



# PORT OF OAKLAND

January 24, 1994

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HAZMAT  
94 JAN 27 PM 2:24

Ms. Jennifer Eberle  
Hazardous Materials Specialist  
Hazardous Materials Division  
Alameda County Health  
Care Services Agency  
80 Swan Way, Rm 200  
Oakland, CA 94621

**Subject: *Underground Storage Tank Removal and Soil Excavation Report, Transbay Container Terminal (TBCT), 707 Ferry Street, Port of Oakland, Oakland, California***

Dear Ms. Eberle:

Enclosed, you will find the Underground Storage Tank Removal and Soil Excavation Report, Transbay Container Terminal (TBCT), 707 Ferry Street, Port of Oakland, Oakland, California.

One 10,000 gallon diesel UST was removed on 3 December 1993. ✓ The report documents all activities associated with the tank removal and soil excavation. The Port will submit a workplan for the installation of a monitoring well in the near future.

Please call me at 272-1184 if you have any questions or comments.

Sincerely,

Jon Amdur  
Port Environmental Scientist

CC: Rich Hiett, San Francisco Regional Water Quality Control Board, 2101 Webster Street, Suite 500 Oakland, CA 94612

Neil Werner (Environmental Department)

enclosure

**Underground Storage Tank Removal  
and Soil Excavation at  
Berth 25, 707 Ferry Street, Oakland, California**

*January 14, 1994*

Prepared for  
Port of Oakland,  
Oakland, California

Prepared by  
Uribe & Associates  
Oakland, California

**Underground Storage Tank Removal  
and Soil Excavation at  
Berth 25, 707 Ferry Street, Oakland, California**

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## **Introduction**

### **Purpose**

This report presents the results of environmental services performed by Uribe & Associates (U&A) during removal of one 10,000-gallon diesel underground storage tank (UST) at 707 Ferry Street, Oakland, California (Figure 1). The UST was removed by Ramcon Environmental (Ramcon) of Sacramento, California on December 3, 1993.

### **Scope of Services**

U&A's scope of services was to provide oversight of UST removal operations, collect soil and groundwater samples for analysis by a certified analytical laboratory, and provide a closure report documenting UST removal activities. Our scope of services did not include observation of backfilling, compaction testing, or inspection of replacement tank systems.

### **Background and Project Description**

The site is in the marine terminals area of the Port of Oakland. The site is currently a container shipping terminal operated by Transbay Container Corporation (TBCT). The topography is flat; the elevation is approximately 10 feet above mean sea level.

An Unauthorized Release Report form was filed on June 6, 1990. The tank had failed a precision tightness test, but the leak was found to be on the vent line. TBCT continued to operate the tank, but did not fill the tank beyond 3/4 full. *→ not here*

Ramcon was contracted by the Port to obtain all necessary permits, remove the tanks and any associated contaminated soils (as necessary), backfill the excavations, and replace the tank system with a new UST. Analytical laboratory services were provided by Curtis and Tompkins, Ltd. of Berkeley, California.

### **Regional and Site Geology**

The Marine Terminals area of the Port is constructed on a fill peninsula on the east side of San Francisco Bay. The fill consists of material dredged from the estuary, and material brought from other areas. In some areas, the fill contains a large percentage of debris. Beneath the fill, are the silts, sands, and clayey silts of the original tidal marsh. These soils are commonly called Bay Mud. Below the Bay Mud is the Merritt Sand formation, which contains a fresh water aquifer that is a potential source of irrigation water in both Oakland and Alameda.

The soils encountered at the site during the UST removal consisted of aggregate fill in the upper two feet, and silty sand to the base of the excavation. The silty sand is a fine grained to medium grained sand with between 25 and 40 percent silt. The backfill material for the tank was pea gravel. The groundwater depth at the site is approximately ten and a half feet below ground surface. The tank was located approximately 300 feet south of the shoreline. It is unknown at this time if the groundwater elevations are tidally influenced.

## **UST Removal and Soil Excavation Operations**

### **UST Removal Procedures**

On December 3, 1993, the UST was exposed and the excavated material was stockpiled. The tank was inerted with dry ice and verified by measuring the lower explosive limit and percent oxygen. Jennifer Eberle of Alameda County Department of Environmental Health (ACDEH) and G. Cody of the City of Oakland Fire Department checked all of the results to approve the safety of the removal of the UST.

Ramcon used a large crane to remove the tank. Groundwater was observed in the excavation for the UST at approximately 10.5 feet below ground surface. The groundwater had a slight sheen directly beneath the former tank location (25 percent of water surface was covered).

The ACDEH representative and U&A then inspected the tank for holes, or other damage. There were no obvious holes or other damage to the tank. The tank was a 10,000 gallon single wall fiberglass tank. The tank was disposed of at Erickson Environmental in Richmond, California.

*manifest?*

The UST was located adjacent to a building between the trackways of the 'transtainer' overhead cranes used to move the shipping containers. Containers were also stacked to the north and south of the tank location, within about 20 feet of the excavation. Due to the proximity of the terminal operations and the potentially hazardous working conditions during ship loading, access to the job site was limited, and the extent of potential excavation was constrained. Ramcon installed sheet pilings for shoring around the tank location and excavation of contaminated soil beyond the shoring was not planned, except as needed to place a new UST. Figure 2 shows the extent of the excavation.

### **Soil Excavation**

Soil adjacent to the tank and under pump island was excavated on December 3 and 11, 1993. A total of approximately 200 cubic yards of soil were excavated. In the tank area, soil was only excavated as needed to install the replacement UST. In the pump island area, soil was excavated to a depth of five feet below ground surface (bgs) to remove apparent contamination. The soil under the pump island was discolored and registered up to 400 parts per million (ppm) on a photoionization detector (PID).

## **Soil Sampling and Analytical Laboratory Results**

### **Soil Sampling**

Following UST removal on December 3, 1993, four soil samples were collected following the U&A soil sampling standard operating procedure (Appendix A). The samples were collected in clean brass liners, capped with Teflon liners and plastic end caps and placed in an ice chest for transport to the laboratory. Two samples were collected from beneath the diesel tank location and two from beneath the pump location. The sample locations were discussed with and directed by Jennifer Eberle of ACDEH. Sample locations are shown on Figure 2. On December 3, 1993, two composite samples were also collected from the excavated soil stockpile.

The samples collected from the diesel tank location were from 10.5 feet bgs and near both ends of the former UST. The samples collected from underneath the pump island location were collected at 2.5 and 4.5 feet bgs. <sup>9-10'</sup> The 2.5 foot depth corresponded to the highest apparent contamination (both visually and with the PID). The 4.5 foot location is just below where the apparent contamination ended.

### **Groundwater Sampling**

Following UST removal on December 3, 1993, U&A collected two water samples from the excavation. One was from the side of the former tank location, and the other was from directly underneath the former tank location. The groundwater in the excavation was not connected when the samples were collected. The area directly beneath the former UST location had a slight sheen; the area adjacent to the tank had no sheen. No measurable floating product was observed at any time in the excavation.

### **Analytical Laboratory Results**

The samples were submitted to Curtis & Tompkins, Ltd., of Berkeley, California for analysis. The samples were analyzed for benzene, toluene, ethyl benzene, xylenes (BTEX) by EPA Method 8020; and TPH-Diesel by Modified EPA Method 8015. One of the soil stockpile samples was also analyzed for the CCR 17 metals by EPA Methods 6010 and 7000, Volatile organic compounds by EPA Method 8240; Reactivity, Corrosivity, Ignitability, and Bio Assay.

Both groundwater samples were analyzed for TPH-Diesel, and the sample from below the tank location was also analyzed for BTEX. Both samples had detected levels of TPH-Diesel, with a maximum of 50 mg/l (sample T-water).



The soil samples analyzed from the tank pit contained a maximum concentration of 2 mg/kg TPH-Diesel (SE-10.0). The maximum concentration detected was 4,200 mg/kg TPH-Diesel (PI-2.5) 2.5 feet below the former pump island, which the laboratory reported as kerosene. This sample is also the only one with detected BTEX compounds. The BTEX contaminated soil was removed and the maximum contamination remaining in place, after excavation, is 18 mg/kg TPH-Diesel in the former pump location (PI-4.5).

Table 1 summarizes the results from excavation samples. Table 2 summarizes the results from the water samples collected from the excavation. Table 3 summarizes the results of the soil stockpile samples. Copies of the laboratory analysis reports are included as Appendix B.

## **Conclusions and Recommendations**

### **Conclusions**

There have been unauthorized releases from the UST system. An unauthorized release report has been filed with ACDEH. *don't have it*

After soil excavation, results of laboratory analysis indicate that low levels of TPH-diesel, and no BTEX compounds remain in the soil. ✓

Groundwater was observed in the excavation and sample results indicate that there is groundwater contamination.

### **Recommendations**

U&A recommends the installation of three groundwater monitoring wells adjacent to the tank excavation. Two of the wells should be installed in the assumed down-gradient direction from the former UST location and one in the up-gradient direction.

*good*

**Tables**

**Table 1:**  
**Summary of Laboratory Results**  
**From Sidewalls of Excavation of Diesel Tank CF-04**  
**At 707 Ferry Street, Oakland, California**  
 Concentrations in mg/kg ✓

Sample ID	Date	TPH-Diesel	Benzene	Toluene	Ethyl benzene	Xylenes
NW-10.0	12/3	ND ✓	1 ✓	<0.005 ✓	<0.005 ✓	<0.005 ✓
SE-10.0	12/3	ND ✓	2 ✓	<0.005 ✓	<0.005 ✓	<0.005 ✓
PI-2.5 <sup>1</sup>	12/3	4,200 <sup>2</sup> ✓	<0.005 ✓	0.440 ✓	2.100 ✓	3.900 ✓
PI-4.5	12/3	18 ✓	<0.005 ✓	<0.005 ✓	<0.005 ✓	<0.005 ✓

<sup>1</sup> Soil associated with this sample was excavated.

<sup>2</sup> Quantified as Kerosene due to overlap of hydrocarbon ranges.

**Table 2:**  
**Summary of Laboratory Results**  
**From Groundwater Samples Collected from Excavation**  
**At 707 Ferry Street, Oakland, California**  
 Concentrations in mg/l ✓

Sample ID	Date	TPH-Diesel	Benzene	Toluene	Ethyl benzene	Xylenes
beside UST H-Water	12/3	19 ✓	<0.0005 ✓	<0.0005 ✓	<0.0005 ✓	<0.0005 ✓
below UST T-Water	12/3	.50 ✓	<0.0005 ✓	<0.0005 ✓	<0.0005 ✓	<0.0005 ✓

**Notes:**

H refers to area next to the tank.

T refers to area directly beneath tank.

Samples were collected after tank was removed.

**Table 3:**  
**Summary of Laboratory Results**  
**From Soil Stockpile Samples**  
**At 707 Ferry Street, Oakland, California**  
 Concentrations in mg/kg

Constituent	Sample ID	
	SK-1	SK-2
TPH-Diesel	180	96
Benzene	<0.005	<0.005
Toluene	<0.005	<0.005
Ethyl benzene	<0.005	<0.005
Xylenes	<0.005	<0.005
Corrosivity	8.6 SU	na
Reactivity (Cyanide and Sulfide)	<1	na
Ignitability	Not Ignitable	na
Bio Assay	LC50 > 750	na
<b>Metals</b>		
Antimony	<2.9	na
Arsenic	2.9	na
Barium	72	na
Beryllium	0.25	na
Cadmium	<0.24	na
Chromium	33	na
Cobalt	10	na
Copper	27	na
Lead	20	na
Mercury	<0.095	na
Molybdenum	<0.98	na
Nickel	43	na
Selenium	<2.5	na
Silver	<0.49	na
Thallium	<2.5	na
Vanadium	24	na
Zinc	66	na
<b>EPA 8240</b>		
Chloromethane	<0.010	na
Bromomethane	<0.010	na
Vinyl Chloride	<0.010	na
Chloroethane	<0.010	na
Methylene chloride	<0.020	na

*na = not analyzed*

**Table 3:**  
**Summary of Laboratory Results**  
**From Soil Stockpile Samples**  
**At 707 Ferry Street, Oakland, California**  
 Concentrations in mg/kg

Constituent	Sample ID	
	SK-1	SK-2
Acetone	<0.020	na
Carbon disulfide	<0.005	na
Trichlorofluoromethane	<0.005	na
1,1-Dichloroethene	<0.005	na
1,1-Dichloroethane	<0.005	na
cis-1,2-Dichloroethene	<0.005	na
trans-1,2-Dichloroethene	<0.005	na
Chloroform	<0.005	na
Freon 113	<0.005	na
1,2-Dichloroethane	<0.005	na
2-Butanone	<0.010	na
1,1,1-Trichloroethane	<0.005	na
Carbon tetrachloride	<0.005	na
Vinyl Acetate	<0.050	na
Bromodichloromethane	<0.005	na
1,2-Dichloropropane	<0.005	na
cis-1,3-Dichloropropane	<0.005	na
Trichloroethene	<0.005	na
Dibromochloromethane	<0.005	na
1,1,2-Trichloroethane	<0.005	na
Benzene	<0.005	na
trans-1,3-Dichloropropane	<0.005	na
Bromoform	<0.005	na
2-Hexanone	<0.010	na
4-Methyl-2-Pentanone	<0.010	na
1,1,2,2-Tetrachloroethane	<0.005	na
Tetrachloroethene	<0.005	na
Toluene	<0.005	na
Chlorobenzene	<0.005	na
Ethylbenzene	<0.005	na
Styrene	<0.005	na
Total Xylenes	<0.005	na

*na = not analyzed*

## Figures

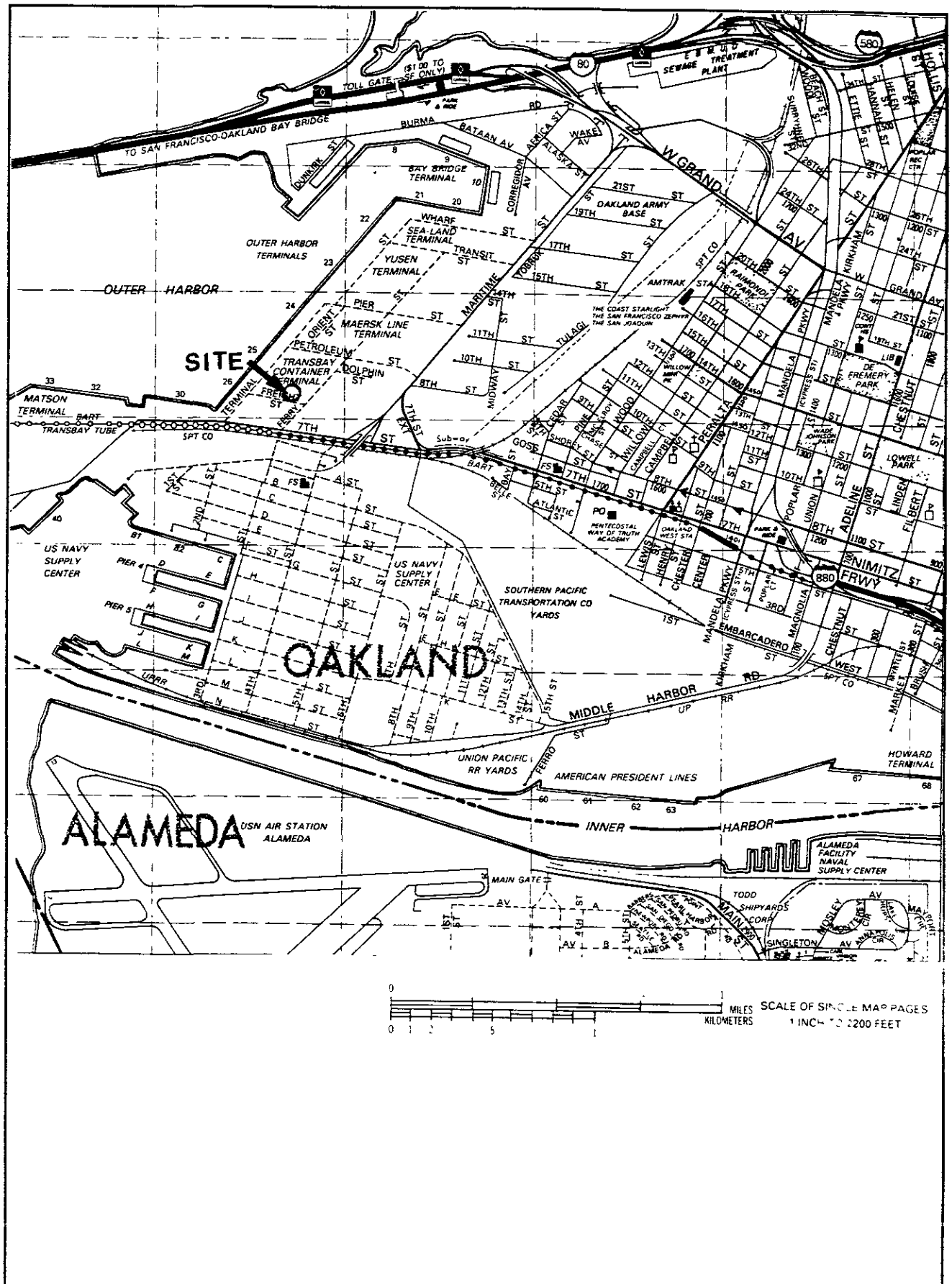
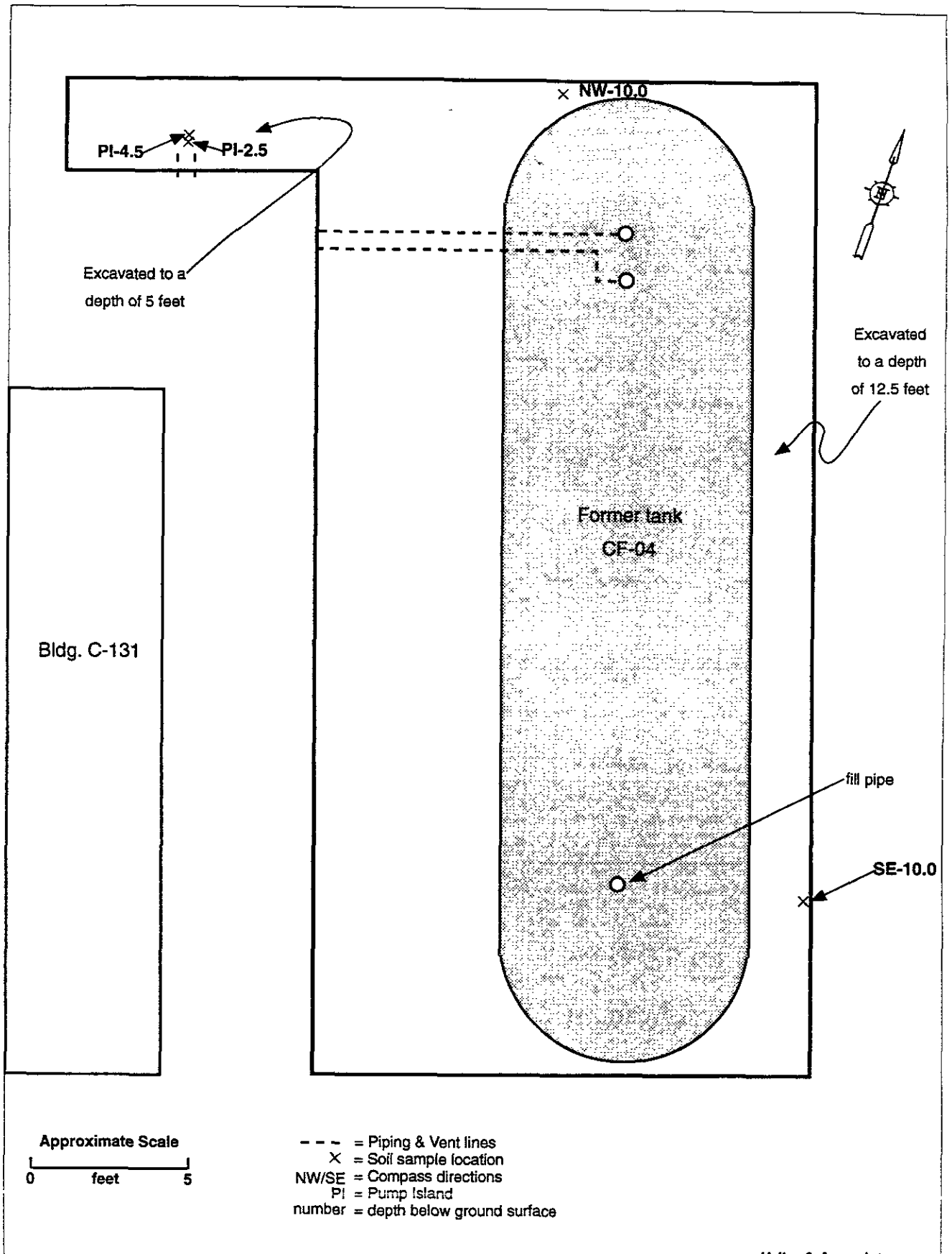


Figure 1: Site Location Map, Berth 25, 707 Ferry Street, Oakland, California





96-405 fig 2 1/6/94DY

Uribe & Associates

Figure 2: Site Plan with Sample Locations Berth 25, 707 Ferry Street, Oakland, California

***Appendix A***

***Standard Operating Procedures***

### SOIL SAMPLING:

During boring activities, soil samples for chemical analysis will be collected at 5-foot intervals, as required by regulations, and more frequently if warranted. Samples will be collected in decontaminated brass sleeves inserted into the sampler. Upon recovery, the sampler will be opened, and the sleeves separated and immediately covered with Teflon tape and plastic end-caps. Samples will be placed in a cooler, chilled to 4°C, and transported to the analytical laboratory under chain-of-custody. Each sample will be labelled with an identification number appropriate for the project written in indelible ink. The sample label will also include the date, company name, project number, preservative used, and sampler's initials. The number will be included on the chain-of-custody form along with any special information necessary to identify the sample.

Grab samples will also be collected in brass sleeves and capped with Teflon and plastic end caps. Grab sample frequency and distribution will vary according to the project. Generally, a minimum of one discreet grab sample will be collected from each 20 cubic yards of soil. Sample locations will be determined using a nine-point random grid system. Transportation and chain-of-custody procedures will be identical to boring samples.

All sampling equipment will be decontaminated after each use with simple green™ or Tri-Sodium Phosphate.

## CHAIN-OF-CUSTODY PROCEDURES

### Sample Handling:

All soil and water samples will be labelled with the sample number, date, company name, preservative used, and sampler's initials. A chain-of-custody form will then be filled out including the time and date of the sample, the sample number, the number of containers for each sample, the analysis required and any distinguishing comments or laboratory notifications. The chain-of-custody form will remain with the samples at all times during transportation and storage.

### Transfer of Custody to Laboratory

The chain-of-custody will be signed and dated by the sampler when relinquished to the laboratory. The laboratory courier or sample receiver will also sign and date the chain-of-custody.

## Organic Compound Monitor (OVA or PID or HNU)

### **Equipment Preparation**

1. Ensure that the battery in the Organic Compound Monitor is fully charged.
2. Recharge the hydrogen gas cylinder in the Century OVA.
3. Ensure that the Organic Compound Monitor has been calibrated within the last week.
4. Follow manufacturer's instructions.

### **Monitoring Activities**

1. Once an hour, record the instrument reading on the data sheet.

### **Post-Monitoring Activities**

Maintenance, care, and calibration of Organic Compound Monitors should be carried out in accordance with the instrument's instruction manual.

## GROUNDWATER SAMPLING

Groundwater samples for chemical analysis will be collected following this procedure:

All purging and sampling equipment will be decontaminated prior to use.

Upon arrival at the site, the wells will be located and opened up, to allow for equilibration with the atmosphere. The monitoring well is first checked for floating product with a dual interface probe. Water or liquid-level measurements will be collected, to the nearest one hundredth of a foot (0.01 foot). If a probe is not available, a clear plastic bailer may be used to check for product. The volume of water in the well casing will be calculated and three to five casing volumes of water will be evacuated. The well will be bailed or pumped to remove the correct volume of water. Stabilization parameters, temperature, conductivity and pH, will be monitored. For wells with extremely low flow rates, i.e. less than 0.01 gallon per minute (GPM), the well will be bailed dry and allowed to recover overnight, and then sampled.

Once the well has been purged, samples will be collected with a bailer and transferred to appropriate sampling vials or bottles. Samples will be labeled and placed in a cooler, cooled to 4 ° C and transported to the analytical laboratory under chain-of-custody. Purge water will be stored on-site pending analytical results, and then properly disposed of.

***Appendix B***

***Laboratory Analysis Results  
and Chain-of-Custody Forms***



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

2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

A N A L Y T I C A L   R E P O R T

Prepared for:

Uribe & Associates  
2930 Lakeshore Avenue  
Suite Two Hundred  
Oakland, CA 94610

Date: 15-DEC-93  
Lab Job Number: 113434  
Project ID: 96-405  
Location: Port of Oakland-TCBT

Reviewed by: 

Reviewed by: 

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LABORATORY NUMBER: 113434  
 CLIENT: URIBE & ASSOCIATES  
 PROJECT ID: 96-405  
 LOCATION: PORT OF OAKLAND-TCBT

DATE SAMPLED: 12/03/93  
 DATE RECEIVED: 12/06/93  
 DATE ANALYZED: 12/09/93  
 DATE REPORTED: 12/15/93

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020  
 Extraction by EPA 5030 Purge and Trap

LAB ID	SAMPLE ID	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)	REPORTING LIMIT (ug/Kg)
113434-001	96405-NW-10.0	ND	ND	ND	ND	5
113434-008	96405-SK-2	ND	ND	ND	ND	5
METHOD BLANK		ND	ND	ND	ND	5

ND = Not detected at or above reporting limit.

Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	91

LABORATORY NUMBER: 113434  
 CLIENT: URIBE & ASSOCIATES  
 PROJECT ID: 96-405  
 LOCATION: PORT OF OAKLAND-TCBT

DATE SAMPLED: 12/03/93  
 DATE RECEIVED: 12/06/93  
 DATE ANALYZED: 12/12/93  
 DATE REPORTED: 12/15/93

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020  
 Extraction by EPA 5030 Purge and Trap

LAB ID	SAMPLE ID	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)	REPORTING LIMIT (ug/Kg)
113434-003	96405-PI-2.5	ND	440	2100	3900	80
METHOD BLANK		ND	ND	ND	ND	30

ND = Not detected at or above reporting limit.

Reporting Limit applies to all analytes.

QA/QC SUMMARY

LCS RECOVERY, %

99

LABORATORY NUMBER: 113434-007  
 CLIENT: URIBE & ASSOCIATES  
 PROJECT ID: 96-405  
 LOCATION: PORT OF OAKLAND-TCBT  
 SAMPLE ID: 96405-SK-1

DATE SAMPLED: 12/03/93  
 DATE RECEIVED: 12/06/93  
 DATE ANALYZED: 12/08/93  
 DATE REPORTED: 12/15/93

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

---

1,2-Dichloroethane-d4	106 %
Toluene-d8	107 %
Bromofluorobenzene	92 %



LABORATORY NUMBER: 113434 METHOD BLANK  
 CLIENT: URIBE & ASSOCIATES  
 PROJECT ID: 96-405  
 LOCATION: PORT OF OAKLAND-TCBT

DATE SAMPLED: N/A  
 DATE RECEIVED: N/A  
 DATE ANALYZED: 12/08/93  
 DATE REPORTED: 12/15/93

## EPA METHOD 8240: VOLATILE ORGANICS IN SOILS &amp; WASTES

COMPOUND	Result (ug/Kg)	Reporting Limit (ug/Kg)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit.

## QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	106 %
Toluene-d8	101 %
Bromofluorobenzene	102 %

## MS/MSD Report

Matrix Sample Number: 113434-007  
 Lab No: QC53788 QC53789  
 Matrix: SOIL  
 Batch No: 11794 939662 939663 939651

Date Analyzed: 09-DEC-93  
 Spike File: >AL818  
 Spike Dup File: >AL819  
 Analyst: CW

	Instrdg	SpikeAmt	% Rec	Limits
<u>MS RESULTS</u>				
1,1-Dichloroethene	40.55	50	81 %	59-172%
Trichloroethene	46.49	50	93 %	62-137%
Benzene	49.88	50	98 %	66-142%
Toluene	48.12	50	96 %	59-139%
Chlorobenzene	53.8	50	108 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	51.93	50	104 %	70-121%
Toluene-d8	53.56	50	107 %	81-117%
Bromofluorobenzene	48.72	50	97 %	74-121%
<u>MSD RESULTS</u>				
1,1-Dichloroethene	42.69	50	85 %	59-172%
Trichloroethene	46.71	50	93 %	62-137%
Benzene	50.2	50	99 %	66-142%
Toluene	48.31	50	97 %	59-139%
Chlorobenzene	53.55	50	107 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	51.38	50	103 %	70-121%
Toluene-d8	53.52	50	107 %	81-117%
Bromofluorobenzene	47.41	50	95 %	74-121%
<u>MATRIX RESULTS</u>				
1,1-Dichloroethene	0			
Trichloroethene	0			
Benzene	.7			
Toluene	0			
Chlorobenzene	0			
<u>RPD DATA</u>				
1,1-Dichloroethene	5 %			< 22%
Trichloroethene	0 %			< 24%
Benzene	1 %			< 21%
Toluene	0 %			< 21%
Chlorobenzene	0 %			< 21%

Results within Specifications - PASS

CW 12/9/93



Client: Uribe & Associates

Laboratory Login Number: 113434

Project Name: Port of Oakland-TCBT  
Project Number: 96-405

Report Date: 15 December 93

ANALYSIS: pH

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	Method	Analyst	QC Batch
113434-007	96405-SK-1	Soil	03-DEC-93	06-DEC-93	09-DEC-93	8.6	SU *	EPA 9045	TR	11819

\* Soil pH measured as water

## Q C B a t c h R e p o r t

Client: Uribe & Associates  
 Project Name: Port of Oakland-TCBT  
 Project Number: 96-405

Laboratory Login Number: 113434  
 Report Date: 15 December 93

ANALYSIS: pH

QC Batch Number: 11819

## Calibration Verification Results

Sample	Result	TV	Difference	Limit	Analyzed
ICV	10.03	10.00	.03	< 0.10	09-DEC-93
CCV	7.01	7.00	.01	< 0.10	09-DEC-93

## Sample Duplicate Results

Sample	Duplicate	RPD	Analyzed
8.63	8.61	.2%	09-DEC-93

LABORATORY NUMBER: 113434  
 CLIENT: URIBE & ASSOCIATES  
 PROJECT ID: 96-405  
 LOCATION: PORT OF OAKLAND-TCBT

DATE SAMPLED: 12/03/93  
 DATE RECEIVED: 12/06/93  
 DATE EXTRACTED: 12/06/93  
 DATE ANALYZED: 12/6,7/93  
 DATE REPORTED: 12/08/93

Extractable Petroleum Hydrocarbons in Soils & Wastes  
 California DOHS Method  
 LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
113434-1	96405-NW-10.0	ND	1	1
113434-2	96405-SE-10.0	ND	2	1
113434-3	96405-PI-2.5	4,200	***	100
113434-4	96405-PI-4.5	**	18	1
113434-7	96405-SK-1	**	180	10
113434-8	96405-SK-2	**	96	1

ND = Not detected at or above reporting limit.

\* Reporting limit applies to all analytes.

\*\* Kerosene range not reported due to overlap of hydrocarbon ranges.

\*\*\* Diesel range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	94



LABORATORY NUMBER: 113434  
 CLIENT: URIBE & ASSOCIATES  
 PROJECT ID: 96-405  
 LOCATION: PORT OF OAKLAND-TCBT

DATE SAMPLED: 12/03/93  
 DATE RECEIVED: 12/06/93  
 DATE EXTRACTED: 12/04/93  
 DATE ANALYZED: 12/07/93  
 DATE REPORTED: 12/08/93

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

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
113434-5	T WATER	**	50,000	5000
113434-6	H WATER	**	19,000	5000

NOTE: Sample results are overrange and are in the process of being diluted and rerun.

\*\* Kerosene range not reported due to overlap of hydrocarbon ranges.

\* Reporting limit applies to all analytes.

QA/QC SUMMARY

BLANK SPIKE RECOVERY, %	45
BLANK SPIKE DUPLICATE RECOVERY, %	78
RELATIVE PERCENT DIFFERENCE, %	52

LABORATORY NUMBER: 113434-007  
 CLIENT: URIBE & ASSOCIATES  
 PROJECT ID: 96-405  
 SAMPLE ID: 96405-SK1

DATE SAMPLED: 12/03/93  
 DATE RECEIVED: 12/06/93  
 DATE REPORTED: 12/08/93

PARAMETER	RESULT	UNITS	REPORTING LIMIT	METHOD
Releasable Cyanide	ND	mg/Kg	1	SW-846 Section 7.3.3.2
Releasable Sulfide	ND	mg/Kg	1	SW-846 Section 7.3.4.1
Ignitability	Does Not Ignite			SW-846 Section 7.1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY	Analysis Date	RPD, %	RECOVERY, %
Cyanide	12/08/93	4	72
Sulfide	12/07/93	12	76
Ignitability	12/08/93	---	---

SAMPLE ID: 96405-SK-1  
 LAB ID: 113434-007  
 CLIENT: Uribe & Associates  
 PROJECT ID: 96-405  
 LOCATION: Port of Oakland-TCBT  
 MATRIX: Soil

DATE SAMPLED: 12/03/93  
 DATE RECEIVED: 12/06/93  
 DATE REPORTED: 12/13/93

**CALIFORNIA TITLE 26 METALS**

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	Batch Number	Method	Analysis Date
Antimony	ND	2.9	11780	EPA 6010	12/09/93
Arsenic	2.9	2.5	11774	EPA 7060	12/07/93
Barium	72	0.49	11780	EPA 6010	12/09/93
Beryllium	0.25	0.098	11780	EPA 6010	12/09/93
Cadmium	ND	0.24	11780	EPA 6010	12/09/93
Chromium (total)	33	0.49	11780	EPA 6010	12/09/93
Cobalt	10	0.98	11780	EPA 6010	12/09/93
Copper	27	0.24	11780	EPA 6010	12/09/93
Lead	20	4.9	11780	EPA 7420	12/08/93
Mercury	ND	0.095	11778	EPA 7471	12/07/93
Molybdenum	ND	0.98	11780	EPA 6010	12/09/93
Nickel	43	0.98	11780	EPA 6010	12/09/93
Selenium	ND	2.5	11774	EPA 7740	12/07/93
Silver	ND	0.49	11780	EPA 6010	12/09/93
Thallium	ND	2.5	11774	EPA 7841	12/08/93
Vanadium	24	0.49	11780	EPA 6010	12/09/93
Zinc	66	0.98	11780	EPA 6010	12/09/93

ND = Not detected at or above reporting limit

CLIENT: Uribe & Associates  
 JOB NUMBER: 113434

DATE REPORTED: 12/13/93

**BATCH QC REPORT  
 BLANK SPIKE/BLANK SPIKE DUPLICATE**

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Arsenic	0.04	0.402	0.43	mg/Kg	100	108	104	7	11774	EPA 7060	12/07/93
Selenium	0.03	0.296	0.282	mg/Kg	99	94	97	5	11774	EPA 7740	12/07/93
Thallium	0.04	0.406	0.402	mg/Kg	102	100	101	1	11774	EPA 7841	12/08/93
Mercury	4	3.866	4.367	ug/L	97	109	103	12	11778	EPA 7470	12/07/93
Antimony	500	443.7	459.6	ug/L	89	92	91	4	11780	EPA 6010	12/08/93
Barium	2000	1949	1908	ug/L	98	95	97	2	11780	EPA 6010	12/08/93
Beryllium	50	44.1	44.1	ug/L	88	88	88	0	11780	EPA 6010	12/08/93
Cadmium	50	54.4	48.8	ug/L	109	98	104	11	11780	EPA 6010	12/08/93
Chromium (total)	200	184.5	184.5	ug/L	92	92	92	0	11780	EPA 6010	12/08/93
Cobalt	500	445.6	450	ug/L	89	90	90	1	11780	EPA 6010	12/08/93
Copper	250	241.9	234.7	ug/L	97	94	96	3	11780	EPA 6010	12/08/93
Lead	500	480	520	ug/L	96	104	100	8	11780	EPA 7420	12/08/93
Molybdenum	400	367.7	365.6	ug/L	92	91	92	1	11780	EPA 6010	12/08/93
Nickel	500	453.6	439.8	ug/L	91	88	90	3	11780	EPA 6010	12/08/93
Silver	50	41.7	41.7	ug/L	83	83	83	0	11780	EPA 6010	12/08/93
Vanadium	500	457.5	456.5	ug/L	92	91	92	0	11780	EPA 6010	12/08/93
Zinc	500	473.4	468.6	ug/L	95	94	95	1	11780	EPA 6010	12/08/93

CLIENT: Uribe & Associates  
 JOB NUMBER: 113434

DATE REPORTED: 12/13/93

 BATCH QC REPORT  
 PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysis Date
Arsenic	ND	2.5	mg/Kg	11774	EPA 7060	12/07/93
Selenium	ND	2.5	mg/Kg	11774	EPA 7740	12/07/93
Thallium	ND	2.5	mg/Kg	11774	EPA 7841	12/08/93
Mercury	ND	0.1	mg/Kg	11778	EPA 7471	12/07/93
Antimony	ND	3	mg/Kg	11780	EPA 6010	12/08/93
Barium	ND	0.5	mg/Kg	11780	EPA 6010	12/08/93
Beryllium	ND	0.1	mg/Kg	11780	EPA 6010	12/08/93
Cadmium	ND	0.25	mg/Kg	11780	EPA 6010	12/08/93
Chromium (total)	ND	0.5	mg/Kg	11780	EPA 6010	12/08/93
Cobalt	ND	1	mg/Kg	11780	EPA 6010	12/08/93
Copper	ND	0.25	mg/Kg	11780	EPA 6010	12/08/93
Lead	ND	5	mg/Kg	11780	EPA 7420	12/08/93
Molybdenum	ND	1	mg/Kg	11780	EPA 6010	12/08/93
Nickel	ND	1	mg/Kg	11780	EPA 6010	12/08/93
Silver	ND	0.5	mg/Kg	11780	EPA 6010	12/08/93
Vanadium	ND	0.5	mg/Kg	11780	EPA 6010	12/08/93
Zinc	ND	1	mg/Kg	11780	EPA 6010	12/08/93

ND = Not detected at or above reporting limit



TOXICITY TESTING • OCEANOGRAPHIC RESEARCH  
Dec. 13, 1993

Ms. Lourinda Brouwer  
Curtis & Tompkins, Ltd.  
2323 Fifth St.  
Berkley, CA 94710

Dear Ms. Brouwer:

We are pleased to present the enclosed acute bioassay report. The test was conducted under the guidelines prescribed in "Static Acute Bioassay Procedures for Hazardous Waste Samples" California Department of Fish and Game, 1988. The results were as follows:

CLIENT:	Curtis & Tompkins, Ltd.
SAMPLE I.D.:	#96405-SK-1 113434-7
DATE RECEIVED:	12/07/93
ABC LAB. NO.:	C&T1233.616

**DOHS (TITLE 22) HAZARDOUS WASTE BIOASSAY USING FATHEAD MINNOWS**

96 HOUR LC50 = >750 mg/l

STATUS = Pass

Yours very truly,

Thomas (Tim) Mikel  
Laboratory Director

AQUATIC BIOASSAY AND CONSULTING LABORATORIES, INC.

29 North Olive Street

Ventura, CA 93001

(805) 643-5621

DOHS Bioassay for Hazardous Waste (Title 22)

SAMPLE INFORMATION

CLIENT:	Curtis & Tompkins Ltd.	Date:	12/07/93
SAMPLE ID	#96405-SK-1	LAB #:	C&T1233.616

113434-7

WATER QUALITY

DILUTION WATER: Reconst. Fresh				AERATION: Single Bubble Air			
CONTROL HARDNESS				CONTROL ALKALINITY			
Beg.	41 mg/l	End:	44 mg/l	Beg.:	30 mg/l	End:	31 mg/l
SAMPLE HARDNESS				SAMPLE ALKALINITY			
Beg.:	43 mg/l	End:	43 mg/l	Beg.:	29 mg/l	End:	30 mg/l

ORGANISM INFORMATION

SPECIES:	Pimephales promelas	DATE REC'D:	11/16/93
COMMON NAME:	Fathead Minnow	AVERAGE LNTH:	38 mm
SOURCE:	Thomas Fish Co.	AVERAGE WT:	0.71 gm
CARRIER:	Greyhound Bus Co.	NO FISH / TANK	10

TEST DATA

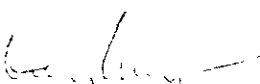
DATE TIME:	INITIAL			24 HOURS				48 HOURS				72 HOURS				96 HOURS			
	Dis.	Temp.	pH	Dis.	Temp.	pH	#Fish Dead	Dis.	Temp.	pH	#Fish Dead	Dis.	Temp.	pH	#Fish Dead	Dis.	Temp.	pH	#Fish Dead
12/07/93 1530				12/08/93 1400				12/09/93 1230				12/10/93 1300				12/11/93 1530			
CONC.	Oxy	dg.C		Oxy.	dg.C			Oxy.	dg.C			Oxy.	dg.C			Oxy.	dg.C		
0 (Control)	8.4	19.0	7.4	8.3	20.0	7.2	0	8.2	19.4	7.2	0	8.2	19.8	7.1	0	8.1	21.3	7.2	0
400 mg/l	8.7	19.0	7.5	8.3	19.3	7.2	0	8.0	19.1	7.0	0	8.1	19.5	7.2	0	7.5	20.7	7.4	0
400 mg/l	8.7	19.0	7.5	8.3	19.3	7.2	0	8.2	19.0	7.0	0	8.2	19.2	7.2	0	7.5	20.6	7.4	0
750 mg/l	8.7	19.0	7.5	8.4	19.3	7.2	0	8.2	19.0	7.0	0	8.2	19.2	7.2	0	7.7	20.5	7.3	0
750 mg/l	8.7	19.0	7.5	8.3	19.4	7.2	0	7.9	19.1	7.0	0	8.2	19.3	7.2	0	7.8	20.7	7.3	0

FINAL DATA

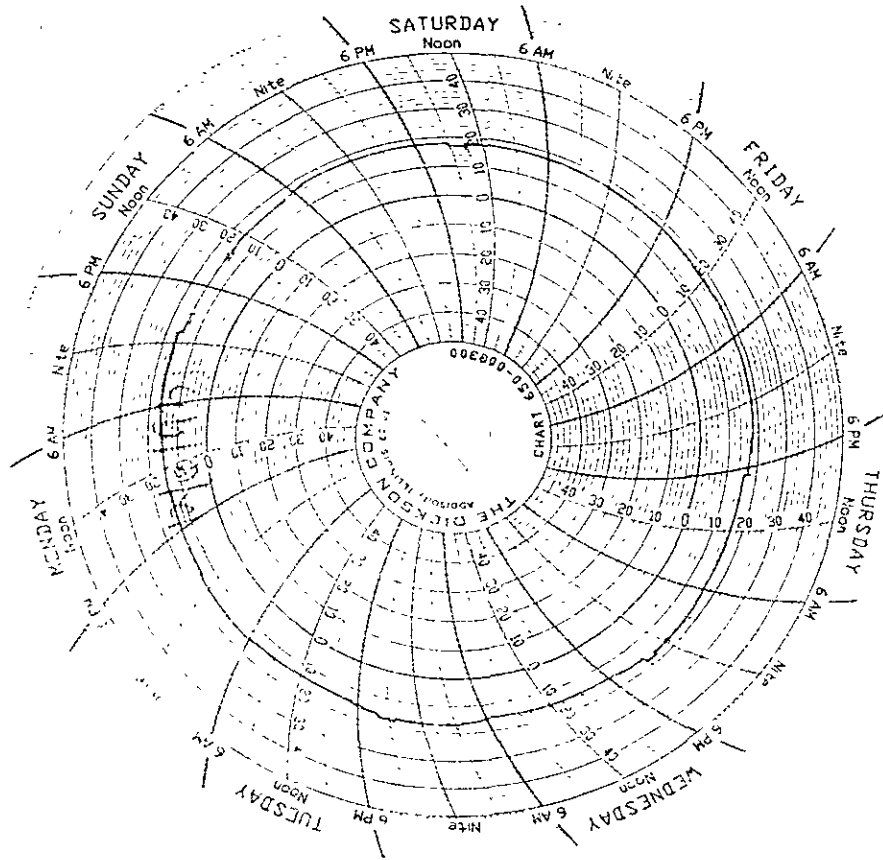
TOTAL MORTALITIES	
0 (Control)	0
400 mg/l	0
400 mg/l	0
750 mg/l	0
750 mg/l	0

FINAL RESULTS

96 HOUR LC50 =	>750 mg/l
STATUS =	Pass
CALCULATION METHOD =	Binomial Test


  
Martha Meyer, Chief Biologist

Date 12/11/93





# CHAIN OF CUSTODY FORM



**Curtis & Tompkins, Ltd.**  
 2323 Fifth Street  
 Berkeley, CA 94710  
 (510) 486-0900 Phone  
 (510) 486-0532 Fax

Sampler: John Borrego

Report to: John Borrego

**Analyses**

Project No: 96-405

Company: Uribe + Assoc.

Project Name: Port of Oakland - TCBT

Telephone: 832-2233

Turnaround Time: 48hr

Fax: 832-2237

Laboratory Number	Sample ID.	Sampling Date	Time	Matrix			# of Containers	Preservative				Field Notes	TPH - Diesel	BTEX	CEC Metals	S240	Bio Assay	Reactivity	Corrosivity	Ignitability	
				Soil	Water	Waste		HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE										
13483-001	96405-NW-10.0	12/3		X			1						X	X							
002	96405-EE-100																				
003	96405-PI-2.5																				
004	96405-PI-4.5																				
005	T water	12/3			X		3	2													
006	H water						1	0													
007	96405-SK-1	12/3		X			1						X	X	X	X	X	X	X	X	
008	96405-SK-2			X			1						X	X	X	X	X	X	X	X	

NOTES:  
 Only 1<sup>o</sup>-6 on 48 hr TAT others on 5 day Next TCH-1  
 bill Port of Oak #:

RELINQUISHED BY:  
John C Borrego  
 DATE/TIME: 12/6/93 7:55a

RECEIVED BY:  
[Signature]  
 DATE/TIME: 12/6/93 07:55