

June 4, 1996
SCI 133.005

Mr. Jonathan Redding
Fitzgerald, Abbott & Beardsley
1221 Broadway, 21st Floor
Oakland, California 94612-1837

**Work Plan for Further Site Characterization
Keep-On-Trucking Diesel Release and
Eighth Avenue Area
Port of Oakland - Ninth Avenue Terminal
Oakland, California**

Dear Mr. Redding:

This letter presents a Work Plan prepared by Subsurface Consultants, Inc. (SCI) to further characterize the extent of petroleum hydrocarbon impacts resulting from a diesel release and other possible sources at the referenced site. This plan is in response to the written request of May 23, 1996 by the Alameda County Health Care Services Agency (ACHCSA).

SCI has prepared this Work Plan based on a review of information contained in files at the Port of Oakland (PORT) and the ACHCSA, and a detailed site reconnaissance. A brief summary of SCI's findings to date precedes the proposed scope of services to provide a rationale for further site characterization.

BACKGROUND

The Ninth Avenue Terminal area was developed in the early 1900's. During its tenure, numerous industrial and commercial businesses have been on-site. However, to date environmental studies of the area have been limited to investigating a 1992 release of diesel fuel into the adjacent Oakland Inner Harbor Estuary and Clinton Basin. The source of the diesel was identified as a leak in a below ground product pipeline leading from an above ground storage tank (AST) containing diesel. The tank was situated within the former Building H-213, which was then occupied by KOT. The diesel fuel apparently entered one or more storm drains near the AST and flowed via the storm drain system to the basin and estuary. Floating diesel has been observed in wells located in the vicinity

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of the AST, however, the free product plume is currently situated in the area upgradient of the release point and along a storm drain line. This finding suggests that the floating product associated with the diesel release(s) from KOT at H-213 has already migrated in unsuspected directions, and that it may be distributed to other areas of the Ninth Avenue Terminal through preferential flow along utility corridors and/or abandoned storm drain systems. The extent of hydrocarbon impacts to soil and groundwater have not been fully defined.

Numerous active subsurface utilities exist in the leak area, and extend throughout the terminal. Abandoned utility lines associated with the historical use of the terminal also exist. Subsurface utilities and associated bedding materials may act as potential conduits for contaminant migration to the estuary and basin. Studies to date have not thoroughly investigated the utility lines as potential migration pathways.

In addition to the documented pipeline leak discussed above, several other potential petroleum hydrocarbon sources, which may impact the terminal area, have been identified through our research. These potential sources are summarized below:

- Oil Tanks - West of Building H-232
- 10,000 gallon UST - North of Building H-227
- Suspected UST near former well, circa 1911 - North of Building H-227
- Two UST's - Near former Building H-209/H-229
- UST/AST's - East Bay Oil Company Area
- Diesel AST - Southwest of Building H-232
- Suspected 1970's surface release of oil at the location of the former American Bitumuls and Port Petroleum facilities
- Storm drain and sanitary sewer lines and laterals that extend adjacent to former businesses with suspected petroleum hydrocarbon use
- Storm drain lines that discharge into Clinton Basin

During our site reconnaissance, up to 17 inches of a petroleum based liquid was found in a manhole which PORT maps indicate may be connected to a concrete storm drain which extends along Eighth Avenue, and parallel to the former KOT Building H-213. In the vicinity of H-213 this line has been blocked with bricks. Dillard Environmental Services, a certified hazardous materials handler, removed about 750 gallons of oil/water on May 13, 1996. During removal the level of liquid within the manhole remained essentially unchanged. The source of the petroleum based liquid is currently unknown.

SCI has been retained to continue the groundwater monitoring program for two KOT tank areas currently being regulated by the ACHCSA Local Oversight Program. One well at Building H-107 and six wells at the former H-213 have been monitored by others. The data from the February

1996 event indicates that conditions at Building H-213 have not changed significantly since monitoring began in 1993. At H-107, diesel concentrations in February 1996 are approximately 20 times higher (6100 ug/l) than the average of the three previous events (300 ug/l). Although the reason for this increase is not readily apparent, it is possible that the H-213 release(s) have now migrated into this area via utility corridors and/or abandoned storm drain systems.

WORK PLAN SCOPE OF SERVICES

To preliminarily evaluate potential impact(s) to the study area resulting from the known pipeline leak, as well as from other identified potential sources, we propose that the following tasks be implemented to supplement existing data.

- Task 1 - Area Utility Survey**
- Task 2 - UST Locating**
- Task 3 - Petroleum Based Liquid Removal from Manhole**
- Task 4 - Groundwater Flow Direction Evaluation**
- Task 5 - Soil and Groundwater Sampling Program**
- Task 6 - Analytical Testing Program**
- Task 7 - Engineering Analysis and Data Report Preparation**
- Task 8 - Free Product Removal and Groundwater Monitoring**

Details of these tasks are described below.

Task 1 - Area Utility Survey and Map/Aerial Photograph Interpretation

Existing data regarding the location of storm drain lines, sanitary sewer lines and outfall locations into Clinton Basin and the estuary are inconsistent. In addition, studies to date have not thoroughly identified or investigated these utility lines as potential migration pathways. Controlled surveying and subsurface utility locating technologies will be used to properly locate all manholes, drain inlets and active outfalls associated with these utilities within a defined area along Eighth Avenue and Clinton Basin. Other potential source areas will be located based on an interpretation of PORT maps and aerial photographs. Specifically, this task will include the following:

- Review PORT maps and aerial photographs
- Perform field utility locating
- Conduct vertical and horizontal survey
- Tabulate utility manhole rim and pipeline invert elevations
- Prepare a base map showing historic improvements of potential environmental concern and utility alignments
- Prepare utility alignment cross-sections

Task 2 - UST Locating

SCI's research to date has identified five potential areas with former petroleum hydrocarbon UST's within the study area. Minimal information exists regarding tank contents or tank closure. These potential tank areas may be potential sources of petroleum hydrocarbons, and thus, should be investigated. Initially, the potential tank areas shown on the attached plan will be screened using non-obtrusive equipment such as magnetometer and ground penetrating radar. Areas where subsurface anomalies are detected will be further investigated by excavating test pits/trenches across the area. Specifically, this task will include the following:

- Locating the suspect tank areas in the field based on a review of aerial photographs and PORT maps
- Screening the potential tank areas with non-obtrusive equipment
- Investigating anomalies with test pits/trenches - *any sampling?*
- Surveying the location of identified anomalies

Task 3 - Manhole Oil Remediation

The PORT proposes to conduct additional removal of the petroleum based liquid identified during the site reconnaissance in an existing manhole. An initial response, which consisted of removing 750 gallons of liquid, indicated that a more extensive response action would be required. Presently, it appears that the manhole and associated inlet and outlet pipelines appear to have been sealed off and are not connected to the active storm drain system. As such, there does not appear to be an immediate threat of release to the Inner Harbor.

SCI proposes to coordinate and observe a response action which will remove the liquid from the manhole and associated pipelines to the extent practical. This task will include the following phases:

- *Specific analysis?*
Characterizing the liquid for purposes of identification of source and evaluation of appropriate disposition
- Removal and disposal of the liquid
- Investigation of all inlet and outlet pipelines using non-obtrusive equipment
- Surveying the location of the pipelines

how about testing the manhole + pipeline for leaks
It may be ultimately necessary to clean the manhole and pipelines to complete the mitigation process. However, the current scope of services does not include this additional phase.

Task 4 - Groundwater Flow Direction Evaluation

Based on a preliminary review of groundwater monitoring data for two tank sites within the study area, it appears that the direction of groundwater flow has not been well defined. In addition, studies performed at a nearby site indicate that although groundwater gradients are locally altered by tidal effects in close proximity to the estuary, flow directions are generally towards the estuary.

Prior to performing Task 5 - Soil and Groundwater Sampling Program, SCI proposes to install 3 monitoring wells to determine the groundwater flow direction. The installation of monitoring wells has been proposed in lieu of installing piezometers, to facilitate measurement repeatability. *} done*

Specifically, this task will include the following:

- Well borings will be drilled using hollow stem auger equipment.
- Upon completion of drilling, the borings will be completed as 2-inch diameter monitoring wells
- The wells will be properly developed prior to sampling.
- The wells will be sampled and analyzed in accordance with procedures outlined in Tasks 5 and 6.
- The wells will be vertically and horizontally located.
- Gradient determinations will be made based on data from the new and previously existing wells. *} results?*

Task 5 - Soil and Groundwater Sampling Program

Based on a review of existing site analytical data, data gaps exist regarding the extent of the known diesel release, and other potential petroleum hydrocarbon source areas. Soil and groundwater samples will be obtained from test borings located a) in the known release area, b) near storm and sanitary sewer improvements, and c) near other potential sources. Thirty-one boring locations have been selected as shown on the attached plan. Specifically, the investigation will include the following:

- Borings will be continuously cored using a portable, hydraulically-driven soil coring system (Enviro-Core)
- A field engineer/geologist will observe coring operations and prepare detailed logs of the soils encountered
- Soil samples will be screened in the field using an organic vapor meter (OVM)

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Any Soil Spills

- Upon completion of coring, 1-inch diameter machine slotted well screens will be temporarily placed into the borings to facilitate collection of grab groundwater samples
- Following grab groundwater sample collection, the temporary casings will be removed and the borings will be backfilled with cement grout and patched to match existing conditions
- Investigation wastes will be placed into 55-gallon drums and left on-site pending analytical test results
- Boring locations will be vertically and horizontally located

Task 6 - Analytical Testing Program

Selected soil and groundwater samples will be transported under Chain-of-Custody to Curtis & Tompkins, Ltd., a state-certified analytical laboratory. All samples will be analyzed for petroleum hydrocarbons. In addition, selected samples will be further analyzed for other potential contaminants of concern. The proposed testing program is presented on Table 1 (see attached).

Task 7 - Engineering Analysis and Data Report Preparation

The results of the investigation will be summarized in a data report. Specifically, the report will include the following:

- Tabulated analytical data from this study and those performed by Uribe and Clayton Environmental in the study area
- Maps showing sampling locations and the location of subsurface anomalies
- Conclusions regarding potential source areas based on the tasks described herein
- Recommendations regarding the scope of additional investigations, if necessary

Task 8 - Free Product Removal and Groundwater Monitoring

Free product removal and groundwater monitoring activities have been performed by Clayton Environmental at two KOT properties within the Eighth Avenue area. SCI will continue these services. Activities will include free product recovery on a monthly basis from two wells at the former location of the pipeline leak (H-213) and quarterly monitoring of the existing six wells at former Building H-213 and the one existing well at Building H-107. Groundwater samples will not be obtained from wells in which free floating product is encountered. Data will be summarized in quarterly letter reports.

- Results
The May event was performed during the week of May 20, 1996. In addition to the scheduled water sampling, a sample of floating product was obtained and analyzed from well MW-6 located in the previous H-213 area to evaluate its predominate constituents. The next quarterly event will be performed during the month of August.

Results?

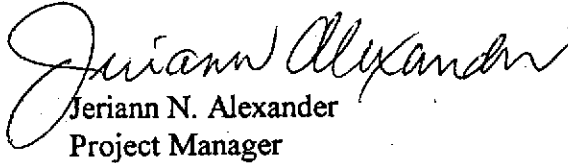
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SCHEDULE

SCI is in the process of implementing this work plan and will keep you informed of significant findings. In addition, you will be notified 72 hours in advance of implementing a new task. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

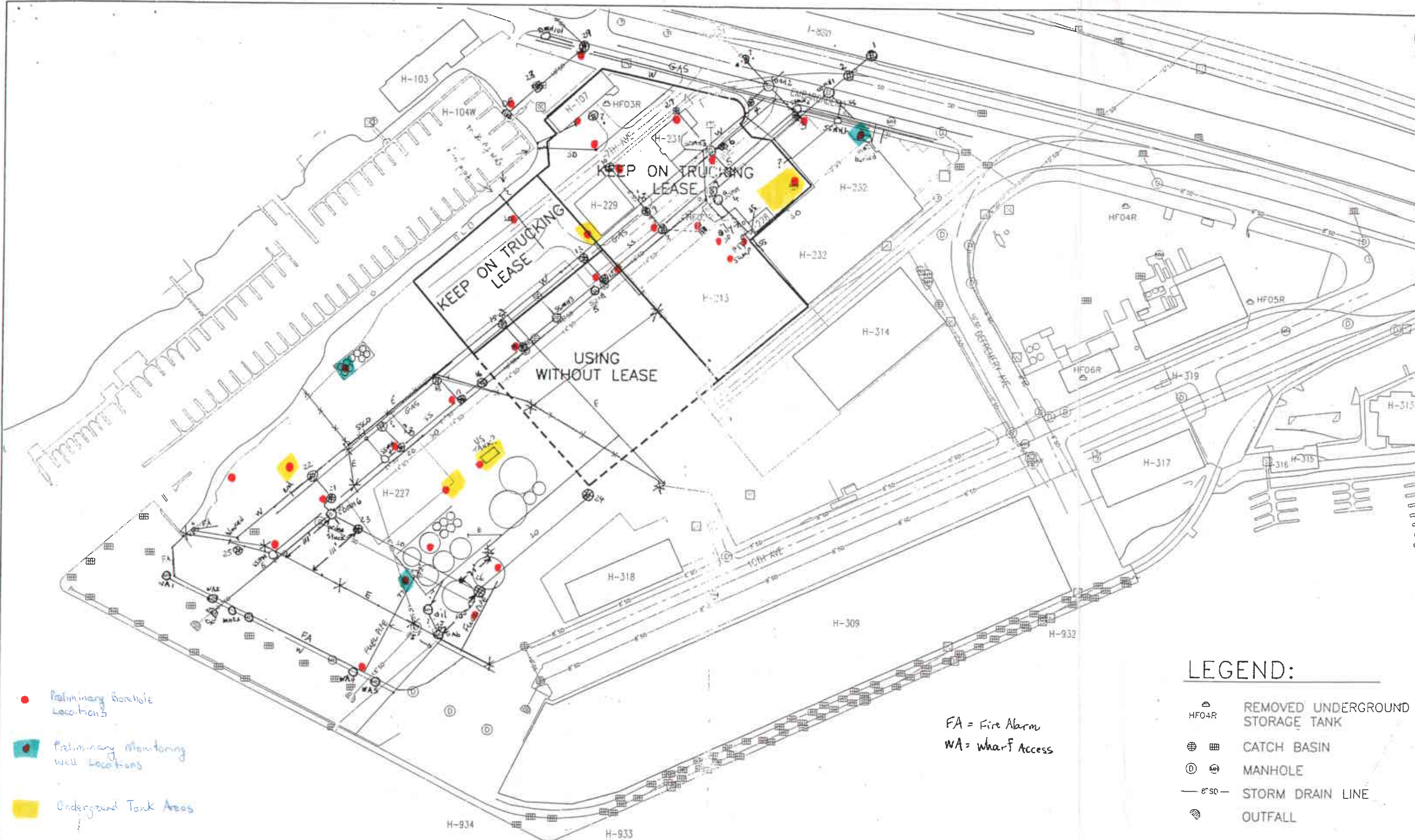

Jeriann N. Alexander
Project Manager

JNA:RWR:sld

Attachment: Proposed Sampling Plan
Analytical Testing Program

cc: Ms. Michele Heffes
Deputy Port Attorney

Mr. Jeff Rubin
Associate Port Environmental Scientist



- Preliminary Borehole Locations
- Preliminary Monitoring Well Locations
- Underground Tank Areas

- LEGEND:**
- REMOVED UNDERGROUND STORAGE TANK
 - CATCH BASIN
 - MANHOLE
 - STORM DRAIN LINE
 - OUTFALL

FA = Fire Alarm
 WA = wharf Access

REFERENCE XREF: \final\1181.dwg						LAND RECORDS MANAGEMENT PRELIMINARY SAMPLING PLAN	PORT OF OAKLAND <small>530 WATER STREET OAKLAND, CALIFORNIA</small>	DATE 11-16-95 SCALE 1"=150' SHEET 01 OF 01 FILE final\1181a
*PORT OF OAKLAND DRAWN TO 3.20' BELOW MEAN SEA LEVEL								

**TABLE 1
ANALYTICAL TESTING PROGRAM
NINTH AVENUE TERMINAL**

No pvt's

<u>Area of Environmental Concern</u>	<u>Sample Designation</u>	<u>O/G</u>	<u>TVH</u>	<u>TEH</u>	<u>BTEX</u>	<u>PCBs</u>	<u>Herbs./ Pests.</u>	<u>Metals</u>	<u>8240s</u>	<u>8270s</u>	<u>PNA's</u>
Pacific Lumber Well Area	Soil		X	X	X						
	Water	X	X	X					X	X	X
Manhole near H-207/H208, Cleaning Compounds & Liquid Fertilizer Manufacturing	Soil	X		X							
	Water	X		X							
H-209 Drayage Tanks	Soil	X	X	X	X						
	Water	X	X	X					X		
H-211/232 Lateral Loop	Soil	X	X	X	X	X	X	X	X	X	X
	Water	X	X	X	X						
H-213 KOT Former AST Pipe Leak	Soil		X	X	X						
	Water		X	X					X		
	Product	X	X	X		X		X	X	X	X
H-213 KOT Current AST	Soil		X	X	X						
	Water		X	X					X		
H-213 Oil Tanks	Soil	X		X		X					
	Water	X		X		X		X	X	X	X
Fuel Line From American Bitumuls/Port Petroleum	Soil	X		X		X		X	X	X	X
	Water	X		X		X			X		
	Product	X		X		X		X	X	X	X
Storm Drain Lines Thru American Bitumuls/Port Petroleum	Soil	X		X							
	Water	X		X		X			X	X	X
H-227 Yard UST	Soil	X	X	X	X						
	Water	X	X	X				X	X	X	X

Low levels

No

*Pb Zn
Ba*

*solvents
DOT
MSK*

Parachlorophenol

why water only on

X X X X X

will they be run if further soil?

**TABLE 1
ANALYTICAL TESTING PROGRAM
NINTH AVENUE TERMINAL**

<u>Area of Environmental Concern</u>	<u>Sample Designation</u>	<u>O/G</u>	<u>TVH</u>	<u>TEH</u>	<u>BTEX</u>	<u>PCBs</u>	<u>Herbs./ Pests.</u>	<u>Metals</u>	<u>8240s</u>	<u>8270s</u>	<u>PNAs</u>
Various Storm Drain Manholes	Soil	X	X	X	X						
	Water	X	X	X		X		X	X	X	X
Storm Drain line west of H107	Soil	X	X	X							
	Water	X	X	X				X	X	X	X
East Bay Oil Company	Soil	X	X	X	X			X		X	X
	Water	X	X	X	X			X	X	X	X
Storm Drain Lines east of H-107	Soil	X	X	X							
	Water	X	X	X		X		X	X	X	X
Storm drain tie-ins S. end 8th Ave.	Soil			X	X						
	Water			X	X						