PORT OF OAKLAND

ENVIRONMENTAL PLANNING DEPARTMENT

TRANSMITTAL

DATE: April 25,2003

TO: Barney Chan

FROM: Ms. Lauren Eisele

RE: Transmittal of Draft Initial Study/Mitigated Negative Declaration

Please find enclosed a copy of the Draft Initial Study/Mitigated Negative Declaration and Notice of Availability for the Soil and Groundwater Investigation and Vapor Extraction and Air Sparging Pilot Testing/Interim Remediation at Berths 23 and 24, the Port of Oakland, Maritime Street, Oakland, California

Water Board site

PORT OF OAKLAND

Alameda County
APR 29 2003
Environmental Health

NOTICE OF AVAILABILITY OF A DRAFT MITIGATED NEGATIVE DECLARATION/INITIAL STUDY AND NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

For the Implementation of a Soil and Groundwater Investigation and Vapor Extraction and Air Sparging Pilot Testing/Interim Remediation System at Berths 23/24 at the Port of Oakland

Public Review Period: April 25, 2003 through May 26, 2003

Notice is hereby given that a Draft Initial Study and Draft Mitigated Negative Declaration on the subject property is available for public review. The project proponent is the Port of Oakland, 530 Water Street, Oakland, California 94607. The Lead Agency is also the Port of Oakland.

Project. The project site is located in the Maersk-Sealand Marine Terminals in the Oakland Outer Harbor at Berths 23 and 24, in Oakland, Alameda County, California. The main objectives of the project are to remediate soil and groundwater beneath the marine terminal yards prior to reconsolidation and modernization construction activities. The project would include the installation of soil vapor extraction systems and air sparging systems. Soil vapor extraction and air sparging are proposed to remove methane, benzene, and other chemicals of concern (COCs) from soil vapor, soil, and ground water underlying the site. Soil vapor extraction systems will apply vacuum to the vadose zone (above the water table) to withdraw volatile COCs from the subsurface. Air sparging systems will introduce air below the water table to strip volatile COCs from ground water. The vapor extraction systems capture the COCs volatilizing from the ground water. In addition to the remedial effects on volatile COCs, the vapor extraction and air sparging systems introduce oxygen into the vadose zone and ground water to promote the natural degradation of non-volatile COCs through aerobic biodegradation. Preliminary soil and groundwater characterization studies will be implemented to ensure efficiency of the remediation systems.

The project area is approximately 25 acres. The construction and operation of the systems will be sequenced in discrete phases in parcels (treatment cells) up to 7 acres each.

The installation and operation of the remediation systems will be performed in accordance with all laws, ordinances and regulations designed to protect the environment and human health.

Potential Impacts. The project includes control measures that reduce impacts to a less-than-significant level. Several additional mitigation measures are proposed to further reduce the potential impacts to air quality and hazardous materials to a less than significant level. A portion of the project site is designated as a site in the list of hazardous materials sites compiled pursuant to Government Code 65962.5 ("Cortese List").

The document has been prepared in accordance with the California Environmental Quality Act (CEQA) and the Port's Guidelines for implementation of CEQA. Persons interested in reviewing or receiving the document are invited to contact Ms. Lauren Eisele at 510-627-1250. In addition, copies of the Initial Study are available for public review at the following locations:

Port of Oakland
Engineering Services Desk
530 Water Street, 2nd floor
Oakland, CA 94607

Oakland Public Library
West Oakland Branch
1801 Adeline Street
Oakland, CA 94607

Oakland Public Library
Main Branch
124 14th Street
Oakland, CA 94612

Comments must be received *in writing* by the end of the review period, which is
Monday May 26, 2003 at 5 :00 PM.

Submit comments to Ms. Lauren Eisele, Environmental Planning Department

Port of Oakland, 530 Water Street, Oakland, CA 94607 Fax: 510/465-3755

Action on the proposed Mitigated Negative Declaration will be taken by the Board of Port Commissioners in June 2003 once comments provided on the Initial Study/Mitigated Negative Declaration are considered.

DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

for

Soil and Groundwater Investigation and Vapor Extraction and Air Sparging Pilot Testing/Interim Remediation

at

Berths 23 and 24,
Port of Oakland
Maritime Street
Oakland, California

prepared for

Port of Oakland
530 Water Street
Oakland, California 94607

April 25, 2003

DRAFT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

for

Soil and Groundwater Investigation Vapor Extraction and Air Sparging Pilot Testing/Interim Remediation

prepared by

Weiss Associates
5801 Christie Avenue, Suite 600
Emeryville, CA 94608

with assistance from

ENTRIX, INC.
590 Ygnacio Valley Road, Suite 200
Walnut Creek, CA 94596

WA Job # 259-1569-4-2

Weiss Associates's work for the Port of Oakland was conducted under my supervision. To the best of my knowledge, the data contained herein are true and accurate and satisfy the scope of work prescribed by the client for this project. The data, findings, recommendations, specifications, and professional opinions were prepared solely for the use of Port of Oakland in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied, and we are not responsible for the interpretation by others of the contents herein.

4/25/03

Agata Sulczynski, JD, REA — Date

CONTENTS

FIGURES

TABLES

APPENDICES

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
C	ceiling
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	carbon monoxide
COCs	chemicals of concern
dBA	decibel (A-weighted)
EMOC	ExxonMobil Oil Company
EPA	Environmental Protection Agency
FID	flame ionization detector
IDLH	immediately dangerous to life and health
LEL	lower explosive limit
MTC	Metropolitan Transportation Commission
NIOSH	National Institute for Occupational Safety and Health
NO_x	oxides of nitrogen
OAQPS	Office of Air Quality Planning and Standards
OSHA	Occupational Health and Safety Administration
PM_{10}	particulate matter containing particles with an aerodynamic diameter of less than 10 microns
PEL	permissible exposure limit
PPE	personal protective equipment
ppm	parts per million
ppmv	parts per million by volume
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SOPs	standard operating procedures
TACs	toxic air contaminants

TLV	threshold limit value
TPH	total petroleum hydrocarbons
TPHG	total petroleum hydrocarbon as gasoline
TWA	time weighted average
WA	Weiss Associates

1. PURPOSE AND APPROACH

1.1 Introduction

Whenever a public agency undertakes a discretionary action, it must determine whether the action is subject to the California Environmental Quality Act (CEQA). If CEQA applies, the agency must evaluate the potential effects of such action on the environment. The purpose of an Initial Study is to provide the Lead Agency with information to use as the basis for deciding whether to prepare an Environmental Impact Report or a Negative Declaration for a proposed project. The Initial Study process also enables the applicant or Lead Agency to modify the project to avoid or reduce adverse impacts, thereby enabling the project to qualify for a Negative Declaration. When mitigation measures proposed in the Initial Study are incorporated into the project, before the Lead Agency's approval and before circulation to the public, a Mitigated Negative Declaration may be adopted by the agency.

1.2 Discretionary Action

The Port of Oakland proposes to authorize access to areas at and adjacent to the former Mobil fuel facilities located at Berths 23 and 24 at the Port of Oakland and to issue a permit to conduct investigation, perform design studies and pilot tests, and install and operate a soil vapor extraction system and an air sparging system to comply with the Regional Water Quality Control Board Cleanup and Abatement Order No. 99-063 (See Appendix A).

1.3 Purpose and Objective

This Initial Study assesses the potential impacts associated with the discretionary action described above. Measures to mitigate the impacts of the proposed action to a level of non-significance are included in this document. The scope of this Initial Study is based on the content requirements pursuant to CEQA, and the Port of Oakland's CEQA guidelines.

1.4 Approach

In accordance with CEQA Guidelines, this Initial Study utilizes a standard Environmental Checklist to identify the project's potential environmental effects. In each resource category, the questions contained in the CEQA Environmental Checklist are provided first, followed by a discussion of the environmental setting and an analysis of the environmental impacts.

PORT OF OAKLAND

DRAFT MITIGATED NEGATIVE DECLARATION

Project Title:	Access authorization and permit issuance for the purpose of permitting and conducting remediation planning, investigation, design and implementation activities, on the Port marine terminals at and adjacent to Berths 23 and 24.
Lead Agency Name and Address:	Port of Oakland, 530 Water Street, Oakland, California, 94607
Project Contact Person and Phone Number:	Lauren Eisele, Environmental Planning Department, 510 627-1250
Project location:	Former Mobil Oil Company Bulk Fuel Terminal at 909 Maritime Street, Oakland, California
Project Sponsor Name and Address:	Port of Oakland, 530 Water Street, Oakland, California, 94607
General plan designation:	General Industrial/Transportation (City of Oakland Comprehensive Plan Land Use Designation)
Zoning:	Unzoned
Description of project:	The project will consist of remediation planning, design, operation, implementation and permitting activities. The activities will include: ▪ Soil and groundwater sampling ▪ Well drilling and construction ▪ Trenching and pipe installation ▪ Construction and operation of a Vapor Extraction System, utilizing thermal oxidizers (up to seven units) and piping connecting extraction wells to oxidizer units ▪ Construction and operation of an Air Sparging System, utilizing air sparging blowers (up to 26 units) and piping connecting air sparging wells to the blowers ▪ Deconstruction of the Vapor Extraction and Air Sparging system ▪ Disposal of contaminated soil and groundwater generated during soil sampling, well drilling and excavation activities ▪ Issuance of related permits The activities are discussed in detail in Sections 2 and 4 of this Mitigated Negative Declaration. The duration of the project is estimated to be several years, with approximately 18 months of investigation and initial pilot testing.
Surrounding land uses and setting:	The project site is located within an urbanized industrial and transportation-related development. There are no residential developments near the site.
Other public agencies whose approval is required:	Bay Area Air Quality Management District, Regional Water Quality Control Board - San Francisco Bay Region
Date checklist submitted:	April 25, 2003

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DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project could not have a significant effect on the environment. A **NEGATIVE DECLARATION** has been prepared.

■ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the project proponent has adopted mitigation measures. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find that the proposed project may have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

☐ I find that the proposed project may have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Reasons Supporting the Determination: The proposed project is not expected to have an unavoidable significant impact on the environment. Potentially significant impacts will be mitigated as described in the Initial Study to a level that is considered less than significant.

Declaration of Compliance with the California Environmental Quality Act: This document has been prepared in accordance with the California Environmental Quality Act (CEQA) and the Port of Oakland's Guidelines for implementing CEQA.

James McGrath

James McGrath, Manager
Environmental Planning Department
Port of Oakland

4/25/03

Date

2. PROJECT DESCRIPTION

2.1 Background

The Port of Oakland (Port) is planning a reconstruction project for 2004 at Berths 23 and 24 (project site or site), portions of which are located at the site of the former Mobil Oil Company (Mobil) Bulk Fuel Terminal and Ashland Oil Company of California Bulk Fuel Terminal at 909 Ferry Street in Oakland (presently Maritime Street), California (Figures 1 and 2) (Port, 2002). Reconstruction activities will include installation of an underground high-voltage electrical line through the site. Results of previous investigation and risk assessments at the site indicate that existing methane and petroleum hydrocarbon concentrations in soil vapor underlying the site may present the potential for chemical exposure and explosion hazards during subsurface construction work necessary for facility upgrades. ExxonMobil Oil Company (EMOC) plans to develop a Remedial Action Plan aimed at reducing the contaminants present in the soil vapor to acceptable levels and proposes to conduct pilot testing and remediation activities at the site to obtain data necessary to develop and implement such a plan.

2.2 Site History

The site has been redeveloped by the Port and now includes container terminals which lie on land reclaimed from shallow San Francisco Bay waters. The reclamation process started in the 1920s and lasted well into the 1930s. Berths 19 through 26 were filled during this time with hydraulically-placed sandy soils derived from offshore dredging operations.

After filling operations ceased, the Port constructed wooden marginal wharves topped with large warehouses or transit sheds. Inland of the waterfront, additional warehouses and streets were constructed in Berths 20 through 23, areas that were typically occupied by various maritime and industrial tenants. Mobil and its predecessors in interest operated a bulk fuel terminal at the site (Berths 23 and 24) from approximately 1924 to 1979. The fuel terminal received refined petroleum products by tanker ship at the oil pier and underground pipelines owned and operated by Southern Pacific Pipelines, Inc. Products handled included diesel fuel, leaded and unleaded gasoline and gasoline additives, heating oil, and various other heavy oil products. Mobil distributed the petroleum products from the fuel terminal by truck and rail. Facilities at the fuel terminal included aboveground and underground storage tanks, aboveground and underground pipelines, product mixing equipment, truck and rail loading equipment, and various buildings and structures including spill containment retaining walls and levees. Mobil vacated the site in 1979 at which time the Port converted the site for containerized cargo operations that continue to the present.

Reports indicate that the Ashland Oil Company of California (Ashland) operated a bulk fuel terminal adjacent to the site during the 1960s and 1970s. The Ashland facility was

located in what is now a portion of Berth 24 and activities at the site were similar in nature to those at the Mobil facility. The Port converted the Ashland facility for containerized cargo operations in approximately 1986.

The past site use conversion process required deepening of the ship channel and berthing areas, construction of high-strength concrete wharves to accommodate container cranes, and the replacement of the various buildings and streets by large open paved container storage areas. During the conversion activities in 1979, two explosions occurred from flammable gases collecting in storm drains and a sanitary sewer. One ignited by a cutting torch and the other by sparks from a saw, both normal construction activities. These explosions, and complaints from the United States Coast Guard and the local wastewater utility district, led to the discovery of a large volume of petroleum product in storm drains and sanitary sewers and shallow fill soils under the former Mobil facilities.

Between 1979 and 1980, the Port blocked and subsequently recovered hydrocarbons in the storm drains and sewer system and conducted an investigation of the site and discovered phase-separated hydrocarbons lying on the water table. The discovery was reported by the Port to the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. The Port then collectively worked with the RWQCB and Mobil to control and recover the release. In 1981, Mobil installed a product recovery system that removed approximately 50,000 gallons of petroleum hydrocarbons in the 1980s. In the 1990s, Mobil installed a monitoring well network and implemented a periodic petroleum recovery program and quarterly monitoring activities. The quarterly monitoring indicated the persistent presence of dissolved-phase petroleum hydrocarbon concentrations in the shallow groundwater.

The site is presently under the RWQCB Cleanup and Abatement Order, CAO# 99-063 (See Appendix A). The Order sets forth site cleanup requirements including the preparation of a Remediation/Risk Management Plan. The proposed project, described below, and the focus of this Initial Study, addresses the remediation portion of the regulatory required Remediation/Risk Management Plan. The Port of Oakland discretionary action granting site access and issuance of a development permit is necessary to perform the various field remediation-related tasks.

2.3 Project Location

The project site is located at the Port of Oakland, in an urbanized industrial and transportation-related development within the City of Oakland (Figure 1). The nearest residential area is approximately two miles away. There are no sensitive receptors, such as hospitals, day care centers or schools near the project site. The closest hospital is approximately two miles away, and the nearest school, the Oakland Military Academy is approximately a quarter mile away.

The project would be conducted on approximately 24 acres located within parts of both Berths 23 and 24 (Figure 2). The remediation phase of the project would be conducted in phases by dividing the estimated 24 acres into individual treatment areas. The initial treatment area would be located in Berth 23 and would cover approximately six acres. The remaining treatment areas would be located in Berth 24 where each area would be uniquely defined so on-going terminal operations can be accommodated. Ongoing terminal operations

are not part of this project. Construction fencing would be used to temporarily separate each remediation area from normal ongoing operations at the site so access to and from the treatment areas is strictly controlled.

2.4 Project Description

The proposed project entails conducting site cleanup activities to address human health and ecological concerns associated with site contamination. The overall project consists of two major components: soils and groundwater remediation, and assessment of groundwater flow/dissolved phase release to the Bay followed by remediation assessment and correction. The first component addresses cleanup and human health concerns; the second addresses ecological concerns. The proposed project would be implemented in phases.

2.4.1 Proposed Remediation Approach

Soil vapor extraction and air sparging is the proposed remedial approach to remove the chemicals of concern (COCs) from soil vapor, soils, and groundwater underlying Berths 23 and 24, the site of the former Mobil and Ashland bulk fuel terminals. Soil vapor extraction works by the application of a vacuum to shallow vadose zone (soils that lie above the water table) wells to withdraw COCs from the subsurface. The air sparging system works by the introduction of atmospheric air into groundwater through shallow wells to strip dissolved COCs from the groundwater. Both systems would operate simultaneously. It is anticipated that a total of 500 to 1,000 vertical wells would be installed over the course of the project. The vapor extraction system would capture the COCs in the vadose zone and the COCs stripped from groundwater and convey these gases through piping to thermal oxidation units permitted by the Bay Area Air Quality Management District (BAAQMD) for final destruction. An added benefit of air sparging is the introduction of oxygen into the vadose zone and groundwater, which promotes the natural degradation of non-volatile COCs through aerobic biodegradation.

2.4.2 Soil and Groundwater Investigation

Pre-remediation soil and groundwater investigations would be conducted prior to installation and operation of remediation equipment. The investigation data would be used to establish a pretreatment baseline for assessing and monitoring (over time) the effectiveness of the remediation activities. The data would also be used for the preparation of the Feasibility Analysis/Remediation Action Plan.

Investigations activities would occur at Berth 23 consisting of two phases. The first phase would include soil and groundwater sampling by direct push borings at 15 locations in the test area. Data from the direct push sampling would be used to better characterize soil and groundwater conditions at Berth 23, including the potential presence of diesel and motor oil. The second phase of the investigation would include installation of approximately eight groundwater monitoring wells and soil sampling during the well installation. The purpose of soil sampling is to obtain lithologic information to assist in identifying well screen intervals for air sparging wells to be installed for pilot testing.

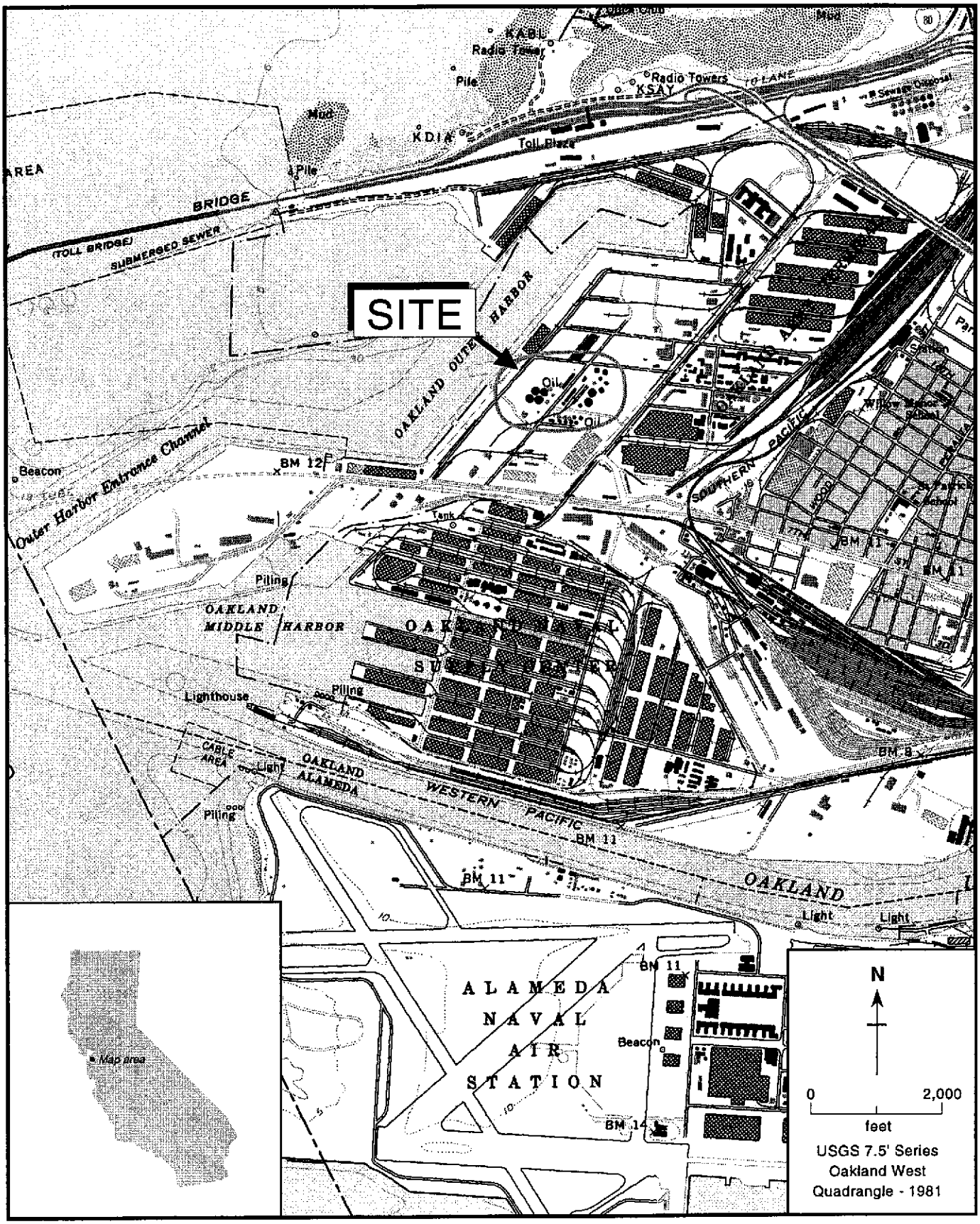

Figure 1. Project Location General Area Map, Former Mobil Bulk Fuel Terminal, Port of Oakland, Oakland, California

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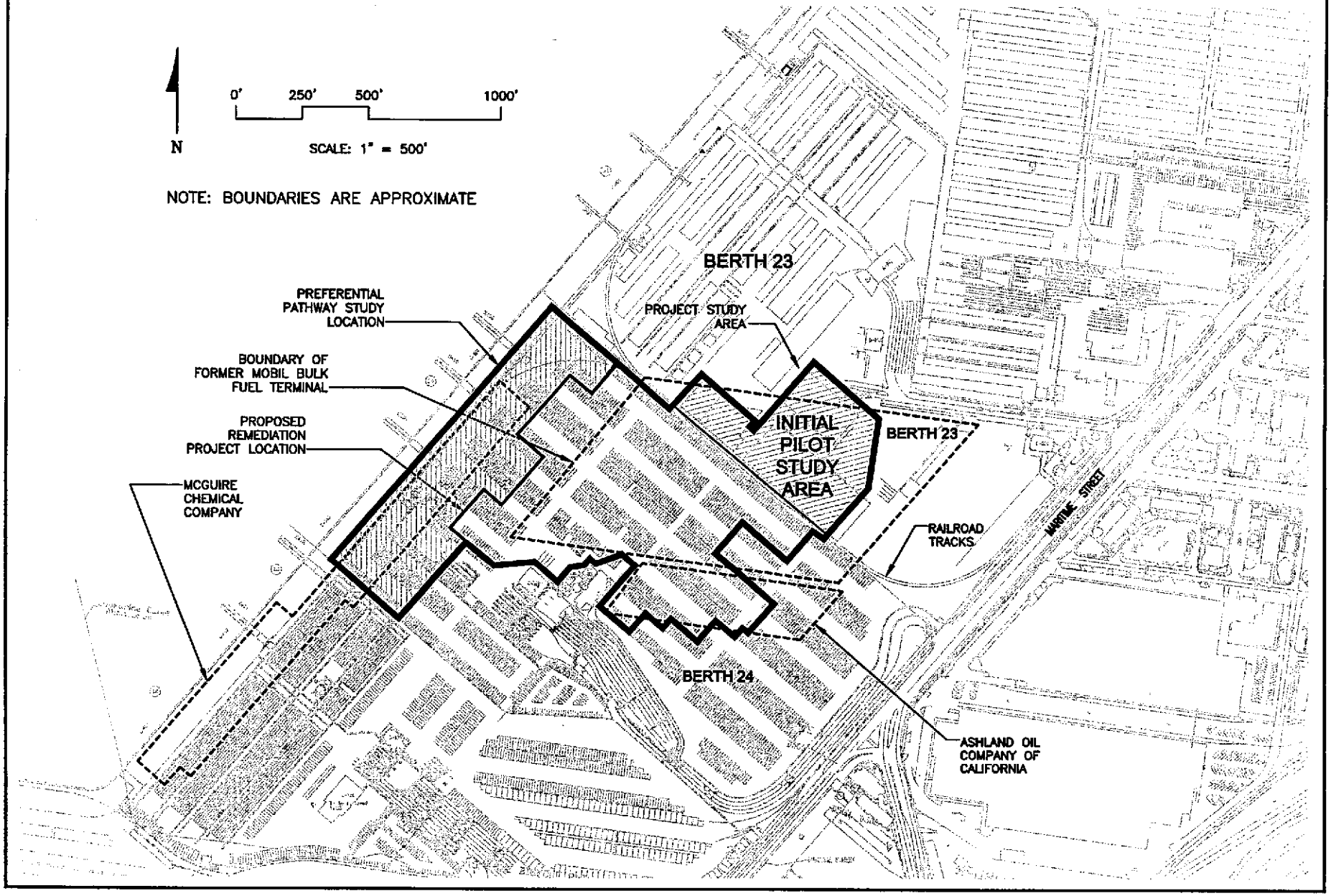

Figure 2. Proposed Project Area and Former Mobil Bulk Fuel Terminal, Port of Oakland, Oakland, California

Similar pretreatment investigation would occur in Berth 24 prior to the installation and operation of remediation equipment. Soil and groundwater sample locations plus installation of monitoring wells would be similar in layout and total number as proposed at Berth 23.

Soil or groundwater waste generated during the soil and groundwater investigation activities would be handled, stored, transported and disposed in accordance with applicable laws, regulations and best management practices.

2.4.3 Pilot Testing

The pilot soil vapor extraction and groundwater air sparging testing would be conducted on an expedited basis over a period of approximately three months. Two phases of pilot testing are proposed. In the first phase (initial pilot test), vapor extraction and air sparging pilot testing would be conducted to develop initial estimates of subsurface air permeability and other variables affecting remedial design. The vapor extraction test would last as long as 24 hours and the air sparging test would last as long as one week.

The results from the first phase would be used to locate and space additional vapor extraction and air sparging wells throughout the Berth 23 six-acre test parcel for a second phase of expanded pilot testing over a period of approximately three months. The results from the second phase of pilot testing would be used to develop a strategy to conduct sequential remediation on five to seven-acre portions of Berth 23 and Berth 24 as the Port makes them available.

Soil or groundwater waste generated during the pilot testing activities would be handled, stored, transported and disposed in accordance with applicable laws, regulations and best management practices.

2.4.3.1 Initial Pilot Test

The initial pilot test would include installation of one vapor extraction test well and five vapor extraction monitoring wells at approximately 10, 20, 20, 40 and 60 feet from the vapor extraction test well. A thermal oxidizer would treat the extracted soil vapor. Soil vapor would be extracted at three different flow rates to permit observation of the relationship of extraction vacuum pressure to the flow rate. The initial pilot test would also include installation of an air sparging test well and four air sparging monitoring wells located approximately 5, 10, 10 and 20 feet from the air sparging test well. The air sparging test well would be connected to an air sparging blower (compressor). Existing groundwater monitoring wells would also be used for the pilot testing.

2.4.3.2 Expanded Pilot Test

Following the initial pilot test, an expanded pilot test of the vapor extraction and air sparging method would be conducted with additional wells installed and spaced based on data obtained in the initial pilot test.

An estimated maximum of 106 vapor extraction wells would be installed. Temporary aboveground piping would be installed to connect the vapor extraction wells to thermal

oxidizers. The projected operation is approximately 25 vapor extraction wells connected to each oxidizer pending the results from the initial vapor extraction pilot testing. Approximately four weeks following startup of expanded vapor extraction with aboveground piping, activities would be initiated to convert the aboveground system to underground.

An estimated 90 air sparging wells would be installed between vapor extraction wells for the expanded pilot test. The actual spacing of the additional air sparging wells would be determined by the results of the initial pilot test. Additional groundwater monitoring wells would be installed prior to the expanded pilot test. Underground piping to connect air sparging wells to air sparging blowers would be installed at the same time as underground vapor extraction piping. It is anticipated that trenches would contain one or both types of piping. Air sparging would be initiated in phases as installation of underground piping is completed, but is anticipated to begin approximately six weeks following initiation of vapor extraction in the aboveground configuration.

Soil or groundwater waste generated during the pilot testing activities would be handled, stored, transported and disposed in accordance with applicable laws, regulations and best management practices.

2.4.4 Remedial Action

Following evaluation of data obtained during the pilot tests and the soil and groundwater investigation, remedial action would continue in Berths 23 and installation would occur at Berth 24. The total project area would be approximately 24 acres. It is anticipated that the remediation system operation would continue in both berths until site data indicate such action is no longer required. The remedial action would follow the same protocol as that implemented in the pilot testing at Berth 23 and would be sequenced in four discrete phases in parcels (treatment cells) up to seven acres each. Following pre-excavation vapor extraction using temporary above-ground piping the vapor extraction wells would be manifolded via underground piping to route extracted vapors containing COCs to aboveground treatment equipment which would destroy/capture the COCs in conformance with air permit requirements. The treatment equipment may include thermal oxidizers, catalytic oxidizers, and/or carbon absorbers.

The air sparging systems would utilize vertical wells for introducing air into the groundwater approximately 5 to 10 feet below the water table. The wells would be manifolded together for air delivery from a common air sparging blower at a ratio of approximately one blower for each ten air sparging wells.

An estimated total of 500 to 1,000 vertical wells would be required for the remediation. An estimated 20,000 to 30,000 feet of trench would contain the underground piping. Based on the results of environmental investigations, the implementation of soil vapor extraction is anticipated for most trenching pathways prior to initiation of excavation to reduce subsurface concentrations of the COCs. Soil vapor extraction would be applied to those areas where investigations have reported methane concentrations in soil vapor greater than 5,000 parts per million by volume (ppmv), or 10 percent of the lower explosive limit (LEL) (Occupational Health and Safety Administration [OSHA] action level for flammable atmospheres). Soil vapor extraction would be applied for approximately two to four weeks

prior to excavating and would continue to be operated during excavation. Extracted soil vapor would be routed to a thermal/catalytic oxidizer for emissions control in accordance with the permit from the BAAQMD. The soil vapor extraction would help to mitigate COC vapors in the subsurface prior to initiation of excavation activities.

Soil or groundwater waste generated during the remediation activities would be handled, stored, transported and disposed in accordance with applicable laws, regulations and best management practices.

2.4.5 Preferential Pathway Study

The focus of the proposed preferential pathway study would be the shoreline area that includes the existing storm drains and sheetpile wall, an integral part of the ship wharf. The study would expand on previous investigations and risk assessments, and would address the potential ecological impacts of petroleum hydrocarbons in groundwater to the outer harbor, including the interaction between groundwater and the tidal flows in the storm drains. The study would consist of sampling of monitoring wells, measuring tidal and stormwater flow in the storm drains, sampling of the storm drains, reassessment of the ship wharf as-built plans, a groundwater tidal influence study, appropriate modeling, and an ecological risk assessment. The study would also include continued groundwater monitoring and may include the installation of additional monitoring wells. A remedial investigation report and a baseline risk assessment would present the results of the study.

The results of the preferential pathway study, baseline risk assessment, and the remedial action would be incorporated into a feasibility study and remedial action plan. Remediation would be based upon the findings from the risk assessment.

Groundwater waste generated during the study would be handled, stored, transported and disposed in accordance with applicable laws, regulations and best management practices.

2.5 Key Environmental Considerations

2.5.1 Waste Disposal

Soil and groundwater generated during construction and drilling activities may be considered hazardous waste. Prior to excavation, soil would be characterized as hazardous or non-hazardous. All materials would be containerized or covered with heavy-duty secure covers pending characterization.

Wastewater generated during well development and sampling activities would be stored in double-contained polyethylene tanks pending characterization. Wastewater determined to be non-hazardous would be transported in accordance with best management practices to an appropriate disposal facility. Hazardous wastewater would be transported to a permitted hazardous waste disposal facility.

All hazardous waste would be handled, stored, transported and disposed in compliance with 49 Code of Federal Regulations (CFR), Parts 100 to 199; 40 CFR, Parts 261-265 and 300; and California Code of Regulations (CCR), Division 4.5.

2.5.2 Air Emissions

Air emissions of dust, organic compounds and other soil contaminants may be generated during construction activities and during the operation of the thermal oxidizers employed during the soil vapor extraction.

All activities conducted at the site would be in compliance with the best practices, California Occupational Safety and Health Administration (CalOSHA) and BAAQMD rules and regulations. Written notice of the intent to excavate contaminated soil would be provided to the BAAQMD before the initiation of earth moving activities. All excavation activities would be conducted in compliance with the BAAQMD Regulation 8 Rule 40, Aeration of Contaminated Soil and Removal of Underground Storage Tanks, to minimize emissions from the project activities. Construction of thermal oxidizers would be conducted in compliance with a BAAQMD Authority to Construct, acquired prior to equipment installation. A Permit to Operate will be acquired prior to system operation.

Standard operating procedures (SOPs) for soil excavation would consist of excavation equipment placing excavated soil directly into transport vehicles for offsite disposal. The trucks would be securely covered before leaving the site. During excavation, all exposed contaminated soil surfaces would be kept visibly moist by water spray, treated with an approved vapor suppressant and covered with continuous heavy-duty plastic sheeting or other covering to minimize emissions or organic compounds to the atmosphere. If necessary, soil may be stockpiled at the project site. Stockpiles would be located away from the waterfront on plastic sheeting and would be securely covered to prevent release. The covering would be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate. When not covered, soil stockpile surfaces would be kept visibly moist by water spray.

During periods of inactivity longer than 12 hours, trench bottoms and sidewalls would be covered with heavy-duty plastic sheeting or other covering to minimize emissions of hydrocarbons to the atmosphere.

2.5.3 Stormwater Pollution Prevention

Excavated contaminated soils may come into contact with stormwater and enter the Bay if proper procedures are not implemented during construction activities. A Notice of Intent to comply with the National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity would be submitted to the RWQCB.

The project contractor would be required to implement a Storm Water Pollution Prevention Plan and Best Management Practices to prevent stormwater contact with contaminated material. The plan would require that all open trenches and stockpiles be covered when not active, equipment leaving the designated work area has been properly

decontaminated, and contaminated soil cuttings from drilling operations and liquid waste are properly containerized and managed pending characterization and disposal. A Sampling and Analysis Plan would also be developed and implemented for the construction phase of the proposed project. The plans would be in compliance with all applicable regulations and requirements.

2.6 Key Health and Safety Considerations

Due to the presence of hazardous constituents in the site soils, there is a potential for public or worker exposure to hazardous materials during site investigation and construction activities that expose the site soils to the environment. Best environmental, health and safety practices would be implemented for all site investigation and construction activities, as well as routine operation and maintenance of the treatment system equipment. All activities would comply with the requirements of the CalOSHA.

The project contractor would be required to develop a comprehensive Site Health and Safety Plan that would comply with all applicable regulations and Port and EMOC environmental health and safety requirements, including project mitigation measures. The plan would be in conformance with the ExxonMobil Operations Integrity Management System, which provides policies on safety, health, the environment, and product safety.

The Site Health and Safety Plan would specify that flammable gas emission levels be monitored on a scheduled basis in and around groundbreaking activities to detect and prevent accumulation of potentially explosive gas levels. Emissions of benzene and other toxic constituents would be monitored to ensure that levels do not exceed applicable CalOSHA occupational exposure limits. Potential worker exposure to site soil contaminants (including lead and other heavy metals) would be minimized through engineering controls (e.g., dust suppression) and general construction safety protocols such as the use of appropriate personal protective equipment and implementation of personal hygiene practices (e.g., hand washing). The soil vapor extraction system would be operated in areas of anticipated excavation for two to four weeks prior to any excavation activities to reduce the levels of potentially flammable, explosive or toxic constituents.

Asphalt cutting, trenching and drilling activities would be conducted in conformance with standard operating procedures intended to minimize potential fire or explosion hazards. Fire prevention techniques, such as water application to coring and cutting tools, use of dry ice in well casings to reduce potentially flammable atmospheres or use of an air knife during drilling, would be employed. In addition to work area monitoring for flammable, explosive or toxic gases, workers conducting any subsurface activities would be equipped with personal hydrogen sulfide monitoring devices.

Construction fencing would be used to separate each remediation area from normal ongoing operations. An additional perimeter boundary would be established to delineate a designated work area in which personal protective equipment would be required. Only properly trained (in Hazardous Waste and Emergency Response Operations) and equipped workers would enter the designated work area. Air monitoring for benzene and other potential airborne contaminants would be conducted at the perimeter boundary and the fence line to ensure that site workers outside of the designated work area would not be exposed to site contaminants exceeding applicable OSHA exposure limits. The perimeter boundary

would be adjusted as necessary based on the air monitoring results to ensure adequate protection was maintained for workers outside the designated work area. Construction of each remedial system within a treatment cell would be ongoing for approximately three months.

Site-specific emergency procedures would be developed and implemented as necessary. Emergency equipment, such as fire extinguishers, dry ice, water, and first aid supplies would be available on site. Site evacuation routes would be posted in conspicuous locations. Personnel would be properly trained in emergency procedures applicable to all remediation equipment units.

2.7 Approvals and Permit Requirements

This document will be used by the Port of Oakland Board of Port Commissioners to evaluate the environmental impacts of their decision to grant approval of the proposed project, including granting rights of entry and any related development permits. This document will also be used as a source of information by Responsible Agencies with permitting or approval authority over the project in their review process.

Table 2-1 summarizes the required approvals and Responsible and Trustee agencies with jurisdiction over this project.

Table 2-1. Agency Approvals and Permits

Agency	Activities within Agency's Jurisdiction	Agency Action/Requirement
Port of Oakland Board of Port Commissioners (Lead Agency)	Project construction and operations	Approval of CEQA Mitigated Negative Declaration, including approval of access and development permits
Bay Area Air Quality Management District	Contaminated soil excavation	Notification in Compliance with BAAQMD Regulation 8, Rule 40
	Operation of thermal oxidizer units	Authority to Construct and Permit to Operate
Regional Water Quality Control Board, San Francisco Bay Region	Remediation activities	Plan Approvals
	Construction activities (trenching)	General Permit for Construction Activities
San Francisco Bay Conservation and Development Commission	Activities within the Bay and the shoreline band	Review proposed action
United States Army Corps of Engineers	Discharges to the Bay associated with wharf area construction and excavation activities	Review proposed action

2.8 Regulatory Compliance

In addition to securing required project permits and approvals listed in Table 2-1 above, the project activities would be required to comply with all applicable federal, state, local regulations and Port and Mobil requirements, including occupational health and safety requirements. Project plans would be developed in accordance with this mitigated negative declaration, applicable regulations and requirements, including, at a minimum, the plans listed in Table 2-2.

Table 2-2. Project Plans

Project Plan	Regulatory Agency
Excavation and Soil Management Plan, including Construction Best Management Practices	Bay Area Air Quality Management District
Storm Water Pollution Prevention Plan, including Storm Water Sampling and Analysis Plan Construction Best Management Practices	Regional Water Quality Control Board
Traffic Control Plan	Port of Oakland
Site Health and Safety Plan, including: Safety Protocols for pre-drilling, asphalt cutting, etc.	Occupational Health and Safety Administration (OSHA)
Sampling and Analysis Plan	Regional Water Quality Control Board
Quality Assurance Plan	Regional Water Quality Control Board
Operations Integrity Management System[1]	EMOC
Injury Illness Prevention Program	OSHA

Notes

[1] EMOC's policies on safety, health, the environment, and product safety. OIMS meets ISO 14001 requirements.

3. SUMMARY OF FINDINGS

Table 3-1 summarized the potential impacts and recommended mitigation measures for the proposed project.

No significant unavoidable impacts have been identified. Some potentially significant impacts were identified related to air quality and hazards and hazardous materials. Each of these impacts would be mitigated to a less-than-significant level if the identified mitigation measures were implemented. A detailed description of potential impacts and recommended mitigation measures is provided in Section 4, Environmental Impacts.

Table 3-1. Summary of Findings

Item	Potential Impact(s)	Mitigation Measure(s)
1. Aesthetics	No significant impacts were identified.	None required
2. Agriculture Resources	No impacts were identified	None required
3. Air Quality	Emissions for the project would emit pollutants for which the project area is non-attainment. (see page 22 for detailed discussion) No other significant impacts were identified	**AIR 2.0**—Development and Implementation of an Excavation and Soil Management Plan. (pages 24-25) **AIR 2.1**—Implementation of BAAQMD Feasible Control Measures for Construction Emissions of PM_{10}. (page 26)
4. Biological Resources	No impacts were identified	None required
5. Cultural Resources	No significant impacts were identified.	None required
6. Geology / Soils	No significant impacts were identified.	None required
7. Hazards & Hazardous Materials	Proposed project activities may present hazards associated with site contaminants. (see page 37 for detailed discussion)	**HAZ 1.0**—Hazardous Waste Storage, Transport and Disposal Procedures (pages 39 and 40) **HAZ 2.0**—Development and Implementation of a Site Health and Safety Plan (page 42) **HAZ 2.1**—Pavement Cutting and Soil Boring Procedures (page 43) **HAZ 2.2**—Standard Operating Procedures for Groundwater Sample Collection (page 43) (continued on next page)

Item	Potential Impact(s)	Mitigation Measure(s)
		HAZ 2.3—Standard Operating Procedures for Vapor Extraction and Air Sparging Systems (page 44) **HAZ 4.0**—Management of Contaminated Media (page 45)
8. Hydrology and Water Quality	No significant impacts were identified.	None required
9. Land Use Planning	No impacts were identified.	None required
10. Mineral Resources	No impacts were identified.	None required
11. Noise	No significant impacts were identified.	None required
12. Population / Housing	No impacts were identified.	None required
13. Public Services	No impacts were identified.	None required
14. Recreation	No impacts were identified.	None required
15. Transportation/Traffic	No impacts were identified.	None required
16. Utilities / Service Systems	No impacts were identified.	None required
17. Mandatory Findings of Significance	No significant impacts were identified.	None required

4. ENVIRONMENTAL IMPACTS

This section discusses the environmental setting and condition at the proposed project site and evaluates the potential impacts associated with implementation of the proposed project. A brief explanation is provided for all answers. All answers take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts. When existing significance criteria or thresholds are used to evaluate a question, they are identified in the answer.

Where it is determined that a particular physical impact may occur, then the answers indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. Less-Than-Significant Impact with Mitigation Incorporated applies when the incorporation of mitigation measures would reduce an effect from Potentially Significant Impact to a Less-Than-Significant Impact. Mitigation measures are described and it is explained how they would reduce project effects to a less-than-significant level.

Supporting information sources are provided in Section 5, References.

4.1 Aesthetics

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
3. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
4. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Setting

The project site is located within an urbanized industrial and transportation-related development. The perimeter of the marine terminals, which includes Berths 23 and 24, is fenced and the yards are lighted. In general, viewers of the project area include travelers along nearby roadways. Visual features in the project area include fences, stacked inter-modal shipping containers, cranes, truck traffic, and buildings associated with maritime terminals and other transportation-related business on Maritime Street. The entire site is paved. No unique scenic vistas or state scenic highways occur on or near the project site.[1]

Impacts

Items 1-2. No Impact.

No scenic vistas, view corridors, scenic highways or scenic resources were identified in the project area. Moreover, the project will not impact any scenic vistas, view corridors, scenic highways or scenic resources.

Item 3. Substantially degrade the existing visual character or quality of the site and its surroundings? **Less-Than-Significant Impact.**

[1] Based on observation during site visit in March 2003.

Well drilling, trenching, sample collection activities and the presence of vapor extraction and air sparging equipment during the pilot tests and remediation activities would alter the visual appearance of the project site. The thermal oxidizers, air sparging blowers and associated electrical equipment are small relative to inter-modal shipping containers stored at or near the site and would be consistent with the industrial character of the site and the surrounding area. The thermal oxidizers would be rectangular in shape, about seven feet wide by twelve feet long and five feet in height. A ten-foot exhaust stack would be located on each thermal oxidizer. The air sparging blowers would be smaller in dimension, approximately two feet wide, three feet long and two feet in height. Electrical equipment consisting of post-mounted electrical panels would be approximately five feet in height. By comparison, an average inter-modal shipping container is eight feet wide, forty feet long, and eight feet tall.

The equipment would remain at the site during the pilot testing and remediation activities, which could last as long as several years. The thermal oxidizer and air sparging blower units would be fenced to minimize visual impacts. After the pilot testing and remediation activities are completed, the project site would return to its current condition; therefore, the project would not result in a long-term impact to the visual character or quality of the site and its surroundings.

Item 4. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area? **No Impact.**

Small area lights may be used during the nighttime to illuminate equipment control panels for a short duration if repairs or modifications to the equipment are necessary. This lighting would only illuminate the equipment and would not affect day or nighttime views in the area.

The project would not add additional permanent lighting to the site, and therefore it would have no impact on the project site or the surrounding area.

4.2 Agricultural Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
2. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
3. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Setting

The project site is currently paved and located in an urbanized setting. The area is developed and serves primarily industrial, maritime and transportation uses. No agricultural lands or farmlands are located in the vicinity of the project.[2]

Impacts

Items 1-3. No Impact

No agricultural land or farmlands are located at or near the project site. The project would not conflict with existing zoning for agricultural use, or involve other changes that could result in conversion of farmland to non-agricultural use. No impact to agricultural resources can result from the project.

[2] Based on observation during site visit in March 2003.

4.3 Air Quality

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
4. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
5. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Setting

The project site is located in the San Francisco Bay Area Air Basin, which is under the jurisdiction of the BAAQMD. Air quality in the San Francisco Bay Area Air Basin is subject to a combination of topographical features and climate. The climate in the San Francisco Bay Area Air Basin is classified as Mediterranean, with warm, dry summers and mild, wet winters. In the summer, there is a strong west-to-east temperature gradient, with inland temperatures much higher than nearby coastal areas. In the sub-region, including Alameda County, marine air traveling though the Golden Gate is often one of the major factors influencing local air quality. The prevailing winds for most of this sub-region are from the west and northwest. Thus, air pollution potential is lowest in areas closest to the Bay, largely because of good ventilation and less influx of pollutants from upwind sources (Port 2002, pp. 26-27).

Major sources of air pollution in the project area include industrial facilities and major freeways. Motor vehicle emissions from traffic congestion on the local freeways and roadways contribute to the deterioration of ambient air quality. Ground level ozone (smog) is formed in the atmosphere through complex chemical reactions between oxides of nitrogen (NO_x) and reactive organic gases (ROG) in the presence of sunlight. The primary sources of NO_x and ROG, often termed ozone precursors, are combustion processes (including motor vehicle engines) and evaporation of solvents, paints and fuels (BAAQMD, 1999, p. 5). Primary sources of suspended particulate are fuel combustion, farming activities, windblown

dust, and entrained road dust. In the Bay Area, most of the carbon monoxide (CO) emissions (70 percent) are generated by motor vehicles.

State and national ambient air quality standards have been established for the following pollutants (criteria pollutants): ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, fine particulate matter (PM_{10}) and lead[3]. For some of these pollutants, notably ozone and PM_{10}, the State standards are more stringent than the national standards. The San Francisco Bay Area air basin is in non-attainment for the federal and state ozone standards and the State particulate matter standard. For all other criteria pollutants, the Bay Area is classified as either in "attainment" or "unclassified." The BAAQMD is responsible for the preparation of plans for attaining and maintaining ambient air quality standards in the region, and for adoption and enforcement of rules and regulations concerning air pollutant sources. Air quality plans implemented by the BAAQMD include the Bay Area Air Quality Plan and the Bay Area 2000 Clean Air Plan. The intent of these plans is to reduce emissions of specific air pollutants that combine to form smog (NO_x and ROG.)

The BAAQMD air quality monitoring station closest to the project site is located along Alice Street in Oakland. Ozone and carbon monoxide are monitored at the Oakland Station. No exceedances of the state and federal standards for ozone or carbon monoxide occurred at the Oakland Station in the past three years ending in 2002[4]. Particulate matter has also been monitored by the Port at two stations in West Oakland since 1997. Data collected at these stations indicate that the state standard for PM_{10} was exceeded more than once in each recent year. These exceedances occurred on days with high level of pollutants in the area, when the state PM_{10} standards were also exceeded at several BAAQMD monitoring stations in the air basin.

Impacts

Item 1. Conflict with or obstruct implementation of the applicable air quality plan? **No Impact.**

The project activities would be conducted in accordance with an air permit issued by the BAAQMD and would comply with applicable BAAQMD regulations. During the construction phase, best management practices, such as dust suppression, covers for excavated soil, and traffic control measures discussed in detail in Item 2 of this section would be implemented to ensure compliance with applicable air quality requirements. Excavation activities would be conducted in accordance with the provisions of Regulation 8 Organic Compounds, Rule 40 Aeration of Contaminated Soil and Removal of Underground Storage Tanks (see Item 2 for details).

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[3] The Clean Air Act, last amended in 1990, requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for the six pollutants: carbon monoxide, ozone, particulate matter, nitrogen dioxide, sulfur dioxide and lead. These pollutants are commonly referred to as "criteria" pollutants.

[4] Data obtained from the BAAQMD web site. 2003 data is not available.

Compliance with BAAQMD regulations and implementation of best management practices would ensure that the project is in full compliance with all applicable air quality plans enforced by the BAAQMD.

Item 2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation? **Less-Than-Significant Impact with Mitigation Incorporated.**

Emissions from Construction Activities

Air emissions during well drilling, trenching and other construction-type activities are anticipated to include criteria pollutant emissions produced by equipment exhaust, fugitive dust created by wind and vehicle travel on paved surfaces, and the operation of drilling and excavation equipment over/in exposed earth. The total project area is estimated at 24 acres; however, disturbance would occur only in small portions of the site as the investigations and the pilot tests would be implemented incrementally on area-by-area basis.

In order to install underground piping to connect the extraction and air sparging wells to thermal oxidizers and air sparging blowers for the remediation, an estimated 5,800 to 8,600 tons of soil would be excavated. An estimated 3,000 linear feet of trench would be excavated at a time for a total of 20,000 to 30,000 feet. Excavation activities may generate short-term dust emissions as well as potential emissions of toxic air contaminants, such as benzene, present in the soil.

Soil Contaminants

Soil contaminants may be emitted to the atmosphere during excavation activities. BAAQMD regulates the excavation and removal of contaminated soils under Regulation 8 Organic Compounds, Rule 40 Aeration of Contaminated Soil and Removal of Underground Storage Tanks. Mitigation Measure: AIR 2.0 requiring compliance with applicable requirements of Regulation 8, Rule 40 would be implemented during excavation activities to ensure that potential emissions of contaminants from the site soils do not present a significant impact.

Mitigation Measure: AIR 2.0	**Development and Implementation of an Excavation and Soil Management Plan**
The project contractor shall develop an Excavation and Soil Management Plan, including Construction Best Management Practices, addressing the requirements of Regulation 8 Organic Compounds, Rule 40 Aeration of Contaminated Soil and Removal of Underground Storage Tanks. The plan shall include procedures to limit the emission of organic compounds from excavated soil. At minimum, the plan shall require that: • Contaminated soil shall be kept visibly moist by water spray, treated with a vapor suppressant, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere; • Surface area not covered by plastic sheeting or other covering of active storage piles not exceed 6,000 square feet; • Contaminated soil shall be covered during periods of inactivity longer than one hour; (continued on next page)	

Mitigation Measure: AIR 2.0	Development and Implementation of an Excavation and Soil Management Plan (continued)

- During excavation, all exposed contaminated soil surfaces above existing grade level shall be kept visibly moist by water spray, treated with an approved vapor suppressant, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere;
- All contaminated soils loaded into trucks or trailers for offsite disposal or treatment shall be covered with continuous heavy duty plastic sheeting or other covering so as to minimize emissions to the atmosphere; and
- Covering used shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

The project contractor shall provide written notice of the intention to excavate to the BAAQMD a minimum of five days prior to initiation of excavation activities followed by written verification not later than 30 working days after excavation is completed. The notice shall be provided to: Air Pollution Control Officer, Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California 94109 and shall include:

- Names and addresses of persons performing and responsible for excavation;
- Location of site at which excavation occurred;
- Date of excavation;
- Quantity of contaminated soil excavated;
- Estimated average organic content of contaminated soil; and
- Procedures to be employed to meet the BAAQMD requirements.

PM_{10} Emissions

Construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts. Fine particulate matter (PM_{10}) is the pollutant of greatest concern with respect to construction activities. There are a number of feasible control measures that can be reasonably implemented to significantly reduce PM_{10} emissions from construction. The BAAQMD's approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions (BAAQMD, 1999, p.14). The BAAQMD has identified a set of feasible PM_{10} control measures for construction activities. The determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. From the BAAQMD's perspective, quantification of construction emissions is not necessary. If all of the control measures indicated in Table 2 of the BAAQMD CEQA Guidelines (as appropriate, depending on the size of the project area) will be implemented, then air pollutant emissions from construction activities would be considered a less than significant impact (BAAQMD, 1999, p.15). Table 4-1 provides the Basic Control Measures (from Table 2 of the BAAQMD CEQA Guidelines) required by BAAQMD for all construction sites and explains when a control measure is either not applicable or unnecessary. The proposed project would include implementation of all of the applicable control measures as Mitigation Measure: AIR 2.1 to mitigate any potential impact from the construction activities to less-than-significant levels.

Table 4-1. BAAQMD Feasible Control Measures for Construction Emissions of PM_{10}

Basic Control Measures	Applicable to Proposed Project?
Water all active construction areas at least twice daily.	Yes
Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.	Yes
Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.	No—Site is paved
Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.	Yes
Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.	Yes (however, no visible soil is expected on adjacent streets)
Enhanced Control Measures (To be implemented in addition to the Basic Control Measures at construction sites greater than four acres in area)	
Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).	Yes—Only if trench sections should remain open for ten days or more.
Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).	Yes
Limit traffic speeds on unpaved roads to 15 mph.	No—All roads at the site are paved.
Install sandbags or other erosion control measures to prevent silt runoff to public roadways.	Yes
Replant vegetation in disturbed areas as quickly as possible.	No—No vegetation exists at the site.
Optional Control Measures	
Install wheel washers for all existing trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.	Yes—For trucks with contact with contaminated soil.
Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.	Yes
Limit the area subject to excavation, grading and other construction activity at any one time.	Yes—Construction activities would be conducted one parcel at a time.

Mitigation Measure: AIR 2.1 Implementation of BAAQMD Feasible Control Measures for Construction Emissions of PM_{10}

The project contractor shall implement applicable control measures listed in Table 4-1 during all construction activities.

Total Emissions from Project Operations

In addition to emissions generated during construction-type activities, vehicle emissions and emissions from operation of project equipment would generate ROG and NO_x.

The vehicle emissions are negligible, given that only one truck would be used at the site during project operations and the estimated trip distance at the project site is less than ten miles per day. As part of the project operations, soil vapor containing ROG would be extracted under vacuum from the vapor extraction wells and passed through a thermal oxidizer capable of 99% ROG destruction. Other criteria pollutants (combustion products, including NO_x) would be generated in the thermal oxidizer exhaust, however, the mass quantity of these pollutants would be substantially lower than the ROG that passes through the thermal oxidizer. Table 4-2 provides the ROG emissions expected from the operation of the thermal oxidizers.

The BAAQMD CEQA Guidelines specify significance thresholds for emissions of three criteria pollutants: ROG, NO_x and PM_{10} (BAAQMD, 1999, p. 16). Table 4-2 compares the total project emissions to these emission thresholds.

Project operation emissions were calculated using standard calculation procedures for air emission from soil vapor extraction with 99% air emission control efficiency. Previous site soil gas surveys (Treadwell, 2002b) indicated average soil gas concentrations of 4.8 ppmv benzene, 10.1 ppm toluene, 4.6 ppmv ethyl benzene, 10.9 ppmv xylenes, and 1,667 ppmv total petroleum hydrocarbon as gasoline (TPHG). TPHG was used as a surrogate for total ROG in the project emissions calculations. To calculate the air emission rate, the soil gas concentrations were converted using an ideal gas methodology to achieve a pollutant concentration in pounds of pollutant per cubic foot of soil gas. Along with temperature and pressure corrections, the conversion included use of a soil gas dilution factor of 0.246 (Acton-Mickelson, 2003b). The dilution is achieved by the introduction of ambient air into the control device and is necessary to operate within the specified heat input rating of the thermal oxidizer. The converted soil gas concentrations were used in conjunction with the extraction fan specifications to calculate the uncontrolled emission rate. The controlled emission rate was calculated by applying a minimum ROG destruction efficiency (control efficiency) of 99%. The calculations include project operation of seven thermal oxidizers. Table 4-2 provides the ROG emissions, and Table 4-3 provides the benzene, ethyl-benzene, toluene and total xylenes emissions expected from the operation of the thermal oxidizers.

Table 4-2. Air Emissions from Project Operations Compared to BAAQMD CEQA Significance Thresholds

Pollutant	Project Operation Emissions (lbs/day)	BAAQMD Significance Threshold (lbs/day)[1]
ROG	7.35	80
NO_x	negligible	80
PM_{10}	negligible	80

[1]BAAQMD CEQA Guidelines, p. 16 (BAAQMD, 1999)

Project operation emissions would not reach the significance thresholds established in the BAAQMD CEQA Guidelines; thus, the project would not substantially contribute to an existing or projected air quality violation. Likewise the project would not violate any air quality standard, as it would be conducted in compliance with all applicable BAAQMD

regulations, permit conditions and would include appropriate controls during construction activities.

Item 3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)? **Less-Than-Significant Impact.**

As discussed in Item 2 above, the project would not result in a considerable net increase for pollutants for which the project region is considered in "non-attainment" (ozone and particulate matter) under an applicable federal or state ambient air quality standard.

Item 4. Expose sensitive receptors to substantial pollutant concentrations? **Less-Than-Significant Impact.**

The project area is located in portions of Berths 23 and 24 at the Port of Oakland in a heavily industrialized area, adjacent to the Oakland Army Base and the other marine terminals. No sensitive receptors (schools, hospitals, or residential areas) are located in the project area. The nearest school is the Oakland Military Academy located about one-half mile to the east of the project site (Port 2002, p. 29). Emissions from project operations will be negligible. Material containment, air pollutant monitoring and establishment of work area boundaries based on real-time air monitoring data would be implemented to ensure that no adjacent occupants are exposed to contaminant emissions.

Emissions from Construction Activities

Construction activities may include localized short-term emissions of toxic air contaminants (TACs) present in site soils to the atmosphere. Although the BAAQMD regulates emissions of TACs based on their effect on potential receptors, the agency does not require quantification of emissions associated with construction activities (BAAQMD, 1999, p. 14) as long as appropriate control measures are implemented. The BAAQMD CEQA Guidelines further state that sources of air pollutant emissions complying with all applicable District regulations generally would not be considered to have a significant air quality impact (BAAQMD, 1999, p. 13).

The construction activities (i.e., trench excavation) would comply with all relevant BAAQMD regulations adopted as Mitigation Measure: AIR 2.0 to reduce organic contaminant emissions and with all applicable control measures listed in Table 4-1 to reduce PM_{10} emissions (Mitigation Measure: AIR 2.1). Additionally, appropriate safety controls discussed in detail in Section 4.7 would be implemented to control potential workers and contractor staff exposure to hazardous soil contaminants.

A conservative boundary would be established around the designated work area prior to beginning construction activities. Air monitoring of hazardous contaminants would be conducted during excavation activities in the breathing zone of the workers, at the perimeter of the designated work area boundary and at the fenceline. Personal protective equipment used by the workers in the designated work area would be up- or down-graded based on the air monitoring data. The designated work area boundary would be adjusted based on the air

monitoring data to eliminate potential for harmful exposure to air contaminants for off-site workers and other workers outside the designed work area.

Emissions from Project Operations

Air emissions from equipment operation during pilot testing and remediation activities would contain three criteria pollutants: ROG, NO_x and PM_{10}. However, as discussed above and summarized in Table 4-2, emissions of ROG would be substantially below the significance thresholds and the NO_x and PM_{10} emissions would be negligible. The equipment may also emit TACs such as benzene, toluene, and xylenes. The BAAQMD CEQA Guidelines establish thresholds of significance for TAC emissions posing an excess cancer risk of 1.0×10^{-5} and a Hazard Index greater than 1 (BAAQMD, 1999, p. 18). The BAAQMD General Risk Management Policy (BAAQMD Tables 1 and 2) defines TAC Trigger Levels used in evaluating air contaminant emissions and risk levels of facilities within the San Francisco Bay Area (BAAQMD Regulation 2, Rule 1, Table 316). TAC emissions above the trigger levels may exceed the cancer risk of 1.0×10^{-5} and a Hazard Index greater than 1. A health risk screening assessment is required to determine risk and Hazard Index if TAC emissions exceed the Trigger Levels.

Table 4-3 compares TAC emissions from project operations with the BAAQMD TAC Trigger Levels.

Table 4-3. Comparison of TAC Emissions from Project Operations to the BAAQMD TAC Trigger Levels

Toxic Air Contaminant	Project Operation Emissions (lbs/year)[1]	BAAQMD TAC Trigger Levels (lbs/year)[2]
Benzene	6.125	6.7
Ethyl benzene[3]	7.7	193,000
Toluene	15.05	38,600
Xylenes	18.9	57,900

Notes

[1]Based on operation of seven thermal oxidizers.

[2]Risk <10 in 1,000,000

[3]Ethyl benzene is not listed as a Toxic Air Contaminant in BAAQMD Regulation 2, Rule 1, Table 2-1-6-316, however, it is listed on the BAAQMD's web site under the Toxic Air Contaminants Trigger Levels table established by the California Air Resources Board.

TAC emissions associated with the proposed project are below the BAAQMD TAC trigger levels; thus, the cancer risk associated with project air emissions is less than 1.0×10^{5}, and the Hazard Index is less than 1. The project would not expose sensitive receptors to pollutant concentrations considered to be substantial.

Item 5. Create objectionable odors affecting a substantial number of people? **Less-Than-Significant Impact.**

Emissions from construction equipment during project construction, from open trenches during piping installation and exhaust from the thermal oxidizers could result in some unpleasant odors, due to release of soil contaminants, such as hydrogen sulfide with a rotten egg smell, and benzene, toluene and xylene, with a sweet smell, into the atmosphere. Odors may also emanate from excavated soil contaminated with petroleum products.

Benzene has an odor threshold of 1.5 ppm, which is above the CalOSHA PEL of 1 (Agency for Toxic Substances and Disease Registry, 1995). Air monitoring at the perimeter boundary would be implemented to ensure that benzene exposure outside the perimeter does not exceed the PEL, and would maintain the benzene odor emissions below the odor threshold. Toluene, xylene and hydrogen sulfide have odor thresholds below the CalOSHA PELs[5], however olfactory fatigue occurs rapidly with these compounds minimizing the unpleasant affects of their odors (NIOSH, 1981). Monitoring at the fence line of the treatment cell would ensure that emissions of hydrogen sulfide are in compliance with BAAQMD Regulation 9, Rule 2, Inorganic Gaseous Pollutants, Hydrogen Sulfide. Methane is an odorless compound.

Odor emissions would be controlled by the implementation of proper soil management practices, such as wetting and use of covers on exposed soil stockpiles. All soil generated during sample collection and well drilling activities would be collected and placed in appropriate closed containers, to minimize any odor emissions. Soil stockpiles and areas of exposed contaminated soil would be wetted and securely covered with plastic (or other appropriate) covers to minimize potential odor emissions. Likewise, all trucks carrying contaminated soil off-site would be securely covered with appropriate covers. Workers inside the designated work area perimeter boundary would be issued appropriate protective equipment, including respirators as necessary, which would minimize their exposure to unpleasant odors.

There would not be a substantial number of people (including employees) at the project site. Given the temporary nature of most of the odor emissions (during construction activities only) and the small number of people affected by the project, the impact would be less than significant.

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[5] Toluene, xylene and hydrogen sulfide can be easily detected at 10-15 ppm, 200 ppm and 4.6 ppm, respectively. The hydrogen sulfide odor is strong and unpleasant at 27 ppm. Olfactory fatigue for these compounds occurs rapidly (e.g., 2 to 15 minutes) and odor is no longer detected at these concentrations. The OSHA PELs for toluene, xylene and hydrogen sulfide are 50 ppm, 100 ppm and, 10 ppm, respectively

4.4 Biological Resources

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Dept. of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Dept. of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Setting

The project site is covered with asphalt paving and devoid of vegetation. No wetlands or other sensitive natural communities or habitat areas exist at or in the vicinity of the project site. There are no biological resources on the site.[6]

[6] Based on observation during site visit in March 2003.

Impacts

Items 1-6. No Impact.

There are no species identified as a candidate, sensitive, or special status species at or in the vicinity of the site. There are no wetlands, riparian habitat, sensitive natural communities, wildlife species, established native resident or migratory wildlife corridors, or native wildlife nursery sites at or near the project location (Port, 2002, pp. 31-34).

The project site is paved and does not provide habitat for biological resources, thereby eliminating potential conflict with local policies or ordinances protecting biological resources.

There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local regional, or state habitat conservation plans adopted for the project site or vicinity (Port, 2002, pp. 31-34).

4.5 Cultural Resources

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
4. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Setting

The Outer Harbor terminal area was created by backfilling of the Bay starting in 1911 when the City of Oakland constructed a rock-filled bulkhead situated about three-quarters of a mile offshore. This rubble seawall enclosed roughly 400 acres of city-owned tidelands (Minor, 2000). Dredge materials and other fill were used to reclaim the tidelands. The terminal underwent major renovation and expansions in the 1960s by SeaLand to convert the facility to a container terminal (Minor, 2000). No historical buildings remain on the site.

Impacts

Items 1-4. Less-Than-Significant Impact.

The project site consists of Bay fill. No known historical, archeological or paleontological resources are known to exist in the subsurface. (Port, 2002, p. 36) There is a very low potential for encountering significant archeological resources during subsurface activities at the maritime areas of the Port of Oakland, which are, in large part, the result of filling over several decades (US Army Corps, 1998, pp. 5.5-5). Similarly, no human remains are likely to be found in this area of artificial fill. Should unknown cultural, historical, archeological or paleontological materials be encountered during well drilling or excavation activities, the contractor would stop further excavation and notify the Port and a qualified archeologist or historical archeologist to evaluate the resource.

4.6 Geology and Soils

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☐	☒
2. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risk to life or property?	☐	☐	☒	☐
5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Setting

The project site is located in a seismically active region of California. The nearest major active fault is the Hayward Fault, approximately six miles northeast of the site. Other

active faults in the region include the San Andreas Fault, approximately 13 miles to the west and the Calaveras Fault, approximately 20 miles to the east of the site. The Working Group on California Earthquake Probabilities has estimated that there is a 70 percent probability that one or more large earthquakes (magnitude 6.7 or greater) will occur along one of the major fault zones (San Andreas, San Gregorio, Hayward, Calaveras, or Rodgers Creek) and along minor faults in the San Francisco Bay Area between 2000 and 2030 (United States Geological Survey, 1999, p. 60).

The project site is underlain by heterogeneous fill material, which extends to depths ranging from about 15 to 20 feet below the ground surface. Results from a geotechnical investigation indicate that the fill has variable composition and consistency, but that it generally consists of loose to medium dense fine sand with varying amounts of clay, silt, and gravel. In addition, rubble fill was encountered in several locations in the vicinity of an existing concrete bulkhead. Underneath the fill material there is a layer of Bay Mud, which is underlain by native Merritt Sand (dense to very dense sand to medium-dense clayey sand) from the San Antonio Formation. (Port, 2002, p. 38)

Impacts

Item 1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. **No Impact.**

The project area is not located within an Alquist-Priolo Earthquake Fault Zone; therefore, the project site is not known to be subject to fault rupture.

ii. Strong seismic ground shaking? **Less-Than-Significant Impact.**

The site is not traversed by any identified active faults; however, several nearby active faults could impact the project. It is possible for the site to be subject to intense ground shaking. Deep, unconsolidated solids, such as those found on the project site, tend to amplify and prolong shaking during earthquakes. Strong seismic groundshaking, and seismic-related ground failures such as liquefaction, could result in substantial adverse effects to workers at the site during the project activities (Port 2002, p. 38).

Workers would be instructed in earthquake response procedures. Site-specific emergency procedures would be developed and implemented as necessary. Emergency equipment, such as fire extinguishers, dry ice, water, and first aid supplies would be available on site. Site evacuation routes would be posted in conspicuous locations. Personnel would be properly trained in emergency procedures applicable to all remediation equipment units.

Underground piping may be compromised during an earthquake and treatment equipment may be damaged. The thermal oxidizer units would be equipped with automatic shut-offs, which would activate at any loss of vacuum in the piping connected to the unit, preventing potentially dangerous accumulation of flammable and/or hazardous vapors. After

an earthquake, all treatment system components would be inspected before system start-up to ensure that all components are safe to operate.

iii. Seismic-related ground failure, including liquefaction? **Less-Than-Significant Impact.**

See response to Item 1(ii) above.

iv. Landslides? **No impact.**

The topography of the upland portion of the site and surrounding area is relatively flat; therefore, it is not susceptible to slope failures or landslides.

Item 2. Result in substantial soil erosion or the loss of topsoil? **No Impact.**

The soils on the site are non-native soil brought in as fill. These soils do not constitute topsoil. Small amounts of soil would be removed in localized areas during soil sampling and well drilling activities. Trenches would be excavated for piping installation and backfilled immediately after completion of the piping installation activities. After construction, the entire site would be covered with paved surfaces. No long-term impact would occur.

Item 3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? **No Impact.**

Project activities would involve installing vapor extraction, air sparging and monitoring wells at the site as well as excavation of trenches for piping installation. Wells would range from 3.25 inches to 8 inches in diameter and from 5 feet below ground to approximately 7 feet below the groundwater table in depth. Because of their small size, these wells are not expected to result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Trenches would be backfilled immediately after completion of the piping installation and likewise would not have any impact.

Item 4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risk to life or property? **Less-Than-Significant Impact.**

The project site is located on Bay fill comprising sandy soils with a relatively low expansion potential.

Item 5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water? **No Impact.**

The marine terminals are serviced by sanitary sewers and therefore septic or alternative wastewater disposal is not part of the project.

4.7 Hazards and Hazardous Materials

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	☒
4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
6. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Setting

Soil, soil gas and shallow groundwater at the project site are known to be impacted by petroleum hydrocarbons. The impacted area, where documented petroleum hydrocarbon occurrences have been identified, is approximately 24 acres.

The site is currently paved which minimizes the diffusion of air into the subsurface and the diffusion of petroleum constituents from soil to the atmosphere. Soil vapor surveys (i.e., soil gas) have reported concentrations of up to 12 percent by volume of TPH as gasoline and up to 0.26 percent by volume of benzene. The lack of atmospheric air exchange can cause an anaerobic environment where biological processes convert the petroleum hydrocarbons in the soil and groundwater to methane, ethane, propane, and butane gases. Methane concentrations of up to 56 percent by volume were reported in soil vapor. The area of soil vapor containing methane at 0.5 percent by volume or greater is approximately 24 acres, including the former Ashland terminal. This concentration exceeds the OSHA exposure limit of 10 percent of the Lower Explosive Limit for flammable atmospheres (0.53%). Benzene concentrations in soil gas on site are above the OSHA 8-hour Permissible Exposure Limit (PEL) and sometimes exceed the OSHA Immediately Dangerous to Life and Health (IDLH) concentrations of 500 ppmv. Concentrations of hydrogen sulfide in soil vapor have also been reported (Port, 2002).

Table 4-4 provides the concentrations for contaminants of primary concern in the site soils. Maximum concentrations in site soil were derived from soil sample data and calculated soil gas concentrations (Port, 2002).

Table 4-4. Maximum Chemical Concentrations in Site Soil Vapor

Chemical	Maximum Concentration in Site Soil at Berth 23	Maximum Concentration in Site Soil at Berth 24	Action Levels Based on PEL/TLV/LEL[1]
Benzene	14 ppmv	2,600 ppmv	0.1 ppm[2]
Methane	30%	56%	5,300 ppmv[3]
Hydrogen Sulfide	11 ppmv	11 ppmv	10 ppmC[4]
Gasoline Vapors as TPH-Gasoline	5,100 ppmv	120,000 ppmv	300 ppm[5]

Notes

[1] The PEL is a Time-Weighted Average (TWA) concentration that must not be exceeded during any 8-hour workshift of a 40-hour work week. The TLV is the TWA concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect. Lowest value is provided.

[2] The OSHA PEL for benzene is 1 ppm. The ACGIH TLV for benzene is 0.5 ppm. The NIOSH REL for benzene is 0.1 ppm. It is standard practice to use the most conservative published exposure limit when dealing with known or potential carcinogens.

(footnotes continue on next page)

Notes (continued)

[3] The Lower Explosive Limit (LEL) for methane is 5.3%, which is a concentration of 0.53 methane in air, equivalent to 53,000 ppmv. The action limit for methane is 10% of the LEL.

[4] There is no acceptable 8-hour Time Weighted Average (TWA) exposure to hydrogen sulfide. OSHA and NIOSH have established acceptable ceiling concentrations. OSHA's Ceiling (C) limit is 20 ppm in the workplace, with a maximum level of 50 ppm allowed for no greater than 10 minutes within an 8-hour shift, if no other measurable exposure occurs. The NIOSH Ceiling limit is 10 ppm.

[5] OSHA and NIOSH have not established acceptable exposure limits to gasoline. The ACGIH TLV for gasoline is 300 ppm; however, it is recommended that exposures be limited to the lowest feasible concentrations.

Abbreviations

C = ceiling
LEL = lower explosive limit
PEL = permissible exposure limit
ppmv = parts per million by volume
TLV = threshold limit value
TPH = total petroleum hydrocarbons

The project would involve boring wells and excavating soil to install underground piping, which would breach the asphalt cap that is currently in place. Approximately 3,000 linear feet of trench would be open for up to two weeks at one time to install the remediation system piping. The elevated concentrations of methane and other toxic gases, such as benzene, present explosion and exposure hazards during activities that penetrate the existing pavement.

Impacts

Item 1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. **Less-Than-Significant Impact with Mitigation Incorporated.**

Hazardous materials are present in the site subsurface, therefore hazardous waste may be generated by soil and groundwater sampling and well drilling activities. An estimated 5,800 to 8,600 tons of potentially contaminated soil would be generated during excavation of trenches for installation of underground piping. These materials would require transport for offsite disposal if characterization data indicates that they constitute hazardous waste and cannot be returned to the excavation. Handling, packaging, transport and disposal of hazardous waste may pose significant hazards to the public and/or the environment if appropriate procedures are not implemented to prevent the release of the hazardous materials to the environment and/or prevent the exposure of the public to such materials.

Soil and fluids that would be generated during soil and groundwater sampling activities, during installation of borings and extraction, air sparging and monitoring wells may be regulated as hazardous waste unless it is known that the soils and/or fluids do not contain hazardous materials.

Mitigation Measure: HAZ-1.0	**Hazardous Waste Storage, Transport and Disposal Procedures**
All potentially hazardous excavated substances would be properly stored onsite pending chemical analysis and designation as either hazardous or non-hazardous waste: • Soil and fluids generated during soil and ground water sampling activities and during installation of borings and extraction, air sparging and monitoring wells shall be contained in appropriate containers compatible with materials generated; (continued on next page)	

Mitigation Measure: HAZ-1.0	Hazardous Waste Storage, Transport and Disposal Procedures (continued)

- Larger amounts of soils generated during trench excavation should be stockpiled on plastic liners away from the waterfront and would be securely covered with appropriate cover material pending disposition;
- All equipment that comes in contact with potentially contaminated soil, drilling fluid, air or water would be decontaminated before and after each use. Residual substances generated during cleaning and decontamination procedures shall be containerized, labeled and stored pending chemical analysis and designation as clean material or hazardous waste.

Storage, labeling, and inspections of potentially hazardous materials/waste shall be in compliance with applicable sections of 40 Code of Federal Regulations (CFR) Parts 260-270 and Title 22 of the California Code of Regulations (CCR). The area designated for storage of potentially hazardous waste shall be secured and clearly identified in the Site Health and Safety Plan. Hazardous waste storage time limits shall not be exceeded.

Areas designated for storage of potentially hazardous waste shall be secured and clearly identified in the Excavation and Soil Management Plan.

If the generated material is designated as hazardous waste, it shall be transported for offsite disposal at a permitted disposal facility. The generator and transporter shall have a valid Environmental Protection Agency identification number for storage, disposal and transport of hazardous waste. The hazardous waste shall be transported under a uniform hazardous waste manifest. All containers shall be properly packaged, labeled, marked, and placarded on the waste and transport vehicle.

In addition to the Mitigation Measure: HAZ 1.0 above, the following mitigation measures (discussed in detail elsewhere in this document) will help to ensure that potentially contaminated site soils are properly managed and do not present a hazard to the public, workers, or the environment:

- Mitigation Measure: AIR 2.0, Development and Implementation of an Excavation and Soil Management Plan including Construction Best Management Practices (p. 24); and
- Mitigation Measure: HAZ 2.0, Development and Implementation of Site Health and Safety Plan (p. 42).

These mitigation measures would ensure proper storage, treatment and disposal of any hazardous materials and/or waste generated during the proposed project and would reduce the hazards associated with transport and disposal of hazardous materials and/or wastes generated during the project to a less-than-significant level.

Item 2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. **Less-Than-Significant Impact with Mitigation Incorporated.**

Risk of release of elevated concentrations of methane and other flammable gases, including benzene, to the atmosphere exists during activities that penetrate site pavement. Explosions may occur during soil and groundwater sample collection and well drilling activities if appropriate safety measures are not implemented to control explosion hazards. Improper operation of the vapor extraction and air sparging units also may result in an

increased risk of fire and/or explosion and expose workers, the public and the environment to releases of hazardous materials creating a significant health hazard.

A conservative screening-level evaluation of potential benzene emissions to air from trenching activities was performed (Appendix B). A preliminary setback distance of 55 feet from trenching activities was estimated to prevent dock-worker and ancillary site personnel exposure to below ten percent of the OSHA PEL for benzene. A designated work area perimeter boundary would be established at this setback distance to protect site personnel. All workers within the designated work area would be equipped with appropriate personal protective equipment to minimize potential occupational exposure. Monitoring for benzene and other known site contaminants would be conducted in the designated work area, at the perimeter boundary of the designated work area, and at the fence line delineating the treatment cell. The designated work area boundary may be adjusted based on the results of field monitoring.

The construction contractor would be required to comply with all applicable OSHA regulations regarding worker safety. Both federal and California OSHA regulate worker exposure to hazardous materials and physical hazards. A Site Health and Safety Plan would be required, and that plan would include all Port-adopted mitigation measures and all required federal and state hazard controls. The Plan's implementation and compliance with all applicable safety regulations including, but not limited to those listed in Table 4-5 would ensure adequate protection for the site workers and the public from hazards associated with the proposed project.

Table 4-5. Occupational Health and Safety Programs Applicable to Control of Hazardous Materials

Occupational Health and Safety Program	**Regulatory Citation**
Benzene	8 CCR §5218
Carcinogen Report of Use Requirements	8 CCR §5203
Control of Harmful Exposure to Employees	8 CCR §5141
Evaluation of Exposure to Hazardous Chemicals	8 CCR §5155
Excavations	8 CCR §1539 – 1547
Fire Prevention and Suppression Procedure	8 CCR §4848
Fire Protection and Prevention	8 CCR §1920–1938
Flammable Vapors	8 CCR §1534
General Safety Precautions	8 CCR §1511
Hazard Communication Program	8 CCR §5194
Hazardous Waste Operations and Emergency Response	8 CCR §5192
Housekeeping	8 CCR §1513
Injury And Illness Prevention	8 CCR §5109
Permit Required Confined Space Entry	8 CCR §5157
Personal Protective Equipment	8 CCR §5114
Respiratory Protection	8 CCR §1531
Safety Instructions for Employees	8 CCR §1510

Note
CCR California Code of Regulations

Mitigation Measure: HAZ-2.0	**Development and Implementation of Site Health and Safety Plan**

A Site Health and Safety Plan compliant with 29 CFR 1910.120 and 8 CCR 5192 and approved by a Certified Industrial Hygienist shall be developed and implemented prior to commencement of project activities.

Standard operating procedures for site activities, equipment operation and maintenance shall be developed as part of the Site Health and Safety Plan and implemented during project activities.

The Site Health and Safety Plan shall:

- Specify that flammable gas emission levels be monitored in and around groundbreaking activities to detect and prevent accumulation of potentially explosive levels.
- Specify that benzene emissions shall be monitored to ensure that levels do not exceed applicable occupational exposure limits.
- Contain procedures to minimize potential worker exposure to site soil contaminants (including lead and other heavy metals) through engineering controls (e.g., dust suppression) and general construction safety protocols such as the use of appropriate personal protective equipment and implementation of personal hygiene practices (e.g., hand washing).
- Discuss known and potential hazards of known and potential site contaminants. Exposure limits for contaminants of concern should be provided. A conservative approach should be used with site contaminants (especially known carcinogens) using the lowest available exposure levels provided.
- Require personal monitoring for site contaminants, specifically benzene. An 8-hr TWA employee exposure representing the full shift exposure for each job classification in each work area should be provided.
- Define decontamination procedures (e.g., soil cuttings should be removed from around the bore holes and placed in 55-gallon drums with shovels).
- Contain a site control program including: a site map, site work zones, the use of a "buddy system," site communications including alerting means for emergencies, standard operating procedures or safe work practices, and identification of the nearest medical assistance.
- Clearly identify/delineate the exclusion, decontamination (or contamination reduction) and support zones.
- Specify that during excavation and associated construction activities, a perimeter boundary shall be erected to establish a designated work area. Air monitoring shall be conducted at the work area boundary and treatment cell fence line to ensure that personnel outside of the designated work area are not exposed to harmful levels of site contaminants. The work area boundary shall be adjusted as necessary based on the air monitoring results to ensure adequate protection for those outside the work area.
- Specify that all workers routinely or occasionally working on the site shall be trained in accordance with 8 CCR §5192.
- Require that workers or other persons that come to the site for a very limited number of site visits will meet the requirements of 8 CCR 5194 and all site PPE requirements, review the Site Health and Safety Plan and be accompanied by a site worker meeting the requirements of 8 CCR 5192. The site worker shall conduct air monitoring and enforce other relevant safety measures to ensure that escorted individuals are not exposed to site contaminants at levels above the PEL or exposed to other site hazards.

In developing the Site Health and Safety Plan, the contractor shall comply with all applicable laws, regulations, Port of Oakland requirements and EMOC's Operations Integrity Management System (EMOC, 2002).

Prior to the start of the pilot test study, the health and safety plan shall be submitted for review to the Port of Oakland Environmental Health and Safety Compliance Department.

Improper operation of the vapor extraction and air sparging units may result in an increased risk of fire and/or explosion and expose workers, the public and the environment to releases of hazardous materials creating a significant health hazard.

The risks of reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be reduced to a less-than-significant level if proper procedures are followed during all ground-penetrating activities as wells as during the operation of the thermal oxidizer and air sparging blower units.

Mitigation measures HAZ-2.0 and 2.1 would ensure the development and implementation of proper procedures for ground penetrating activities, thereby reducing the risks of construction hazards to a less-than-significant level. Likewise Mitigation Measure: HAZ-2.3 would ensure that proper procedures are developed and implemented to ensure safe operation of the treatment systems.

Mitigation Measure: HAZ 2.1 Pavement Cutting and Soil Boring Procedures
All unnecessary sources of ignition shall be shut off prior to beginning cutting or boring activities.
Known underground utilities in the immediate area, such as electrical, phone and gas lines, shall be shut off if possible and appropriate lock out/tag out procedures shall be implemented.
Sufficient fire extinguishing equipment shall be available in the immediate vicinity of the concrete cutting or soil boring activities.
The contractor shall perform all pavement-cutting activities with a continuous supply of water to the blade. All concrete cutting activities should be performed wet and Lower Explosive Limit (LEL) monitoring for potentially explosive environments should be performed in conjunction with cutting activities. The blade must stay wet during cutting to avoid sparks that could ignite. Proper health and safety and contaminated media protocols shall be followed during concrete cutting procedures and should be outlined in a Site Health and Safety Plan.
The pavement areas being cut should be watered during the cutting activity to prevent heating of the concrete and/or asphalt.
During soil boring activities, vacuum digging, probing with hand tools, hand digging and hand augering methods should be employed as appropriate to prevent generation of sparks which could cause an explosion, especially in soils where rocks and other obstructions are known or suspected. These activities should be conducted under the supervision of a Project Manager and/or the Project Health and Safety Officer.

Mitigation Measure: HAZ 2.2 Standard Operating Procedures (SOPs) for Groundwater Sample Collection
The atmosphere in the wellheads should be monitored prior to sample collection using a Flame Ionization Detector (FID) or an LEL Meter, if the FID maximum indicated range (typically 10,000 ppmv) is exceeded.
If explosive atmospheres are detected, the wellhead will be purged with nitrogen or by injection of dry ice prior to sample collection (or equivalent methods approved by the Site Health and Safety Manager). The atmosphere in the wellheads will be measured again to ensure that the explosion potential has been mitigated prior to collection of the sample.
All monitoring equipment will be calibrated in accordance with the manufacturer's recommendations, regulatory requirements and the Site Health and Safety Plan.
Appropriate fire extinguishing equipment shall be available in the immediate area.

Mitigation Measure: HAZ 2.3	Standard Operating Procedures for Vapor Extraction and Air Sparging Systems
Standard operating procedures for the treatment units shall be prepared and implemented upon start up. The procedures shall be prepared and/or reviewed by a trained professional and submitted to the Port prior to installation of the pilot test program. At a minimum, standard operating procedures shall address the routine operating conditions, including inlet gas concentration parameters, fire prevention procedures, procedures for safely addressing upset conditions, repair and maintenance requirements, and emergency response procedures. Procedures for start-up of the equipment shall take into account potential build-up of explosive vapors in the equipment. All units shall have electrical controls approved by Underwriters Laboratories, Inc. (or equivalent) and combustion burner components and controls in accordance with the requirements of FM Global (formerly Factory Mutual) and/or the National Fire Protection Association. The SOPs shall ensure compliance with applicable regulations and the Site Health and Safety Plan.	

Compliance with applicable requirements regulating hazardous materials would reduce the risks of reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment to a less-than-significant level.

Item 3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. **No Impact.**

No existing or proposed school is located within one-quarter mile of the project site. The nearest school is the Oakland Military Academy located about 1/2 mile to the east of the project site. Transport of hazardous materials may occur near the school. All hazardous materials transportation would be conducted in accordance with applicable regulations and best management practices. Trucks or trailers transporting contaminated soil for offsite disposal or treatment would be covered with continuous heavy-duty plastic sheeting or other covering so as to minimize emissions of hazardous materials to the atmosphere. The covering used would be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

Item 4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5 and, as a result, would it create a significant hazard to the public or the environment? **Less-Than-Significant Impact.**

The project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5. Two clean-up orders have been issued for hazardous materials sites located in the near vicinity of Berths 23 and 24, sites known as the former Mobil Oil Bulk Terminal and the McGuire Chemical Company. The orders were issued by the Regional Water Quality Control Board and the Department of Toxic Substances Control and contain cleanup requirements for the two sites. (California Regional Water Quality Control Board, 1999 and Department of Toxic Substances Control, 2001) In addition, there were regulatory actions by Alameda County for former Underground Storage Tank sites at Berth 23.

The objective of the project is to obtain data, and develop and implement a strategy to mitigate the hazards associated with the current site contamination. The result of the project

would be to reduce the present hazards to the public and the environment by reducing the levels of contamination.

Activities at hazardous materials sites often present chemical exposure hazards to the workers and may present hazards to the public and the environment if off-site contaminant migration occurs. A Site Health and Safety Plan would be developed and implemented to control these hazards in accordance with the requirements of 8 CCR 5192.

Proper management of contaminated media generated during construction and sampling activities would prevent the release of contamination to other parts of the project site or off-site and creation of a hazard to the public and the environment. An Excavation and Soil Management Plan, including Construction Best Management Practices and a Storm Water Pollution Prevention Plan would be developed and implemented for the project.

Mitigation Measure: HAZ-4.0 Management of Contaminated Media
Contractor shall remove all soils cuttings with significant amount of debris, petroleum hydrocarbon stains, and PID readings above background levels and place them into storage drums or equivalent closed containers.
Potentially contaminated water (groundwater and rinseate water) generated during project activities must be containerized.
The soil and water generated at the site shall be analyzed and disposed of in an appropriate manner as required by Mitigation Measure: HAZ 1.0. Proper storage shall be ensured while the material is pending analysis (see Mitigation Measure: HAZ 1.0)

Development and implementation of a Site Health and Safety Plan, and proper management of contaminated soils and groundwater would reduce the potential impact to the workers, the public and the environment to a less-than-significant impact.

Item 5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? **No Impact.**

The project site is not located within two miles of the Metropolitan Oakland International Airport, nor is it within an airport land use plan area, thus the proposed project would not result in a safety hazard for people living or working in the area.

Item 6. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? **No Impact.**

The project site is not within the vicinity of a private airstrip and thus it would not result in a safety hazard for people living or working in the area.

Item 7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evaluation plan? **No Impact.**

The approximate police response time to the site for life threatening emergencies (including hazardous materials events) is usually less than five minutes (although may be as long as ten minutes, depending the other emergencies in progress)[7]. The approximate fire department response time is three to five minutes for emergencies within the District. As with the police department, response times can vary depending on call load and starting locations.[8]

The proposed project would not cause any delay in response time for fire and police protection. No increase in traffic flow would result from the project that would significantly impact traffic flows. No equipment would be parked on the street physically blocking access for fire or police forces.

Item 8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? **No Impact.**

The project is located in an industrial/maritime district within an urban area. Most of the area is paved and devoid of vegetation. No wildland areas exist in the vicinity of the project site.[9]

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[7] Per conversation with Dispatcher 75 of the Communications Unit of the Oakland Police Department on April 19, 2003 (telephone number 510 777-3333). Response time is for Code 3 emergencies, which require the use of police lights and sirens.

[8] Per conversation with Dispatcher 11 of the Oakland Fire Department on April 21, 2003 (telephone number 510-238-4000). Response time is for emergencies.

[9] Based on observation during site visit in March 2003.

4.8 Hydrology and Water Quality

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in erosion and/or sedimentation on- or off-site?	☐	☐	☐	☒
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
6. Otherwise substantially degrade water quality?	☐	☐	☒	☐
7. Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
10. Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

Setting

A shallow, unconfined, tide-influenced groundwater zone occurs within the artificial fill material underneath the project site. During excavation and/or drilling for subsurface investigation, groundwater was found in borings at approximately 8 feet below ground surface (Port, 2002, p. 51). The project site is currently paved.

Deeper aquifers exist underneath the project site. The berths in the Outer Harbor are located along the eastern San Francisco Bay margin within an area generally referred to as the East Bay Plain groundwater basin. The geologic units of this basin consist of sediments (from the ground surface downward, Young Bay Mud, San Antonio Formation, Old Bay Mud, and Alameda Formation) overlying metamorphic rocks (Franciscan Complex). The San Antonio (Merritt Sand) and Alameda Formations are the major regional groundwater-bearing units (Subsurface Consultants, 1999). Saltwater intrusion near the San Francisco Bay margin has impacted water in the Merritt Sand but the Old Bay Mud serves as an aquitard separating the San Antonio and Alameda Formations, and the Alameda Formation aquifer contains good-quality freshwater with low concentrations of dissolved solids (Port, 2002, p. 51).

Impacts

Item 1. Violate any water quality standards or waste discharge requirements? **Less-Than-Significant Impact.**

There is very small possibility that runoff water quality may be degraded during drilling and trench excavation activities if contaminated soil particles are disturbed, and exposed, and if they enter the Bay via stormwater runoff. A Notice of Intent to comply with the National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity would be submitted to the RWQCB. The project contractor would develop and implement a Storm Water Pollution Prevention Plan

and adopt Best Management Practices to ensure that exposed soils are properly managed. Soil cuttings would be containerized to prevent them from contacting stormwater runoff. Larger amounts of soils excavated during trenching would be stockpiled away from the waterfront on plastic sheeting and would be securely covered to prevent release. A Sampling and Analysis Plan would also be developed and implemented for the construction phase of the proposed project. The plans would be in compliance with all applicable regulations and requirements.

Item 2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? **No Impact.**

Groundwater supplies are not currently utilized at the project site or in the surrounding area. Neither construction nor operation of the project would require use of groundwater. Groundwater sampling and vapor extraction and air sparging activities would result in the removal of small amounts of groundwater, however the volume of groundwater removed would be insignificant.

The project is not expected to substantially impact the amount of groundwater in aquifers underlying the site.

Item 3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in erosion and/or sedimentation on- or off-site? **No Impact.**

The project site is mostly flat and covered with low-permeability surfaces (pavement). Precipitation that falls on the site currently runs off into the storm drain system. Trenches may collect rainwater during a heavy precipitation event before they are backfilled. A Storm Water Pollution Prevention Plan and Best Management Practices would be implemented during construction activities to ensure that rainwater which comes into contact with contaminated soils does not run off the site. The proposed project would not alter the site's existing drainage pattern and would not result in a net increase in impervious surface area.

Item 4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? **No Impact.**

See response to Item 3 above.

Item 5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? **No Impact.**

No change in the runoff quantity would occur as a result of the project. The project site would continue to be covered with low-permeability surfaces. Precipitation falling on the site would continue to be collected into the storm drain system. Implementation of a Storm Water Pollution Prevention Plan and Best Management Practices during well drilling and excavation would reduce or eliminate runoff impact to the San Francisco Bay during construction activities.

Item 6. Otherwise substantially degrade water quality? **Less-Than-Significant Impact.**

There is very small possibility that runoff water quality may be degraded during drilling and trenching activities if contaminated soil particles are disturbed, exposed, and enter the Bay via stormwater runoff. A Storm Water Pollution Prevention Plan and Best Management Practices would be implemented to ensure that exposed soils are properly managed and do not enter storm water runoff. All disturbed soil would be covered immediately or as soon as practicable with secure covers. Soil cuttings from drilling and/or sample collection activities would be containerized in closed drums or equivalent containers. Larger amounts of excavated soil would be stockpiled away from the waterfront on plastic sheeting and securely covered to prevent dispersion. Contaminated tools and equipment would be decontaminated to prevent contaminant migration into stormwater. Contaminated groundwater or rinseate from decontamination of tools or equipment would be containerized in closed containers.

Groundwater contamination is possible by introduction of contaminants during well installation activities and after well construction if wells are not properly secured to prevent unauthorized access. In accordance with the California Water Code and Alameda County Water Well Ordinance 73-68, wells would be installed to meet or exceed the well standards specified in the California Department of Water Resources Bulletin No. 74-90, "Monitoring Well Standards". Procedures for well installation would ensure that well installation activities do not introduce contaminants into the groundwater. Tools and equipment used in the well installation would be decontamination after each installation to prevent cross-contamination. Well casings would be inspected prior to installation to ensure that they are free from any contaminants, including glues, lubricants and other substances that could potentially contaminate the groundwater. Security measures, such as locks, would be implemented to prevent unauthorized tampering with the wells and potential introduction of contaminants.

With the implementation of the Storm Water Pollution Prevention Plan and Best Management Practices and appropriate well installation procedures discussed above, the project would not substantially degrade water quality.

Item 7. Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? **No Impact.**

The project site and surrounding area are not within a potential flood area (City of Oakland, 1974, Environmental Hazards Element, p. 25). In addition, no housing would be built as a result of the project. Thus, no impact would occur.

Item 8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows? **No Impact.**

The project is not within a flood zone, no project structures would substantially impede or redirect flood flows.

Item 9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? **No Impact.**

As shown in the "Potential Flooding Area" map of the Environmental Hazards Element of the Oakland Comprehensive Plan (City of Oakland, 1974), the project area is not subject to potential flooding or dam inundation.

Item 10. Inundation by seiche, tsunami, or mudflow? **Less-than-Significant Impact.**

As shown in the map depicting "Areas of Potential Inundation by Tsunamis" in the Environmental Hazards Element of the Oakland Comprehensive Plan, the project site is within an area that could be inundated by a tsunami (City of Oakland, 1974, Environmental Hazards Element). Tsunami are large ocean waves produced by an offshore earthquake, volcanic eruption, or landslide. They are commonly caused by vertical faulting beneath the ocean. They can be destructive upon reaching exposed coastlines.

The highest tsunami recorded in the San Francisco Bay by the United States Coast Guard and Geodetic Survey occurred in March 1964 as a result of the Alaskan earthquake. This wave reached a height of 7 ½ feet at Fort Point. By comparison, the wave created by the 1906 earthquake at the San Andreas Fault was measured as ½ foot at Fort Point (City of Oakland, 1974).

Damage in the project area due to tsunamis is not expected to be substantial because: (1) tsunamis tend to dissipate once they move from open, deep waters to shallower Bay waters, and sites adjacent to a Bay, harbor, or cove water areas are likely to be buffered by their locations, and (2) tsunamis appear to be the result of vertical displacement, and movement in the San Francisco Bay Area faults is mainly in the horizontal direction. In addition, existing early warning programs implemented by the United States Geological Survey and the National Oceanic and Atmospheric Administration, and emergency evacuation plans and procedures already in place, are likely to provide sufficient warning to any employees at the project site of the potential risk of tsunami after an offshore earthquake. The impact from tsunamis in the project area would be less-than-significant.

Seiches are earthquake-generated waves within enclosed or restricted bodies of water such as lakes and reservoirs. These waves are similar to the sloshing of water in a bowl or bucket when it is shaken. No surface water bodies likely to be affected by seiches are present in the project vicinity. As the project vicinity is relatively level, no impacts from mudflows are expected.

4.9 Land Use Planning

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Physically divide an established community?	☐	☐	☐	☒
2. Conflict with applicable environmental plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
3. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Setting

City of Oakland General Plan. Even though the project site is located within the City of Oakland, land use planning authority for this maritime area lies with the Port of Oakland. The Port of Oakland is governed by a Board of Port Commissioners and is an independent department of the City of Oakland. Because the Port is an autonomous City department, the Port area is not subject to City zoning designations, but Port uses must be consistent with the Oakland Comprehensive Plan, which comprises several elements. The City of Oakland Land Use and Transportation Element adopted in 1998 designated the land use at the project site as "General Industrial/Transportation"—a land use designation that supports a variety of uses such as heavy industrial, marine terminals, distribution and warehousing, manufacturing, and transportation (City of Oakland, 1998, p.153).

As with other urban waterfronts, the project site is within the planning jurisdiction of other governmental agencies and must conform to adopted plans, such as the San Francisco Bay Plan and the Seaport Plan.

San Francisco Bay Plan. The San Francisco Bay Plan (Bay Plan) was first adopted by the San Francisco Bay Conservation and Development Commission (BCDC) in 1969 and it has been amended periodically to keep it current. The BCDC is the agency responsible for maintaining and carrying out the provisions of the Bay Plan for the protection of the Bay and its natural resources and the development of the Bay and shoreline to their highest potential with minimum of Bay fill. The BCDC exercises its authority to issue or deny permit applications for placing fill, extracting materials, or changing the use of any land, water, or structure within the area of its jurisdiction, in conformity with the provisions and policies

contained in the Bay Plan. The regulatory jurisdiction of the BCDC extends to activities that take place within 100 feet of the Bay Shoreline (the "100-foot shoreline band").

San Francisco Bay Area Seaport Plan (Seaport Plan). A cooperative planning effort of the Metropolitan Transportation Commission (MTC) and the BCDC resulted in the Bay Area Seaport Plan, a document used by both agencies to guide their decision making on Bay Area projects. The MTC uses the Seaport Plan to assist in making project funding decisions and managing the metropolitan transportation system; the BCDC uses it to help guide its regulatory decisions on permit applications, and consistency determination. One of the main goals promoted by the Seaport Plan is to reserve sufficient areas to accommodate future growth in maritime cargo, thereby minimizing the need for new Bay fill for Port development.

The project site is designated as a "Port Priority Use Area" in the Seaport Plan. "Port Priority Use Areas" are reserved for regional maritime port use and include within their premises marine terminals and directly related ancillary activities such as container freight stations, temporary storage, support transportation uses including trucking and railroad yards, and marine services (San Francisco Bay Conservation, 1997).

Impacts

Items 1-3. No Impact.

The project would not change the existing land use of the project site. The project would be temporary, and the site conditions would return to current conditions after project completion. The project would not conflict with any environmental plans. Finally, there are no habitat conservation plans or natural community conservation plans that are applicable to the project.

4.10 Mineral Resources

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	☒
2. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Setting

No known mineral resources occur at the site.

Impacts

Items 1-2. No Impact.

The project would have no impact on mineral resources, since none are known to exist at the site.

4.11 Noise

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project cause:				
1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
6. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Setting

The project area is subject to noise from industrial activities, vehicular traffic on nearby roadways (Maritime Street and Burma Road) and freeways (I-80 and I-880), and train traffic on nearby rails. The Noise Element of the City of Oakland Comprehensive Plan indicates that the site is affected by nearby transportation corridors such as I-80 (City of Oakland, 1974, Noise Element, p. 14). No sensitive noise receptors such as hospitals, senior housing, or schools exist in close proximity to the project site. The nearest sensitive receptor is the Oakland Military Academy, a college preparatory school, located approximately 2,500 feet away at 2405 West 14th Street.

Impacts

Item 1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? **No Impact.**

The Port of Oakland is not required to comply with zoning and related regulations of the City of Oakland[10]. However, these regulations are relevant in determining if noise generated from project operations is significant.

Chapter 17.120.050(H) of the City of Oakland Planning Code (Planning Code) requires that noise generated by short-term (less than ten days) construction operations and received by industrial land use across real property lines not exceed 80 decibels adjusted (dBA) during the daytime (7 a.m. to 7 p.m.), 70 dBA during weekends, and 60 dBA during the nighttime (10 p.m. to 7 a.m.). The requirements for long-term construction operations are 70 dBA during the daytime and 60 dBA during the weekends and nighttime. In addition to regulating construction-related noise, the Planning Code regulates noise from all activities. Section 17.120.050(B) requires that noise level received by any commercial land use across real property lines shall not exceed 65 dBA for 20 minutes during any one hour time period regardless of time of day.

Section 8.18.010 of Title 8 of the Oakland Municipal Code states that noise resulting from construction activities and other commercial or industrial noise that exceed the standards of the Oakland Planning Code is considered a nuisance and is subject to fines and penalties. Section 8.18.020 further states that failure to comply with the listed provisions shall constitute a nuisance.

Construction Noise

The project would generate short-term, intermittent construction-related noise during drilling and excavation activities. Based on U.S. Environmental Protection Agency (EPA) data on typical noise ranges for construction equipment, noise levels at 50 feet from the drilling equipment would range from 82 to 101 dBA (Leq[11]). Drilling activities would be conducted during the daytime on weekdays and would be short-term (less than 10 days). Excavation activities would also occur during daytime on weekdays. The noise level at the perimeter of each parcel on which project activities would occur is estimated to range from approximately 76 dBA to 95 dBA (Leq). Heavy-duty trucks associated with drilling equipment would also be sources of noise. Based on U.S. EPA data, typical noise ranges generated by such trucks ranges from 72 to 95 dBA (Leq). Noise from the construction activities would be dampened by the intermodal containers stored at the project site and adjacent site.

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[10] The Port of Oakland is an independent department of the City of Oakland and is required to comply with the City of Oakland General Plan, but not with the Oakland Zoning Ordinance (Oakland Charter, Section 727).

[11] Equivalent sound pressure level—the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.

To minimize construction noise, the following measures would be implemented where practicable: (1) all construction equipment powered by internal combustion engines would be properly muffled and maintained; (2) unnecessary idling of internal combustion engines would be prohibited, and (3) quiet construction equipment would be selected whenever possible. Although the project would generate construction noise at the site, no industrial land uses across real property lines are near enough the project site to be affected by noise from the project operations.

After all construction activities are completed, noise in the project area would return to current levels. Due to the location of the project in an area with industrial ambient noise levels and large distances across real property lines, the project operations would have no impact on the current noise environment.

Operational Noise

During project operation, each thermal oxidizer would produce a noise level of 85 dBA at five feet from the unit. Similarly, each air-sparging blower would generate a noise level of 85 dBA at three feet for the unit. Noise attenuation is not expected due to the smooth, hard surface of the site paving which provides poor sound absorption. During the initial pilot test, only one thermal oxidizer and one air-sparging blower would be operated.

Operation of the equipment during the extended pilot test and remedial action would increase the noise levels due to the increase in the number of units operating at any time to seven thermal oxidizers and 26 air sparging blowers. The total noise generated by the thermal oxidizers and air-sparging blowers is estimated to be approximately 65 dBA at the boundary of the seven-acre parcel if the equipment is clustered near the center of the parcel and approximately 73 dBA at the parcel boundary if the equipment is equally distributed throughout the parcel. These noise level estimates are conservative, in that they do not take into account the dampening effect of shipping containers stored at the site. The current ambient noise level at the marine terminals at the site is approximately 75 dBA; therefore the noise from the equipment would not create any impact on the current condition.

After all construction, pilot testing activities and remedial activities are completed, noise in the project area would return to current levels. Due to the location of the project in an area with industrial levels of ambient noise and large distances across real property lines, the project operations would have no impact on the current noise environment.

Item 2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? **Less-Than-Significant Impact.**

Very minor groundborne vibration may be experienced during drilling activities. Most of the vibration would be absorbed by the subsurface fill material. Any vibration would be temporary and localized at the drilling locations. It would not affect persons other than the site workers. No groundborne noise is anticipated to result from the project.

Item 3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? **No Impact.**

Increase in ambient noise levels is not expected to be substantial as discussed in Item 1 above. This increase would not be permanent, since all noise-generating equipment would be removed after the completion of the project. No significant impact would occur.

Item 4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? **No Impact.**

Increase in ambient noise levels is not expected to be substantial as discussed in Item 1 above, therefore, any impact from the project would be less than significant.

Item 5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? **No Impact.**

The project site is not located within two miles of the Metropolitan Oakland International Airport, nor is it within an airport land use plan area, thus the proposed project would not expose people residing or working in the project area to excessive noise levels.

Item 6. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? **No Impact.**

The project is not within the vicinity of a private airstrip, thus it would not expose people residing or working in the project area to excessive noise levels.

4.12 Population and Housing

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
2. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
3. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Setting

The project site is within an urbanized industrial and transportation-related development located within the City of Oakland (City of Oakland, 1974).

Impacts

Item 1. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? **No Impact.**

The project would be temporary in nature and would not involve construction of new housing or infrastructure that could directly or indirectly induce substantial growth in population or housing. Project employees would be temporary and expected to live within commute distance from the project sites. Thus the project would not result in an increase in immigrants to the area attracted by new job opportunities. The project is not expected to affect population growth.

Item 2. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? **No Impact.**

No existing housing would be displaced as a result of the proposed project.

Item 3. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? **No Impact.**

See response to Items 1 and 2 above. The project would not displace people or housing.

4.13 Public Services

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
1. Fire protection?	☐	☐	☐	☒
2. Police protection?	☐	☐	☐	☒
3. Schools?	☐	☐	☐	☒
4. Parks?	☐	☐	☐	☒
5. Other public facilities?	☐	☐	☐	☒

Setting

The project is located in the City of Oakland and is served by the Oakland fire and police departments. The approximate police response time to the site for life threatening emergencies (including hazardous materials events) is usually less than five minutes (although may be as long as ten minutes, depending the other emergencies in progress)[12]. The approximate fire department response time is three to five minutes for emergencies within the District. As with the police department, response times can vary depending on call load and starting locations.[13]

No schools, parks, or other public facilities are located on or in the vicinity of the project site.[14]

Impacts

Item 1. Fire protection? **No Impact.**

The project is not expected to increase the demand for fire protection for the area. The existing fire protection capabilities are sufficient to respond to fire emergencies at the project site.

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[12] Per conversation with Dispatcher 75 of the Communications Unit of the Oakland Police Department on April 19, 2003 (telephone number 510 777-3333). Response time is for Code 3 emergencies, which require the use of police lights and sirens.

[13] Per conversation with Dispatcher 11 of the Oakland Fire Department on April 21, 2003 (telephone number 510-238-4000). Response time is for emergencies.

[14] Based on observation during site visit in March 2003.

Item 2. Police protection? **No Impact.**

The project is not expected to increase the demand for police protection for the area because the project is not expected to increase the number of people working in the area.

Items 3-5. No Impact.

The proposed project would not have a significant impact on the current level of public services in the area. No increase in demand for school services, parks, or other recreation or public facilities would occur as a result of the project.

4.14 Recreation

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
2. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Setting

The project site is located within an urbanized industrial and transportation-related development. No recreational facilities or parks are in the immediate vicinity of the project site.[15]

Impacts

Items 1-2. No Impact.

The project would not cause a substantial increase in the use of existing neighborhood and regional parks or other nearby recreational facilities. As discussed in Section 4.12, Population and Housing, the project is not expected to affect population growth and would not significantly alter the number of employees working at the project site; thus it would not result in an increased demand of recreational facilities. The project does not include construction of new facilities or expansion of existing recreational facilities.

[15] Based on observation during site visit in March 2003.

4.15 Transportation and Traffic

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☒
2. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated road or highways?	☐	☐	☐	☒
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
5. Result in inadequate emergency access?	☐	☐	☐	☒
6. Result in inadequate parking capacity?	☐	☐	☐	☒
7. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

Setting

Local vehicular access to the project site is provided mostly by Maritime Street, West Grand Avenue, and 7th Street. Maritime Street is a four-lane arterial with a center two-way left-turn lane. It is heavily used by trucks and other traffic accessing the Outer Harbor terminals and adjacent businesses. Maritime Street is connected to West Grand Avenue, which provides access to I-880. 7th Street is a four-lane arterial, which connects Maritime Street to the City of Oakland business center and provides access to I-880 south. A new frontage road connects 7th Street to points north.

Impacts

Item 1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial

increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)? **No Impact.**

During the construction phase of the project, additional vehicles would be entering the project site, including approximately four excavators, four front-end loaders, twenty end-dump trucks, three drilling rigs, one fueling truck, two water trucks, seven diesel trucks and ten gasoline trucks and automobiles. All vehicles, excluding the trucks and automobiles, would remain at the site during the construction activities and would not impact traffic on the nearby roadways and intersections. The dump trucks would be used to transport contaminated soil for off-site disposal. Approximately fifteen trucks per day for 18 to 26 days would transport the soil off-site for a total of 263 to 390 trips during the project construction phase. The daily traffic volume on Maritime Street is approximately 11,900 vehicles, which corresponds to a Level of Service "B" at nearby intersections. (Port of Oakland, 1998, p. 3.2-9, 10). A temporary addition of fifteen trucks per day represents an increase in traffic volume of less than one percent (0.13%), which is not a substantial increase. The remaining trucks and vehicles would be used for project support and may make a few trips per day during the construction phase of the project.

A Traffic Control Plan would be implemented during construction activities to ensure the safety of all project personnel and others at or near the project site. The Traffic Control Plan includes the following requirements for work in traffic areas or areas where accidents can occur:

- Use of reflective vest and bright clothing
- Placement of flags as needed to protect the work areas
- Placement of "Men Working" signs
- Implementation additional traffic control measures/devices
- Observance of a 10-mile per hour speed limit
- Use of a "spotter" in areas with traffic
- Compliance with terminal driving rules
- Review of Site Health and Safety Plan

Following the completion of construction activities, one to two trucks or automobiles would be utilized at the site to support the operation of the treatment units.

The increase in traffic due to the project vehicles would not be significant in an area zoned for transportation use and heavily traveled by truck traffic. The construction phase of the project, which would utilize the most vehicles, is temporary in nature and would not add to any long-term traffic impacts in the area. No significant impact would result from the proposed project.

Item 2. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated road or highways? **No Impact.**

As discussed in Items 1 and 4 of this Section, the impact of additional vehicles at the site would be short-term and consistent with the current roadway use. A temporary increase in traffic volume of 0.13% is not anticipated to exceed the current level of service standard.

Item 3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? **No Impact.**

Air traffic is not a part of the proposed project. The proposed project will not affect air traffic patterns.

Item 4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? **No Impact.**

The proposed project would not modify existing street or road design features and would not introduce incompatible uses to the site location. Vehicles associated with the proposed project include four excavators, four front-end loaders, twenty end-dump trucks, three drilling rigs, one fueling truck, two water trucks, seven diesel trucks and ten gasoline trucks and automobiles. The heavy equipment (excavators, loaders, drilling rigs) would be used at the project site and not be traveling on nearby roadways. Trucks and automobiles associated with the proposed project would utilize nearby roadways, but they are compatible with current use of the nearby roadways. All vehicles would comply with the Traffic Control Plan, which controls hazards associated with vehicular travel.

Item 5. Result in inadequate emergency access? **No Impact.**

Parking for all project vehicles would be provided at the site and would not affect emergency access to the site. There will be no fencing or systems set up at the entrance to the terminals.

Item 6. Result in inadequate parking capacity? **No Impact.**

Parking for all project vehicles would be provided on the project site. The project vehicles would not utilize existing parking available to other site personnel, therefore the proposed project would not result inadequate parking capacity.

Item 7. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)? **No Impact.**

The proposed project would not conflict with any adopted policies, plans, or programs supporting alternative transportation.

4.16 Utilities and Service Systems

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
1. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
2. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
3. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
4. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
5. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
6. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Setting

The project area is currently serviced by the East Bay Municipal Utility District sanitary sewer system and potable water supply. The site has an existing storm water drainage system which discharges to the San Francisco Bay.

Impacts

Items 1-7. No Impact.

During well drilling and excavation activities, a Storm Water Pollution Prevention Plan and Best Management Practices would be implemented to eliminate stormwater contact with potentially contaminated soils. The project would not require additional wastewater treatment or landfill capacity. The project would not affect the amount of stormwater runoff

from the site. Solid waste generated during the project would be disposed in compliance with all federal, state, and local statutes and regulations related to solid waste. No water discharge would occur as part of the project. Demand for water would not increase substantially during the project duration and would return to current conditions following project completion.

4.17 Mandatory Findings of Significance

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Mandatory Findings of Significance:				
1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
Issues (and Supporting Information Sources):				
2. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Impacts

Item 1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? **No Impact.**

The project is located on a completely paved parcel in an industrial development with no known plant and animal habitat. The site does not provide important examples of the major periods of California history or prehistory. No impact would occur from project activities.

Item 2. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental

effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) **Less-Than-Significant Impact.**

Past projects at the site, include conversions of the site to maritime and transportation use and remedial actions undertaken by EMOC to remove soil contaminants. Future projects will be in compliance with the RWQCB Order. Future projects would include the reconstruction of Berths 20-24. Analysis of potential impacts associated with the reconstruction of Berths 20-24 found the impacts to be less-than-significant.

The highest level of impact associated with the proposed project and future projects was determined to be Less-Than-Significant with Mitigation Incorporated. No additional impacts are expected to result from the proposed project that would combine with other projects to create a significant impact. As long as the required mitigation identified for all proposed projects is implemented, the cumulative impacts of the proposed project and past and future projects at the site would not create a significant impact

Item 3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? **No Impact.**

The project would not have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

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5.2 Persons Consulted

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APPENDIX A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,
SAN FRANCISCO BAY REGION, CLEANUP AND ABATEMENT
ORDER NO. 99-063

California Regional Water Quality Control Board
San Francisco Bay Region

Winston H. Hickox
Secretary for Environmental Protection

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Gray Davis
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Date: JUL 28 1999
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Subject: Adoption of Site Cleanup Requirements for the Former Mobil Bulk Terminal at the Port of Oakland, Oakland, Alameda County

Dear Messrs. Pao and Prall:

Enclosed is a copy of Board Order No. 99-063 for the adoption of site cleanup requirements for the subject site. The Order was adopted by the Board at its meeting of July 21, 1999.

Please contact Derek Lee of my staff at (510) 622-2374 or email: dcl@rb2.swrcb.ca.gov if you have any questions.

Sincerely,

Loretta K. Barsamian

Loretta K. Barsamian
Executive Officer

PORT OF OAKLAND
ENVIRONMENTAL DIVISION

Enclosure: Order No. 99-063
cc w/ enc: Mailing List

Aug 2 1999
RECEIVED
ENVIRONMENTAL DIVISION

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 99-063

ADOPTION OF SITE CLEANUP REQUIREMENTS FOR:

MOBIL OIL CORPORATION AND
PORT OF OAKLAND

for the property located at

FORMER MOBIL BULK TERMINAL AT THE PORT OF OAKLAND
OAKLAND
ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Board), finds that:

1. **Site Location:** The subject property (the "Site") is located on 909 Ferry Street (street no longer in existence), Oakland, occupying parts of the Port of Oakland's current Berths 23 and 24. It measures 1,500 feet by 1,000 feet, covering approximately 34 acres. The Site is bounded on the west by the Oakland Outer Harbor, and on the north and south by other Port berths. Ferry Street previously divided the Site into Mobil East and West Facilities.

2. **Site History:** The Site has been owned by the Port of Oakland (Port) since before Mobil Oil Corporation's (Mobil) operations. Pursuant to a lease with the Port, General Petroleum Corporation operated a bulk terminal for petroleum product storage and distribution on-site from 1924 to approximately 1966. In 1960, General Petroleum Corporation became a part of the Mobil Oil Corporation, and Mobil became the legal successor-in-interest to General Petroleum. The lease was then assigned to Mobil in 1966. Southern Pacific Pipe Lines, Inc. supplied refined petroleum to the Site by underground pipes. The refined petroleum was mixed and stored on-site in large aboveground tanks (ASTs) and underground storage tanks (USTs).

   The Port owned some buildings, structures, facilities, improvements, and other fixtures on-site, including four petroleum storage tanks located at the Mobil East Facility. Mobil and its predecessors owned the four petroleum storage tanks at the Mobil West Facility.

   Petroleum products stored at the Site included diesel fuel, leaded and unleaded gasoline, premium gasoline and gasoline additives, heating oil, and various other heavy oil products.

Mobil's lease expired on January 9, 1979, at which time the bulk terminal was dismantled to accommodate containerized cargo terminals, operated by Maersk Terminals, Inc.. What remained of the Mobil facilities was demolished in the early 1980s.

3. **Named Discharger:** Mobil Oil Corporation is named a discharger because it and its predecessors-in-interest operated on Site from 1924 to 1979 and caused releases of the pollutants found in the subsurface on-site. The Port of Oakland is named as a discharger because it was and continues to be the property owner during and after the time of the activity that resulted in the discharge, had knowledge of the discharge or the activities that caused the discharge, and had the legal ability to prevent the discharge.

   If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the Site where it entered or could have entered waters of the state, the Board will consider adding that party's name to this order.

4. **Regulatory Status:** This site is currently not subject to Board Order. However it has been under active regulatory oversight either by the Alameda County Department of Environmental Health or the Board since 1979.

5. **Site Hydrogeology:** The Site is underlain by hydraulic fill, Bay Muds, and sand zones. The fill extends from immediately below the pavement to depths ranging from approximately 15 to 20 feet below ground surface (bgs). It consists of fine to medium sand interbedded with silty sand, clayey sand, and sandy silt. The Young Bay Mud below consists of clay and silty clay with lenses of sand and silt and ranges in thickness between 0.5 and 6 feet. Beneath the Young Bay Mud is the first sand zone consisting of silty sand to depths of approximately 32 feet bgs. The layer designated as the Old Bay Mud consists of clayey sand of 5 to 10 feet in thickness extending from below the first sand zone to the second sand zone. The second sand zone reaches a depth of approximately 72 feet bgs, which is, in turn, underlain by a silty clay unit.

   Depth to groundwater varies from approximately 5.5 to 10.9 feet bgs. The general direction of groundwater flow is west toward the San Francisco Bay. There is an apparent groundwater mound beneath the central portion of the Site which could locally influence the flow direction. Moreover, a seawall along the shoreline separates the Bay from inland. There is also a seawall along the Bay shoreline. However, studies showed that waves can propagate through and below the seawall, and therefore, groundwater underlying at least the western portion of the Site appears to be subject to tidal influences.

6. **Remedial Investigation:** The primary pollutants found in the subsurface are total petroleum hydrocarbons as gasoline (TPH-g) and their related constituents. Total petroleum hydrocarbons as diesel (TPH-d) also exist on-site in smaller quantities.

- TPH-g was detected in soil at concentrations ranging from 0.0015 to 12,000 ppm. There was also some TPH-d ranging from 0.0022 to 8.7 ppm. The maximum concentration measured for benzene in the soil in 1997 was 41 ppm. Toluene, ethylbenzene, and total xylenes yielded maximum concentrations of 250, 120, and 670 ppm, respectively, with the heaviest contamination generally observed at depths greater than 6 feet bgs.

- Total petroleum hydrocarbon concentrations up to 56,000 ppmv in soil gas were reported in 1987 in the area of the former Mobil West Facility. The total concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) in the soil gas, however, were significantly lower than total hydrocarbon concentrations. Specifically, the concentration of benzene in the soil gas ranged from below detection limit to 72 ppmv.

- Investigations in 1997 revealed methane concentrations in the vadose zone as high as 47%. The area with the highest concentrations of methane appears to overlie locations where significant free product was found, in the area where the Mobil West Facility was located. High concentrations of benzene were also detected in the groundwater in this area with some reported 1997 figures as high as 22,000 and 31,000 ppb. A TPH-g detection of 38,000 ppb in the groundwater was reported at around the same time in this area as well.

- TPH-g is present on-site in both the free and dissolved phases. In 1980, it was estimated that there were approximately 300,000 to 400,000 gallons of free product beneath the Site. Most of the free product was found under the general area of the former Mobil West Facility. However, this estimate was based on the apparent thickness of product in monitoring wells and therefore exaggerated the true volume of free product.

  A free product recovery system was installed and began operation in February 1982. The system had resulted in a significant reduction in the total product volume by 1984. Results of recent monitoring revealed that the free product is limited to groundwater monitoring wells MW-30, MW-32, and MW-33, at the western and northwestern portions of the Site. The use of the SPILLVOL model estimated the amount of free product left to be 13,900 gallons in 1996.

- A dissolved-phase groundwater contaminated plume was also identified beneath parts of the Site. TPH-g has been detected at concentrations up to 220,000 ppb, north of the former ASTs. However, when analyzed for BTEX, the highest concentrations were observed east of the former ASTs. The maximum concentrations detected for benzene, toluene, ethylbenzene, and xylene were 55,000 ppb, 61,000 ppb, 16,000 ppb, and 76,000 ppb, respectively.

- On January 9, 1997, Mobil presented its *Groundwater Flow and Contaminant Transport Modeling Report*. The model revealed that the primary pathway for chemical plume migration into the Bay is most likely through a limited space below the seawall at a depth of 40 to 50 feet bgs.

  The model considered scenarios with and without a groundwater mound at the center of the Site. The results showed that the migration of BTEX into the Bay would be less in the case of no groundwater mounding. It was estimated that, under the influence of a groundwater mound, the mass flux of benzene into the Bay ranges between 9.33 grams per year in year 2 to 352 grams per year in year 20. Without the mound, 6.7 grams per year was estimated to enter the Bay in year 2 and 138 grams in year 20. The mass fluxes translate into an average benzene concentration of 16.7 ppb in the outflow into the Bay with a groundwater mound and 8.27 ppb, without a mound. Board staff reviewed and concurred with the conclusions of this report and that the amount of BTEX estimated to be entering the Bay from the subject site appears to be insignificant.

Additional remedial investigation is needed to:

a. assess the vertical groundwater gradient, if any, and vertical distribution of petroleum hydrocarbons;
b. verify the fate and transport study results;
c. demonstrate that free product has been removed to the extent practicable; and
d. assess the explosive dangers posed by methane during construction activities and in current and future site use scenarios.

7. **Interim Remedial Measures:** Following Mobil's decontamination of the tanks and related pipelines, the Port dismantled the bulk oil facilities to accommodate containerized cargo terminals in the early 1980s. This included the removal of six large and one small ASTs, associated piping and distribution systems, and on-site buildings. The Site was subsequently regraded and repaved.

In early 1982, Mobil designed and installed a recovery system to recover the separate-phase petroleum product. It consisted of five 24-inch-diameter recovery wells and 12 water injection wells. Recovered product was separated from groundwater and stored in ASTs. Pumped groundwater was returned to the water table untreated. Pursuant to instructions by Mobil's contractor, the Port performed routine operational maintenance on the extraction system until approximately 1989 and reportedly removed approximately 59,000 gallons of free product. From 1994 to 1995, Mobil also performed free product removal from the existing wells on-site by skimming.

Depending on the results of additional remedial investigation and risk assessment regarding the methane gas, remediation and/or risk management may be required to ensure human health and safety.

8. **Adjacent Sites:** The areas surrounding the Site are heavily industrialized. Ashland Oil Company of California operated the Ashland Oil Storage Facility just south of the Mobil site starting in the early 1960's. There were 15 aboveground tanks and two underground storage tanks on the Ashland facility used for storage of a variety of petroleum products. The tanks were removed in 1986 and 1987. This case was under regulatory oversight by the Alameda County Department of Environmental Health up until 1994 when the County requested soil and groundwater investigations. No additional site investigation/cleanup has occurred since that time.

9. **Basin Plan:** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

The potential beneficial uses of groundwater underlying and adjacent to the site include:

a. Industrial process water supply
b. Industrial service water supply
c. Agricultural water supply

At present, there is no known use of groundwater underlying the site for the above purposes. The water is unsuitable for municipal/domestic uses because of brackish conditions.

The existing and potential beneficial uses of the Oakland Outer Harbor (Basin Plan) include:

a. Industrial process supply or service supply
b. Water contact and non-contact recreation
c. Wildlife habitat
d. Fish migration and spawning
e. Navigation
f. Estuarine habitat
g. Shellfish harvesting
h. Preservation of rare and endangered species

10. **Other Board Policies:** Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has

been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally high contaminant levels. However, as stated above, the groundwater beneath the subject site is unsuitable for municipal/domestic uses because of brackish conditions.

11. **State Water Board Policies:** State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives. Given the Board's past experience with groundwater pollution cases of this type, it is unlikely that background levels of water quality can be restored. This initial conclusion will be verified when a cleanup plan is prepared. This order and its requirements are consistent with Resolution No. 68-16.

State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

12. **Preliminary Cleanup Goals:** The dischargers will need to make assumptions about future cleanup standards for groundwater, in order to determine the necessary extent of remedial investigation, interim remedial actions, and the draft cleanup plan. Pending the establishment of site-specific cleanup standards, the following preliminary cleanup goals should be used for these purposes:

    a. **Groundwater**: USEPA National Ambient Water Quality Criteria (Saltwater Aquatic Life Protection) or applicable risk-based levels for ecological receptors in the Oakland Outer Harbor.

    b. **Soil**: 100 mg/kg for total petroleum hydrocarbons as gasoline (TPH-g) and 1,000 mg/kg for total petroleum hydrocarbons as diesel (TPH-d) and heavier ends.

13. **Basis for 13304 Order:** The dischargers have caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.

14. **Cost Recovery:** Pursuant to California Water Code Section 13304, the dischargers are hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.

15. **CEQA:** This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.

16. **Notification:** The Board has notified the dischargers and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.

17. **Public Hearing:** The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers (or their agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.

2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. TASKS

The Board strongly encourages joint efforts from the dischargers in completing the following tasks:

1. **ACCESS AGREEMENT**

COMPLIANCE DATE: August 31, 1999

Submit an access agreement acceptable to the Executive Officer signed by both parties to allow timely completion of all work required in this order. Past failures in reaching access agreements have resulted in work delays.

2. **WORKPLAN FOR REMEDIAL INVESTIGATION OF THE FREE PRODUCT, CONTAMINATED GROUNDWATER PLUME, AND METHANE**

COMPLIANCE DATE: September 30, 1999

Submit a workplan, acceptable to the Executive Officer, combining the *Final Cleanup Objective and Action Plan* (Final Cleanup Plan) and its addendum, already approved by Board staff on April 1, 1998, and May 11, 1998, respectively, with additional methane gas investigation.

In addition to the work already proposed, a workplan to delineate the horizontal extent of the methane plume should be proposed. The investigation should include areas where significant amounts of free product were formerly located. Abiotic indicators of anaerobic biodegradation of petroleum hydrocarbons should be collected and analyzed as well. The workplan should describe sampling and analysis procedures to be used. The additional work could be proposed in the form of a second addendum to the Final Cleanup Plan.

3. **COMPLETION OF REMEDIAL INVESTIGATION AND RISK ASSESSMENT**

COMPLIANCE DATE: May 15, 2000

Submit a technical report acceptable to the Executive Officer documenting the completion of Task 2. Because the section, "Evaluation of Site's Final Cleanup Objectives", contained in the original *Final Cleanup Objective and Action Plan*, is largely duplicative of Task B.4 of this Order, it needs not be completed at this time. This technical report should also include a methane risk assessment based on results of the remedial investigation and considering current and future site use and construction scenarios. In particular, it should address the potential explosive dangers due to migration of methane gas into trenches during future construction activities and removal of the surficial cap.

4. **REMEDIATION / RISK MANAGEMENT PLAN**

COMPLIANCE DATE: August 15, 2000

Submit a technical report acceptable to the Executive Officer containing:

a. A summary of remedial investigation results and risk assessment findings
b. Feasibility study evaluating alternative remedial and risk management actions
c. Recommended remedial and risk management actions and cleanup standards
d. Implementation tasks and time schedule

Item b should include projections of cost, effectiveness, benefits, and impact on public health, welfare, and the environment of each alternative action.

Items a through c should consider the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), CERCLA guidance documents with respect to remedial investigations and feasibility studies, and State Board Resolution No. 92-49 as amended ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304").

Item c should consider the preliminary cleanup goals for soil and groundwater identified in finding 12 and should address the attainability of background levels of water quality (see finding 11).

5. **Delayed Compliance:** If the dischargers are delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the dischargers shall promptly notify the Executive Officer and the Board may consider revision to this Order.

C. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).

2. **Good O&M:** The dischargers shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.

3. **Cost Recovery:** The dischargers shall be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program,

reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the dischargers over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.

4. **Access to Site and Records**: In accordance with California Water Code Section 13267(c), the dischargers shall permit the Board or its authorized representative:

   a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

   b. Access to copy any records required to be kept under the requirements of this Order.

   c. Inspection of any monitoring or remediation facilities installed in response to this Order.

   d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.

5. **Contractor / Consultant Qualifications**: All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.

6. **Lab Qualifications**: All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).

7. **Reporting of Changed Owner or Operator**: The Port shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.

8. **Reporting of Hazardous Substance Release**: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the dischargers shall report such discharge to the Regional Board by calling (510) 622-2300 during regular office hours (Monday through Friday, 8:00 to 5:00).

A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

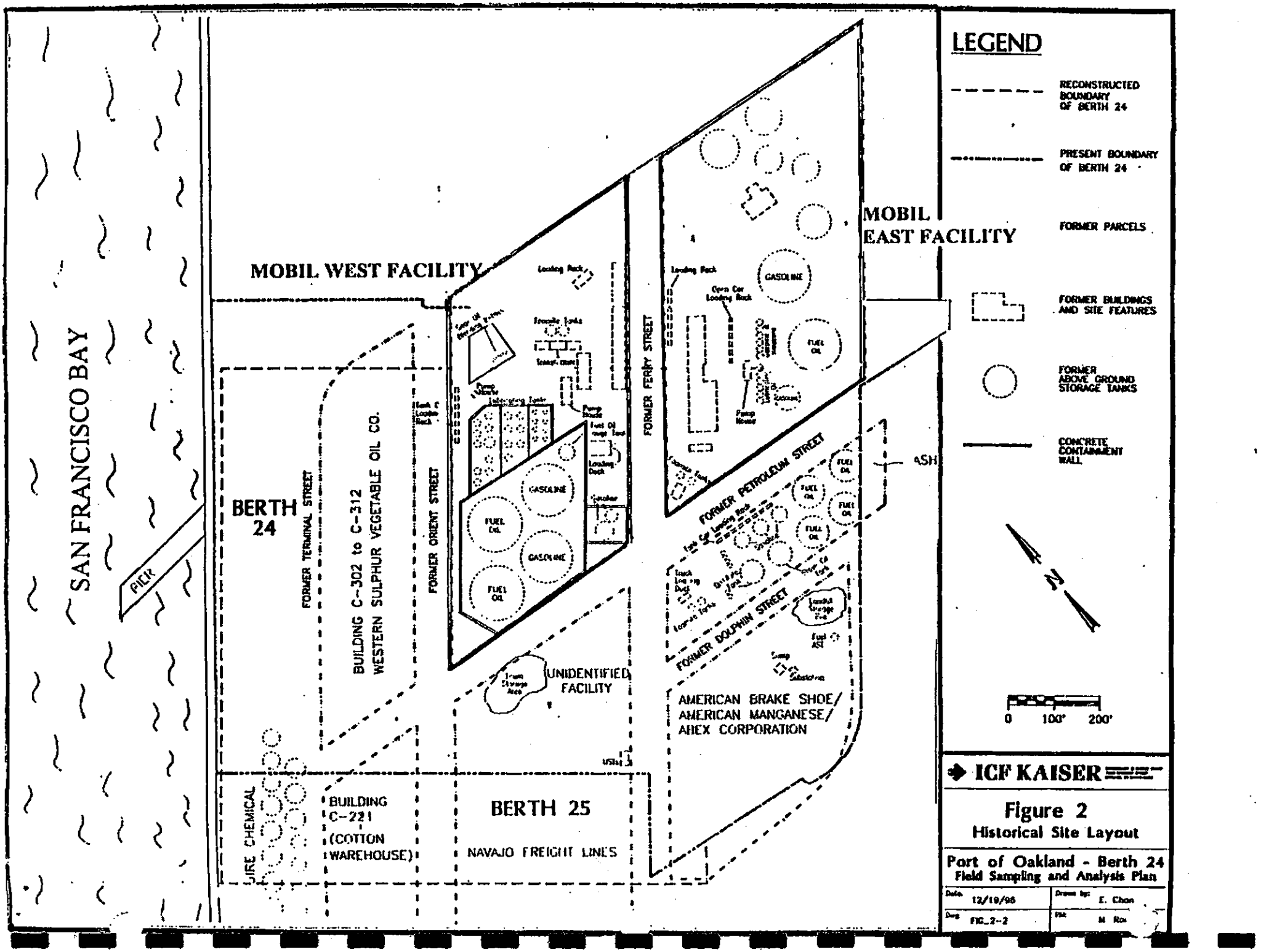
This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

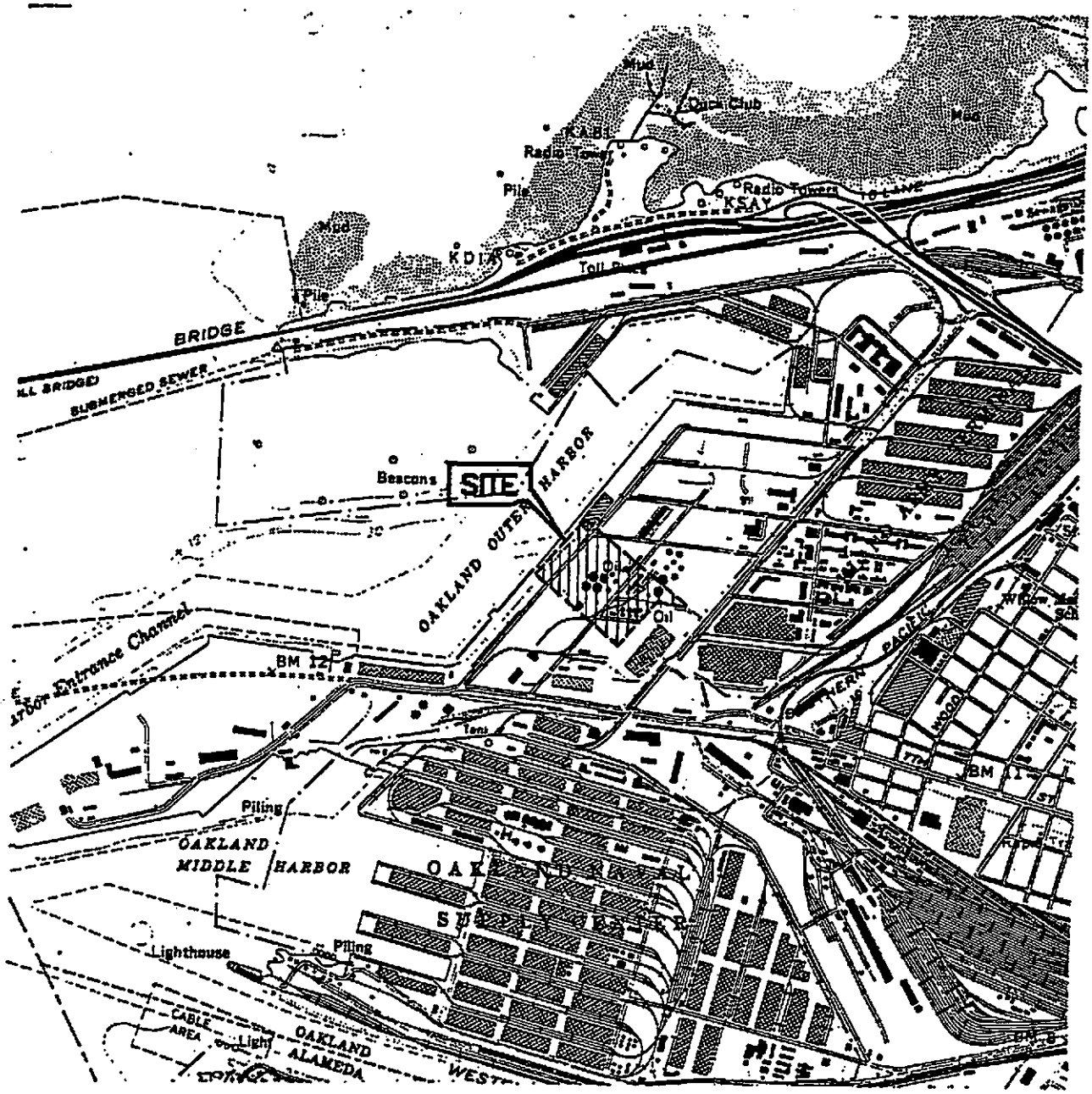
9. **Periodic SCR Review**: The Board will review this Order periodically and may revise it when necessary. The dischargers may request revisions and upon review the Executive Officer may recommend that the Board revise these requirements.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on July 21, 1999.

Loretta K. Barsamian
Executive Officer

FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY


SAN FRANCISCO BAY
PIER
MOBIL WEST FACILITY
MOBIL EAST FACILITY
BERTH 24
FORMER TERMINAL STREET
BUILDING C-302 to C-312
WESTERN SULPHUR VEGETABLE OIL CO.
FORMER ORIENT STREET
FORMER FERRY STREET
FORMER PETROLEUM STREET
FORMER DOLPHIN STREET
ASH
GASOLINE
FUEL OIL
Loading Rack
Open Car Loading Rack
Pump House
UNIDENTIFIED FACILITY
AMERICAN BRAKE SHOE/
AMERICAN MANGANESE/
AMEX CORPORATION
FIRE CHEMICAL
BUILDING C-221 (COTTON WAREHOUSE)
BERTH 25
NAVAJO FREIGHT LINES
LEGEND
RECONSTRUCTED BOUNDARY OF BERTH 24
PRESENT BOUNDARY OF BERTH 24
FORMER PARCELS
FORMER BUILDINGS AND SITE FEATURES
FORMER ABOVE GROUND STORAGE TANKS
CONCRETE CONTAINMENT WALL
N
0
100'
200'
ICF KAISER
Figure 2
Historical Site Layout
Port of Oakland - Berth 24
Field Sampling and Analysis Plan
Date 12/19/98
Drawn by: E. Chan
Dwg FIG_2-2
Plot M Rox



SOURCE:
USGS MAP, OAKLAND WEST QUADRANGLE, CALIFORNIA, 7.5 MINUTE SERIES, 1959, PHOTOREVISED 1980.

N

0 1000' 2000'

FIGURE 1

SITE VICINITY MAP

FORMER MOBIL OIL BULK TERMINAL
909 FERRY STREET
OAKLAND, CALIFORNIA

PROJECT NO. 10-098

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

APPENDIX B

MEMORANDUM, SUBJECT: BENZENE EMISSIONS ESTIMATE AND SETBACK DISTANCE CALCULATION FOR NON-PROJECT PERSONNEL FROM TRENCHING ACTIVITIES

MEMORANDUM

TO: Lauren R. Eisele, Port of Oakland

FROM: Michael P. McGuire , P.E.

DATE: 15 April 2003

PROJECT: Vapor Extraction and Air Sparging Pilot Testing/Interim Remediation at Berths 23 and 24
Oakland, California
T&R Project No. 3314.01

SUBJECT: Benzene Emissions Estimate and Setback Distance Calculation for Non-Project Personnel from Trenching Activities

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Introduction

This memorandum presents a conservative, screening-level evaluation of potential benzene vapor releases associated with trenching work during the installation of ExxonMobil's proposed remediation system to the breathing zone air of distant non-project personnel. The proposed remediation system will consist of a network of vertical soil vapor extraction (SVE) and air sparring wells, and possibly horizontal SVE wells, for removal of methane, benzene, and other volatile contaminants in soil, soil gas, and groundwater. The installation activities will include trenching and handling of excavated soil. This evaluation was performed to develop a preliminary conservative estimate of the necessary distance ("setback" or "safe buffer zone" distance) from the trenching activities to prevent potential exposure of non-project personnel to volatile chemical emissions in breathing zone air exceeding 10 percent of OSHA Permissible Exposure Limits (PELs). The PEL is a time-weighted average concentration over an assumed 8-hour work shift. Ten percent of the PEL was selected as a conservative action level to minimize the likelihood that actual exposure would exceed the PEL regulatory standard at the edge of the "safe buffer zone" established to protect non-project personnel.

Assumed Scope of Trenching Activities and Assumptions Utilized in Modeling

The evaluation was based on the following scope of trenching activities [assumptions are stated in brackets]:

- As much as 3,000 linear feet of trench will be open at any one time. [It is assumed that the 3,000 feet of trench will remain open for two weeks].

- Each trench will be 2 feet wide by 5 feet deep, consistent with the installation of horizontal SVE wells. [It is more likely the trenches will actually be used only for installation of utility lines to connect vertical wells and thus be shallow (3 feet deep), but the deeper trench (5 feet) is a more conservative assumption.]

- Interim extraction from vertical SVE wells with temporary, aboveground extraction lines will begin approximately two to four weeks prior to trenching to reduce volatile contaminant concentrations subject to possible release to the atmosphere from excavated soil and open trench sidewalls. [For this evaluation, two weeks of interim SVE operation was conservatively assumed.]

- Excavated soil may be temporarily stockpiled or loaded directly onto trucks for offsite disposal.

- SVE will continue during the trenching work. [The effectiveness of on-going SVE in preventing volatile emissions from the sidewalls of open trenches was ignored in this evaluation. Not including this feature of the proposed project adds substantially to the inherent conservatism of this evaluation.]

Evaluation Approach

Although other petroleum-related volatile compounds have been detected in soil and soil gas samples collected at the site, this evaluation used benzene as the sole indicator compound. The PEL of benzene (3.19 mg/m^3) is much lower than the PELs for toluene (188 mg/m3), ethyl benzene (435 mg/m2), or xylenes (435 mg/m^3), but the concentrations of these other chemicals at the site are generally within the same order of magnitude as benzene. Therefore, the use of benzene as an indicator in this evaluation is appropriate and conservative.

The evaluation considered benzene emissions from two types of possible sources:

- Short-term release of soil gas during soil excavation and handling derived from pore spaces and released to outside air, and

- Longer-term diffusion to air from soil exposed in open trenches and stockpiles.

The evaluation of emissions was based on following assumptions and modeling approach. This approach is expected to yield conservative estimates of actual emissions and setback exposures:

- Short-term release of soil gas from excavated soil during initial excavation or when loading into trucks was ignored based on the realistic expectation that the interim SVE operation would, at least in the short-term, reduce benzene concentrations in soil pore spaces to insignificant levels.

- The starting sorbed-phase benzene concentration in soil exposed in the open trench following interim SVE operation was conservatively defined as the highest concentration (53 mg/kg) previously detected in soil at the site. This assumption for conservatism also ignored any reduction in sorbed-phase benzene caused by the operation of the interim SVE.

- Each trench was conservatively assumed to remain completely open to the atmosphere full-time (rather than temporarily covered during inactive periods) over a 2-week period. Furthermore, excavation management practices required by the Bay Area Air Quality Management District's BAAQMD) Regulation 8, Rule 40 (Aeration of Contaminated Soil) to reduce possible emissions from the trench, e.g., wetting the trench sidewalls, were also conservatively ignored.

- Operation of the SVE during trenching operations, and related reductions in benzene emissions from open trench sidewalls, was conservatively ignored. This assumption alone adds considerably to the overall conservatism of this evaluation since maintaining the SVE operations during trenching activities is reasonably expected to result in a flow of atmospheric air into the trench countering benzene emissions out of the trench.

- Diffusion of sorbed-phase benzene into air from soil stockpiles was considered insignificant. This assumption was realistic since, consistent with BAAQMD Regulation 8, Rule 40, the stockpiles would be kept covered (and wetted when exposed for stockpiling operations) to minimize emissions to the atmosphere. Furthermore, the interim SVE operation would be reasonably expected to have substantially reduced sorbed-phase benzene in the excavated soil.

The net outcome of the assumptions and modeling approach was that emission sources needing to be estimated were limited to only the open trench. Once the emissions from the trench were conservatively estimated (explained in more detail below), breathing zone concentrations downwind from the trench were conservatively estimated using a box model that treated the open trench as an emission source located at the upwind end of a box. The target air concentration at the downwind edge of the box was conservatively set at 10 percent of the benzene PEL and the necessary length of the box, i.e., the setback or "safe buffer zone" distance, was calculated. The calculations are summarized on the attached Table 1 and explained in more detail below.

The first step was to calculate the mass loading of sorbed-phase benzene in a unit volume of in-place soil as follows:

$$C_{ml} = C_{soil} \times P_b \times 1x10^{-6}\ kg/mg$$

where:

C_{ml}	=	Mass Loading of contaminant in soil ($8.9x10^{-5}$, grams/cm^3 as the calculated value)
C_{soil}	=	Starting soil concentration (53 mg/kg, equal to the highest detected soil concentration)
P_b	=	Soil Bulk Density (1.68 grams/cm^3, site-specific value)
$1x10^{-6}$	=	Unit conversion factor (mg/kg)

The saturation of benzene in soil gas (equilibrium coefficient) partitioning from the sorbed phase was then calculated as follows:

$$K_{eq} = (VP \times MW \times P_a)/(R \times T \times C_{ml})$$

where:

K_{eq}	=	Relative saturation (equilibrium coefficient) of soil gas (7.21, unitless, was the calculated value)
VP	=	Vapor pressure of benzene (94.8 mm Hg)
MW	=	Molecular weight of benzene (78.11 grams/mole)
R	=	Molar gas constant (62,361 mm-Hg-cm^3/mole K, standard value)
T	=	Temperature (293 K, standard)
C_{ml}	=	Mass Loading of contaminant in soil ($8.9x10^{-5}$, grams/cm^3, a calculated value)
P_a	=	Air-filled porosity (0.16, unitless, calculated value [Total Soil Porosity])

where:

$$P_a = P_t - (MC \times S_d)$$

where

P_a =Air-filled porosity (0.16, unitless, was the calculated value)

MC =Soil moisture content (0.087, site-specific value)

S_d =Soil dry density (2.7 grams/cm^3, a calculated value)

P_t =Total soil porosity (0.32, unitless, a calculated value)

where:

$P_a = 1 - (S_d/S_g)$

$P_t = (1-S_d/S_g)$

$S_d = P_b/(1-MC)$

where:

S_g = Soil specific gravity (2.7 grams/cm^3, a site-specific value)

The effective diffusivity of benzene in air was calculated as follows:

$$D_{eff} = (D_a \times P_a^{3.33})/(P_t^2)$$

where:

D_{eff} = Effective diffusivity of benzene in air (1.88×10^{-3} cm^2/sec, was the calculated value)

D_a = Benzene diffusivity in air (8.8×10^{-2} cm^2/sec, a chemical-specific value)

P_a = Air-filled porosity (0.16, unitless, a calculated value)

P_t = Total soil porosity (0.32, unitless, a calculated value)

The emission rate from the sidewalls of 3,000 feet of open trench due to diffusion was then calculated as follows:

$$ER_{diff} = (C_{ml} \times 1000 \times SA)/[(P_a/[K_{eq} \times K_g]) + (\pi \times t_{sv}/[D_{eff} \times K_{eq}])^{0.5}]$$

where:

ER_{diff}	=	Emission rate from diffusion (5.57×10^{-2} grams/second, was the calculated value)
C_{ml}	=	Mass Loading of contaminant in soil (8.9×10^{-5} grams/cm^3, a calculated value)
1000	=	Unit conversion factor (cm^2/m^2)
SA	=	Excavation surface area (3,312 m^3, based upon an excavation surface area of 2 x 5 feet (walls), 2 feet width, and 3,000 feet length)
P_a	=	Air-filled porosity (0.16, unitless, a calculated value)
K_{eq}	=	Relative saturation of soil gas (equilibrium coefficient) (7.21, unitless, a calculated value)
K_g	=	Gas-phase mass transfer coefficient (0.15 cm/sec, standard value)
π	=	3.14, unitless
t_{sv}	=	Total excavation time (1.21×10^6 seconds, based upon 2 weeks time, 7 days per week, 24 hours per day, 60 minutes per hour, and 60 seconds per minute)
D_{eff}	=	Effective diffusivity of benzene in air (1.88×10^{-3} cm^2/sec, chemical-specific value)

This emission rate was used to calculate a setback distance based upon the use of a box model and a target air concentration equal to 10% of the OSHA PEL by:

$$W = ER_{diff}/(W_{sp} \times H \times T_a)$$

where:

W	=	Width of box, used to define set-back distance (55 feet or 18.1 meters, was the calculated value)
ER_{diff}	=	Emission rate from diffusion (5.57×10^{-2} grams/second, a calculated value)

W_{sp} = Wind speed (3.22 meter/second, a site-specific value)

H = Height of box (3 meters, assumed value based on a target box height to width ratio of roughly 1:5)

T_a = Target air concentration (0.319 mg/m^3, equal to 10 percent of the OSHA benzene PEL of 1 ppmv or 3.19 mg/m^3)

Conclusions

For non-project personnel, a target breathing zone action level of 10 percent of the PEL, plus an appropriate conservative setback or "safe buffer zone" distance of 55 feet from trenching activities was estimated (see attached Table 1 for summary calculations). The evaluation was based on a number of conservative assumptions and a conservative evaluation method. The setback distance should be subject to confirmation and periodic evaluation in the field based on air quality monitoring conducted during the proposed trenching and soil management activities to maintain an effective "safe buffer zone" for non-project personnel.

33140122.OAK

TABLE 1
SET-BACK ESTIMATE - TRENCH DEPTH OF 5 FEET
PORT OF OAKLAND
Oakland, California

PARAMETER	ACRONYM	UNITS	VALUE	NOTES
Soil Concentration	Csoil	mg/kg	53	Site-Specific Soil Value (used highest detected soil concentration)
Soil Bulk Density	Pb	grams/cm3	1.68	Site-Specific
Volume of Soil Moved	Vs	m3	840	3000 feet * 2 feet * 5 feet
Mass Loading of Contaminant in Soil	Cml	grams/cm3	8.90E-05	=Csoil*Pb*1E-6kg/mg
Total Excavation time	tsv	sec	1.21E+06	2 weeks - 7 days/week 24 hours/day
Excavation Surface Area	SA	m2	3312	(5+2+5 feet) x 3000 feet
Total Soil Porosity	Pt	unitless	0.32	= 1-(Sd/SG)
Soil Dry Density	Sd	grams/cm3	1.84	= Pb/(1-MC)
Soil Specific Gravity	SG	grams/cm3	2.7	Site-Specific
Soil Moisture Content	MC	grams/cm3	0.087	Site-Specific
Relative Saturation of Soil Gas (Equilibrium Coefficient)	Keq	unitless	7.21E-01	=(VP*MW*Pa)/(R*T*Cml) - if greater than 1, Keq=1
Gas-Phase Mass Transfer Coefficient	kg	cm/sec	0.15	Default Standard
Diffusivity in Air	Da	cm2/sec	8.80E-02	Chemical-specific
Effective Diffusivity in Air	Deff	cm2/sec	1.88E-03	=(Da*Pa^3.33)/(Pt^2)
Temperature	t	K	293	Default Standard
Molar Gas Constant	R	mm-Hg-cm3/mole K	62361	Default Standard
Soil/Air Exchange	ExC	unitless	0.33	Default for dry sandy-silty soils
Excavation Rate	Q	m3/sec	6.94E-04	Vs/2 weeks
Vapor Pressure	VP	mm Hg	94.8	Chemical-specific
Molecular Weight	MW	grams/mole	78.11	Chemical-specific
Air-Filled Porosity	Pa	unitless	0.16	= Pt- (MC*Sd)
Emission Rate from Diffusion	ERdiff	grams/sec	5.57E-02	=(Cml*10000*SA)/[(Pa/Keq*Kg)+(pi*tsv/Deff*Leq)^0.5]
Emission Rate from Pore Space (mass balanced)	ERpsx	grams/sec	0.00E+00	Assume no emission from excavating and stockpiling soils
Average Emission Rate from Excavation	ERvoc	grams/sec	5.57E-02	=ERpsx +ERdiff
Target Air Concentration	Ta	mg/m3	0.319	10% of the PEL (1 ppm = 3.19 mg/m3)
Air Concentration	Ca	mg/m3	3.19E-01	=(ERvoc/(Wsp*W*H))*1000mg/g
Average Wind Speed	Wsp	m/sec	3.22	ICF - Oakland EBMUD average value
Height	H	m	3	Assumed Value
Width of Area Parallel to Wind	W	m	1.81E+01	
Width of Area Parallel to Wind	W	feet	55	Setback distance from trench

Includes only diffusion from excavation surface - no exposed stockpile surface and no emission from excavated soil