PORT OF OAKLAND

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Alameda County
Environmental Health

August 15, 2012

Mr. Keith Nowell
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Subject: Transmittal of Report by Ninyo and Moore, 2 April 2009, Work Plan for Soil Remediation Activities and Additional Investigation of Former Tanks MF-25 & MF-26, Oakland Maintenance Center, Oakland International; Airport, 1100 Airport Drive, Oakland, California 94621; Site RO00000414

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Sincerely,

Douglas Herman
Port of Oakland
Environmental Scientist

530 Water Street ■ Jack London Square ■ P.O. Box 2064 ■ Oakland, California 94604-2064
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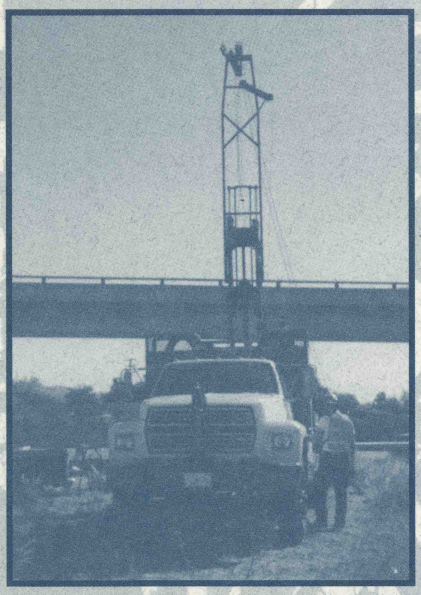
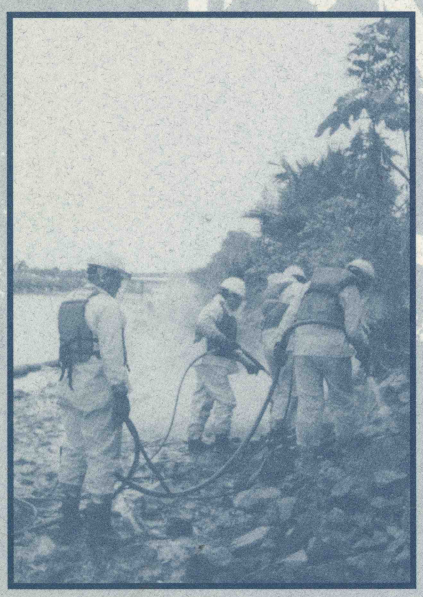
REPORT ID# 634
p&f - 5-15-09

WORK PLAN FOR SOIL REMEDIATION ACTIVITIES AND ADDITIONAL INVESTIGATION OF FORMER TANKS MF-25 & MF-26 OAKLAND MAINTENANCE CENTER OAKLAND INTERNATIONAL AIRPORT 1100 AIRPORT DRIVE





Geotechnical

and

Environmental

Sciences

Consultants

Ninyo & Moore

WORK PLAN FOR SOIL REMEDIATION ACTIVITIES AND ADDITIONAL INVESTIGATION OF FORMER TANKS MF-25 & MF-26 OAKLAND MAINTENANCE CENTER OAKLAND INTERNATIONAL AIRPORT 1100 AIRPORT DRIVE OAKLAND, CALIFORNIA 94621

PREPARED FOR:
Port of Oakland
530 Water Street
Oakland, California 94607

PREPARED BY:
Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
1956 Webster Street, Suite 400
Oakland, California 94610

April 2, 2009
Project No. 401164011

April 2, 2009
Project No. 401164011

Mr. Dale Klettke, CHMM
Associate Environmental Scientist
Port of Oakland
530 Water Street
Oakland, California 94607

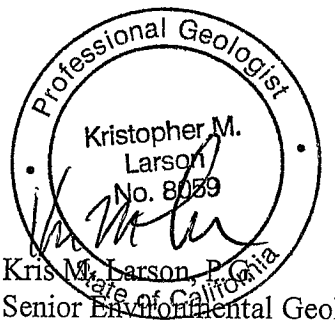
Subject: Work Plan for Soil Remediation Activities and Additional Investigation of Former Tanks MF-25 & MF-26, Oakland Maintenance Center
Oakland International Airport, 1100 Airport Drive, Oakland, California 94621

Dear Mr. Klettke:

Ninyo & Moore has prepared the enclosed Work Plan for Soil Remediation Activities and Additional Investigation of Former Tanks MF-25 & MF-26 for excavation, grading and soil boring activities at the Oakland Maintenance Center property for the Oakland International Airport located at 1100 Airport Drive in the City of Oakland, California. The Draft Work Plan will be succeeded by a Final Work Plan, which will incorporate comments from the Port of Oakland subsequent to their review. We appreciate the opportunity to provide service on this project.

Sincerely,
NINYO & MOORE

Cem R. Atabek
Staff Environmental Engineer



Kris M. Larson, P.G.
Senior Environmental Geologist

CRA/KML/dhi

Distribution: (1) Addressee

TABLE OF CONTENTS

1. INTRODUCTION

This Remediation Workplan has been prepared to provide procedures and criteria to guide soil remediation operations at the Oakland Maintenance Center (OMC) located at 1100 Airport Drive in Oakland, California (site) (Figure 1). This Workplan was developed with acknowledgement of past site use history and previous subsurface investigations completed at the site, which are further discussed in Sections 3 & 4.

2. PURPOSE

The purpose of this Work Plan for Soil Remediation Activities and Additional Investigation of Former Tanks MF-25 & MF-26 is to:

- Outline remedial excavation activities needed in the Areas of Concern (AOCs) which include removing impacted soil containing concentrations of constituents of concern (COC) exceeding San Francisco Bay Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) and obtain regulatory closure without deed restrictions within the AOC, and

- To evaluate the extent of residual contamination suspected to be present in soil in the area of former underground storage tanks (USTs) MF-25 & MF-26.

It is our understanding that the Alameda County Department of Environmental Health (ACDEH) has overseen past site characterization of the AOCs and agreed with the extent of characterization. It is also our understanding that the ACDEH has agreed that the remediation goals for the AOC would be RWQCB ESLs for commercial properties. The specific ESL selected to guide the remediation goal for impacted soil are the Direct Exposure Soil Screening Levels for Construction/Trench Worker Exposure Scenario (Table K-3). Two types of ESLs were selected for comparison with the groundwater monitoring data from the area of former USTs MF-25 & MF-26. For comparison with concentrations of volatile organic compounds (VOCs), the Groundwater Screening Level for Evaluation of Potential Vapor Intrusion Concerns for Commercial/Industrial Land Use (Table E-1) was used. For comparison with concentrations of petroleum compounds, the Gross Contamination Ceiling Values where groundwater is not a current or potential drinking water resource (Table I-2) was used. This Work Plan also includes a

discussion of actions relating to mitigating known and unknown chemical hazards on site during excavation activities.

3. BACKGROUND

The site is a 39.09-acre facility located within the Oakland International Airport, in Oakland, California. The site is bordered by storm water drainage channels and an aircraft taxiway to the north, Sally Ride Way to the east, Airport Drive to the south, and parking lot structures to the west (Figure 2). The site was constructed for and initially utilized by World Airways from construction in 1973 until 1988. From 1988 to May of 2003, the site was leased and utilized by United Airlines (UAL) to perform maintenance on wide-body Boeing 747-type aircraft. The site is no longer used by UAL as an aircraft maintenance facility. The site contains an approximately 309,910-square foot structure (Building M-110) containing four aircraft hangars (main hangar). Building M-110 also contains offices in the four stories situated adjacent to and above the current facility entrance identified as A-Core. The office areas located in A-Core are currently utilized by Port construction personnel and various Port contractors working at the Oakland International Airport. The site area surrounding the hangar is paved with either concrete or asphalt, and was primarily used for aircraft movement, storage, and cleaning. The main hangar building and surrounding areas of the site contained several additional structures used for aircraft maintenance including an aircraft wash rack, small parts wash rack, vehicle maintenance shop and fueling station, wastewater treatment system, hazardous material storage areas, and miscellaneous equipment storage areas (ERM, 2004).

The Port of Oakland provided Ninyo & Moore with two previous reports prepared for the site for the purpose of review in August 2007. A brief description of environmental investigations conducted at the site is summarized below.

A report titled Summary of Compliance Work Completed for UAL Exit of the Oakland Maintenance Center, Oakland International Airport, Oakland, California was completed in July 2003 on behalf of United Airlines (ERM, 2003). This report explained compliance activities such as properly disposing of hazardous wastes, closing permits, cleaning tanks, and notifying

the RWQCB and ACDEH of soil and groundwater investigations performed at the site. Included in an appendix of this report was a copy of a letter report summarizing a Phase I Environmental Site Assessment (ESA) performed on the site, as well as results of soil and groundwater investigations performed at the site. The Phase I ESA identified 19 AOCs at the site where soil and/or groundwater samples were later collected. The AOCs were identified through any combination of the following methods: visual observations, interviews with site employees, document review, and agency record review. The AOCs included but were not limited to former wash racks, wastewater vaults, above ground storage tanks (ASTs), USTs, vehicle and aircraft maintenance areas, hazardous waste/material storage areas, storm drains, and areas where historical releases of hazardous materials occurred. This report contained information from the soil and groundwater sampling, however, a more complete set of data from soil and groundwater investigations at the site was available in a report entitled Former United Airlines Oakland Maintenance Center, Site Investigation and Risk Assessment Report, Oakland International Airport, dated June 30, 2004 (ERM, 2004). This report explained the reasoning for each AOC being identified, explained the analytical results of soil and/or groundwater investigations at each AOC, contained a conceptual site model, and a risk assessment. This report included comparisons of levels of COCs present at the site to their Tier-1, Tier-2, and Tier-3 risk-based standards for airport workers, construction workers, and ecological receptors. The report concluded that COCs detected in the soil and groundwater on-site do not pose an unacceptable risk to exposure populations and recommended no further action for all 19 AOCs investigated (ERM, 2004).

4. ADDITIONAL INVESTIGATION OF THE FORMER USTS MF-25 & MF-26 AREA

Former USTs MF-25 & MF-26 were removed from an area just southwest of the OMC in 1992. According to the Report of Removal of Inactive Tanks MF-25 & MF-26 prepared by Uribe & Associates in May 1992 (Uribe, 1992), UST MF-25 was reportedly a 3,000 gallon tank and UST MF-26 was reportedly a 1,000 gallon storage tank. According to the report, the USTs were suspected to have stored gasoline, diesel, waste oil and solvents; however no documentation

existed on the use of the two tanks. Soil samples were collected from the sidewalls of the pit after removal of the USTs. Elevated concentrations of petroleum compounds and VOCs were detected in the sidewall samples collected. Over-excavation of the UST pit area was performed and confirmation samples were collected from the sidewalls of the excavation. Analytical results revealed mostly non-detectable concentrations and a few low concentrations of petroleum compounds and VOCs which were below ESLs detected in samples collected from the northwest side of the excavation (Uribe, 1992). A series of 8 monitoring wells (MW-1 through MW-8) were installed within and surrounding the former UST excavation in the following years. Elevated concentrations of petroleum compounds and VOCs have been detected in the monitoring wells during sampling past events conducted since 1992, suggesting that a contaminant source area of residual impacted soil may remain in the area surrounding the former UST excavation. According to the August 2006 Groundwater Sampling and Analysis Report prepared by SCA Environmental (SCA, 2006), concentrations of petroleum compounds and VOCs were detected in monitoring wells MW-1 through MW-4 and MW-7. The highest concentrations were detected in monitoring well MW-2, including total petroleum hydrocarbons as diesel (TPH-d), and total petroleum hydrocarbons as jet fuel (TPH-j) which were detected equal to and above, respectfully, the ESLs of 2,500 micrograms per liter (µg/l) (Figure 3). Concentrations of VOCs were not detected above the ESLs for Evaluation of Potential Vapor Intrusion Concerns. The groundwater flow direction was measured to be towards the south-southwest. Results of the latest groundwater sampling event, conducted in July and August of 2006, are presented in Figure 3.

Additional investigation will be conducted in the area of the former UST excavation to evaluate the extent of residual contamination in soil and groundwater. Eleven borings will be advanced to a depth of approximately 15 feet bgs using direct push technology in the area of the former UST excavation for the collection of soil and groundwater samples (Figure 4). Eight borings (B-1 through B-8) will be advanced within approximately 5 to 10 feet of the former UST excavation limits for the collection of soil samples. A hydro-punch boring (B-9) will be advanced within the former UST excavation for the collection of a grab groundwater sample to evaluate the magnitude of impacts to groundwater in this area. Soil samples will not be collected from this boring as the subsurface of this area consists of gravel fill material used to backfill the

excavation. Two borings (B-10 and B-11) will be advanced within 15 to 20 feet from the former UST excavation to evaluate the lateral extent of impacts to soil and groundwater in areas up gradient and down gradient from monitoring wells MW-2 through MW-4, where the highest concentrations of constituents of concern have been detected. If physical signs of impacts are not observed in boring B-6, located closer to the former UST excavation than boring B-10, boring B-10 may be advanced near another boring location where impacts were observed to evaluate the lateral extent of impacts to soil and groundwater in that area. Grab groundwater samples should be collected from borings B-3 through B-6 and B-11, located in areas down gradient of monitoring wells MW-2 through MW-4, to evaluate the lateral extent of impacts to groundwater in these areas. If constituents of concern are detected in soil samples from any of the initial borings at concentrations exceeding the ESLs selected as remediation goals, step-out borings will be advanced in the area surrounding these initial borings to evaluate the lateral extent of impacts.

Soil cores will be screened using a photo-ionization detector (PID) and visual observations to evaluate the presence of impacted soil. Discrete soil samples will be collected from two depths in each borings, including:

- Near the soil-groundwater interface or at the depth where obvious signs of contamination are observed, and
- Near the fill-bay mud interface or at the most shallow depth where obvious signs of contamination are no longer observed.

Soil and groundwater samples will be analyzed for VOCs by EPA Method 8260B and TPH compounds including jet fuel, gasoline, diesel and motor oil by EPA method 8015B.

5. SOIL MANAGEMENT PROTOCOLS FOR KNOWN SOIL IMPACTED AOCS ON SITE

For purposes of this work plan, past soil analytical data was compared with the RWQCB ESLs for Direct Exposure for Construction/Trench Worker Exposure Scenario (Table K-3). Through the review and analysis of the previous reports regarding soil and groundwater investigations at the site, Ninyo & Moore has determined that seventeen AOCs (1,2, and 4 through 18) do not ex-

hibit environmental conditions that indicate soil impacted with COCs exists at levels above RWQCB ESLs.

Two AOCs (3 & 19) were found to exhibit environmental conditions that indicate soil potentially impacted with COCs exists and will require remediation before site closure will be granted. These two AOCs are discussed further in section 5. The following specific soil management protocols for soil impacted AOCs (3 & 19) will be followed during grading and excavation activities undertaken at the site AOCs. The specific soil management protocols for soil impacted AOCs are grouped by the individual AOCs and have been developed with acknowledgement of past site use history and previous subsurface investigations completed at the site.

Soil impacted with TPH compounds and metals were compared to ESLs as a guide for remediation at the site AOCs. The ESLs for either arsenic or cobalt were exceeded in three samples collected on site. TPH and VOC constituents were not reported above ESLs. The specific locations and the concentrations detected are discussed below.

5.1. Soil Remediation Methodology

Soil will be excavated in the AOCs in a 100 square foot area around the sample locations where impacted soil was reported subsequent to the ERM sampling events. The soil may be either stockpiled on Visqueen© next to the excavation or directly loaded into trucks and transported to a pre-approved disposal site. Soil management protocols discussed in Section 6, below, will be followed during excavation and grading activities. Soil excavation occurring in areas where groundwater monitoring wells are located will occur by excavating around the wells without destroying or damaging the well.

Confirmation samples will be collected subsequent to remedial activities. If confirmation soil samples are found to contain COCs in excess of ESLs, the excavation will be extended in the direction of the sample exceeding ESLs and re-sampled. If confirmation soil samples do not contain COCs in excess of ESLs, the excavated pit will be backfilled with clean fill material and graded to match the surrounding surface.

Areas of concerns where remediation activities are recommended are discussed in the following sections. A summary of the excavation areas, quantities to be excavated, and confirmation sampling to be performed is presented in Table 1, below.

5.1.1. Area of Concern 3 – Industrial Wastewater Vault

5.1.1.1. Background Information

Area of Concern 3 contained a 2,000-2,500 gallon concrete sump where water runoff from the aircraft wash rack was diverted and collected. Soil samples collected in 2003 indicated two localized areas of soil potentially impacted by the former activities on-site (Figure 5). The areas of potentially impacted soil appear to be to the north and west of the industrial wastewater sump where two sample locations (W-B-10 and W-B-12) contained samples collected from various depths where concentrations of metals exceeded their respective ESLs. In a sample collected from 3 feet bgs at W-B-10, a concentration of arsenic (25 milligrams per kilogram [mg/kg]) exceeding the ESL was reported. In a sample collected from 0.5 feet bgs at W-B-12, a concentration of cadmium (44 mg/kg) exceeding the ESL was reported.

5.1.1.2. Area of Soil Remediation

For the potentially impacted soil at sample location W-B-10, soil will be excavated to a depth of 3.5 feet bgs. Approximately 13 cubic yards (cy) of soil will be excavated and stockpiled from this location and sampled according to Section 6.2.6. For the potentially impacted soil at sample location W-B-12, soil will be excavated to a depth of 2 feet bgs. Approximately 8 cy of soil will be excavated and stockpiled from this location and sampled according to Section 6.2.6. For the two localized areas of potentially impacted soil in AOC 3, a total of approximately 21 cy of soil will be excavated and stockpiled.

5.1.1.3. Confirmation Samples

Subsequent to soil excavation of potentially impacted soil within AOC 3, confirmation samples will be collected from each excavated area. One confirmation soil sample will be collected from the bottom of each excavated pit at as well as one from each sidewall of each excavated pit at approximately half the depth of the excavation.

5.1.2. Area of Concern 19 – Runoff from Pavement to Unpaved Area

5.1.2.1. Background Information

Area of Concern 19 consists of an un-paved grassy area of exposed soil and vegetation where storm water reportedly drains to from the OMC property. Soil samples collected in 2003 indicated one localized areas within AOC 19 where soils appear to be impacted by storm water runoff from the OMC at concentrations exceeding ESLs (Figure 6). This area of potentially impacted soil (W-B-34) is located along the north edges of the pavement north of the OMC. A sample collected from the soil surface at W-B-34 contained a concentration of arsenic (32 mg/kg) exceeding the ESL.

5.1.2.2. Area of Soil Remediation

For the potentially impacted soil at W-B-34, soil will be excavated to a depth of 1 foot bgs. Approximately 3.7 cy of soil will be excavated and stockpiled from the location and sampled according to Section 6.2.6.

5.1.2.3. Confirmation Samples

Subsequent to soil excavation of potentially impacted soil within AOC 19, confirmation samples will be collected from the excavated area. One confirmation soil sample will be collected from the bottom of the excavated pit at approximately 1 foot bgs, as well as one from each sidewall of the excavated pit at depths of 0.5 feet bgs.

Table 1 – Soil Excavation Summary

Area of Concern	Boring	ESL(s) exceeded (mg/kg)	Concentration Detected (mg/kg)	Amount of excavation	Number of confirmation samples	Laboratory analyses to be performed
3-Industrial Wastewater Vault	W-B-10	Arsenic - 15	25 at 3 feet bgs	13 CY	4-sidewall 1-bottom	Arsenic
3-Industrial Wastewater Vault	W-B-12	Cadmium - 39	44 at 0.5 feet bgs	7.4 CY	4-sidewall 1-bottom	Cadmium
19-Runoff from Pavement to Unpaved Area	W-B-34	Arsenic - 15	32 at surface	3.7 CY	4-sidewall 1-bottom	Arsenic

5.2. Closure Report

Following completion of the additional investigation activities around former USTs MF-25 & MF-26, additional remediation may be recommended based on the findings of the additional investigation. Following the completion of the remediation and grading activities described in this Work Plan and any other remediation activities which may be recommended based on the findings of the additional investigation, a Post Remediation Closure Report will be prepared that will document the results of the sampling, excavation, and grading activities. The report will be submitted to the Port of Oakland and the ACDEH for review.

6. GENERAL ENVIRONMENTAL ACTIVITIES FOR SITE GRADING AND EXCAVATION

The following presents the activities that will be performed prior to, during, and following the on-site grading and excavation activities.

6.1. Pre-Grading Activities

Pre-grading activities will be conducted to minimize down time and interruptions of grading activities if unknown environmental features are encountered. Pre-grading activities are intended to identify health and safety issues, and prepare and coordinate site individuals with their respective responsibilities.

6.1.1. Health and Safety Plan (HSP)

A HSP will be prepared to protect workers and subcontractors from chemicals that might be encountered. Field personnel will review and sign the HASP prior to commencing field activities.

6.1.2. Pre-Excavating / Grading Meeting

The Port of Oakland project director and the consultant project manager / field coordinator will be requested to attend a pre-excavating / grading meeting. The agenda of the meeting will include an oversight of the historical land use, environmental investigations, and remedial activities to be performed at the site. The meeting will also be held to discuss possible unknown environmental features that might be encountered. Additionally, program participant information will be confirmed and updated as needed by the remediation project manager.

6.2. General Guidelines for Excavation Activities

Once excavation has begun, the following activities will be performed.

6.2.1. Dust and Odor Control

The general or excavation contractor's health and safety field monitor will monitor excavation operations for fugitive dust and direct the general or excavation contractor to take such measures, as necessary, such as the application of water or a change in operations or equipment in order to properly manage dust from leaving the site. Stockpiled soil will be covered with plastic sheeting, or other similar tarp material, at the end of each workday.

If impacted soil is discovered, the general or excavation contractor's health and safety field monitor will monitor excavation operations for odors, and direct the general or excavation contractor to take such measures, as necessary, such as the application of water or a change in operations or equipment in order to properly manage noticeable or nuisance odors from leaving the site.

6.2.2. Notification and Identification of Unknown Environmental Features

The Port of Oakland will be notified if unknown environmental features are identified that require additional investigations or remediation. The field coordinator will direct a limited excavation to identify the feature. The specific scope of work will be verbally discussed with the Port of Oakland prior to beginning the work. Documentation of the work conducted to assess and remediate these features will be provided in the final report. Confirmation samples will be collected and analyzed subsequent to soil remediation to assess environmental conditions in the soil after excavation.

If the unknown environmental feature is assessed to be a regulated feature, such as a UST, septic pit, or clarifier, the appropriate regulatory agencies will be notified, permits will be obtained, and work plans will be provided. The results of the investigations and remediation will be documented in the final report, or in an individual report.

6.2.3. Stained and/or Odorous Soil, or Other Unregulated Feature

Stained and/or odorous soil, or other unregulated features that are discovered at the site will be assessed or mitigated using on-site equipment. Confirmation samples will be collected and analyzed for COCs pertaining to the individual AOC. Confirmation samples will be collected using a hand auger.

Impacted soil will be excavated and stockpiled, and confirmation samples will be collected from the floor and walls of the excavation. Confirmation samples will be analyzed for the COCs, and the results of the pre-excavation and confirmation samples will be documented in the final report that will be prepared following remediation activities.

6.2.4. Regulated Features

If a regulated feature such as a UST, septic pit, or clarifier is encountered, the consultant will alert the Port of Oakland.

6.2.5. Storm Water Control

Storm water pollution can occur when surface runoff contacts disturbed soils in excavation areas, exposed wastes, or soil stockpiles. Therefore, this type of runoff will be minimized by using dust control measures such as those discussed in 6.2.1 as well as minimizing the amount of materials on-site, covering or wiping down materials at the end of the day and maintaining good housekeeping practices on-site.

To control runoff, structural practices may be used to divert flows from exposed impacted soils, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site containing impacted soil. Silt fences, straw bales, diversion dikes, storm drain inlet protection, outlet protection, visqueen covers, sediment traps, and/or sediment basins may be used to control storm water flow.

6.2.6. Soil Stockpile Segregation and Sampling

Characteristics of excavated soil will be evaluated through the use of a PID, as well as visual indicators (staining, discoloration, odor, etc.) to determine if the soil appears to be impacted. Excavated impacted soil will be placed on, and covered with visqueen plastic. Excavated impacted soil will be segregated from clean soil stockpiles.

Profile sampling for off-site use/disposal of the soil will include the following sampling protocol as outlined in the DTSC SW-846, which is discussed below, or profiling criteria set forth by a disposal/recycling facility:

- Minimum of one sample for 100 cubic yards (cy) or less; and
- Minimum of three samples for greater than 100 to 500 cy; and one sample for every 500 cy thereafter.

Composite sampling, if completed, will consist of compositing a maximum of four samples into one and will follow DTSC SW-846 guidelines. Compositing shall be completed by the laboratory.

All soil stockpiles will be analyzed for COCs pertaining to their individual AOC.

6.2.7. Soil Disposal, Loading, and Transport

The Port of Oakland will be responsible for securing the subcontractor for soil remediation on-site. Soil will be stored on plastic sheeting during excavation activities on-site. Analytical results from composite samples collected from soil stockpiles will determine the classification of the soil or whether it can be reused on-site. Impacted soil will be transported to either a Class I or Class II landfill facility.

The soil transport vehicles will be equipped with plastic sheeting and will be loaded using a standard front-end loader. The loading will be conducted in a manner to reduce the potential to generate dust and vapor. Dust suppression during the loading will be performed by limiting the height of soil drop from the loader to the truck and by lightly spraying or misting the stockpiles with water. After the soil is loaded into the transport trucks, the soil will be covered with tarps to prevent soil from spilling out of the trucks during transport to the disposal facility. Prior to departure, the trucks will have loose soil debris removed via dry brushing the tires and truck body.

Department of Transportation approved, placarded end-dump, or bottom dump trucks will transport excavated soil to the appropriate off-site disposal facility. The number of vehicles to be used for soil loading and transport will be minimized to avoid generating excess decontamination wastes. Waste haulers will be required to provide proof of valid registrations, and permits for hazardous waste transport if soil is transported to a Class I facility. The vehicles will be properly registered, operated, and placarded in compliance with local, state, and federal requirements. Trucks will be inspected by the Ninyo & Moore and/or the transportation contractor technical staff representative before

leaving the site to verify that they are properly registered, operated, and placarded in accordance with the requirements.

6.2.8. Laboratory Analysis

A California state-certified laboratory will perform chemical analyses on soil samples collected for testing during the development of the site. The consultant project manager, Port of Oakland project director, and the ACDEH representative will evaluate the laboratory analyses required in accordance with this Work Plan and Specific Soil Management Protocols for Soil Impacted AOCs discussed in section 5.

6.2.9. Groundwater

According to previous environmental investigations performed at the site, groundwater was encountered at the site at depths ranging from 2 feet to 11 feet bgs (SCA, 2006). During soil remediation activities at the site, groundwater may be encountered. Groundwater remediation is not included in the scope of this workplan. However, if groundwater is encountered and appears to be impacted through visual observation, an Oxygen Release Compound (ORC®) will be added to the clean backfill below the groundwater surface to accelerate attenuation of residual COC concentrations.

7. LIMITATIONS

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard-of-care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied is made regarding the professional opinions presented in this report.

Our recommendations and opinions are based on an analysis of the observed site conditions and the referenced literature. If conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In

addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of this report by parties other than the client is undertaken at said parties' sole risk.

8. REFERENCES

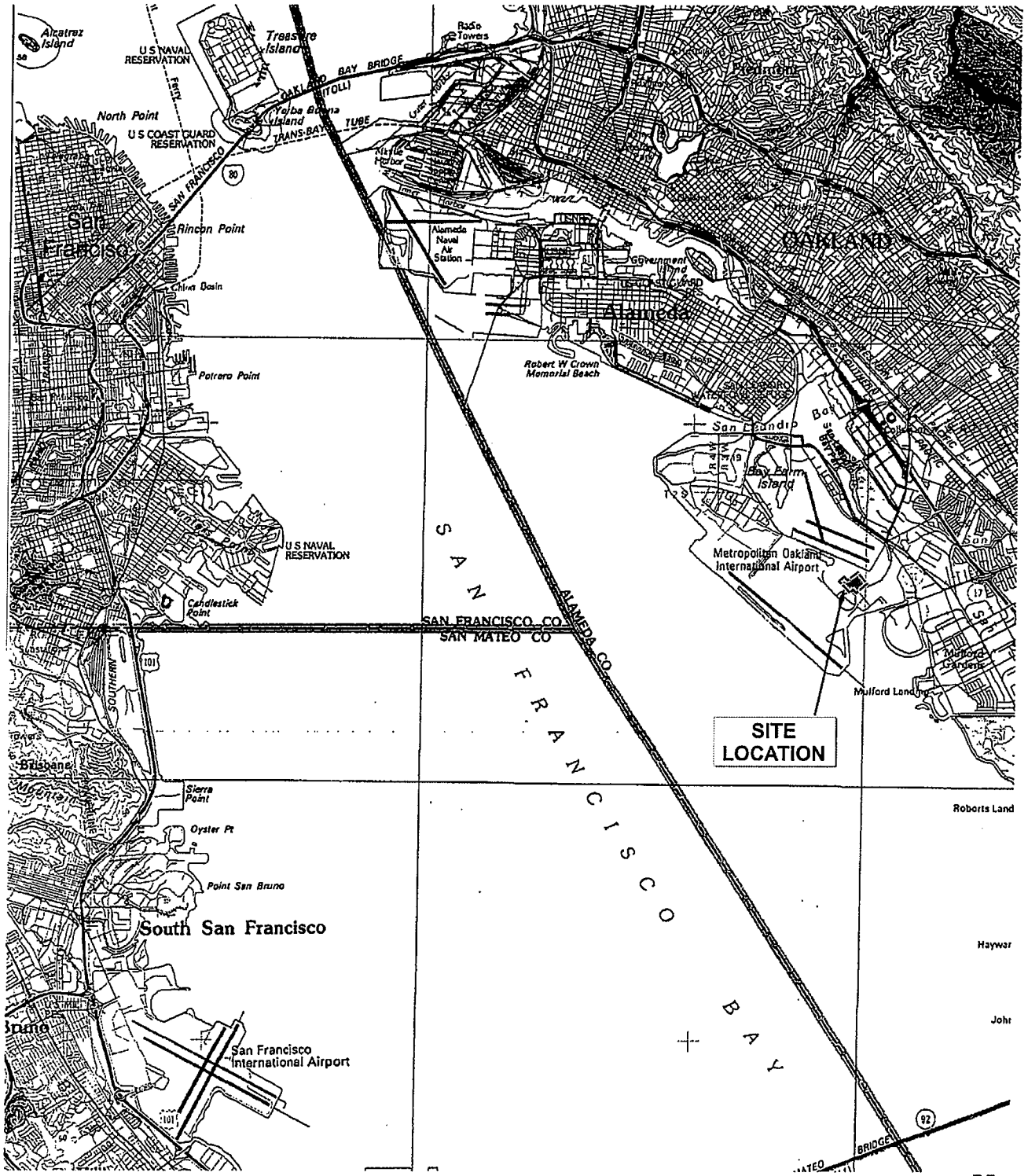
Environmental Resources Management, 2003, Summary of Compliance Work Completed for UAL Exit of Oakland Maintenance Center, Oakland International Airport, Oakland, California: dated July 30.

Environmental Resources Management, 2004, Former United Airlines Oakland Maintenance Center, Site Investigation and Risk Assessment Report, Oakland International Airport: dated June 30.

Lawrence Berkeley National Laboratory, Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory, U.S. Department of Energy Contract DE-AC03-76SF00098: dated 2002.

Uribe & Associates, 1992, Report of Removal of Inactive Tanks MF-25 and MF-26, 1100 Airport Drive, Oakland: dated May.

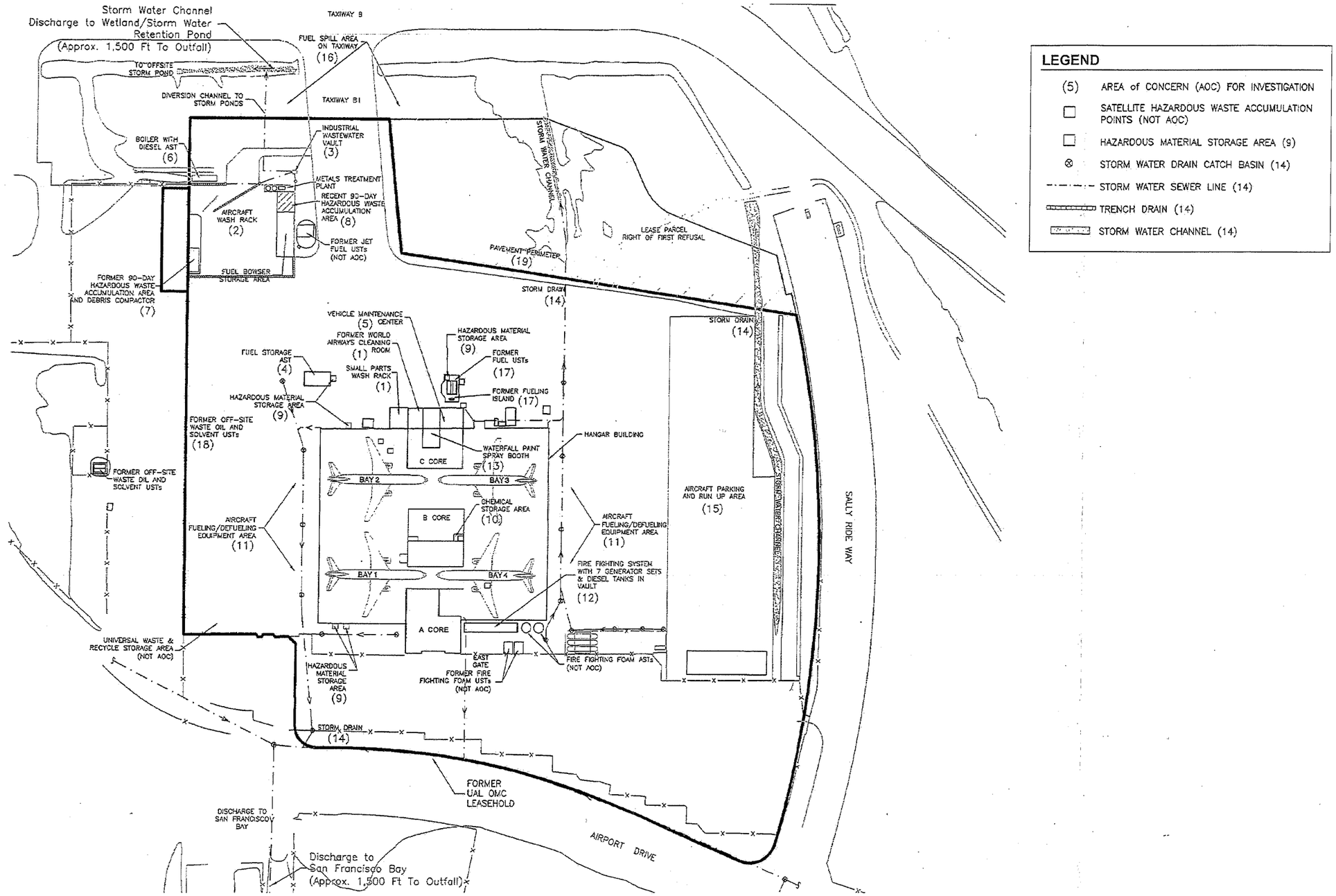
SCA Environmental, 2006, Groundwater Sampling and Analysis Report, Former United Airlines Hangar & Economy Parking Area, Oakland International Airport, Port of Oakland: dated August.



Note: Basemap supplied from Environmental Resources Management, 2004, Former United Airlines Oakland Maintenance Center, Site Investigation and Risk Assessment Report, Oakland International Airport: Dated June 30.

NOT TO SCALE

Ninyo & Moore		SITE LOCATION MAP	FIGURE 1
PROJECT NO: 401164011	DATE: 4/09	SOIL REMEDIATION WORKPLAN OAKLAND MAINTENANCE CENTER - OAKLAND INTERNATIONAL AIRPORT OAKLAND, CALIFORNIA	



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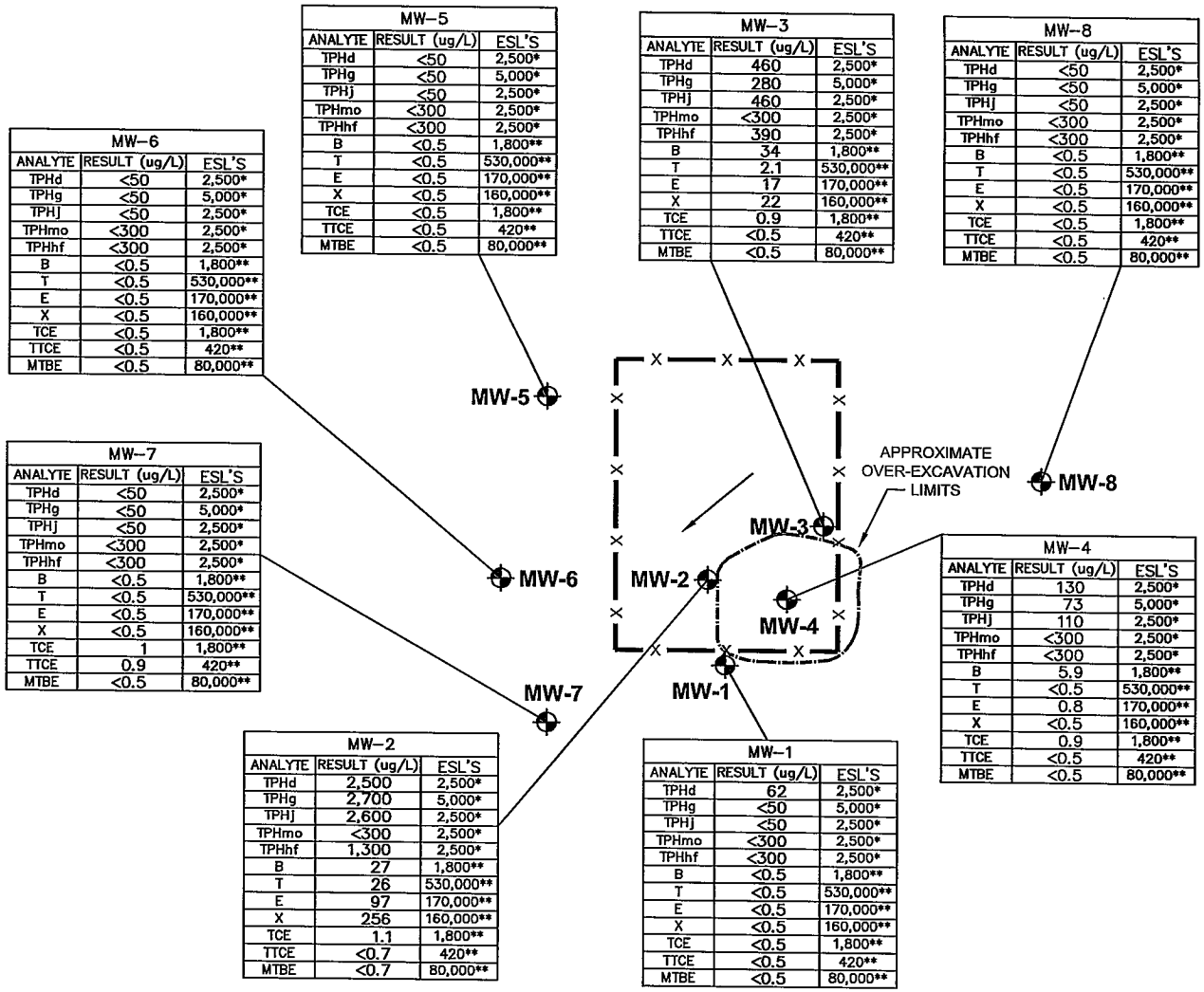
0 220

Approximate Scale:
1 inch = 220 feet

Ninyo & Moore	SITE PLAN AND AREAS OF CONCERN	FIGURE
PROJECT NO: 401164011	DATE: 4/09	2
SOIL REMEDIATION WORKPLAN OAKLAND MAINTENANCE CENTER - OAKLAND INTERNATIONAL AIRPORT OAKLAND, CALIFORNIA		



MW–5		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	<50	2,500*
TPHg	<50	5,000*
TPHj	<50	2,500*
TPHmo	<300	2,500*
TPHhf	<300	2,500*
B	<0.5	1,800**
T	<0.5	530,000**
E	<0.5	170,000**
X	<0.5	160,000**
TCE	<0.5	1,800**
TTCE	<0.5	420**
MTBE	<0.5	80,000**

MW–3		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	460	2,500*
TPHg	280	5,000*
TPHj	460	2,500*
TPHmo	<300	2,500*
TPHhf	390	2,500*
B	34	1,800**
T	2.1	530,000**
E	17	170,000**
X	22	160,000**
TCE	0.9	1,800**
TTCE	<0.5	420**
MTBE	<0.5	80,000**

MW–8		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	<50	2,500*
TPHg	<50	5,000*
TPHj	<50	2,500*
TPHmo	<300	2,500*
TPHhf	<300	2,500*
B	<0.5	1,800**
T	<0.5	530,000**
E	<0.5	170,000**
X	<0.5	160,000**
TCE	<0.5	1,800**
TTCE	<0.5	420**
MTBE	<0.5	80,000**

MW–6		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	<50	2,500*
TPHg	<50	5,000*
TPHj	<50	2,500*
TPHmo	<300	2,500*
TPHhf	<300	2,500*
B	<0.5	1,800**
T	<0.5	530,000**
E	<0.5	170,000**
X	<0.5	160,000**
TCE	<0.5	1,800**
TTCE	<0.5	420**
MTBE	<0.5	80,000**

MW–7		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	<50	2,500*
TPHg	<50	5,000*
TPHj	<50	2,500*
TPHmo	<300	2,500*
TPHhf	<300	2,500*
B	<0.5	1,800**
T	<0.5	530,000**
E	<0.5	170,000**
X	<0.5	160,000**
TCE	1	1,800**
TTCE	0.9	420**
MTBE	<0.5	80,000**

MW–4		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	130	2,500*
TPHg	73	5,000*
TPHj	110	2,500*
TPHmo	<300	2,500*
TPHhf	<300	2,500*
B	5.9	1,800**
T	<0.5	530,000**
E	0.8	170,000**
X	<0.5	160,000**
TCE	0.9	1,800**
TTCE	<0.5	420**
MTBE	<0.5	80,000**

MW–2		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	2,500	2,500*
TPHg	2,700	5,000*
TPHj	2,600	2,500*
TPHmo	<300	2,500*
TPHhf	1,300	2,500*
B	27	1,800**
T	26	530,000**
E	97	170,000**
X	256	160,000**
TCE	1.1	1,800**
TTCE	<0.7	420**
MTBE	<0.7	80,000**

MW–1		
ANALYTE	RESULT (ug/L)	ESL'S
TPHd	62	2,500*
TPHg	<50	5,000*
TPHj	<50	2,500*
TPHmo	<300	2,500*
TPHhf	<300	2,500*
B	<0.5	1,800**
T	<0.5	530,000**
E	<0.5	170,000**
X	<0.5	160,000**
TCE	<0.5	1,800**
TTCE	<0.5	420**
MTBE	<0.5	80,000**

LEGEND

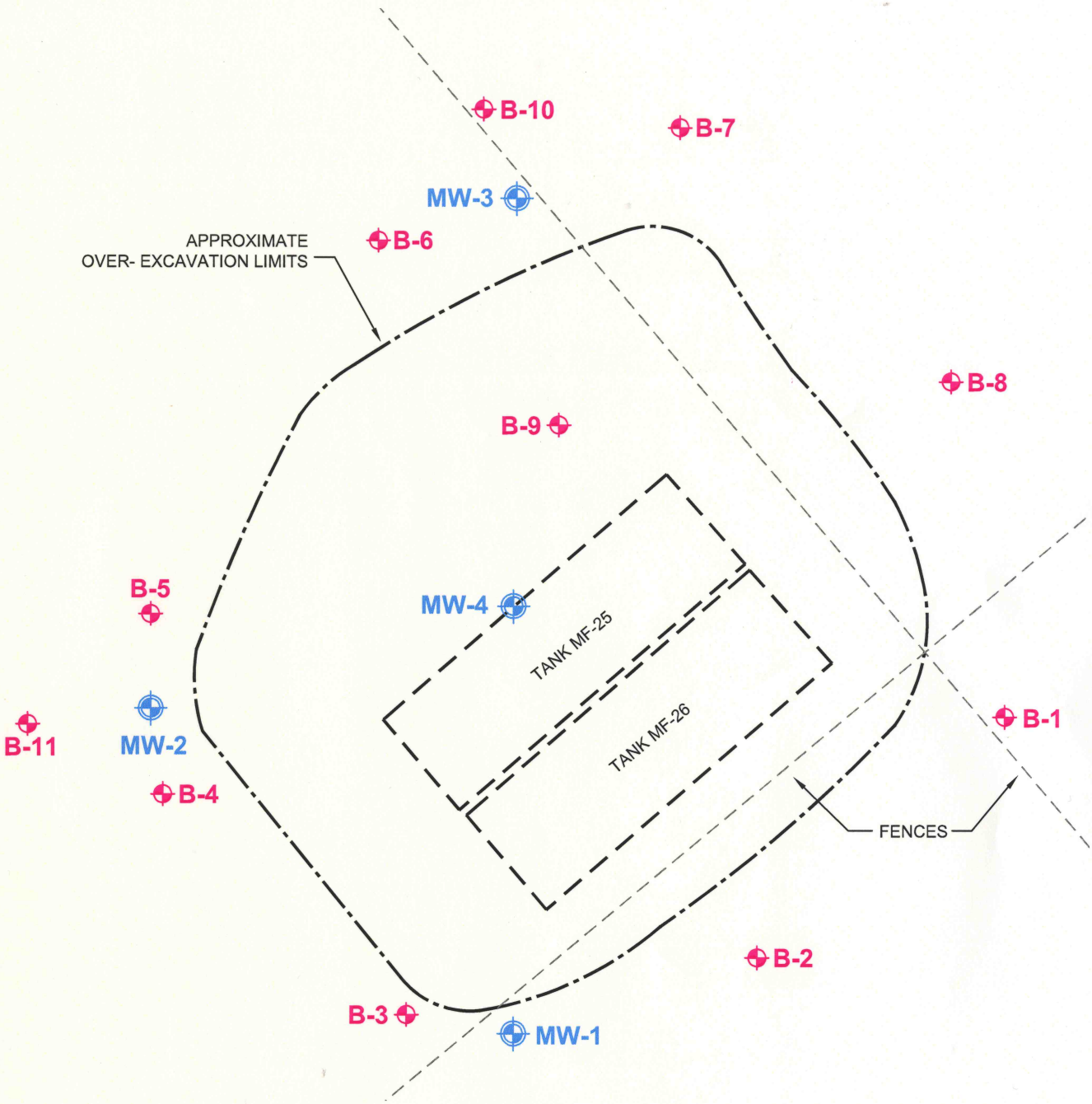
MW-8	APPROXIMATE MONITORING WELL LOCATION
TPHd	TOTAL PETROLEUM HYDROCARBONS AS DIESEL
TPHg	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
TPHj	TOTAL PETROLEUM HYDROCARBONS AS JET FUEL
TPHmo	TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
TPHhf	TOTAL PETROLEUM HYDROCARBONS AS HYDRAULIC FLUID
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES
TCE	TRICHLOROETHENE
TTCE	TETRACHLOROETHENE
MTBE	METHYL TERT-BUTYL ETHER
ug/L	MICROGRAMS PER LITER
ESL	ENVIRONMENTAL SCREENING LEVELS
*	ESL WHERE GROUNDWATER IS NOT A CURRENT OR POTENTIAL DRINKING WATER RESOURCE, GROSS CONTAMINATION CEILING VALUE (TABLE I-2)
**	ESL FOR GROUNDWATER FOR EVALUATION OF POTENTIAL VAPOR INTRUSION CONCERNS, COMMERCIAL/INDUSTRIAL LAND USE (TABLE E-1)
<X	INDICATES CONCENTRATION NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT OF X
←	APPROXIMATE GROUNDWATER FLOW DIRECTION
—X—	FENCE

N

NOT TO SCALE

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore	AUGUST 2006 GROUNDWATER MONITORING ANALYTICAL RESULTS FOR FORMER USTs MF-25 & MF-26	FIGURE
PROJECT NUMBER: 401164011	DATE: 4/09	FORMER UNITED AIRLINES OAKLAND MAINTENANCE CENTER 1100 AIRPORT DRIVE OAKLAND, CALIFORNIA	3



N

APPROXIMATE SCALE IN FEET

0 10 20

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

LEGEND	
B-11	PROPOSED BORING LOCATION
MW-4	APPROXIMATE MONITORING WELL LOCATION

Ninyo & Moore	PROPOSED BORING LOCATION MAP	FIGURE
PROJECT NUMBER: 401164011	DATE: 4/09	FORMER UNITED AIRLINES OAKLAND MAINTENANCE CENTER 1100 AIRPORT DRIVE OAKLAND, CALIFORNIA	4

W-B-12				
ANALYTE	SURFACE	0.5 FT BGS	3 FT BGS	ESL
Cd	15	44	12	39

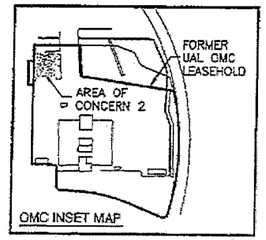
W-B-10		
ANALYTE	3 FT BGS	ESL
As	25	15

ERM-MW-15
AOC 16
W-B-11
ERM-B-27
2 FT EXCAVATION DEPTH
ERM-MW-10
INDUSTRIAL WASTEWATER SUMP
AOC 3
3.5 FT EXCAVATION DEPTH
BOILER W/ DIESEL AST
AOC 6
ERM-B-5
ERM-B-7
ERM-B-6
ERM-MW-9
METALS TREATMENT PLANT
ERM-B-12
RECENT 90-DAY HAZARDOUS WASTE ACCUMULATION AREA
AOC 8
ERM-MW-16
ERM-MW-8
ERM-B-4
W-B-7
ERM-MW-6
FUEL BOWSER STORAGE AREA
W-B-8
FORMER 12,000 GAL. JET-A USTs (2) (NOT AOC)
AIRCRAFT WASH RACK
AOC 2
W-B-16
ERM-MW-7
ERM-B-3
AOC 7
W-B-17
ERM-MW-17

LEGEND

All Results Reported in milligrams per kilogram

- As — Arsenic
- Cd — Cadmium
- ESL — RWQCB Direct Exposure Soil Screening Level for Construction/Trench Worker Exposure Scenario (table K-3)
- Storm Water Drain Catch Basin
- Storm Water Sewer Line
- Trench Drain
- Sample Location
- Groundwater Monitoring Well Location
- Proposed 10 FT x 10 FT Soil Excavation



Note: Basemap supplied from Environmental Resources Management, 2004, Former United Airlines Oakland Maintenance Center, Site Investigation and Risk Assessment Report, Oakland International Airport: Dated June 30.

0 44

Approximate Scale: 1 inch = 44 feet

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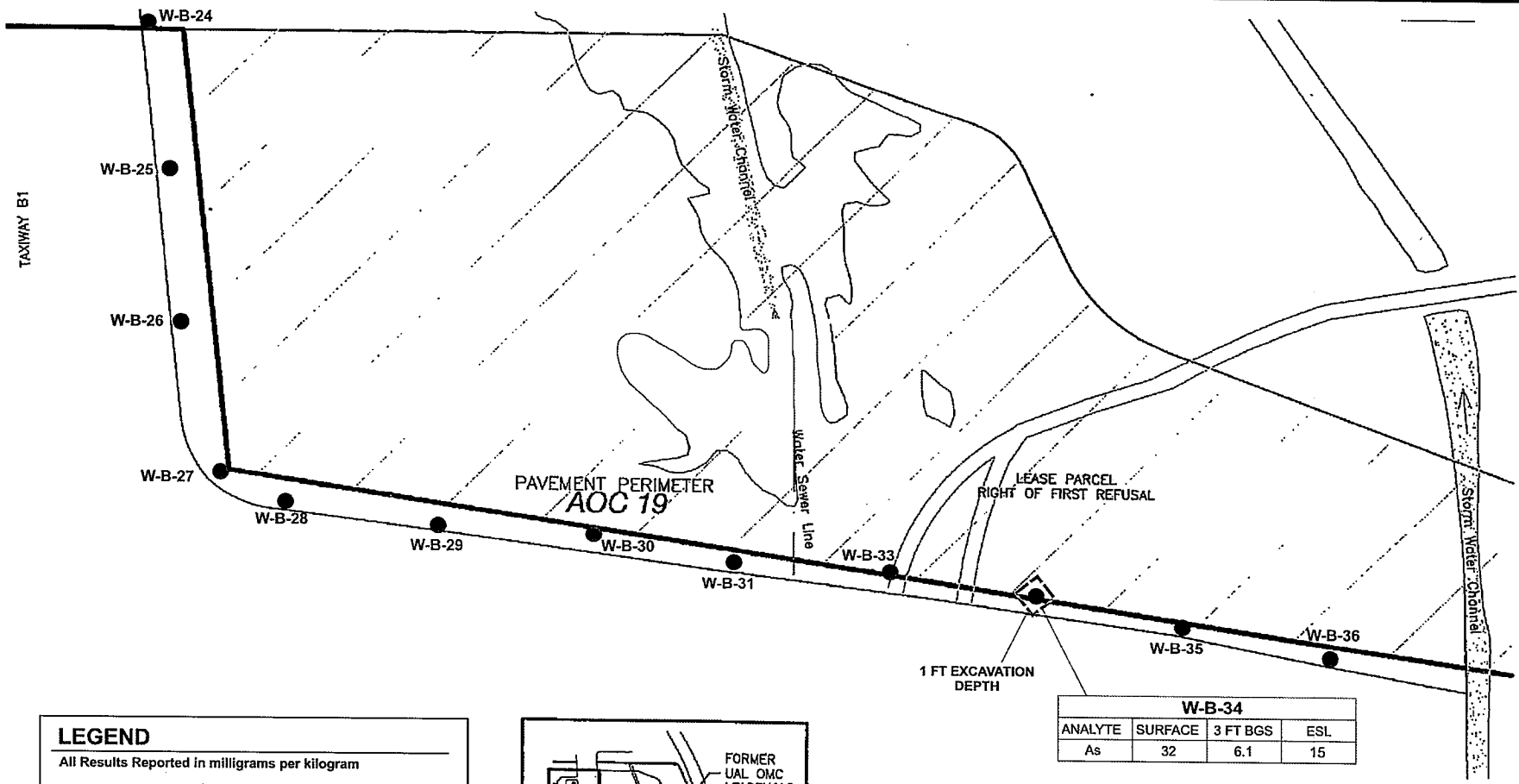
SOIL CONCENTRATION AND EXCAVATION MAP - AREA OF CONCERN 3

FIGURE 5

PROJECT NO: 401164011

DATE: 4/09

SOIL REMEDIATION WORKPLAN
OAKLAND MAINTENANCE CENTER - OAKLAND INTERNATIONAL AIRPORT
OAKLAND, CALIFORNIA

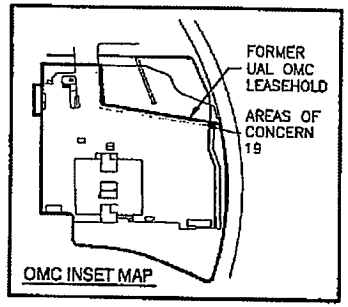


W-B-34			
ANALYTE	SURFACE	3 FT BGS	ESL
As	32	6.1	15

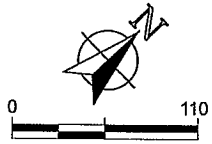
LEGEND

All Results Reported in milligrams per kilogram

ESL	RWQCB Direct Exposure Soil Screening Levels for Construction/Trench Worker Exposure Scenario (table K-3)
As	Arsenic
AOC 19	Area of Concern
●	Sample Location
▭	Proposed 10 FT x 10 FT Soil Excavation



Note: Basemap supplied from Environmental Resources Management, 2004, Former United Airlines Oakland Maintenance Center, Site Investigation and Risk Assessment Report, Oakland International Airport: Dated June 30.



Approximate Scale:
1 inch = 110 feet

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SOIL CONCENTRATION AND EXCAVATION MAP - AREA OF CONCERN 19

FIGURE 6

PROJECT NO: 401164011

DATE: 4/09

SOIL REMEDIATION WORKPLAN
OAKLAND MAINTENANCE CENTER - OAKLAND INTERNATIONAL AIRPORT
OAKLAND, CALIFORNIA