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REPORT ON
SOIL SAMPLING ACTIVITIES - PHASE II
JET FUEL, WASTE OIL/SAFETY SOLVENT TANK AREAS
UNITED AIRLINES MAINTENANCE HANGAR
MUNICIPAL OAKLAND INTERNATIONAL AIRPORT
OAKLAND, CALIFORNIA

1100 Airport Dr

ENVIRONMENTAL
PROTECTION
9 11 3 20

Prepared for

PORT OF OAKLAND
Oakland, California

January 1989

Prepared by

BASELINE ENVIRONMENTAL CONSULTING
315 Washington Street
Oakland, California 94607
415/763-7037

BASELINE

ENVIRONMENTAL CONSULTING

24 January 1989
S8-171

PORT OF OAKLAND
ENVIRONMENTAL DIVISION

Mr. Neil Werner
PORT OF OAKLAND
77 Jack London Square
Oakland, CA 94607

JAN 25 1989
R E C E I V E D
ENVIRONMENTAL DIVISION

Subject: Phase II Site Characterization Report, Jet Fuel and Waste Oil/Safety Solvent Tank Areas - United Airlines Maintenance Hangar, Municipal Oakland International Airport, Oakland, California

Dear Mr. Werner:

Enclosed please find two copies of our Phase II Site Characterization report for the jet fuel and waste oil/safety solvent tank areas located at the United Airlines Maintenance Hangar located at the Municipal Oakland Airport. It has been a pleasure providing these services, and if we can be of further assistance, please do not hesitate to contact us.

Sincerely,


Yane Nordhav
Reg. Geologist No. 4009


Steven Wisbaum
Hazardous Materials Specialist

YN/mb/S5
Enclosure

cc: Michele Heffes, w/ encl.

REPORT ON SOIL SAMPLING ACTIVITIES - PHASE II
JET FUEL, WASTE OIL/SAFETY SOLVENT TANK AREAS
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TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
BACKGROUND	1
Site Description	1
Preliminary Investigation - Phase I Site Characterization	4
SOIL SAMPLING ACTIVITIES	4
Sampling Methods	4
ANALYTICAL RESULTS	9
Jet Fuel Tank Area	9
Waste Oil/Safety Solvent Tank Area	9
REGULATORY FRAMEWORK	10
Total Petroleum Hydrocarbons	10
Metals, Volatile, and Semi-Volatile Organic Compounds	10
CONCLUSIONS AND RECOMMENDATIONS	11
Jet Fuel Area	11
Waste Oil/Safety Solvent Tank Area	11

LIST OF FIGURES

1: Regional Location	2
2: General Site Plan	3
3: Sampling Locations and TPH Results - Jet Fuel Tank Area	7
4: Sampling Locations and TPH Results - Waste Oil/Safety Solvent Tank Area	8

LIST OF TABLES

1: Analytical Results For Soil Samples - Waste Oil/Safety Solvent Tank Area	5
2: Analytical Results For Soil Samples - Jet Fuel Tank Area	6

LIST OF APPENDICES

A: Laboratory Reports and Chain-of-Custody Forms	
B: Soil Boring Logs	

**REPORT ON SOIL SAMPLING ACTIVITIES - PHASE II
JET FUEL, WASTE OIL/SAFETY SOLVENT TANK AREAS
UNITED AIRLINES MAINTENANCE HANGAR
MUNICIPAL OAKLAND INTERNATIONAL AIRPORT
OAKLAND, CALIFORNIA**

INTRODUCTION

This report describes sampling activities conducted as a Phase II Site Characterization of environmental contamination in the vicinity of two underground tank areas located at the United Airlines Maintenance Hangar at the Municipal Oakland International Airport in Oakland, California. The purpose of the Phase II site Characterization was to identify the extent of soil contamination associated with releases from operation of the tanks and to provide recommendations for appropriate remedial measures during and following tank closure activities.

This report contains a description of the site, a summary of Phase I soil sampling activities, the regulatory framework for releases of hazardous materials associated with underground storage tanks, soil sampling and site screening methods used during subsurface exploration at this site, laboratory analytical results, and recommendations for future tank closure activities.

BACKGROUND

Site Description

The United Airlines Maintenance Hangar, formerly the World Air Center, is located at 1100 Airport Drive immediately northwest of the intersection of Airport Drive and John Glenn Drive at the Oakland International Airport, as shown in Figure 1.

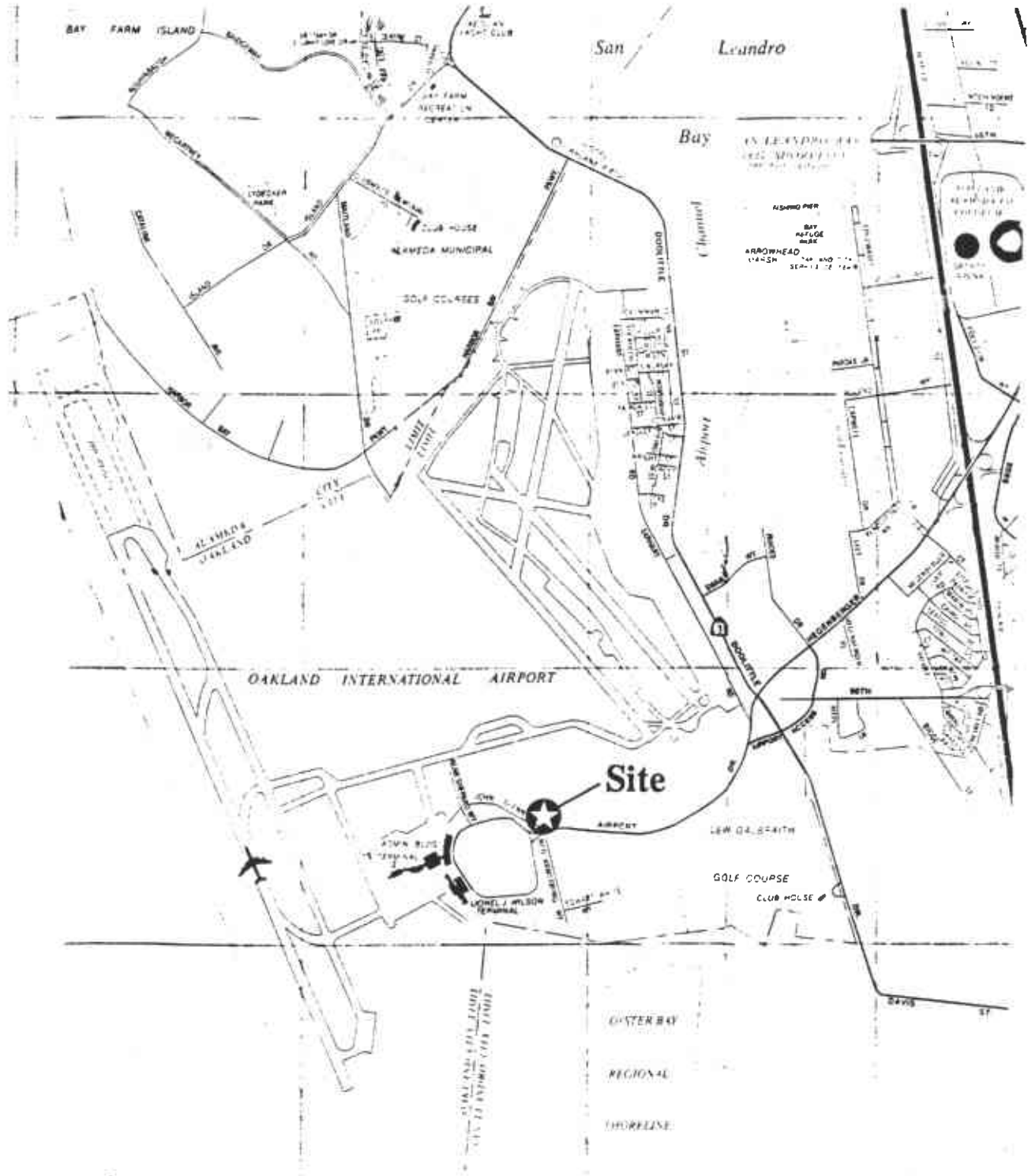
Two 10,000-gallon underground jet fuel tanks are located approximately 300 feet north of the hangar (Figure 2). The two tanks were reportedly installed more than ten years ago by R.J. Miller Company of Richmond, California. The tanks are not currently in operation and it is not known whether any product remains in the tanks.

A 500-gallon waste oil tank and a 1,000-gallon safety solvent tank are located approximately 350 feet west of the United Hangar (Figure 2). These tanks were also reportedly installed

*actually
3000 +
1000 ?*

REGIONAL LOCATION

Figure 1



**Building M-110
United Airlines
Maintenance Hangar**

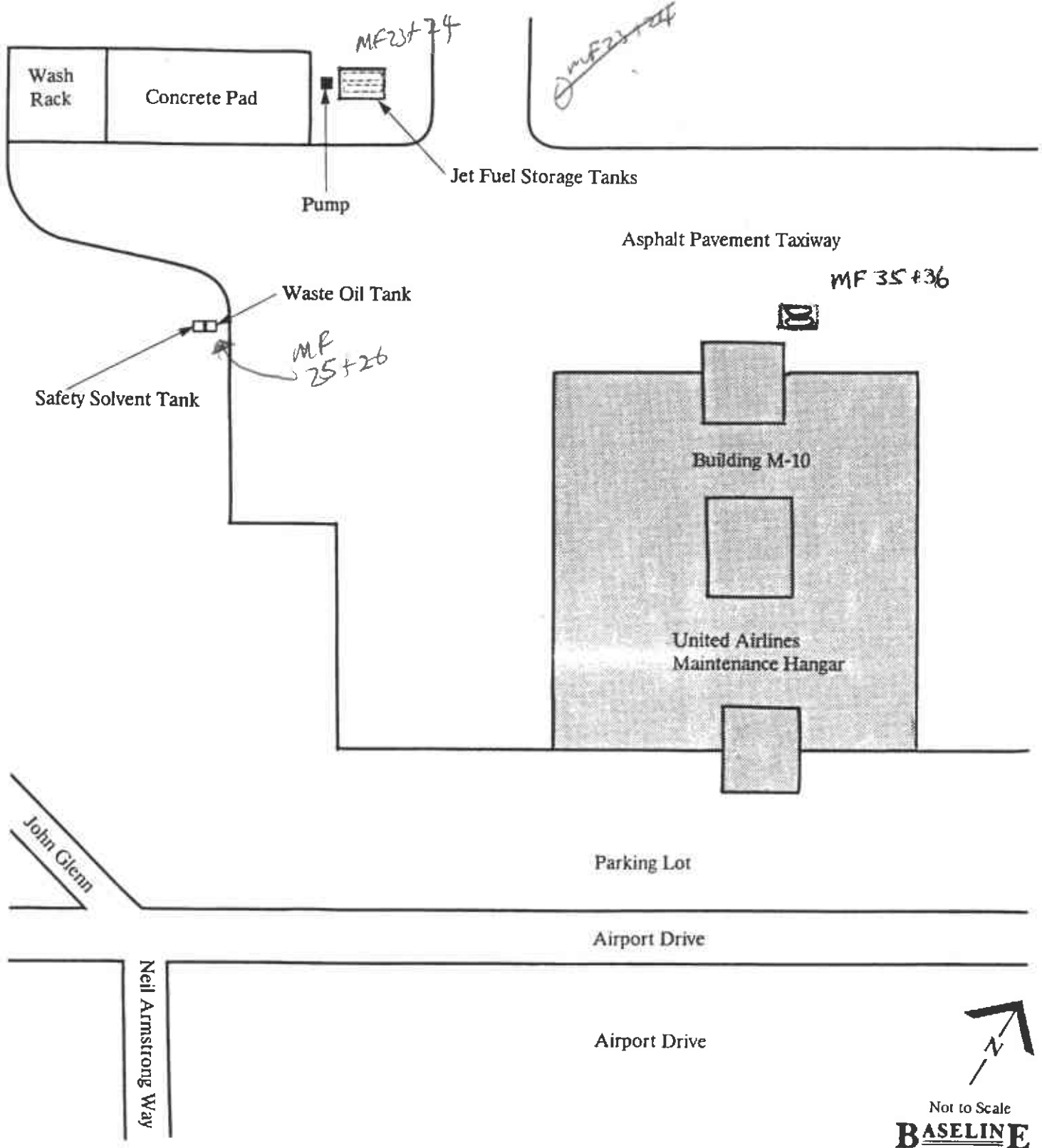


BASELINE

GENERAL SITE PLAN

Figure 2

United Airlines Maintenance Hanger Oakland International Airport Oakland, California



more than 10 years ago by R.J. Miller Company. Observations made by BASELINE during a site reconnaissance indicated that the area surrounding these two tanks had been used to store hazardous materials and the ground in the vicinity of the tanks was stained.

Preliminary Investigation - Phase I Site Characterization

10/4/88

Prior to closure of the four underground tanks, the Port of Oakland retained BASELINE to conduct soil sampling in the vicinity of the tanks. The purpose of this initial soil sampling was to determine if unauthorized releases had occurred from the tanks.

Analytical results obtained from Phase I soil sampling activities conducted in the immediate vicinity of the jet fuel tanks indicated the presence of elevated concentrations of total petroleum hydrocarbons as jet fuel (330 to 2,200 mg/kg), and the volatile organic compounds benzene (0.2 to 0.27 mg/kg), toluene (0.375 to 0.50 mg/kg), xylenes (2.25 to 4.50 mg/kg), and ethyl benzene (0.29 to 1.30 mg/kg).

Analytical results obtained from a soil sample collected in the immediate vicinity of the waste oil/safety solvent tank area indicated the presence of elevated concentrations of total petroleum hydrocarbons as jet fuel (11,000 mg/kg), oil and grease (9,000 mg/kg), 1,1,1-trichloroethane (0.90 mg/kg), ethylbenzene (7.20 mg/kg), tetrachloroethene (1.70 mg/kg), toluene (8.60 mg/kg), and total xylenes (19.0 mg/kg). Analytical results for these Phase I soil sampling activities are summarized in Tables 1 and 2 and are shown graphically in Figures 3 and 4.

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SOIL SAMPLING ACTIVITIES - PHASE II

12/28/88

Sampling Methods

To determine the potential extent of soil contamination near the four tanks, additional soil sampling was conducted as part of the Phase II investigation. Prior to initiating sampling activities, utility clearance was obtained from Underground Service Alert and the Port of Oakland. A total of 16 soil samples were collected from 14 soil borings locations at distances ranging from 12 to 45 feet from the jet fuel tanks. A total of 14 soil samples were collected from 14 soil boring locations at distances ranging from 12 to 110 feet from the waste oil/safety solvent tanks. The locations of the borings are shown in Figures 3 and 4.

TABLE 1
ANALYTICAL RESULTS FOR SOIL SAMPLES - PHASE II SITE CHARACTERIZATION
WASTE OIL/SAFETY SOLVENT TANK AREA
MUNICIPAL OAKLAND INTERNATIONAL AIRPORT
(mg/kg)

Compound	UW-1	UW-2	UW-3	UW-4	UW-5	UW-6	UW-7	UW-8	UW-9	UW-10	UW-11	UW-12	UW-13	UW-14	UHWS-1	RWQCB	DHS		DHS
																Action Level	TTLC	STLC	Hazardous Waste
TPH ¹																			
Gasoline	ND	ND	ND	ND	2,800.0	ND	ND	ND	2,300.0	ND	ND	ND	ND	ND	ND	100	--	--	1,000
Jet fuel	ND	ND	ND	ND	9,500.0	ND	ND	ND	8,100.0	18.0	ND	ND	ND	ND	11,000	100	--	--	1,000
Metals ²																			
Berium	NA	NA	NA	NA	25.0	NA	NA	NA	NA	120.0	NA	NA	NA	NA	NA	--	10,000	100.0	--
Chromium	NA	NA	NA	NA	19.0	NA	NA	NA	NA	20.0	NA	NA	NA	NA	NA	--	2,500	560.0	--
Cobalt	NA	NA	NA	NA	3.5	NA	NA	NA	NA	3.4	NA	NA	NA	NA	NA	--	8,000	80.0	--
Copper	NA	NA	NA	NA	5.9	NA	NA	NA	NA	13.0	NA	NA	NA	NA	NA	--	2,500	25.0	--
Nickel	NA	NA	NA	NA	20.0	NA	NA	NA	NA	18.0	NA	NA	NA	NA	NA	--	2,000	20.0	--
Vanadium	NA	NA	NA	NA	14.0	NA	NA	NA	NA	14.0	NA	NA	NA	NA	NA	--	2,400	24.0	--
Zinc	NA	NA	NA	NA	13.0	NA	NA	NA	NA	16.0	NA	NA	NA	NA	NA	--	5,000	250.0	--
Volatile Organics ³																			
Toluene	NA	NA	NA	NA	11.0	ND	ND	ND	NA	ND	NA	ND	ND	ND	8.6	--	--	--	--
Ethylbenzene	NA	NA	NA	NA	20.0	ND	ND	ND	NA	ND	NA	ND	ND	ND	7.2	--	--	--	--
Total xylenes	NA	NA	NA	NA	44.0	ND	ND	ND	NA	ND	NA	ND	ND	ND	19.0	--	--	--	--
1,1,1-Trichloroethane	NA	NA	NA	NA	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	.90	--	--	--	--
Tetrachloroethene	NA	NA	NA	NA	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND	1.7	--	--	--	--
Semi Volatiles ⁴																			
Napthalene	ND	NA	NA	ND	15.0	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	--	--	--	--

¹ Analyzed by modified EPA Method 8015. Only compounds detected at concentrations exceeding laboratory detection limits are shown.

² Analyzed by EPA Methods 6010 and 7471. Only metals detected at concentrations exceeding laboratory detection limits are shown.

³ Analyzed by EPA Method 8240. Only compounds detected at concentrations exceeding laboratory detection limits are shown.

⁴ Analyzed by EPA Method 8270. Only compounds detected at concentrations exceeding laboratory detection limits are shown.

ND = Compound not detected above laboratory detection limit.

ND = Compound not detected above laboratory detection limit.

NA = Sample not analyzed for specific parameter.

-- = No regulatory standard established.

Soil samples UW-1 through UW-14 collected 12/28/88, Phase II Site Characterization.

Soil sample UHWS-1 collected 10/4/88, Phase I Site Characterization.

Laboratory reports are included in Appendix A.

Sampling locations are shown on Figure 3.

TABLE 2
ANALYTICAL RESULTS FOR SOIL SAMPLES -
JET FUEL TANK AREA
MUNICIPAL OAKLAND INTERNATIONAL AIRPORT
(mg/kg)

Parameters	TPH ¹			Volatile Aromatic Hydrocarbons ²			
	C ₁₀ -C ₁₆ Jet Fuel	C ₄ -C ₁₂ Gasoline	Other	Benzene	Toluene	Ethyl- benzene	Total Xylenes
U-1 through U-16 ³	ND	ND	ND	NA	NA	NA	NA
UHI-1 ⁴	ND	ND	460	NA	NA	NA	NA
UHI-2	2,200	ND	ND	NA	NA	NA	NA
UHI-3	800	ND	ND	0.20	0.50	1.30	4.50
UHI-4	330	ND	ND	0.27	0.38	0.29	2.25
DHS Action Level ⁵	1,000	1,000	1,000	---	---	---	---
RWQCB Active Levels ⁶	100	100	100	---	---	---	---

¹ Total petroleum hydrocarbons analyzed by modified EPA Method 8015.

² Volatile aromatic hydrocarbons analyzed by EPA Method 8020.

³ Samples U-1 through U-16 collected 12/27/88 - Phase II.

⁴ Samples UHI-1 through UHI-4 collected 10/4/88 - Phase I.

⁵ Guidelines used by DHS to classify hazardous waste. The 1,000 mg/kg level for petroleum hydrocarbons may also be used to classify wastes containing oil and grease.

⁶ Guidelines used by San Francisco Bay RWQCB for required soil/groundwater investigation per "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, 2 June 1988.

ND = Compound not identified above laboratory detection limit of 10.0 mg/kg.

NA = Sample not analyzed for specified parameter.

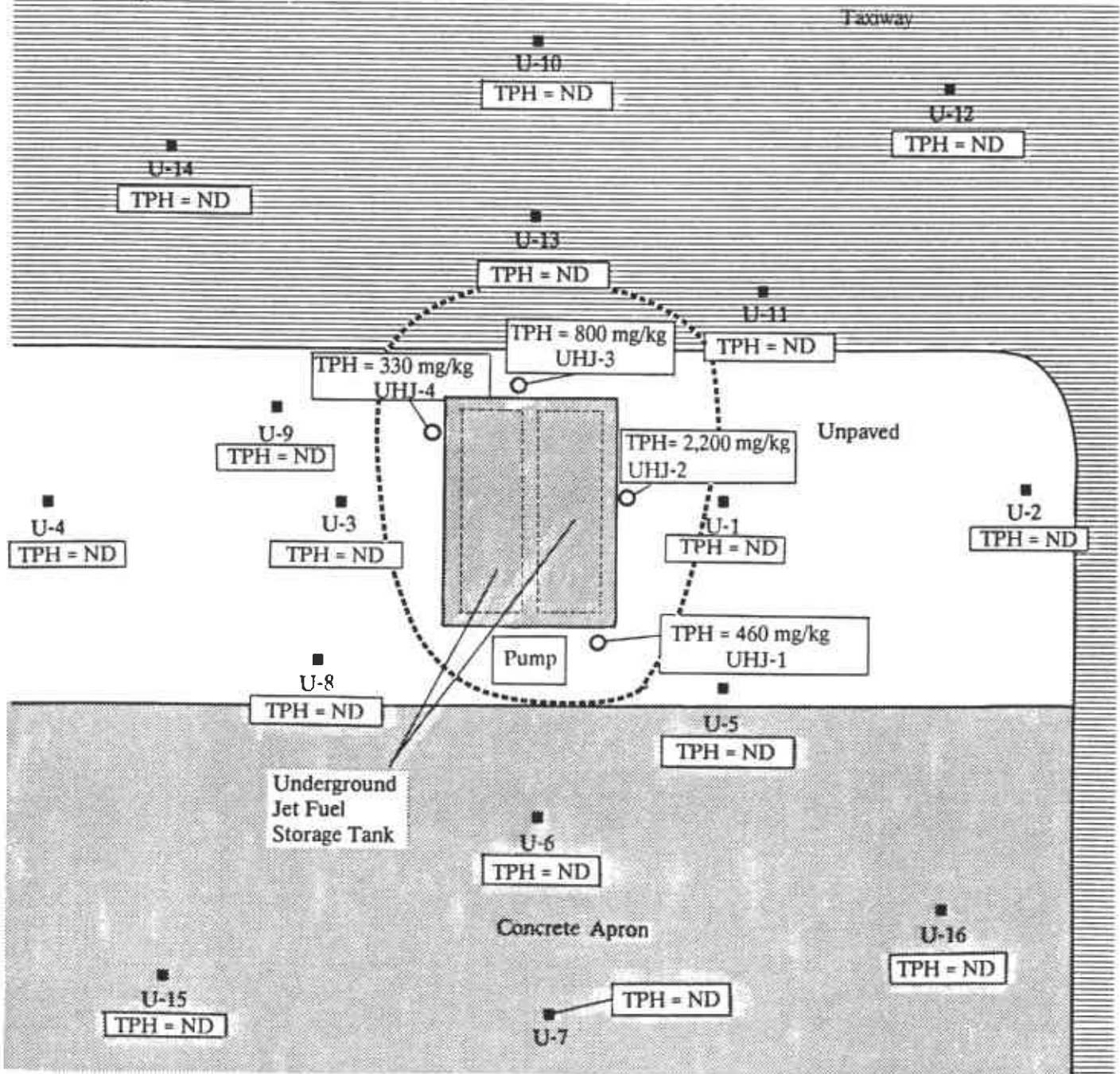
--- = No regulatory standard established.

Laboratory reports included in Appendix A.

Sampling locations are shown on Figure 3.

SAMPLING LOCATIONS AND TPH RESULTS
Jet Fuel Storage Tank Area
United Airlines
Maintenance Hangar
Building M-110

Figure 3



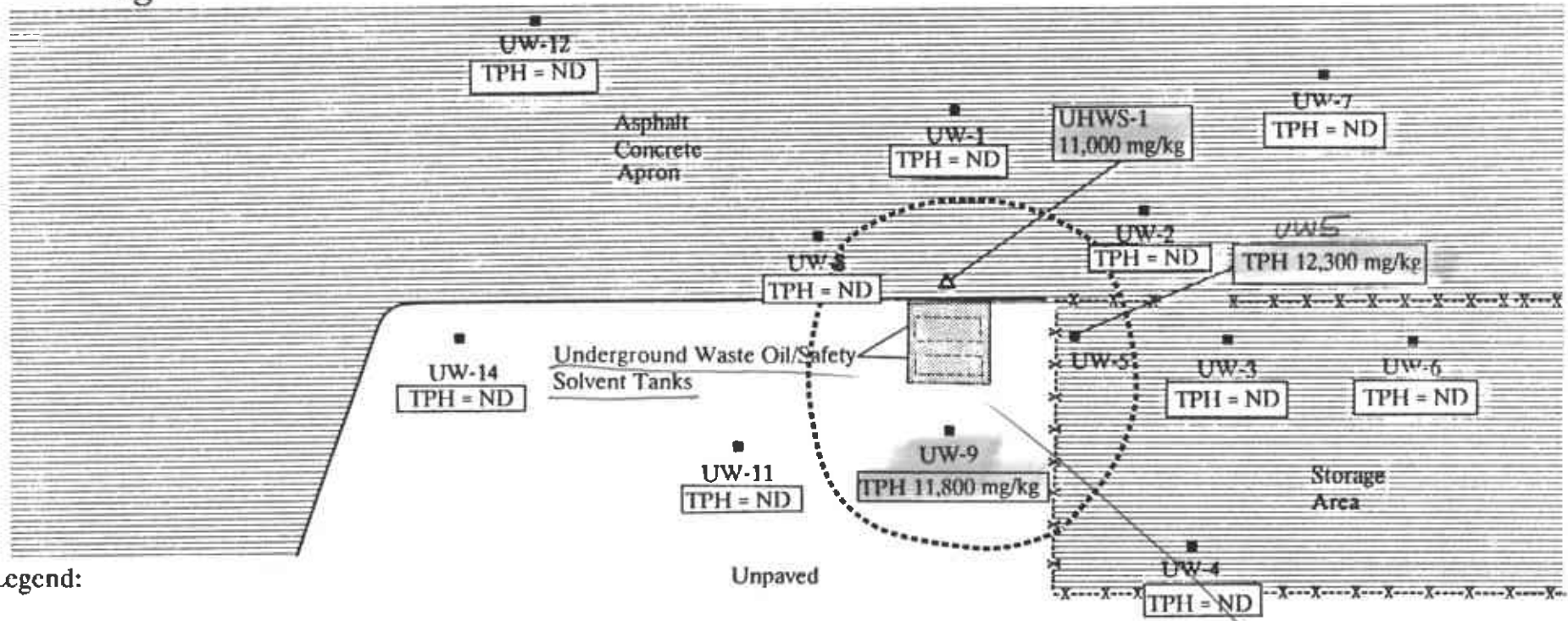
- UHJ-1 ○ Soil Sampling Locations 10/4/88
 - U-1 ■ Soil Sampling Locations 12/28/88
 - TPH Total Petroleum Hydrocarbons (ND=Not Detected)
 - Potential Area of Soil Contamination
 - Concrete Pad
 - Asphalt Concrete
- 0 20 Feet
BASELINE E

SAMPLING LOCATIONS AND TPH RESULTS

Waste Oil/Safety Solvent Storage Tank Area

United Airline Maintenance Hangar Building M-110

Figure 4



Legend:

- x---x---x Fence
- Concrete Pad
- Asphalt Concrete
- ▲ UHWS-1 Soil Sample Locations 10/4/88
- UW-1 Soil Sample Locations 12/28/88
- ND = Compound Not Detected
- Estimated Extent of TPH Contaminated Soils Above 100 mg/kg

UW-13
TPH = ND

UW-10
TPH 18.0 mg/kg

MP 25 + 26



BASELINE

Note: TPH Values are an addition of jet fuel and gasoline concentrations

The boreholes were completed in the unsaturated zone with a drill rig using a 6-inch hollow stem drilling auger. The subsurface consisted of fine sands. Groundwater was encountered in the vicinity of jet fuel tanks at an approximate depth of 3.25 to 3.75 feet below grade. Groundwater in the vicinity of the waste oil/safety solvent tanks was encountered at an approximate depth of 2.5 to 3.0 feet below grade.

Soil samples were collected immediately above the groundwater interface using a California modified sampler fitted with 2-inch brass sleeves. The augers and sampler were steam cleaned prior to and between each sampling event. The samples were collected in the brass sleeves, covered with aluminum foil, capped, tapped, placed in zip-lock bags, refrigerated, and brought to a California Department of Health Services certified laboratory for analysis; proper Chain-of-Custody procedures were followed.

ANALYTICAL RESULTS

Jet Fuel Tank Area

The 16 soil samples collected from the vicinity of the jet fuel tanks during Phase II sampling were analyzed in the laboratory for total petroleum hydrocarbon (TPH) compounds (EPA Method modified 8015). Analytical results from Phase II sampling activities did not identify any petroleum hydrocarbon compounds above the laboratory detection limit of 10 mg/kg at the locations where samples were collected.

Waste Oil/Safety Solvent Tank Area

The 14 soil samples collected from the vicinity of the waste oil/safety solvent tanks were analyzed in the laboratory for TPH (EPA Method modified 8015). Two of the soil samples were analyzed for California Code of Regulations (CCR) Title 22 Metals (EPA Methods 6010 and 7841), eight samples for volatile organic compounds (EPA Method 8240), and five samples were analyzed for semivolatile organic compounds (EPA Method 8270).

Analytical results identified elevated concentrations of TPH compounds as gasoline (up to 2,800 mg/kg) and jet fuel (up to 9,500 mg/kg) in samples UW-5 and UW-9. Elevated concentrations of the metals barium (120 mg/kg), chromium (total) (20.0 mg/kg), cobalt (3.5 mg/kg), copper

(13.0 mg/kg), nickel (20.0 mg/kg), vanadium (14.0 mg/kg), and zinc (16.0 mg/kg) were also identified in samples UW-5 and UW-9. Elevated concentrations of toluene (11.0 mg/kg), ethylbenzene (20.0 mg/kg), xylenes (44.0 mg/kg), and naphthalene (15.0 mg/kg) were identified in sample UW-5. A summary of these analytical results is shown in Table 2. The laboratory reports are included in Appendix A.

REGULATORY FRAMEWORK

Total Petroleum Hydrocarbons

California Department of Health Services (DHS) considers soils containing petroleum hydrocarbon concentrations exceeding 1,000 mg/kg as hazardous for handling, storage, and disposal purposes. As shown in Tables 1 and 2, the soils sampled at locations UHJ-2, UW-5, and UW-9 would be considered hazardous by the DHS guidelines. *

The guidelines and concentration limits used by the Regional Water Quality Control Board (RWQCB) to determine action levels for soil and groundwater investigation and clean-up are generally established on a case-by-case basis but may follow guidelines contained in "Regional Board Staff Recommendations for Initial evaluation and Investigation of Underground Tanks" (2 June 1988). As indicated in Tables 1 and 2, the observed concentrations of total petroleum hydrocarbon compounds as gasoline and jet fuel in the soils in the immediate vicinity of both tank areas are above a 100-mg/kg RWQCB action level requiring a groundwater investigation and tank closure.

Metals, Volatile and Semi-Volatile Organic Compounds

Elevated concentrations of seven metals were identified in soil samples UW-5 and UW-10. In addition, the six volatile and semi-volatile organic compounds found in the near surface soils in the vicinity of the two tank areas at the project site are listed as potentially toxic in Section 66680 of CCR Title 22. Whether soils contaminated with listed compounds are considered hazardous by DHS is determined by the total threshold limit concentration (TTLC) and the soluble threshold limit concentration (STLC) of those compounds in the soil. As shown in Table 1, soil samples UW-5 and UW-10 contained concentrations of barium and nickel, respectively, above the STLC but below the TTLC.

CONCLUSIONS AND RECOMMENDATIONS

Jet Fuel Tank Area

Based on the analytical results of soil samples collected during Phase I and II sampling activities, elevated concentrations of total petroleum hydrocarbon compounds, and the volatile organic compounds benzene, toluene, ethylbenzene, and xylene are present in near surface soils in the immediate vicinity of the jet fuel tanks at the project site. It appears that the concentrations are highest within five feet of the tanks and decreasing to non-detectable concentrations at a distance of 12 feet. On the basis of these data it appears that an unauthorized release has occurred and the tanks would be required to be closed. Using the guidelines cited above, soils containing concentrations of total petroleum hydrocarbons above 1,000 mg/kg must be disposed of as hazardous waste. In addition, installation of up to three groundwater monitoring wells would be required to evaluate if the waters of the state have been affected by the unauthorized release and to determine the groundwater flow direction.

On the basis of the analytical results obtained during Phases I and II of the soils investigation, it appears, conservatively, that up to about 180 cubic yards of materials (assuming an area of 35 by 40 feet to a depth of 3.5 feet) would require management for off-site disposal. The composite concentrations of this material may or may not be above the action level of 1,000 mg/kg of total petroleum hydrocarbons; therefore the material could possibly be disposed of at a Class II landfill. Disposal (without hauling) costs at a Class II land treatment facility could amount to about \$75 per cubic yard, compared to a range of \$105 to \$250 for disposal at a Class I landfill. It should be noted that alternatives to off-site disposal may be available; however, the cost effectiveness of alternatives is likely limited due to the relatively small volume of material. Potential options include treatment through aeration (limited effectiveness due to non-volatile contaminant components), on-site thermal treatment, and on/off-site bioremediation.

Waste Oil/Safety Solvent Tank Area

Based on the analytical results obtained from soil samples collected during Phase I and II sampling activities in the vicinity of the waste oil/safety solvent tank area, elevated concentrations of total petroleum hydrocarbon compounds, various metals, and volatile and semivolatile organic compounds are present in near surface soils. The highest concentrations of

these materials appear to be limited to within 20 to 25 feet from the tank area. On the basis of these data it appears that an unauthorized release has occurred and the tanks would be required to be closed. Soils management and groundwater investigation requirements would be similar to the discussion above for the jet fuel tanks. It is conservatively estimated that about 275 cubic yards of material (assuming an area of 50 by 50 feet to a depth of 3 feet) would require management and off-site disposal.

APPENDIX A

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS



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

2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

LABORATORY NUMBER: 16505
 CLIENT: BASELINE
 JOB #: S8-171
 LOCATION: UNITED HANGER/JET FUEL TANK AREA

DATE RECEIVED: 12-30-88
 DATE ANALYZED: 01-04-89
 DATE REPORTED: 01-06-89

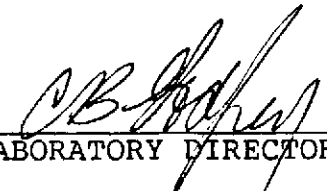
Total Petroleum Hydrocarbons in Soils & Wastes
 EPA 8015 (Modified)
 Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSINE (mg/Kg)	DIESEL (mg/Kg)	JET FUEL (mg/Kg)
16505-1	U-1	ND(10)	ND(10)	ND(10)	ND(10)
16505-2	U-2	ND(10)	ND(10)	ND(10)	ND(10)
16505-3	U-3	ND(10)	ND(10)	ND(10)	ND(10)
16505-4	U-4	ND(10)	ND(10)	ND(10)	ND(10)
16505-5	U-5	ND(10)	ND(10)	ND(10)	ND(10)
16505-6	U-6	ND(10)	ND(10)	ND(10)	ND(10)
16505-7	U-7	ND(10)	ND(10)	ND(10)	ND(10)
16505-8	U-8-A	ND(10)	ND(10)	ND(10)	ND(10)
16505-9	U-8-B	ND(10)	ND(10)	ND(10)	ND(10)
16505-10	U-9-A	ND(10)	ND(10)	ND(10)	ND(10)
16505-11	U-9-B	ND(10)	ND(10)	ND(10)	ND(10)
16505-12	U-10	ND(10)	ND(10)	ND(10)	ND(10)
16505-13	U-11	ND(10)	ND(10)	ND(10)	ND(10)
16505-14	U-12	ND(10)	ND(10)	ND(10)	ND(10)
16505-15	U-13	ND(10)	ND(10)	ND(10)	ND(10)
16505-16	U-14	ND(10)	ND(10)	ND(10)	ND(10)
16505-17	U-15	ND(10)	ND(10)	ND(10)	ND(10)
16505-18	U-16	ND(10)	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference 3
 Spike: % Recovery 107


 LABORATORY DIRECTOR



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

2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

LABORATORY NUMBER: 16504
 CLIENT: BASELINE
 JOB #: S8-171
 LOCATION: UNITED HANGER

DATE RECEIVED: 12-29-88
 DATE ANALYZED: 01-05-89
 DATE REPORTED: 01-12-89
 PAGE 1 OF 22

Total Volatile Hydrocarbons as Gasoline in Soils & Wastes
 EPA 8015 (Modified)
 Extraction Method: EPA 5030 (Purge & Trap)

LAB ID	CLIENT ID	GASOLINE (mg/Kg)
16504-1	UW - 1	ND(10)
16504-2	UW - 2	ND(10)
16504-3	UW - 3	ND(10)
16504-4	UW - 4	ND(10)
16504-5	UW - 5	2,800
16504-6	UW - 6	ND(10)
16504-7	UW - 7	ND(10)
16504-8	UW - 8	ND(10)
16504-9	UW - 9	2,300
16504-10	UW - 10	ND(10)
16504-11	UW - 11	ND(10)
16504-12	UW - 12	ND(10)
16504-13	UW - 13	ND(10)
16504-14	UW - 14	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

%RPD	2
Spike, % Recovery	86

Stephen L. Jones for C&T
 LABORATORY DIRECTOR



LABORATORY NUMBER: 16504
CLIENT: BASELINE
JOB #: S8-171
LOCATION: UNITED HANGER

DATE RECEIVED: 12-29-88
DATE ANALYZED: 01-05-89
DATE REPORTED: 01-12-89
PAGE 2 OF 22

Total Heavy Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	KEROSINE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
16504-1	UW - 1	ND(10)	ND(10)	ND(10)
16504-2	UW - 2	ND(10)	ND(10)	ND(10)
16504-3	UW - 3	ND(10)	ND(10)	ND(10)
16504-4	UW - 4	ND(10)	ND(10)	ND(10)
16504-5	UW - 5	9,500	ND(10)	ND(10)
16504-6	UW - 6	ND(10)	ND(10)	ND(10)
16504-7	UW - 7	ND(10)	ND(10)	ND(10)
16504-8	UW - 8	ND(10)	ND(10)	ND(10)
16504-9	UW - 9	8,100	ND(10)	ND(10)
16504-10	UW - 10	18	ND(10)	ND(10)
16504-11	UW - 11	ND(10)	ND(10)	ND(10)
16504-12	UW - 12	ND(10)	ND(10)	ND(10)
16504-13	UW - 13	ND(10)	ND(10)	ND(10)
16504-14	UW - 14	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference 2
Spike: % Recovery 86



LABORATORY NUMBER: 16504-5
 CLIENT: BASELINE
 PROJECT #: S8-171
 LOCATION: UNITED HANGER
 CLIENT ID: UW - 5

DATE RECEIVED: 12-29-88
 DATE ANALYZED: 01-03-89
 DATE REPORTED: 01-12-89
 PAGE 3 OF 22

Title 22 Metals in Soils & Wastes
 Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	2.5	EPA 6010
Arsenic	ND	2.5	EPA 6010
Barium	25	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	ND	0.5	EPA 6010
Chromium (total)	19	0.5	EPA 6010
Cobalt	3.5	0.5	EPA 6010
Copper	5.9	0.5	EPA 6010
Lead	ND	2.5	EPA 6010
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	20	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1.0	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	14	1.0	EPA 6010
Zinc	13	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	<1	100	Mercury	<1	108
Arsenic	2	107	Molybdenum	2	104
Barium	2	99	Nickel	3	102
Beryllium	7	86	Selenium	<1	97
Cadmium	1	106	Silver	<1	107
Chromium	1	102	Thallium	5	101
Cobalt	1	102	Vanadium	3	91
Copper	<1	98	Zinc	1	106
Lead	1	104			



LABORATORY NUMBER: 16504-11
 CLIENT: BASELINE
 PROJECT #: S8-171
 LOCATION: UNITED HANGER
 CLIENT ID: UW - 11

DATE RECEIVED: 12-29-88
 DATE ANALYZED: 01-03-89
 DATE REPORTED: 01-12-89
 PAGE 4 OF 22

Title 22 Metals in Soils & Wastes
 Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	2.5	EPA 6010
Arsenic	ND	2.5	EPA 6010
Barium	120	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	ND	0.5	EPA 6010
Chromium (total)	20	0.5	EPA 6010
Cobalt	3.4	0.5	EPA 6010
Copper	13	0.5	EPA 6010
Lead	ND	2.5	EPA 6010
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	18	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1.0	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	14	1.0	EPA 6010
Zinc	16	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	<1	100	Mercury	<1	108
Arsenic	2	107	Molybdenum	2	104
Barium	2	99	Nickel	3	102
Beryllium	7	86	Selenium	<1	97
Cadmium	1	106	Silver	<1	107
Chromium	1	102	Thallium	5	101
Cobalt	1	102	Vanadium	3	91
Copper	<1	98	Zinc	1	106
Lead	1	104			



LABORATORY NUMBER: 16504-5
CLIENT: BASELINE
JOB #: S8-171
LOCATION: UNITED HANGER
CLIENT ID: UW - 5

DATE RECEIVED: 12-29-88
DATE EXTRACTED: 01-04-89
DATE ANALYZED: 01-04-89
DATE REPORTED: 01-12-89
PAGE 5 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	1000
bromomethane	ND	1000
vinyl chloride	ND	1000
chloroethane	ND	1000
methylene chloride	ND	500
trichlorofluoromethane	ND	500
1,1-dichloroethene	ND	500
1,1-dichloroethane	ND	500
trans-1,2-dichloroethene	ND	500
chloroform	ND	500
1,2-dichloroethane	ND	500
1,1,1-trichloroethane	ND	500
carbon tetrachloride	ND	500
bromodichloromethane	ND	500
1,2-dichloropropane	ND	500
cis-1,3-dichloropropene	ND	500
trichloroethylene	ND	500
dibromochloromethane	ND	500
1,1,2-trichloroethane	ND	500
benzene	ND	500
trans-1,3-dichloropropene	ND	500
2-chloroethylvinyl ether	ND	1000
bromoform	ND	500
1,1,2,2-tetrachloroethane	ND	500
tetrachloroethene	ND	500
toluene	11,000	500
chlorobenzene	ND	500
ethyl benzene	20,000	500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	1000
carbon disulfide	ND	500
2-butanone	ND	1000
vinyl acetate	ND	1000
2-hexanone	ND	1000
4-methyl-2-pentanone	ND	1000
styrene	ND	500
total xylenes	44,000	500

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	108
Toluene-d8	105
Bromofluorobenzene	103



LABORATORY NUMBER: 16504-6
CLIENT: BASELINE
JOB #: S8-171
LOCATION: UNITED HANGER
CLIENT ID: UW - 6

DATE RECEIVED: 12-29-88
DATE EXTRACTED: 01-04-89
DATE ANALYZED: 01-04-89
DATE REPORTED: 01-12-89
PAGE 6 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	90
Toluene-d8	99
Bromofluorobenzene	106



LABORATORY NUMBER: 16504-7
 CLIENT: BASELINE
 JOB #: S8-171
 LOCATION: UNITED HANGER
 CLIENT ID: UW - 7

DATE RECEIVED: 12-29-88
 DATE EXTRACTED: 01-04-89
 DATE ANALYZED: 01-04-89
 DATE REPORTED: 01-12-89
 PAGE 7 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	83
Toluene-d8	110
Bromofluorobenzene	99

LABORATORY NUMBER: 16504-8
 CLIENT: BASELINE
 JOB #: S8-171
 LOCATION: UNITED HANGER
 CLIENT ID: UW - 8

DATE RECEIVED: 12-29-88
 DATE EXTRACTED: 01-04-89
 DATE ANALYZED: 01-04-89
 DATE REPORTED: 01-12-89
 PAGE 8 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	88
Toluene-d8	102
Bromofluorobenzene	107



LABORATORY NUMBER: 16504-10
CLIENT: BASELINE
JOB #: S8-171
LOCATION: UNITED HANGER
CLIENT ID: UW - 10

DATE RECEIVED: 12-29-88
DATE EXTRACTED: 01-04-89
DATE ANALYZED: 01-04-89
DATE REPORTED: 01-12-89
PAGE 9 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	86
Toluene-d8	103
Bromofluorobenzene	107



LABORATORY NUMBER: 16504-12
CLIENT: BASELINE
JOB #: S8-171
LOCATION: UNITED HANGER
CLIENT ID: UW - 12

DATE RECEIVED: 12-29-88
DATE EXTRACTED: 01-04-89
DATE ANALYZED: 01-04-89
DATE REPORTED: 01-12-89
PAGE 10 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	83
Toluene-d8	108
Bromofluorobenzene	112



LABORATORY NUMBER: 16504-13
CLIENT: BASELINE
JOB #: S8-171
LOCATION: UNITED HANGER
CLIENT ID: UW - 13

DATE RECEIVED: 12-29-88
DATE EXTRACTED: 01-04-89
DATE ANALYZED: 01-04-89
DATE REPORTED: 01-12-89
PAGE 11 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	85
Toluene-d8	101
Bromofluorobenzene	103

LABORATORY NUMBER: 16504-14
 CLIENT: BASELINE
 JOB #: S8-171
 LOCATION: UNITED HANGER
 CLIENT ID: UW - 14

DATE RECEIVED: 12-29-88
 DATE EXTRACTED: 01-04-89
 DATE ANALYZED: 01-04-89
 DATE REPORTED: 01-12-89
 PAGE 12 OF 22

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	50
bromomethane	ND	50
vinyl chloride	ND	50
chloroethane	ND	50
methylene chloride	ND	25
trichlorofluoromethane	ND	25
1,1-dichloroethene	ND	25
1,1-dichloroethane	ND	25
trans-1,2-dichloroethene	ND	25
chloroform	ND	25
1,2-dichloroethane	ND	25
1,1,1-trichloroethane	ND	25
carbon tetrachloride	ND	25
bromodichloromethane	ND	25
1,2-dichloropropane	ND	25
cis-1,3-dichloropropene	ND	25
trichloroethylene	ND	25
dibromochloromethane	ND	25
1,1,2-trichloroethane	ND	25
benzene	ND	25
trans-1,3-dichloropropene	ND	25
2-chloroethylvinyl ether	ND	50
bromoform	ND	25
1,1,2,2-tetrachloroethane	ND	25
tetrachloroethene	ND	25
toluene	ND	25
chlorobenzene	ND	25
ethyl benzene	ND	25

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	50
carbon disulfide	ND	25
2-butanone	ND	50
vinyl acetate	ND	50
2-hexanone	ND	50
4-methyl-2-pentanone	ND	50
styrene	ND	25
total xylenes	ND	25

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	84
Toluene-d8	110
Bromofluorobenzene	106



LABORATORY NUMBER: 16504-1
CLIENT: BASELINE
JOB #: S8-171, UNITED HANGER
SAMPLE ID: UW-1

DATE RECEIVED: 12/29/88
DATE EXTRACTED: 01/05/89
DATE ANALYZED: 01/05/89
DATE REPORTED: 01/13/88
PAGE 13 OF 22

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	1.65
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.66
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	1.65
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33

LABORATORY NUMBER: 16504-1
SAMPLE ID: UW-1EPA 8270
PAGE 14 OF 22

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
4-Bromophenylphenyl ether	ND	0.33
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65

HSL COMPOUNDS

Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	0.33
Aniline	ND	0.33
Benzyl Alcohol	ND	1.65
4-Chloroaniline	ND	0.66
2-Methylnaphthalene	ND	0.33
2-Nitroaniline	ND	1.65
3-Nitroaniline	ND	1.65
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	1.65

ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	33	2-Fluorobiphenyl	79
2,4,6-tribromophenol	87	Terphenyl	101
Nitrobenzene-d5	72		



LABORATORY NUMBER: 16504-4
CLIENT: BASELINE
JOB #: S8-171, UNITED HANGER
SAMPLE ID: UW-4

DATE RECEIVED: 12/29/88
DATE EXTRACTED: 01/05/89
DATE ANALYZED: 01/05/89
DATE REPORTED: 01/13/88
PAGE 15 OF 22

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	1.65
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.66
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	1.65
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33

LABORATORY NUMBER: 16504-4
SAMPLE ID: UW-4EPA 8270
PAGE 16 OF 22

BASE/NEUTRAL COMPOUNDS	RESULT mg/kg	LOD mg/kg
4-Bromophenylphenyl ether	ND	0.33
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzydine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65

HSL COMPOUNDS

Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	0.33
Aniline	ND	0.33
Benzyl Alcohol	ND	1.65
4-Chloroaniline	ND	0.66
2-Methylnaphthalene	ND	0.33
2-Nitroaniline	ND	1.65
3-Nitroaniline	ND	1.65
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	1.65

ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	33	2-Fluorobiphenyl	77
2,4,6-tribromophenol	78	Terphenyl	118
Nitrobenzene-d5	70		



LABORATORY NUMBER: 16504-5
CLIENT: BASELINE
JOB #: S8-171, UNITED HANGER
SAMPLE ID: UW-5

DATE RECEIVED: 12/29/88
DATE EXTRACTED: 01/05/89
DATE ANALYZED: 01/05/89
DATE REPORTED: 01/13/88
PAGE 17 OF 22

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3580 Waste Dilution

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	3.3
2-Chlorophenol	ND	3.3
2-Nitrophenol	ND	16.5
2,4-Dimethylphenol	ND	3.3
2,4-Dichlorophenol	ND	3.3
4-Chloro-3-methylphenol	ND	6.6
2,4,6-Trichlorophenol	ND	3.3
2,4-Dinitrophenol	ND	16.5
4-Nitrophenol	ND	16.5
2-Methyl-4,6-dinitrophenol	ND	16.5
Pentachlorophenol	ND	16.5
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	3.3
1,3-Dichlorobenzene	ND	3.3
1,4-Dichlorobenzene	ND	3.3
1,2-Dichlorobenzene	ND	3.3
Bis(2-chloroisopropyl)ether	ND	3.3
N-nitrosodi-n-propylamine	ND	3.3
Hexachloroethane	ND	3.3
Nitrobenzene	ND	3.3
Isophorone	ND	3.3
Bis(2-chloroethoxy)methane	ND	3.3
1,2,4-Trichlorobenzene	ND	3.3
Naphthalene	ND	3.3
Hexachlorobutadiene	ND	3.3
Hexachlorocyclopentadiene	ND	3.3
2-Chloronaphthalene	ND	3.3
Dimethyl phthalate	ND	3.3
Acenaphthylene	ND	3.3
2,6-Dinitrotoluene	ND	3.3
Acenaphthene	ND	3.3
2,4-Dinitrotoluene	ND	3.3
Fluorene	ND	3.3
Diethyl phthalate	ND	3.3
4-Chlorophenylphenyl ether	ND	3.3
N-Nitrosodiphenylamine	ND	3.3
1,2-Diphenylhydrazine	ND	3.3

LABORATORY NUMBER: 16504-5
SAMPLE ID: UW-5EPA 8270
PAGE 18 OF 22

BASE/NEUTRAL COMPOUNDS

	RESULT mg/kg	LOD mg/kg
4-Bromophenylphenyl ether	ND	3.3
Hexachlorobenzene	ND	3.3
Phenanthrene	ND	3.3
Anthracene	ND	3.3
Dibutylphthalate	ND	3.3
Fluoranthene	ND	3.3
Benzidine	ND	16.5
Pyrene	ND	3.3
Butylbenzylphthalate	ND	3.3
Benzo (a) anthracene	ND	3.3
3,3'-Dichlorobenzidine	ND	16.5
Chrysene	ND	3.3
Bis (2-ethylhexyl)phthalate	ND	3.3
Di-n-octyl phthalate	ND	3.3
Benzo (b) fluoranthene	ND	3.3
Benzo (k) fluoranthene	ND	3.3
Benzo (a) pyrene	ND	3.3
Indeno (1,2,3-cd) pyrene	ND	16.5
Dibenzo (a,h) anthracene	ND	16.5
Benzo (ghi) perylene	ND	16.5

HSL COMPOUNDS

Benzoic Acid	ND	33
2-Methylphenol	ND	3.3
4-Methylphenol	ND	3.3
2,4,5-Trichlorophenol	ND	3.3
Aniline	ND	3.3
Benzyl Alcohol	ND	16.5
4-Chloroaniline	ND	6.6
2-Methylnaphthalene	ND	3.3
2-Nitroaniline	ND	16.5
3-Nitroaniline	ND	16.5
Dibenzofuran	ND	3.3
4-Nitroaniline	ND	16.5

ND = None Detected, Limit of Detection (LOD) appears in right column



LABORATORY NUMBER: 16504-12
CLIENT: BASELINE
JOB #: S8-171, UNITED HANGER
SAMPLE ID: UW-12

DATE RECEIVED: 12/29/88
DATE EXTRACTED: 01/05/89
DATE ANALYZED: 01/05/89
DATE REPORTED: 01/13/88
PAGE 19 OF 22

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	1.65
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.66
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	1.65
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenyphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33



LABORATORY NUMBER: 16504-12
SAMPLE ID: JW-12

EPA 8270
PAGE 20 OF 22

BASE/NEUTRAL COMPOUNDS

	RESULT mg/kg	LOD mg/kg
4-Bromophenylphenyl ether	ND	0.33
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65

HSL COMPOUNDS

Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	0.33
Aniline	ND	0.33
Benzyl Alcohol	ND	1.65
4-Chloroaniline	ND	0.66
2-Methylnaphthalene	ND	0.33
2-Nitroaniline	ND	1.65
3-Nitroaniline	ND	1.65
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	1.65

ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	30	2-Fluorobiphenyl	37
2,4,6-tribromophenol	100	Terphenyl	99
Nitrobenzene-d5	35		



LABORATORY NUMBER: 16504-13
CLIENT: BASELINE
JOB #: S8-171, UNITED HANGER
SAMPLE ID: UW-13

DATE RECEIVED: 12/29/88
DATE EXTRACTED: 01/05/89
DATE ANALYZED: 01/05/89
DATE REPORTED: 01/13/88
PAGE 21 OF 22

EPA 8270: Base/Neutral and Acid Extractables in Soils & Wastes
Extraction Method: EPA 3550 Sonication

ACID COMPOUNDS	RESULT mg/kg	LOD mg/kg
Phenol	ND	0.33
2-Chlorophenol	ND	0.33
2-Nitrophenol	ND	1.65
2,4-Dimethylphenol	ND	0.33
2,4-Dichlorophenol	ND	0.33
4-Chloro-3-methylphenol	ND	0.66
2,4,6-Trichlorophenol	ND	0.33
2,4-Dinitrophenol	ND	1.65
4-Nitrophenol	ND	1.65
2-Methyl-4,6-dinitrophenol	ND	1.65
Pentachlorophenol	ND	1.65
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	0.33
1,3-Dichlorobenzene	ND	0.33
1,4-Dichlorobenzene	ND	0.33
1,2-Dichlorobenzene	ND	0.33
Bis(2-chloroisopropyl)ether	ND	0.33
N-nitrosodi-n-propylamine	ND	0.33
Hexachloroethane	ND	0.33
Nitrobenzene	ND	0.33
Isophorone	ND	0.33
Bis(2-chloroethoxy)methane	ND	0.33
1,2,4-Trichlorobenzene	ND	0.33
Naphthalene	ND	0.33
Hexachlorobutadiene	ND	0.33
Hexachlorocyclopentadiene	ND	0.33
2-Chloronaphthalene	ND	0.33
Dimethyl phthalate	ND	0.33
Acenaphthylene	ND	0.33
2,6-Dinitrotoluene	ND	0.33
Acenaphthene	ND	0.33
2,4-Dinitrotoluene	ND	0.33
Fluorene	ND	0.33
Diethyl phthalate	ND	0.33
4-Chlorophenylphenyl ether	ND	0.33
N-Nitrosodiphenylamine	ND	0.33
1,2-Diphenylhydrazine	ND	0.33



LABORATORY NUMBER: 16504-13
SAMPLE ID: UW-13

EPA 8270
PAGE 22 OF 22

BASE/NEUTRAL COMPOUNDS

RESULT
mg/kg

LOD
mg/kg

4-Bromophenylphenyl ether	ND	0.33
Hexachlorobenzene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Dibutylphthalate	ND	0.33
Fluoranthene	ND	0.33
Benzidine	ND	1.65
Pyrene	ND	0.33
Butylbenzylphthalate	ND	0.33
Benzo (a) anthracene	ND	0.33
3,3'-Dichlorobenzidine	ND	1.65
Chrysene	ND	0.33
Bis (2-ethylhexyl)phthalate	ND	0.33
Di-n-octyl phthalate	ND	0.33
Benzo (b) fluoranthene	ND	0.33
Benzo (k) fluoranthene	ND	0.33
Benzo (a) pyrene	ND	0.33
Indeno (1,2,3-cd) pyrene	ND	1.65
Dibenzo (a,h) anthracene	ND	1.65
Benzo (ghi) perylene	ND	1.65

HSL COMPOUNDS

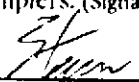
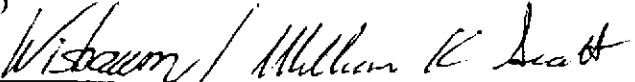
Benzoic Acid	ND	3.3
2-Methylphenol	ND	0.33
4-Methylphenol	ND	0.33
2,4,5-Trichlorophenol	ND	0.33
Aniline	ND	0.33
Benzyl Alcohol	ND	1.65
4-Chloroaniline	ND	0.66
2-Methylnaphthalene	ND	0.33
2-Nitroaniline	ND	1.65
3-Nitroaniline	ND	1.65
Dibenzofuran	ND	0.33
4-Nitroaniline	ND	1.65


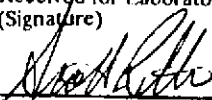
ND = None Detected, Limit of Detection (LOD) appears in right column

QA/QC SUMMARY: SURROGATE RECOVERIES

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	27	2-Fluorobiphenyl	78
2,4,6-tribromophenol	78	Terphenyl	105
Nitrobenzene-d5	67		

CHAIN OF CUSTODY RECORD

Project No.		Project Name and Location						Analysis										Remarks	Detection Limits
S8-171		Waste Oil Safety School Area United Hanger / Bldg 137-110A Oakland Airport						TPH (light + heavy) 8-276 8-270 TML 23 Metals											
Samplers: (Signature)																			
 																			
No. Station	Date	Time	Media	Depth	Compo-sites	No. of Con-tainers	Station Location												
UW-1	12-28	0837	Soil	(20-25)	-	1		X		X									
UW-2	12-28	0900	Soil	(20-25)	-	1		X											
UW-3	12-28	0920	Soil	(20-25)	-	1		X											
UW-4	12-28	0948	Soil	(20-25)	-	1		X		X									
UW-5	12-28	1013	Soil	(20-25)	-	1		X	X	X	X								
UW-6	12-28	1037	Soil	(20-25)	-	1		X	X										
UW-7	12-28	1112	Soil	(20-25)	-	1		X	X										
UW-8	12-28	1145	Soil	(20-25)	-	1		X	X										
UW-9	12-28	1202	Soil	(20-25)	-	1		X											

Relinquished by: (Signature) 	Date / Time 12/29 11:00	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) 	Date / Time 12/29 11:00	Remarks:	

315 Washington Street
Oakland, CA 94607
(415) 763-7037

CHAIN OF CUSTODY RECORD

Turn-Around Time 2-Week

Lab Curtis & Tempkins

Contact Person John G.

Project No.		Project Name and Location						Analysis										Remarks	Detection Limits
S8-171		Waste Oil/Safety School Area United Hanger/Bldg M-110 [^] Oakland Airport						TPH (Lab) <u>1000</u> PCBs <u>5000</u> PAHs <u>5000</u> TML <u>22 MCL</u>											
Samplers: (Signature)		Steven Webaum / William K. Scott																	
No. Station	Date	Time	Media	Depth	Composites	No. of Containers	Station Location										Remarks	Detection Limits	
UW-10	12-28	1256	Soil	(20-25)	-	1													
UW-11	12-28	1305	Soil	(20-25)	-	1													
UW-12	12-28	1338	Soil	(20-25)	-	1													
UW-13	12-28	1348	Soil	(20-25)	-	1													
UW-14	12-28	1408	Soil	(20-25)	-	1													

Relinquished by: (Signature) <i>Steven Webaum</i>	Date / Time 12/29 11:00	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) <i>William K. Scott</i>	Date / Time 12/29 11:00	Remarks:	

315 Washington Street
Oakland, CA 94607
(415) 763-7037

CHAIN OF CUSTODY RECORD

Turn-Around Time 2-week

Lab Curtis + Tompkins

Contact Person John G

Project No.		Project Name and Location						Analysis										Remarks	Detection Limits
S8-171		Jet Fuel Tank Area United Hangar/Bldg M-110 ⁿ Oakland Airport						TTH (Jet Fuel)											
Samplers: (Signature) <i>Steven Webraum / William K. Scott</i>																			
No. Station	Date	Time (hrs)	Media	Depth (ft)	Compo-sites	No. of Con-tainers	Station Location							Remarks	Detection Limits				
U-1	12-27	1035	Soil	(3.5-4.0)	—	1													
U-2	12-27	1055	Soil	(3.0-3.5)	—	1													
U-3	12-27	1110	Soil	(3.0-3.5)	—	1													
U-4	12-27	1125	Soil	(3.0-3.5)	—	1													
U-5	12-27	1145	Soil	(3.0-3.5)	—	1													
U-6	12-27	1215	Soil	(2.5-3.0)	—	1													
U-7	12-27	1330	Soil	(2.5-3.0)	—	1													
U-8-A	12-27	1340	Soil	(1.0-1.5)	—	1													
U-8-B	12-27	1342	Soil	(2.5-3.0)	—	1													

Relinquished by: (Signature) <i>Steven Webraum</i>	Date / Time 12/29 11:00	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) <i>Scott Keith</i>	Date / Time 12/29 11:00	Remarks:	

315 Washington Street
Oakland, CA 94607
(415) 763-7037

CHAIN OF CUSTODY RECORD

Turn-Around Time 2-Week

Lab Curtis & Tompkins

Contact Person John G





Project No. 58-171		Project Name and Location <u>Jet Fuel Tank Area</u> <u>United Hangar/ Bldg M-116A Oakland Airport</u>						Analysis <i>TPH (Jet Fuel)</i>										Remarks		Detection Limits	
Samplers: (Signature) <u>Steven Wisbaum / William K. Scott</u>																					
No. Station	Date	Time	Media	Depth	Compo-sites	No. of Con-tainers	Station Location														
U9-A	12-27	1400	Soil	(10-15)	—	1		X													
U9-B	12-27	1405	Soil	(30-35)	—	1		X													
U-10	12-27	1425	Soil	(30-35)	—	1		X													
U-11	12-27	1448	Soil	(30-35)	—	1		X													
U-12	12-27	1510	Soil	(25-30)	—	1		X													
U-13	12-27	1526	Soil	(30-35)	—	1		X													
U-14	12-27	1545	Soil	(30-35)	—	1		X													
U-15	12-28	1430	Soil	(25-30)	—	1		X													
U-16	12-28	1447	Soil	(20-25)	—	1		X													

Relinquished by: (Signature) <u>Steven Wisbaum</u>	Date / Time <u>12/29 1100</u>	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) <u>John G</u>	Date / Time <u>12/29 11:00</u>	Remarks:	

APPENDIX B
SOIL BORING LOGS

SOIL SAMPLING KEY

Samples collected during monitoring well construction were either screened on-site with an HNU photoionization detector, temporarily stored for laboratory analysis, or retained for future geotechnical analysis. These samples are indicated in the graphics column of the following drill logs. The key to the samples are as follows:

-  = Sample analyzed on-site by HNU detector.
-  = Sample collected for laboratory analysis.
-  = Sample retained for future geotechnical analysis.
-  = Groundwater level during drilling.

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037



Location	<u>United Airlines Hangar Bldg. M1-10</u>	Boring No.	<u>U-1</u>
	<u>Jet Fuel Tank Area</u>		
Driller	<u>ASE</u>	Date	<u>12/27/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Gray, SAND, fine-grained, moist-wet.	Petroleum odor
1			
2			
3		Dark greenish gray, SAND, fine-grained, wet.	8-12-15 Blow counts
4		Total Depth 4.5 feet.	
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location <u>United Airlines Hangar Bldg. M1-10</u>	Boring No. <u>U-2</u>
<u>Jet Fuel Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/27/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Gray, SAND, fine-grained, moist-wet.	
1			
2			
3		Dark greenish gray, SAND, medium- to fine-grained, wet.	9-14-15 Blow counts Fuel odor
4		Total Depth 4.0 feet.	
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Jet Fuel Tank Area</u>	Boring No.	<u>U-3</u>
Driller	<u>ASE</u>	Date	<u>12/27/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Olive gray, SAND, fine-grained, moist-wet.	
1			
2			
3			7-13-15 Blow counts
4		Dark greenish gray, SAND, fine to medium grained, moist-wet.	
5		Total Depth 4.0 feet.	
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	United Airlines Hangar Bldg. M1-10	Boring No.	U-4
	Jet Fuel Tank Area		
Driller	ASE	Date	12/27/88
Method	Hollow Stem	Bore size	8"
Logger	WKS/SW	Datum	
		Casing size	

Depth	Graphic	Lithology	Notes
0 ft		Gray, SAND, fine-grained, moist-wet, shell fragments.	5-7-6 Blow counts
1			
2			
3			
4	Total Depth 4.0 feet.		
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u>	Boring No.	<u>U-5</u>
	<u>Jet Fuel Tank Area</u>		
Driller	<u>ASE</u>	Date	<u>12/27/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u>	Datum	<u></u>
		Casing size	<u></u>

Depth	Graphic	Lithology	Notes
0 ft		Gray, SAND, fine-grained, moist-wet, shell fragments.	
1			
2			
3			10-15-20 Blow counts
3		Dark greenish gray, SAND, medium- to fine-grained, wet.	
4		Total Depth 4.0 feet.	
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

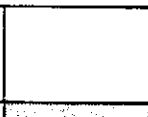
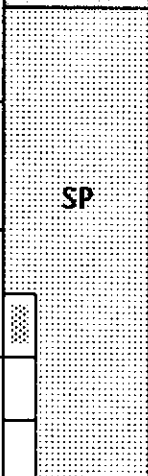
Location	United Airlines Hangar Bldg. M1-10	Boring No.	U-6
	Jet Fuel Tank Area		
Driller	ASE	Date	12/27/88
Method	Hollow Stem	Bore size	8"
Logger	WKS/SW	Datum	
		Casing size	

Depth	Graphic	Lithology	Notes
0 ft		Concrete slab.	
1		Dark greenish gray, SAND, fine-grained, moist-wet, shell fragments.	Strong petroleum odor
2	SP		9-11-14 Blow counts
3			
4		Total depth 3.5 feet.	
5			
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8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u>	Boring No.	<u>U-7</u>
	<u>Jet Fuel Tank Area</u>		
Driller	<u>ASE</u>	Date	<u>12/27/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u>	Datum	<u></u>
		Casing size	<u></u>

Depth	Graphic	Lithology	Notes
0 ft		Concrete slab.	
1		Dark greenish gray, SAND, fine-grained, moist-wet, shell fragments.	Petroleum odor
2			9-15-20 Blow counts
3			
4			Total depth 4.0 feet.
5			
6			
7			
8			
9			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location <u>United Airlines Hangar Bldg. M1-10</u>	Boring No. <u>U-8</u>
<u>Jet Fuel Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/27/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft	<p>The graphic log shows a vertical scale from 0 to 10 feet. A shaded area representing soil is present from 0 to approximately 3.75 feet. The label 'SP' is placed within this shaded area. A downward-pointing arrow is located at the 4-foot mark, indicating the total depth of the borehole.</p>	Gray, SAND, fine-grained, moist.	1-2-3
1			8-17-29 Blow counts
2			
3			
4			Total depth 3.75 feet.
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u>	Boring No.	<u>U-9</u>
	<u>Jet Fuel Tank Area</u>		
Driller	<u>ASE</u>	Date	<u>12/27/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u>	Datum	<u></u>
		Casing size	<u></u>

Depth	Graphic	Lithology	Notes
0 ft		Gray, SAND, fine-grained, moist, shell fragments.	3-4-9-15 Blow counts
1			
2			
3			
4			
4	▼	Total depth 3.75 feet.	11-17-24
5			
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7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location <u>United Airlines Hangar Bldg. MI-10</u>	Boring No. <u>U-10</u>
<u>Jet Fuel Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/27/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top. Base rock.	
1		Gray, SAND, fine-grained, moist, shell fragments.	
2		Clayey sand layer, approx. 1" thick.	11-17-26 Blow counts
3		Dark greenish gray, SAND, fine-grained, moist-wet, shell fragment.	7-16-21
4		Total depth 5.0 feet.	
5			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Jet Fuel Tank Area</u>	Boring No.	<u>U-11</u>
Driller	<u>ASE</u>	Date	<u>12/27/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top. Base rock.	
1		Gray, sand, fine-grained, moist.	
2			8-7-31 Blow counts
3		Dark greenish gray, SAND, medium- to fine-grained, moist-wet, shell fragments.	
4		Total depth 3.5 feet.	
5			
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8			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location <u>United Airlines Hangar Bldg. M1-10</u>	Boring No. <u>U-12</u>
<u>Jet Fuel Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/27/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top. Base rock.	
1		Gray, SAND, medium- to fine-grained, moist, shell fragments.	
2		SP	9-15-26 Blow counts
3			
3.5		Total depth 3.5 feet.	
4			
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location <u>United Airlines Hangar Bldg. M1-10</u>	Boring No. <u>U-13</u>
<u>Jet Fuel Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/27/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	
		Base rock.	
1		Gray, SAND, fine-grained, moist-wet.	
2			
3			
3.5		Total depth 3.5 feet.	11-20-25 Blow counts
4			
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9			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

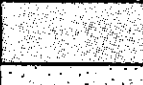
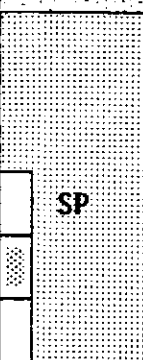



Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Jet Fuel Tank Area</u>	Boring No.	<u>U-14</u>
Driller	<u>ASE</u>	Date	<u>12/27/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top. Base rock.	
1		Gray, SAND, fine-grained, moist.	
2		Olive gray/olive, SAND, fine-grained, moist.	8-15-24 Blow counts
3		Thin bed of clayey sand, same color.	
		Total depth 3.5 feet.	
4			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

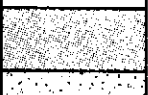


Location	United Airlines Hangar Bldg. M1-10	Boring No.	U-15
	Jet Fuel Tank Area		
Driller	ASE	Date	12/28/88
Method	Hollow Stem	Bore size	8"
Logger	WKS/SW Datum	Casing size	

Depth	Graphic	Lithology	Notes
0 ft		Concrete Slab. Base rock.	
1		Dark greenish gray, SAND, moist-wet.	Petroleum odor.
2			11-18-24 Blow counts
3			
4		Total depth 3.5 feet.	
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7			
8			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037


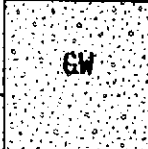
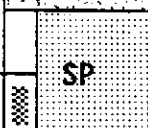

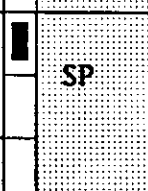
Location <u>United Airlines Hangar Bldg. M1-10</u>	Boring No. <u>U-16</u>
<u>Jet Fuel Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/28/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Concrete slab. Base rock.	
1		Olive gray, SAND, fine-grained, moist-wet.	
2		SP Dark greenish gray, SAND, fine-grained, moist-wet.	11-29-36 Blow counts
3		Total depth 3.0 feet.	
4			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037



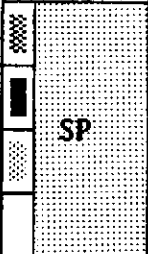


Location	<u>United Airlines Hangar Bldg. MI-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-1</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
1		Base rock.	
2		Brown, SAND, fine-grained, moist.	8-21-24 Blow counts 0.5 ppm
3		Brown, GRAVEL, moist-wet.	14-15-21
4		Dark greenish gray, SAND, fine-grained, wet.	
5		Total depth 4.5 feet.	
6			
7			
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9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. MI-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-2</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
1		Base rock.	
2		Dark greenish gray, SAND, fine-grained, moist.	
3			
3.5		Total depth 3.5 feet.	4-10-19-34 Blow counts 250 ppm
4			
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037


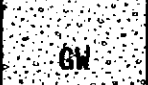
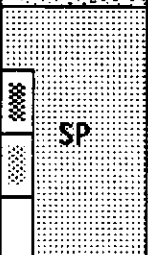

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-3</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
1		Base rock.	
2		Olive gray, SAND, fine-grained, moist.	11-18-22 Blow counts 200 ppm
3		Total depth 3.0 feet	35 ppm
4			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037



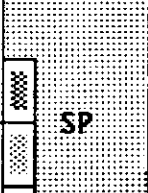

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-4</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
1	 GW	Base rock.	
2	 SP	Olive gray, SAND, fine-grained, moist, shell fragments.	7-12-23 Blow counts 130 ppm
3		Total depth 3.0 feet.	
4			
5			
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DRILLING LOG

BASELINE
315 Washington Street
Oakland, Ca 94607
(415) 763-7037

Location <u>United Airlines Hangar Bldg. M1-10</u>	Boring No. <u>UW-5</u>
<u>Waste Oil/Safety Solvent Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/28/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
1		Base rock.	
2		Dark greenish gray, SAND, fine-grained, moist, shell fragments.	
3		Total depth 3.0 feet.	strong solvent odor 8-14-17 Blow counts Greater than 2000 ppm
4			
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037



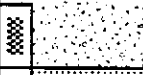
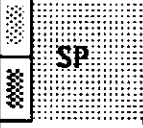
Location	United Airlines Hangar Bldg. M1-10	Boring No.	UW-6
	Waste Oil/Safety Solvent Tank Area		
Driller	ASE	Date	12/28/88
Method	Hollow Stem	Bore size	8"
Logger	WKS/SW	Datum	
		Casing size	

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
		Base rock.	
1		Olive gray, SAND, fine-grained, moist.	strong solvent odor 100 ppm 13-20-28 Blow counts
2			
3		Dark greenish gray, SAND, fine-grained, moist.	200 ppm
4		Total depth 3.0 feet.	
5			
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8			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-7</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
1	 GW	Base rock.	
2	 SP	Dark greenish gray, SAND, fine-grained, moist.	90 ppm 18-23-25 Blow counts
3		Total depth 3.0 feet.	275 ppm
4			
5			
6			
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8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location <u>United Airlines Hangar Bidg. M1-10</u>	Boring No. <u>UW-8</u>
<u>Waste Oil/Safety Solvent Tank Area</u>	
Driller <u>ASE</u>	Date <u>12/28/88</u>
Method <u>Hollow Stem</u>	Bore size <u>8"</u>
Logger <u>WKS/SW</u> Datum _____	Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings
1		Base rock.	
2			9-25-29 Blow counts
3		Dark greenish gray, SAND, fine-grained, moist. Total depth 3.0 feet.	175 ppm
4			
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-9</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Dark olive gray, SAND, fine-grained, moist.	ppm indicates HNU readings
1		Dark greenish gray, SAND, fine-grained, moist-wet.	strong solvent odor 5-11-16 Blow counts
2			
3		Total depth 3.0 feet.	
4			
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u>	Boring No.	<u>UW-10</u>
	<u>Waste Oil/Safety Solvent Tank Area</u>		
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Dark olive gray, SAND, fine-grained, moist.	ppm indicates HNU readings
1			
2			slight solvent odor 10-8-13 Blow counts 60 ppm
3		Total depth 3.0 feet.	
4			
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-11</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____



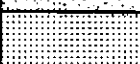

Depth	Graphic	Lithology	Notes
0 ft		Olive gray, SAND, fine-grained, moist. Total depth 3.0 feet.	ppm indicates HNU readings 6-13-19 Blow counts 70 ppm
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location United Airlines Hangar Bldg. M1-10
Waste Oil/Safety Solvent Tank Area
 Driller ASE
 Method Hollow Stem
 Logger WKS/SW Datum _____

Boring No. UW-12
 Date 12/28/88
 Bore size 8"
 Casing size _____

Depth	Graphic	Lithology	Notes
0 ft		Asphalt top.	ppm indicates HNU readings 12-31-43 Blow counts 75 ppm
1	 GW	Base rock.	
2	 SP	Olive gray, SAND, fine-grained, moist-wet.	
3	 SP	Dark greenish gray, SAND, fine-grained, moist-wet.	
4		Total depth 3.0 feet.	
5			
6			
7			
8			
9			
10			

DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-13</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Olive gray, SAND, fine-grained, moist.	ppm indicates HNU readings
1		Dark greenish gray, SAND, fine-grained, moist-wet.	
2		Total depth 3.0 feet.	60 ppm 6-11-25 Blow counts
3			
4			
5			
6			
7			
8			
9			
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DRILLING LOG

BASELINE
 315 Washington Street
 Oakland, Ca 94607
 (415) 763-7037

Location	<u>United Airlines Hangar Bldg. M1-10</u> <u>Waste Oil/Safety Solvent Tank Area</u>	Boring No.	<u>UW-14</u>
Driller	<u>ASE</u>	Date	<u>12/28/88</u>
Method	<u>Hollow Stem</u>	Bore size	<u>8"</u>
Logger	<u>WKS/SW</u> Datum _____	Casing size	_____

Depth	Graphic	Lithology	Notes
0 ft		Dark olive gray, SAND, fine-grained, moist-wet.	ppm indicates HNU readings 40 ppm 9-20-29 Blow counts
1		Dark greenish gray, SAND, fine-grained, moist-wet.	
2		Total depth 3.0 feet.	
3			
4			
5			
6			
7			
8			
9			
10			

ENVIRONMENTAL
 PROTECTION
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