calculated based on 2001 surveyed top-of-casing elevations of 14.18 feet (Port of Oakland Datum)

Table 4: Summary of Soil Sample Analytical Results
Port of Oakland
801 Maritime street, Oakland, CA
Soil Sampling Anlytical Results for RM-1 through RM-10; Sampling performed March 15, 2007

	Results are in mg/Kg											
Soil Sample	RM-1-8	RM-2-7	RM-2-10	RM-3-4	RM-3-11	RM-4-6	RM-4-11	RM-5-5	RM-6-7	RM-6-10	RM-7-6	RM-7-10
TPH												
Gasoline (C7-C12)	ND<1	ND<1	ND<1	2.2,g	ND<1	ND<1	ND<1	36,g,m	ND<1	ND<1	ND<1	ND<1
Diesel (C10-C24)	ND<1	ND<1	ND<1	49,a	6.4,g,b	5.1,g,b	9.7,g,b	150,g,b	ND<1	16,g,b	ND<1	ND<1
BTEX and MTBE												
Benzene	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015
Toluene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	0.067	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Ethylbenzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	0.036	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Xylenes	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	0.18	ND<0.005	ND<0.005	ND<0.005	ND<0.005
MTBE	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05

	Results are in mg/Kg						
Soil Sample	RM-8-5	RM-8-11	RM-9-5	RM-9-8	RM-9-11.5	RM-10-6	RM-10-11
TPH							
Gasoline (C7-C12)	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1
Diesel (C10-C24)	ND<1	6.2,g,b	ND<1	4.9,g,b	9.1,g,b	ND<1	3.1,g,b
BTEX and MTBE							
Benzene	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015
Toluene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Ethylbenzene	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
Xylenes	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005
MTBE	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05

See Appendix B for laboratory report
See Figure 3 for boring locations
RM = Boring
1 = Boring #
8 = sample depth, ft
TPH-g = Total Petroleum Hydrocarbons as Gasoline
TPH-d = Total Petroleum Hydrocarbons as Diesel
BTEX = Benzene, toluene, ethylbenzene, and xylenes
MTBE = Mthyl tert-butyl ether
ND = Not detected
a = Unmodified or weakly modified diesel is significant
b = Diesel range compounds are significant; no recognizable pattern
g = Strongly aged gasoline or diesel range compounds are significant
m = No recognizable pattern

Table 5: Summary of Grab Groundwater Sample Analytical Results
Port of Oakland
801 Maritime street, Oakland, CA
Ground Water Sampling Anlytical Results for RM-1 through RM-10; Sampling performed March 15, 2007

Results are in µg/L										
Water Sample	RM-1	RM-2	RM-3	RM-4	RM-5	RM-6	RM-7	RM-8	RM-9	RM-10
TPH										
Gasoline (C7-C12)	ND<50	ND<50	ND<50	ND<50	73,a	ND<50	ND<50	ND<50	ND<50	ND<50
Diesel (C10-C24)	ND<50	ND<50	ND<50	ND<50	57,b	ND<50	ND<50	ND<50	ND<50	ND<50
BTEX and MTBE										
Benzene	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Toluene	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Ethylbenzene	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Xylenes	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MTBE	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

Sample Designation: Example RM-10
RM = Boring
10 = Boring #
TPH-g = Total Petroleum Hydrocarbons as Gasoline
TPH-d = Total Petroleum Hydrocarbons as Diesel
BTEX = Benzene, toluene, ethylbenzene, and xylenes
MTBE = Mthyl tert-butyl ether
ND = Not detected
a = Unmodified or weakly modified gasline is significant
b = Diesel range compounds are significant; no recogniable pattern
See Appendix B for laboratory report
See Figure 3 for boring locations

Table 6 Summary of September 25, 2008 Soil Sample Analytical Results

Port of Oakland

801 Maritime street, Oakland, CA

Soil Sampling Anlytical Results for RM-11 through RM-15; Sampling performed September 25, 2008

Soil Sample	RM-11-7	RM-11-10.5	RM-12-7	RM-12-10.5	RM-13-7	RM-13-11	RM-14-7	RM-15-7.5	RM-15-11	RM-15-15
TPH (mg/kg)										
Gasoline (C7-C12)	ND<0.94	ND<1.0	ND<0.96	ND<0.99	ND<1.0	ND<1.1	0.98	ND<1.1	ND<0.93	ND<1.1
Diesel (C10-C24)	ND<1.0	ND<1.0	ND<1.0	2.0, Y	98, Y	11, Y	140, Y	2.4, Y	44, Y	7.7, Y
BTEX and MTBE (µg/kg)										
Benzene	ND<4.6	ND<4.7	ND<5.0	ND<4.8	ND<5.0	ND<5.0	ND<4.9	ND<5.0	ND<4.9	ND<5.0
Toluene	ND<4.6	ND<4.7	ND<5.0	ND<4.8	ND<5.0	ND<5.0	ND<4.9	ND<5.0	ND<4.9	ND<5.0
Ethylbenzene	ND<4.6	ND<4.7	ND<5.0	ND<4.8	ND<5.0	ND<5.0	ND<4.9	ND<5.0	ND<4.9	ND<5.0
Xylenes	ND<4.6	ND<4.7	ND<5.0	ND<4.8	ND<5.0	ND<5.0	ND<4.9	ND<5.0	ND<4.9	ND<5.0
MTBE	ND<4.6	ND<4.7	ND<5.0	ND<4.8	ND<5.0	ND<5.0	ND<4.9	ND<5.0	ND<4.9	ND<5.0

Notes:

See Appendix B for laboratory report

See Figure 3 for boring locations

RM = Boring

1 = Boring #

7 = Sample depth, ft

TPH-g = Total Petroleum Hydrocarbons as gasoline

TPH-d = Total Petroleum Hydrocarbons as diesel

BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes

MTBE = Methyl tert-butyl ether

ND = not detected

Y = Notation by the laboratory: the sample exhibits chromatographic pattern which does not resemble standard

Table 7: Summary of September 25, 2008 Grab Groundwater Sample Analytical Results

Port of Oakland

801 Maritime Street, Oakland, CA

Grab Groundwater Sampling Anlytical Results for RM-11 through RM-15; Sampling performed September 25, 2008

Results are in µg/L					
Water Sample	**RM-11**	**RM-12**	**RM-13**	**RM-14**	**RM-15**
TPH					
Gasoline (C7-C12)	ND<50	ND<50	ND<50	65	ND<50
Diesel (C10-C24)	ND<63	ND<63	150, Y	59, Y	ND<50
BTEX and MTBE					
Benzene	ND<0.5	ND<0.5	ND<0.5	3.3	ND<0.5
Toluene	ND<0.5	ND<0.5	ND<0.5	1.8	ND<0.5
Ethylbenzene	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5
Xylenes	ND<0.5	ND<0.5	ND<0.5	4.5	ND<0.5
MTBE	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1,2-Dibromoethane (EDB)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
1,2-Dichloroethane (EDC)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Methyl tert-Amyl Ether (TAME)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Ethyl tert-Butyl Ether (ETBE)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Isopropyl Ether (DIPE)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.1
Tert-Butyl Alcohol (TBA)	ND<10	ND<10	ND<10	ND<10	ND<10
Ethanol (ETOH)	ND<1,000	ND<1,000	ND<1,000	ND<1,000	ND<1,000

Notes:

See Appendix B for laboratory report

See Figure 3 for boring locations

RM = Boring

1 = Boring #

TPH-g = Total Petroleum Hydrocarbons as gasoline

TPH-d = Total Petroleum Hydrocarbons as diesel

BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes

MTBE = Methyl tert-butyl ether

ND = not detected

Y = Notation by the laboratory: the sample exhibits chromatographic pattern which does not resemble standard

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-1

SEE SITE PLAN

ALISTO PROJECT NO: 10-339-01 DATE DRILLED: 07/03/96

CLIENT: Port of Oakland

LOCATION: 801 Maritime Street, Oakland, California

DRILLING METHOD: Hollow-Stem Auger (8")

DRILLING COMPANY: V & W Drilling CASING ELEVATION: 10.61 'MSL

LOGGED BY: C. Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAN	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
						SM SP	silty to gravelly SAND: gray, damp; gravel to 2-inch diameter.
38,50/6"			5			SP	gravelly SAND: gray, wet, very dense; medium- to coarse-grained sand; approximately 30% angular gravel to 1/2-inch.
10,12,32			10			ML	sandy SILT: dark gray, wet; approximately 30% very fine- to fine-grained sand; driftwood (approximately 50% at 11-11.5 foot sample).
2,3,3			15			CL	sandy CLAY: dark gray, wet; approximately 15% very fine- to fine-grained sand.
3,3,3							Same
			20				Stabilized water level measured on July 10, 1996.
			25				
			30				

WELL DIAGRAN: 2" Sch. 40 PVC; 2" 0.010" Slotted PVC Screen; Bentonite Seal; Neat Cement; #2/12 Sand

BORING LOG

R&M EIE, Inc.

Borehole No: RM-1

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C. Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1' Asphalt + rock base		
		-2				1-4' dark yellowish brown, sandy gravel loose	10yR/4/6	
		-3						
		-4						
		-5				4-5' Asphalt + clay		
		-6	0			5-7.5' dark green grey Sand, very fine to fine well sorted, moist, no odor, no stain		
		-7						
		-8		7.4' dtw		7.5-12' dark green grey sand, very fine to fine, well sorted Boring was terminated at 12 ft bgs Depth to Water: 7.4 ft	1 gley 4/1	
RM-1-8	9:19	-9						
		-10						
		-11				purged 3 gal. before sampling at 9:24		
		-12				Bag Sample RM-1-11 = 0.0 ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-2

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C.Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0 - 1' Asphalt		
		-2				1-2' dark yellowish- brn, sdy gravel, loose, s'ang clasts to 1 1/2 in	10yR/4/6	
		-3					2.5yR3/4	
		-4				2-4.5' red brn gravelly sand, fN-med, loose moist, NO O/S		
		-5				4.5-5.5' ~6" asphaltic, 6" sandbase		
		-6				5.5'-8' - sand light yellowish brn fN-vfN well sorted, NO O/S Depth to Water: 7.2 ft		
RM-2-7	8:39	-7						
		-8		7.2' dtw			2.5 y/6/9	
		-9				8 - 12' blue black sand, very fine to fine, silty wet no odor no stain Boring terminated at 12 ft bgs	grey 2/5pb	
RM-2-10	8:44	-10						
		-11				purged 2 gal water prior to to sampling @8:49, clear - slightly turbi		
		-12				Bag Sample RM-2-8 - 0.0 ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-3

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C.Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				4" Asphalt 6" concrete		
		-2				1 - 2' greenish black sandy gravel, loose, moist, MOD HC, odor	2.5/10y	
		-3	31.8			2-3' dark reddish born sandy gravel, clayey	2.5yR/3/4	
RM-3-4	7:47	-4	7.3			3-4' greenish black sandy gravel, loose, moist, MOD HC odor	2.5/10y	
		-5				5-12' olive brown; sand, loose well sorted, moist (wet 9-12'), slight Hydrocarbon odor Boring terminated at 12 ft bgs Depth to Water: 8.05 ft	2.5y/4/4	
		-6						
		-7						
		-8						
	7:54	-9	1.4	8.05' dtw				
		-10						
RM-3-11	8:04	-11				purged 1 gal prior to sampling water, water was clear, sampled at 8:10		
		-12				Bag Sample RM-3-1 = 10.7 ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-4

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C.Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1' Asphalt + base rock		
		-2				1' - 10.5' gravel, brown, reddish brown, yellow brown, sandy, loose firm, Depth to Water: 8.4 ft		
		-3						
		-4						
		-5						
RM-4-6	10:55	-6						
		-7						
		-8						
		-9		8.4' dtw				
		-10				10.5-12' dark green grey sand, very fine to fine, loose wet no odor no stain, Boring terminated at 12 ft bgs		
RM-4-11	11:00	-11				- purged 2 gal before sampling at 11:00 water was clear.		
		-12				Bag Sample RM-4-11 = 0.0 ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-5

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C.Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1' Asphalt		
		-2				1' - 6' olive brown gravelly sand, loose-firm, moist gravel-sub angular to 1", slight hydrocarbon odor		
		-3						
		-4						
RM-5-5	11:46	-5						
		-6						
		-7				6'-12' grey gravel, loose, large sub angular, sub rounded clasts to 2", wet at 8', no odor, no stain; soil sample not feasible below 7 feet due to large gravel clasts and no silt no sand and no clay Boring terminated at 12 ft bgs Depth to Water: 7.6 ft		
	11:48	-8		7.6' DTW				
		-9						
		-10						
		-11				purged 1 gallon at 12:00pm before sampling, water was clear		
		-12				Bag Sample RM-5-6 = 11.6ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-6

Date: 3/15/07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): Paul Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi (PG), R. Carranza, C.Adams	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1': asphalt and base rock		
		-2				1-5': light orange brown sandy/silty gravel, loose-firm, moist, no odor/staining		
		-3						
		-4						
		-5						
		-6				5-6': black sand and asphalt chips		
RM-6-7	13:25	-7				6-10': light yellow brown sand, very fine-fine grained, loose, moist, no hydrocarbon odor or staining Depth to Water: 8.23 ft		
		-8						
	13:35	-9		8.23' DTW				
RM-6-10 (BAG)	13:30	-10	0.0					
		-11				10-12': dark grey-green silty sand, very fine-fine grained, loose, wet, no hydrocarbon odor or staining, locally clayey, Boring terminated at 12 ft bgs Bag Sample RM-6-10 = 0.0 ppm		
		-12						

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-7

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C. Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1' Asphalt + rock base		
		-2				1-6' - dark yellowish brown, sandy gravel, loose	10yR/4/6	
		-3						
		-4						
		-5						
RM-7-6	10:24	-6						
		-7				6-7' sand, light yellowish brown, loose moist, fine grain no odor, no stain		
	10:23	-8		7.41' DTW		7-12' dark green grey sand, very fine to fine, loose wet, slightly clayey from 11-12'		
		-9				Boring Terminated at 12 ft bgs		
RM-7-10	10:28	-10				Depth to Water: 7.41 ft		
		-11				purged 2 gal. before sampling @ 10:29		
		-12				Bag Sample RM-7-9 = 0.0ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-8

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C. Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1' Asphalt + rock base		
		-2				1-5' red brown- grey brown sandy gravel, loose, moist no odor no stain		
		-3						
		-4						
RM-8-5	12:12	-5						
		-6				5-6' dark grey-black sandy, very fine to med fine, loose moist, no odor, no stain		
		-7				6-11' yellow brown sand, very fine to fine, loose, moist no odor no stain		
		-8				Depth to Water: 8.48 ft		
		-9		8.48' DTW				
		-10				11-12' dark olive grey sandy very fine to fine, wet loose no odor, no stain, Boring Terminated at 12 ft bgs		
RM-8-11	12:15	-11				purged 1 gal. before sampling @ 12:20, water was slightly turbid		
		-12				Bag Sample RM-8-10 = 0.0ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-9

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C. Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1' Asphalt + rock base		
		-2				1-4.5' grey brown-sandy gravel, loose moist no hydrocarbon odor, no stain		
		-3						
		-4						
RM-9-5	12:45	-5				4.5-8.5' light yellow brown sand, very fine to fine grained, loose, moist no odor, no stain Depth to Water: 7.6 ft		
RM-8-8	12:48	-6						
		-7						
		-8		7.6' DTW				
		-9				8.5-12' greenish grey SAND, very fine to fine, wet loose, clay from 11.5-12' ~ slight hydrocarbon odor Boring terminated at 12 ft bgs		
		-10						
RM-8-11.5	12:50	-11				purged 2 gal. before sampling @ 12:54, water was clear to slightly turbid 1 DUP = RM-9		
		-12				Bag Sample RM-9-8.5 = 0.0ppm		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc.

Borehole No: RM-10

Date: 3-15-07

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): P. Rogers
Project No: 4009	Coring Equipment: Geoprobe
Logged By: J. Gribi, P.G., C. Adams, R. Carranza	Sampler (Type/Diameter): 2" dual-tube liners
Reviewed By:	Borehole Diameter: 5"

Sample ID	Time	Depth (ft)	PID (ppm)	Water Level	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Color [2]	Backfill Material [3]
		-1				0-1' Asphalt + rock base		
		-2				1-3' dark yellowish brown, sandy gravel loose	10yR/4/6	
		-3						
		-4				3-5' black gravely sandy, loose (possible asphalt)	10yR/2/1	
		-5				5-9' Sand light yellowish brown, loose, fine grain, moist, no odor, no stain	2.5y/6/4	
RM-10-6	9:47	-6				Depth to Water: 7.48 ft		
		-7						
		-8		7.48 DTW				
		-9				9-12' Sand dark green grey, very fine to fine, loose, wet no Hydrocarbon odor/stain Boring	1 gley/4/1	
		-10				terminated at 12 ft bgs		
RM-10-11	9:51	-11				purged 4 gal. before sampling water @9:24, water was clear		
		-12				Bag Sample RM-10-9 = 0.0 ppm,		

1. Referencing USCS Chart
2. Referencing Munsell Chart
3. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc. **Borehole No:** RM-11 **Date:** 9/25/08

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): Brandon Moses
Project No: 4009	Coring Equipment: DP-12
Logged By: Jim Gribi, PG	Sampler (Type/Diameter): 2" dual-tube linners
Reviewed By:	Borehole Diameter:

Sample ID	Time of Sampling	Depth (ft-bgs)	PID (ppm)	Water Level (approx.)	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Backfill Material [2]
		-1			GP	0-6.5' Grey-brown sandy gravel, loose, some asphalt pieces, no odor, no staining	C
		-2					
		-3					
		-4					
		-5					
		-6					
RM-11-7	8:50	-7	0		SP	6.5-10.5' Tan-light brown sand, fine-medium sized, loose, wet @ 8', no odor, no staining	
RM-11 (water)	9:10	-8		8'			
		-9					
RM-11-10.5	8:55	-10	0				
		-11			SM	10.5-15' Olive grey silty sand, very fine-medium sized, wet, no odor, no staining	
		-12					
		-13					
		-14					
		-15	0			Stopped at 15 ft	

1. Referencing USCS Chart
2. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc. **Borehole No:** RM-12 **Date:** 9/25/08

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): Brandon Moses
Project No: 4009	Coring Equipment: DP-12
Logged By: Jim Gribi, PG	Sampler (Type/Diameter): 2" dual-tube linners
Reviewed By:	Borehole Diameter:

Sample ID	Time of Sampling	Depth (ft-bgs)	PID (ppm)	Water Level (approx.)	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Backfill Material [2]
		-1			GP	0-6.5' brown-grey brown sandy gravel, loose, moist, some large clasts, some asphalt pieces, no odor	C
		-2					
		-3					
		-4					
		-5					
		-6					
RM-12-7	8:05	-7	0		SP	6.5-10.5' brown-grey brown sand, fine-medium sized, loose, wet @ ~8', no odor, no staining	
RM-12 (water)	8:25	-8		8'			
		-9					
RM-12-10.5	8:10	-10	0				
		-11			ML	10.5-11.5' dark grey sandy clay, soft, wet, no odor, no staining	
		-12			SP	11.5-15' grey sand, fine-medium sized, loose, wet, no odor, no staining	
		-13					
		-14					
		-15	0			Stopped at 15 ft	

1. Referencing USCS Chart
2. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc. **Borehole No:** RM-13 **Date:** 9/25/08

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): Brandon Moses
Project No: 4009	Coring Equipment: DP-12
Logged By: Jim Gribi, PG	Sampler (Type/Diameter): 2" dual-tube linners
Reviewed By:	Borehole Diameter:

Sample ID	Time of Sampling	Depth (ft-bgs)	PID (ppm)	Water Level (approx.)	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Backfill Material [2]
		-1			GP	0-7.5' brown-grey brown sandy gravel, loose-firm, some concrete clasts, no odor, no staining	C
		-2					
		-3					
		-4					
		-5					
		-6					
RM-13-7	10:15	-7	0				
RM-13 (water)	11:00	-8		7.5'	SP	7.5-15' olive-grey sand, fine-medium sized, loose-firm, wet @ 7.5', no odor, no staining (NOTES: 9:35 - had to move boring location 9' south of original boring due to refusal @ 3.5'; 9:50 - had to move boring once again 6' east of original boring due to refusal @ 6.5')	
		-9					
		-10					
RM-13-11.5	10:20	-11	0				
		-12					
		-13					
		-14					
		-15	0			Stopped at 15 ft	

1. Referencing USCS Chart
2. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc. **Borehole No:** RM-14 **Date:** 9/25/08

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): Brandon Moses
Project No: 4009	Coring Equipment: DP-12
Logged By: Jim Gribi, PG	Sampler (Type/Diameter): 2" dual-tube linners
Reviewed By:	Borehole Diameter:

Sample ID	Time of Sampling	Depth (ft-bgs)	PID (ppm)	Water Level (approx.)	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Backfill Material [2]
		-1			GW	0-6' asphalt and grey brown gravel, loose, some asphalt and concrete pieces, no odor, no staining	C
		-2					
		-3					
		-4					
		-5					
		-6					
RM-14-7	11:00	-7	0		concrete fill	6-8' light grey concrete rubble, dry, no odor, no staining	
RM-14 (water)	11:20	-8					
		-9			no recovery	8-12' no recovery	
		-10					
		-11					
		-12				Stopped at 12 ft	

1. Referencing USCS Chart
2. Bentonite (B); Cement (C); Sand (S); Asphalt (A)

BORING LOG

R&M EIE, Inc. **Borehole No:** RM-15 **Date:** 9/25/08

SITE INFORMATION	SUBCONTRACTOR INFORMATION
Name: Additional Site Investigation	Drilling Company: Gregg Drilling
Location: 801 Maritime Street, Oakland, CA	Driller(s): Brandon Moses
Project No: 4009	Coring Equipment: DP-12
Logged By: Jim Gribi, PG	Sampler (Type/Diameter): 2" dual-tube linners
Reviewed By:	Borehole Diameter:

Sample ID	Time of Sampling	Depth (ft-bgs)	PID (ppm)	Water Level (approx.)	UNIFIED SOIL CLASSIFICATION SYSTEM [1] Group Symbol	SOIL DESCRIPTION	Backfill Material [2]
		-1			GM	0-7.5' asphalt and light reddish brown gravel, sandy, silty, dry-moist, no odor, no staining	C
		-2					
		-3					
		-4					
		-5					
		-6					
RM-15-7.5	12:00	-7	0				
RM-15 (water)	12:35	-8		8'	SC	7.5-16' olive grey clayey sand, silty, very fine-fine sized, wet @ 8', loose, no odor, no staining	
		-9					
		-10					
RM-15-11	12:05	-11	0				
		-12					
		-13					
		-14					
RM-15-15	12:10	-15	0				
		-16				Stopped at 16 ft	

1. Referencing USCS Chart
2. Bentonite (B); Cement (C); Sand (S); Asphalt (A)