Appendix A
List of Initial Study/Negative Declaration Recipients

APPENDIX A

List of Initial Study/Negative Declaration Recipients

Chris Orsolini, Schnitzer Steel (corsolini@schn.com)

Ray Kidd, West Oakland Neighbors (raykidd1@peoplepc.com)

Mark Major, Union Pacific (mmajor@up.com)

Vivian Kahn, Phoenix Lofts (vkahn@kmort.com)

Steve Lowe, West Oakland Commerce Association (steve@urbanspace.biz)

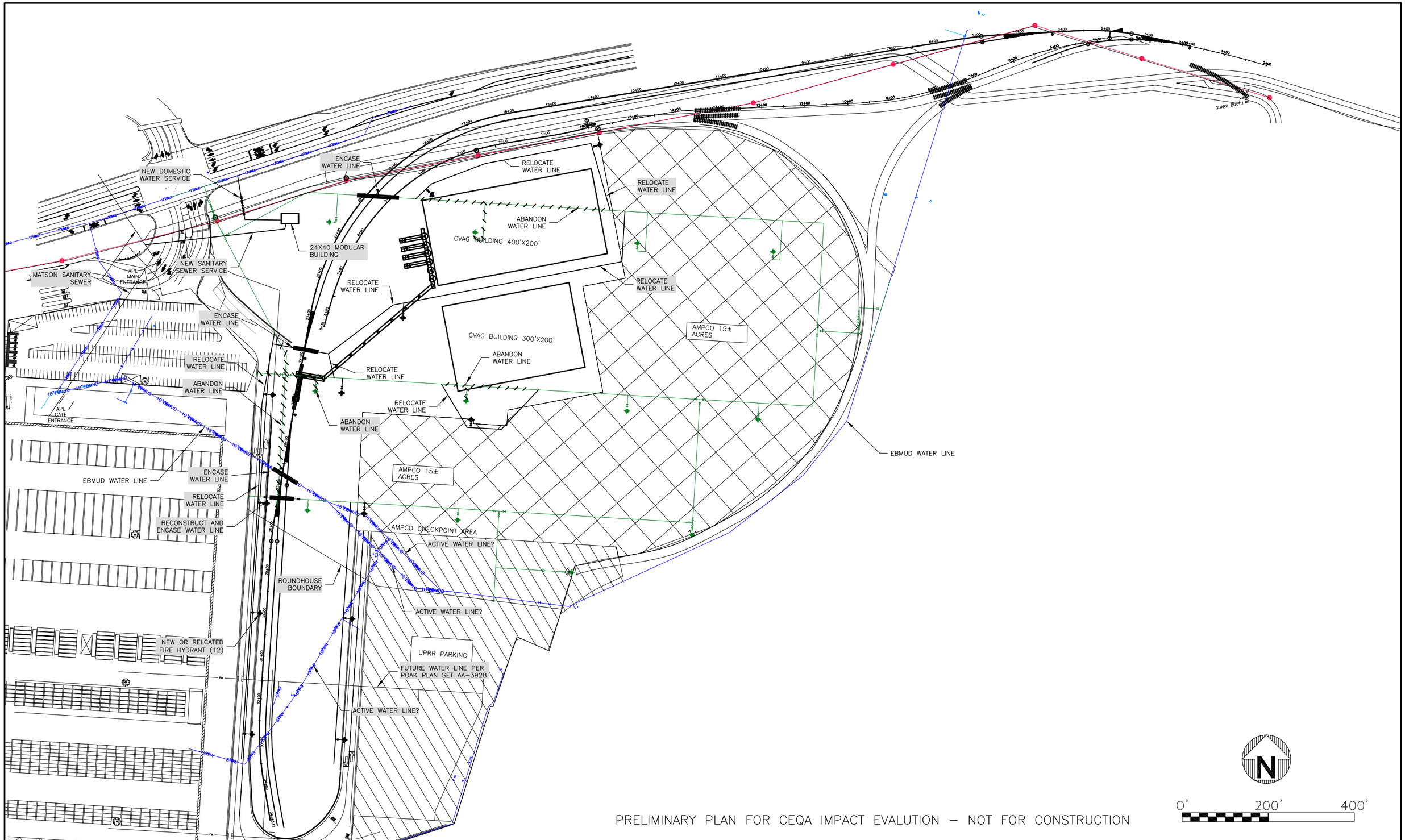
Louis Vela, ABM/Ampco (louis.vela@abm.com)

Jim Rice, SSA Terminals (jim.rice@ssamarine.com)

Brian Beveridge, West Oakland Environmental Indicators Project (WOEIP) (brian.woeip@gmail.com)

Margaret Gordon, WOEIP (margaret.woeip@gmail.com)

Appendix B
Project Site Utilities



PRELIMINARY PLAN FOR CEQA IMPACT EVALUTION – NOT FOR CONSTRUCTION

0 1" 2"
ORIGINAL SCALE
CAUTION: THIS PLAN MAY BE REDUCED

NO.	REVISIONS	DATE	REV'D	APP'D

DRAWN
DESIGNED REG. ENGINEER NO.
CHECKED REG. ENGINEER NO.

CENTRAL VALLEY AG GRINDING
5707 Langworth Road
Oakdale, California 95361

PARSONS
155 Grand Avenue
Suite 350
Oakland, CA 94612

INNER HARBOR
CENTRAL VALLEY AG GRINDING UNLOADING FACILITY AT ROUNDHOUSE SITE
EXISTING UTILITY SYSTEMS
FIRE SUPPRESSION WATER LINE RELOCATION

DATE: 3-9-15
SCALE: AS SHOWN
SHEET: 1 OF 1 SHEETS

MAIN SUBSTATION
SS-E-2 FROM AA-3928

PG&E LINE (E)

PG&E VAULT FROM AA-3928

NEW PG&E VAULT

NEW UNIT SUBSTATION
CVAG-1

NEW ELEC. DUCTBANK

ABANDON ELEC.
DUCTBANK

CVAG BUILDING 400'X200'

ABANDON
ELEC.
DUCTBANK

NEW ELECTRICAL
DUCTBANK

CVAG BUILDING 300'X200'

NEW ELECTRICAL
DUCTBANK

NEW ELEC.
DUCTBANK

APL
MAIN
ENTRANCE

ABANDON ELEC.
DUCTBANK

APL
GATE
ENTRANCE

NEW OR
RELOCATED
HIGMAST
LIGHT (5)

UNIT SUBSTATION
RH-1 (N)

AMPCO 15±
ACRES

NEW
ELECTRICAL
DUCTBANK

ABANDON ELEC.
DUCTBANK

AMPCO CHECKPOINT AREA

NEW POWER
CENTER (4)

ROUNDHOIUSE
BOUNDARY

UPRR PARKING

AMPCO 15±
ACRES

GUARD BOOTH

N

0' 200' 400'

PRELIMINARY PLAN FOR CEQA IMPACT EVALUTION – NOT FOR CONSTRUCTION

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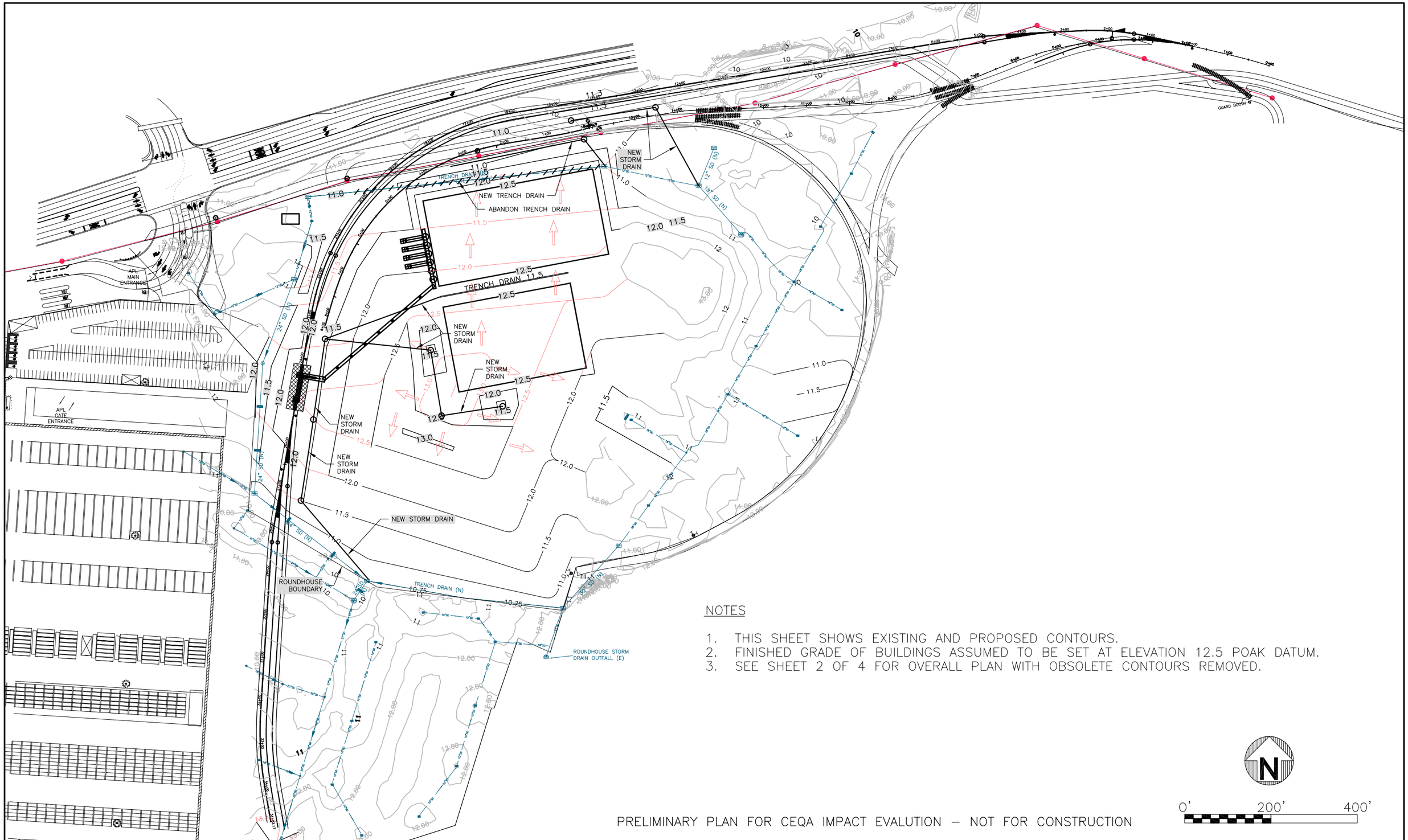
155 Grand Avenue
Suite 350
Oakland, CA 94612

INNER HARBOR

CENTRAL VALLEY AG GRINDING
UNLOADING FACILITY AT ROUNDHOUSE SITE

EXISTING UTILITY SYSTEMS
ELECTRICAL CONSTRUCTION AND RELOCATION

DATE: 3-9-15
SCALE: AS SHOWN
SHEET: 1 OF 1 SHEETS



NOTES

1. THIS SHEET SHOWS EXISTING AND PROPOSED CONTOURS.
2. FINISHED GRADE OF BUILDINGS ASSUMED TO BE SET AT ELEVATION 12.5 POAK DATUM.
3. SEE SHEET 2 OF 4 FOR OVERALL PLAN WITH OBSOLETE CONTOURS REMOVED.

N

0' 200' 400'

PRELIMINARY PLAN FOR CEQA IMPACT EVALUTION – NOT FOR CONSTRUCTION

0 1" 2"
ORIGINAL SCALE
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PARSONS
155 Grand Avenue
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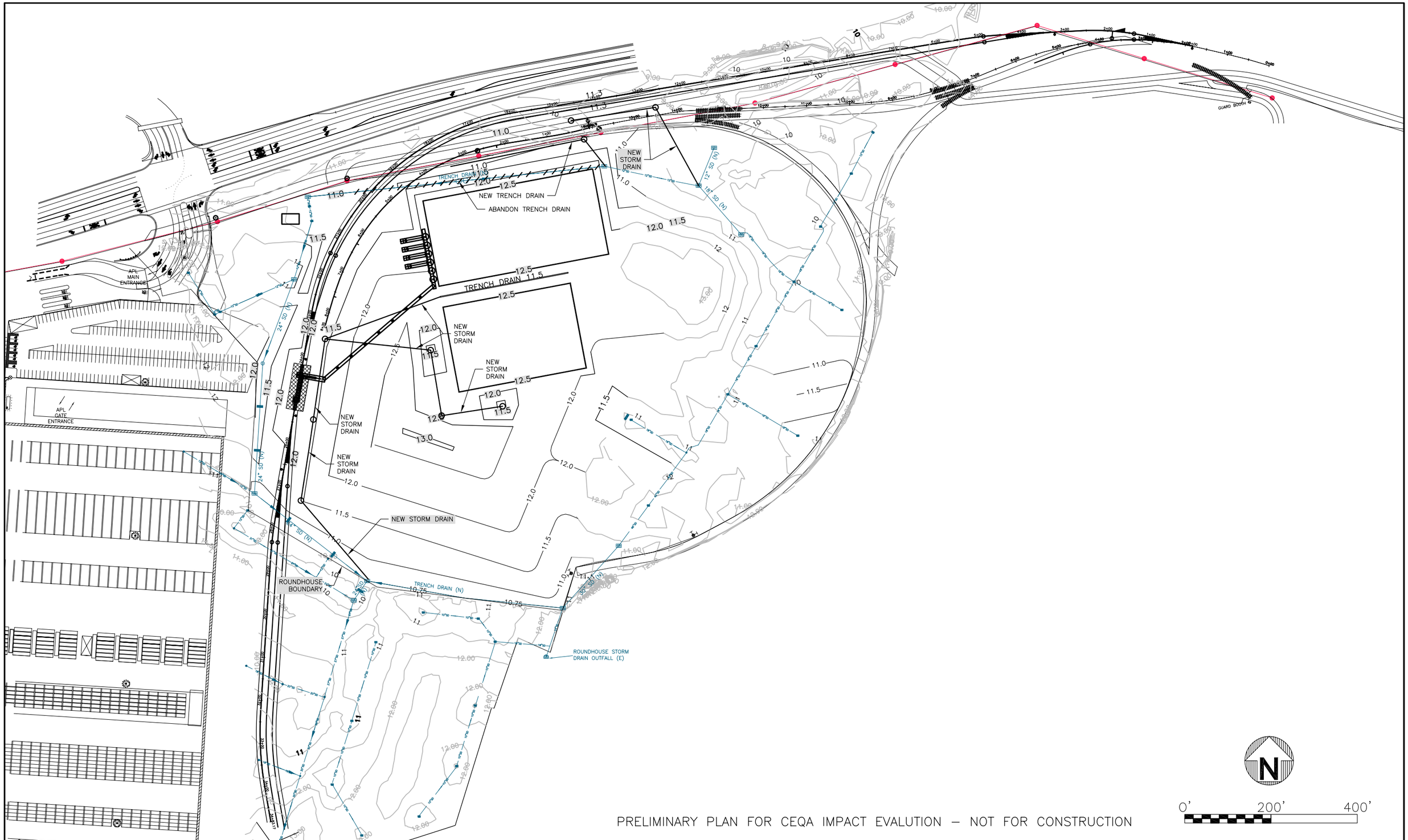
Oakland, CA 94612

INNER HARBOR
CENTRAL VALLEY AG GRINDING
UNLOADING FACILITY AT ROUNDHOUSE SITE
EXISTING STORM DRAIN SYSTEMS
STORM DRAIN RELOCATION AND REGRADING – 1

DATE: 3–9–15
SCALE: AS SHOWN
SHEET: 1 OF 4 SHEETS



PRELIMINARY PLAN FOR CEQA IMPACT EVALUTION – NOT FOR CONSTRUCTION

0 1" 2"
ORIGINAL SCALE
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Oakdale, California 95361

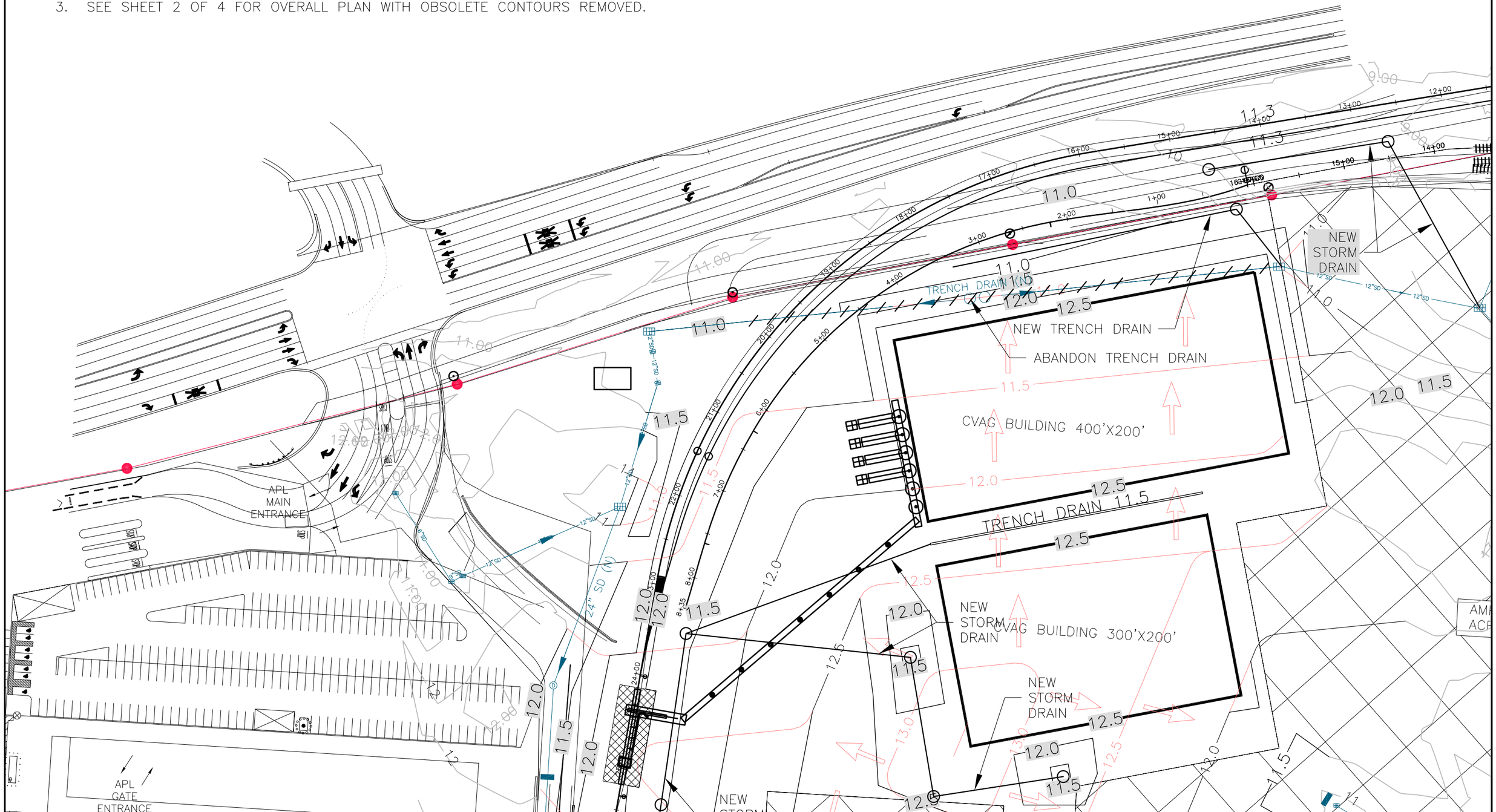
PARSONS
155 Grand Avenue
Suite 350
Oakland, CA 94612

INNER HARBOR
CENTRAL VALLEY AG GRINDING UNLOADING FACILITY AT ROUNDHOUSE SITE
EXISTING STORM DRAIN SYSTEMS
STORM DRAIN RELOCATION AND REGRADING – 2

DATE: 3-9-15
SCALE: AS SHOWN
SHEET: 2 OF 4 SHEETS

NOTES

1. THIS SHEET SHOWS EXISTING AND PROPOSED CONTOURS.
2. FINISHED GRADE OF BUILDINGS ASSUMED TO BE SET AT ELEVATION 12.5 POAK DATUM.
3. SEE SHEET 2 OF 4 FOR OVERALL PLAN WITH OBSOLETE CONTOURS REMOVED.



ORIGINAL SCALE
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155 Grand Avenue
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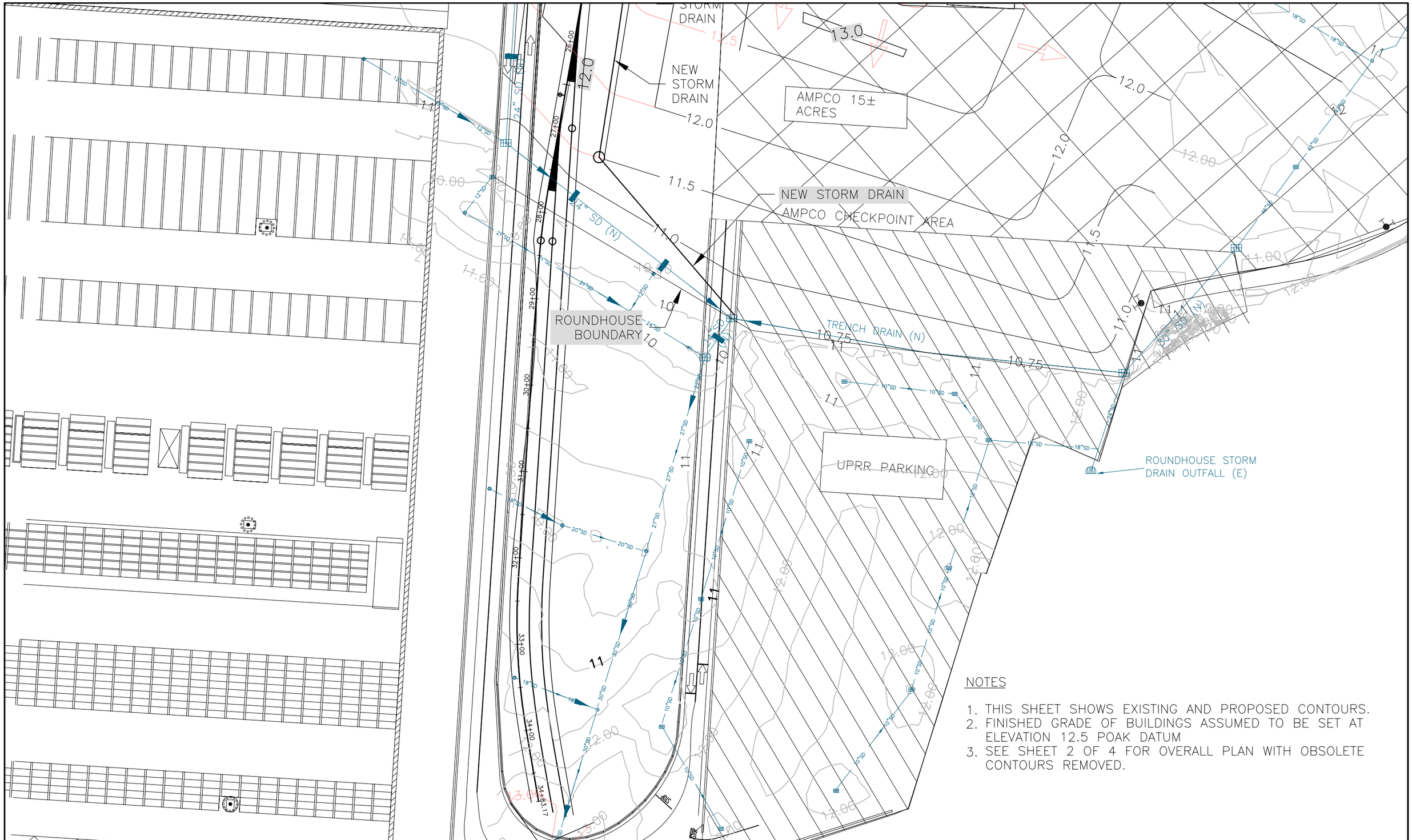
Oakland, CA 94612

INNER HARBOR
CENTRAL VALLEY AG GRINDING
UNLOADING FACILITY AT ROUNDHOUSE SITE
EXISTING UTILITY SYSTEMS
STORM DRAIN RELOCATION AND REGRADING – 3

DATE: 3–9–15
SCALE: AS SHOWN
SHEET: 3 OF 4 SHEETS



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1. THIS SHEET SHOWS EXISTING AND PROPOSED CONTOURS.
2. FINISHED GRADE OF BUILDINGS ASSUMED TO BE SET AT ELEVATION 12.5 POAK DATUM
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INNER HARBOR
CENTRAL VALLEY AG GRINDING
UNLOADING FACILITY AT ROUNDHOUSE SITE
EXISTING UTILITY SYSTEMS
STORM DRAIN RELOCATION AND REGRADING – 4

DATE: 3–9–15
SCALE: AS SHOWN
SHEET: 4 OF 4 SHEETS

Appendix C
Revised Site Management Plan

REVISED SITE MANAGEMENT PLAN
FORMER UNION PACIFIC ROUNDHOUSE AREA
1407 MIDDLE HARBOR DRIVE
OAKLAND, CALIFORNIA

Submitted to:

Port of Oakland, California

Submitted by:

AMEC Geomatrix, Inc., Oakland, California

January 9, 2009

Project 8207.016

TABLE OF CONTENTS

FIGURES

APPENDICES

REVISED SITE MANAGEMENT PLAN
Former UP Roundhouse Area
1407 Middle Harbor Drive
Oakland, California

1.0 INTRODUCTION

AMEC Geomatrix, Inc. (AMEC)[1], has prepared this Revised Site Management Plan (SMP), on behalf of the Port of Oakland (Port), for the former UP Roundhouse Area (the site; Figure 1). This document updates and supersedes the November 30, 2005 SMP based on the completion of monitoring activities conducted by the Port between 2006 and 2008.[2]

The site was refurbished in 2005 to be incorporated into the Port's marine terminal operations. Based on investigation activities conducted at the site, separate-phase petroleum hydrocarbon product (petroleum product) is present in the subsurface, and soil at the site contains elevated concentrations of lead. This SMP has been prepared based on existing known conditions and the intended use of the site as a container terminal. The SMP is incorporated by reference into the environmental deed restriction for the site.

The objectives of the SMP are to:

- summarize existing conditions at the site;
- present protocols and measures to protect construction workers at the site from potential exposures to product that is present in the subsurface and lead that is present in soil; and,
- provide a plan for management of soil and groundwater disturbed during operations, maintenance, or development activities in a manner that protects human health and the environment; and

Terms used in this SMP include the following:

- Tenant – current leaseholder;
- Contractor – party conducting on-site activities as engaged by the Port or other parties; and

1. AMEC Geomatrix, Inc, formerly Geomatrix Consultants, Inc. For purposes of this report, investigations and remediation completed prior to June 20 will be attributed to Geomatrix.
2. Further, this SMP also supersedes the March 15, 1999 *Remediation and Risk Management Plan* and June 14, 1999 *Supplement to Remediation and Risk Management Plan* (Kleinfelder, 1999a and 1999b) prepared for the site by Kleinfelder, Inc. (Kleinfelder).

- Consultant – engineer/consultant engaged by the Port or Tenant to assist in implementing this SMP.

This document describes site background and environmental site conditions, soil and construction dewatering management activities, maintenance of the SMP, representations and limitations of the SMP, and lists the references used in preparing the SMP, including those that provide information about known environmental conditions at the site.

2.0 BACKGROUND

This section provides information regarding site setting, historical uses, regulatory status, and environmental investigation and remediation activities that have been conducted at the site.

2.1 SITE SETTING, PAST USES, AND CONDITIONS

The approximately 44-acre site is bounded by Port property and the Oakland Inner Harbor to the south, Port marine terminal operations to the west (currently occupied by Eagle Marine Services, Ltd.), and the Union Pacific Railroad Company (UPRR) yard to the north. A scrap metal facility operated by Schnitzer Steel, Inc., is located directly east of the site.

The site previously was owned by UPRR and was purchased by the Port in 1996. Historically, the site was used as a railroad maintenance facility and contained a roundhouse and associated turntable, fueling facilities, and associated structures (Figure 2). Railroad operations discontinued at the site in the 1960s, and the site facilities were demolished by the 1970s. Since that time, the paved site was used as a staging area for various tenants since the Port purchased the property. Remedial measures were completed at the site in October 2005 (as described in Section 2.4). The site was incorporated for use as part of the Port's marine terminal operations in mid-2006.

Based on environmental work conducted at the site, the site is underlain by artificial fill (consisting primarily of sand, gravel, and/or asphalt) extending to depths of 5 to 8 feet below ground surface (bgs). The fill typically is underlain by dark gray clay and water-bearing silts and fine- to medium-grained sand to depths of 8 to 10 feet bgs, which may be Young Bay Mud (YBM) or similar dredged material from the bay. These units reportedly are underlain by YBM (clay and silty clay rich in organic material) at a depth of 10 to 14 feet bgs. The YBM is underlain by the Merritt Sand that can reach a maximum thickness of 65 feet. Shallow groundwater generally is encountered at a depth of less than 10 feet bgs throughout the site

and surrounding area.[3] The presumed hydraulic gradient is generally toward the south and the Oakland Inner Harbor.

2.2 REGULATORY OVERSIGHT

Regulatory agency oversight was initiated at the site in 1991 upon the removal of six underground storage tanks (USTs; as described in Section 2.3). Broadly, this oversight has been provided as follows:

Agency	Description	Date
Alameda County Health Care Services Agency (ACHCSA)	Removal of USTs	1991-1997
California Regional Water Quality Control Board, San Francisco Bay Region (Water Board)	Site characterization and monitoring	1996-present
U.S. Environmental Protection Agency (USEPA)	Remediation of petroleum discharge under a Notice of Federal Interest	2004-2005

2.3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Various investigations have been conducted at the site since 1991. These investigations have included collection of soil, grab groundwater, and soil vapor samples from throughout the site. The findings of these investigations are summarized below based on information provided in the October 1998 and March 1999 reports by Kleinfelder (Kleinfelder, 1998 and 1999a), the UST case closure summary from the ACHCSA (ACHCSA, 1997), and the August 2005 investigation report by Geomatrix (Geomatrix, 2005a). Additionally, information from the product monitoring program, conducted between 2006 and 2008, also is presented herein. Tables and figures that document analytical testing results are presented in Appendix A. Analytical data summaries and figures for various phases of investigation included in Appendix A are from the October 1999 Kleinfelder report (Kleinfelder, 1999a), Geomatrix's August 2005 investigation report (Geomatrix, 2005a), and the 2005 groundwater monitoring report (Geomatrix, 2005b). No data tables or figures are available from the UST removal and monitoring efforts conducted by UPRR from 1991 to 1997.

2.3.1 Petroleum Product in the Subsurface

Soil analytical results and field observations indicate that separate-phase petroleum product is present in the subsurface and is distributed primarily near historical structures such as oil

3. Previous groundwater monitoring at the site has indicated that depth to groundwater generally ranges from approximately 2 to 10 feet bgs across the site.

tanks and pipelines, within the area shown on Figure 2. Within this area, the petroleum product is laterally discontinuous, and product migration, where observed, appears to have been through preferential pathways, such as the storm drain system prior to improvements (Section 2.4).

Analytical testing indicates that the petroleum product is characterized in the diesel and motor oil hydrocarbon ranges.

Outside of the defined product area, the presence of petroleum hydrocarbons in soil, where detected, has been reported as concentrations less than 100 milligrams per kilogram (mg/kg). Consistent with varying quality of fill material, the presence of petroleum hydrocarbons in soil outside of the areas where product has been identified is random across the site. Remedial measures were implemented at the site under the direction of the USEPA to remove preferential pathways within the product area. These remedial measures are discussed in Section 2.4.

2.3.2 Other Constituents in Soil

Soil samples collected from the site have been analyzed for metals, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), including polynuclear aromatic hydrocarbons (PAHs). Based on analytical results, the following analytes have been detected in site soil:

- Metals: Elevated concentrations of antimony and lead were reported at select locations during site investigations (Kleinfelder, 1999a). However, results of sampling conducted on excavated soil during site remediation activities suggest that elevated lead is distributed in fill material across the site.
- VOCs: No benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in soil samples.
- SVOCs, including PAHs: PAHs were detected in some soil samples; of these, fluorene and phenanthrene appeared most frequently detected. No other SVOCs were detected.

2.3.3 Volatile Constituents in Soil Vapor

No BTEX or chlorinated hydrocarbons were detected in soil gas samples. Low concentrations of undifferentiated petroleum hydrocarbons and elevated concentrations of methane (up to 27 percent by volume) were detected at some locations within the product area.

2.3.4 Dissolved Constituents in Groundwater

Analytical results indicate that no VOCs, including BTEX, have been detected in groundwater beneath the site. Metals, where detected, are present at concentrations below Maximum Contaminant Levels (MCLs) in filtered groundwater samples (Geomatrix, 2005a). Additionally, with the exception of some PAHs, no SVOCs have been detected in groundwater. PAHs and extractable petroleum hydrocarbons primarily are detected in samples within the area where product is present in soil; however, petroleum hydrocarbons have been detected at low concentrations in some groundwater samples collected outside of the product area (AMEC, 2008). No significant dissolved phase plume associated with product exists at the site.

2.4 REMEDIAL MEASURES

Based on the results of the investigative activities conducted by AMEC in response to an oily discharge from the site through the storm drain system in July 2004 and the resulting Notice of Federal Interest (NFI) issued by the USEPA, remedial measures were implemented at the site to prevent migration of petroleum product through subsurface utility lines and discharge to the Oakland Inner Harbor. Remedial measures that were implemented at the site included the following:

- The storm drain line extending from catch basin DI-21 to catch basin DI-14A, and selected laterals to this trunk line, was decommissioned in October and November 2004. Impermeable barriers were placed in the backfill of the decommissioned storm drain line to remove preferential pathways through the storm drain backfill. A new, water-tight storm drain line was installed, as shown on Figure 3.

- In February 2005, the storm drain network in the vicinity of catch basin DI-7 was decommissioned using subsurface barriers and by demolishing catch basins.

- The entire storm drain network at the site was redesigned and replaced. This work consisted of shallow trench drains that are not in contact with product (where possible), water-tight storm drain pipelines and sealed catch basins in areas of known or suspected product, backfilling storm drain pipe trenches with low-permeability controlled density fill in areas of known or suspected product, and installation of subsurface barriers along storm drains and other subsurface utilities (e.g., fire water and electrical conduit). These remedial measures were completed at the site in October 2005.

The locations of the remedial measures are shown on Figure 3.

2.5 PRODUCT MONITORING PROGRAM

As approved by the Water Board in its September 23, 2005 letter to the Port, a petroleum product monitoring program was implemented at the site. To monitor whether product is moving in the direction of the Oakland Inner Harbor, four wells (PMW-6, PMW-7, PMW-8, and

PMW-9) were installed in January 2006 between the maximum known extent of the petroleum product in the subsurface and the Oakland Inner Harbor.

Product monitoring activities were conducted quarterly from February 2006 through November 2007. Product monitoring consisted of observing the surface of the groundwater in the four wells for the possible presence of product; field methods consisted of visual observation by shining a flashlight into the well and lowering a clean disposable bailer into the well to observe the possible presence of sheen on the water surface. In addition to visual observation, field personnel used an oil/water interface probe to monitor for product in wells PMW-6 through PMW-9. During the 2 years of quarterly monitoring, neither sheen nor free product were observed and the oil/water interface probe did not register the presence of product in any of the monitoring wells.

The absence of product in the monitoring wells re-affirmed that the primary mechanism for product migration at the site was by way of preferential pathways and that engineering controls have been successful in preventing migration. Based on these results, the Water Board approved the proposed well destruction on October 21, 2008 in a meeting with the Port and AMEC, followed by e-mail correspondence to the Port on October 24, 2008. The product monitoring wells subsequently were destroyed on November 17, 2008.

3.0 SOIL MANAGEMENT ACTIVITIES

This section outlines soil management measures that should be implemented during site construction activities. This SMP is written to specifically address issues that may arise during construction and maintenance activities at the site.

3.1 SITE MANAGEMENT MEASURES

The purpose of the site management measures is to provide guidelines to be followed during potential future earthwork activities at the site. These site management measures are to be used by parties involved in construction and maintenance activities at the site, including the Port and Tenant, their designated Consultants and Contractors, and utility contractors accessing subsurface utilities (e.g., electrical, sewer). Activities may include, but are not limited to, excavation, demolition, new construction, rehabilitation/new construction/site development [in some combination], construction grading, landscaping, geotechnical studies, and utility repair. Parties engaged in soil handling during future earthwork activities shall be provided a copy of this SMP.

3.1.1 Regulatory Requirements

Earthwork activities may be subject to federal, state, and local laws and regulations, including those promulgated by USEPA, California Environmental Protection Agency (Cal-EPA), the Bay Area Air Quality Management District (BAAQMD), the City of Oakland, and the California Occupational Safety and Health Administration (Cal-OSHA). These laws address issues such as health and safety, dust generation, hazardous waste, storm water, and community right-to-know. While some of these issues are discussed in this SMP, it is the responsibility of the Contractor to ensure that all earthwork activities comply with current applicable laws and regulations.

3.1.2 Site-Specific Health and Safety Plan

A site-specific Health and Safety Plan shall be prepared prior to initiating subsurface activities at the site. Each Contractor shall prepare its own separate site Health and Safety Plan in compliance with federal and state law to address worker safety measures, including personal protective equipment, monitoring, and appropriate notifications, during construction activities.

3.1.3 Access Control

Vehicle and personnel access to areas where soil will be disturbed shall be controlled. Caution tape, cones, fencing, steel plates, or other measures shall be used to clearly designate the active work area and to prevent access by the public. Stockpiles of excavated soil shall be covered as described in Section 3.1.4 and secured by temporary fences or other means to prevent unauthorized access.

3.1.4 Soil Handling Guidelines

Based on soil sampling and analytical testing that has been conducted at the site, elevated concentrations of lead are present in soil across the site, and petroleum product is present in the subsurface in the central portion of the site (Figure 2). Therefore, excavated soil should be tested prior to disposal and the following guidelines should be undertaken:

1. **Handling of soil during excavation.** All excavated soil shall be stockpiled on site. Soil that will not be used on site shall be sampled and chemically tested prior to off haul. No soil shall be exported for off-site reuse. Soil shall be visually observed for the presence of petroleum product, including evidence of discoloration, staining, and/or noticeable chemical odors. Soil observed to contain petroleum product shall be segregated and stockpiled or contained separately from other soil. Access to stockpile areas shall be controlled to prevent unauthorized persons accessing exposed soil (Section 3.1.3).

2. **Securing soil piles.** At the end of each workday, stockpiled soil shall be secured with a cover consisting of a minimum of 10-mil plastic sheeting to prevent erosion

or run-off. Stockpiles shall be secured by temporary fences or other means to prevent unauthorized access. Covered drums or secured roll-off bins would provide substantially similar control.

3. **Disposal of soil.** Excavated soil that will not be reused on site shall be sampled and analyzed for disposal characterization by the Port. Soil shall be profiled based on requirements of the disposal facility selected by the Port and in accordance with all applicable state and federal laws. Soil shall, at a minimum, be analyzed for Title 22 metals, petroleum hydrocarbons, and benzene, toluene, ethylbenzene, and xylenes at a frequency consistent with the disposal facility's requirements. Depending on the results for metals and the disposal facility requirements, soluble metals analyses also may be necessary. Soil determined to be hazardous waste shall be disposed off site within 90 days of generation. The soil must be properly manifested and transported by a registered transporter under applicable U.S. and California Department of Transportation regulations. Current federal and state requirements should be reviewed prior to disposal of soil.

4. **Fill material.** Soil brought to the site as fill material shall be characterized to assess whether chemicals may be present in the soil. Characterization may be based on knowledge of the source (e.g., material directly from a quarry). Analyses may include, but are not limited to, metals, petroleum hydrocarbons, pesticides, and polycyclic aromatic hydrocarbons. The Port or its representative should be consulted to define criteria (e.g., number of samples) appropriate for use at the time of the activity.

3.1.5 Management of Open Excavations

For excavations that must be left open after the end of a work day, dust control measures shall be implemented to prevent dust generation while the excavation is unattended, as described in Section 3.1.7. In addition, public access to the excavation shall be controlled by implementation of access controls as described in Section 3.1.3.

3.1.6 Dust Control

Chemicals of concern identified in the subsurface at the site include lead in soil and petroleum product. When earthwork activities occur, dust control measures shall be implemented to minimize dust generation. These will include dust control measures recommended by the BAAQMD (1999) and other recommended practices, such as:

- sprinkling water to maintain soil moisture,[4] as necessary;
- covering all trucks hauling soil, sand, or other loose materials or requiring all trucks to maintain at least 2 feet of freeboard;[5]

4. BAAQMD recommends at least twice daily.
5. Trucks hauling soil off site must secure the load in accordance with California and U.S. Departments of Transportation regulations.

- paving, applying water three times daily, or applying soil stabilizers (non-toxic) on all unpaved roadways, parking areas, or staging areas;
- sweeping all paved access roads, parking areas, and staging areas daily;
- sweeping streets daily if visible soil material is carried onto adjacent public streets;
- restricting non-essential traffic to compacted roadways and capped portions of the site;
- limiting vehicle speeds to 5 miles per hour on unpaved portions of the site;
- minimizing drop heights while loading transportation vehicles; and
- covering exposed soil or stockpiles and securing with fencing or other means.

Additional control measures developed by the BAAQMD (1999) in its California Environmental Quality Act Guidelines may be applicable if the construction area is greater than 4 acres in size.

3.1.7 Equipment Decontamination

In addition to the presence of product in the subsurface, soil at the site has been shown to contain elevated concentrations of lead. Therefore, construction equipment used for construction or maintenance activities shall be decontaminated prior to working in other areas of the site or leaving the site. If vehicles are exposed to affected soil and/or product, decontamination procedures should include removing loose soil from the vehicle exterior with brooms or brushes. Soil and product not removed by brushing should be removed by washing with soap and water, pressure washing, or steam cleaning.

Water from the cleaning processes shall be collected and containerized, and sampled prior to proper disposal. Small equipment can be cleaned directly in a container that will be used for storing the water before disposal (e.g., bucket or drum). For larger equipment or vehicles that must be washed, a temporary decontamination area should be set up for collecting and containerizing wash water. Access to the decontamination area should be restricted. Other methods for handling decontamination water (e.g., disposal to sewer or storm drain, on-site use for dust control in lead-affected soil areas) may be used if approved by Water Board or the appropriate agency.

3.1.8 Storm Water Management

Storm water pollution controls will be implemented to minimize runoff of sediment in storm water, which could include lead-affected sediment. Storm water pollution controls at construction sites greater than 1 acre in size are regulated using the NPDES General Permit

for Storm Water Discharges Associated with Construction Activity (99-08-DWQ; General Permit).

In advance of mobilization for the site, the Port will file a Notice of Intent (NOI) to comply with the General Permit for earthwork activities disturbing greater than 1 acre of the site. Prior to mobilization, the Contractors also shall prepare storm water pollution prevention plans (SWPPPs) consistent with the Port's model SWPPP as well as the Port's standard construction specifications to address requirements for erosion prevention and storm water management.

Storm water pollution controls implemented at the site will be based on Best Management Practices (BMPs), such as those described in the "Information on Erosion and Sediment Controls for Construction Projects: A Guidebook," Erosion and Sediment Control Field Manual (Water Board, 2002), and the Storm Water Best Management Practices Handbook (CSQA, 2003). Specific practices that shall be implemented to reduce the sediment load of storm water runoff from the site include grading the site to prevent storm water from running off site, installing storm water control devices (earth berms, silt fences, or hay bale barriers) around the perimeter of unpaved portions of the site until final paving has been completed, and protecting existing catch basins with silt fences, hay bales, or gravel bags. In addition, all Contractors shall store fuel and chemicals in such a manner that prevents accidental spills from impacting storm water.

3.1.9 Methane Monitoring

As noted in Section 2.3.3, methane concentrations up to 27 percent by volume have been measured in the petroleum product area during soil vapor sampling. Prior to construction within a utility or subsurface vault, methane concentration measurements shall be collected within the subsurface feature to evaluate the presence of potentially explosive vapors, and Cal-OSHA confined space entry requirements shall be followed. Similarly, caution and monitoring shall be undertaken during general excavation activities. Specific vapor monitoring procedures shall be outlined in the Contractor's Health and Safety Plan.

Prior to construction of buildings on the site, the possible presence of methane shall be assessed. If necessary, methane mitigation measures shall be incorporated into the building design.

3.2 UNANTICIPATED SUBSURFACE CONDITIONS

It is possible that unknown, historical subsurface features and structures of potential environmental concern (such as underground vaults or piping) may remain at the site. If

present, these structures or features may be encountered during construction or maintenance activities. In addition, chemicals other than those previously identified may be present in site soil. Unanticipated subsurface conditions may include, but not be limited to, the following:

- underground storage tank;
- concrete vault;
- underground piping; and
- other chemical impact, as evidenced by stained soil or odors.

Whenever unanticipated conditions are encountered, the Contractor shall stop work in that area, secure the work area, and evaluate the situation before any further action is taken. Further action may include removal or in-place abandonment of subsurface structures, or characterization and appropriate handling of soil potentially affected by chemicals. Further action will be taken in consultation with appropriate regulatory agencies.

The following provides some general guidelines for addressing below-grade structures.

- The Contractor shall cease work in the area of the below-grade structure and notify the Port or its Consultant if a below-grade structure is discovered. If the structure is of environmental concern (e.g., petroleum-containing UST), the Port will notify the appropriate regulatory agency.
- Residual liquid or sludge, if present in the encountered below-grade structure or pipeline, shall be removed by an appropriately-licensed contractor, placed in sealed storage containers, characterized as required by applicable laws and regulations and by the permitted disposal facility, and appropriately disposed.
- The below-grade structure shall be removed or closed in place as required by applicable laws and regulations. Contaminated soil surrounding the below-grade structure shall be addressed under appropriate regulatory oversight.

4.0 WATER MANAGEMENT ACTIVITIES

Only low concentrations of petroleum hydrocarbons have been detected in groundwater at some locations at the site. However, if construction or maintenance activities require dewatering, the procedures presented below shall be followed.

Construction de-watering water shall be pumped into holding tanks, and the water in the tanks shall be sampled by the Port and analyzed in accordance with characterization requirements for off-site disposal. Water shall be stored on site in accordance with applicable laws and regulations. The water shall be disposed of off site (or treated on site as appropriate) within 90

days of generation and must be properly manifested and transported by a registered transporter under applicable U.S. and California Department of Transportation regulations. Current federal and state requirements shall be reviewed prior to disposal of water. Should long-term dewatering be necessary, the Contractor shall work with the Port to determine disposal options and requirements for additional sampling of water generated during excavation.

5.0 MANAGEMENT OF SMP

This section discusses the responsibilities for managing this SMP and the circumstances under which this SMP may be modified.

5.1 RESPONSIBILITIES

The Port and its Tenant shall oversee implementation of this SMP at the site. In addition, the Port and Tenant shall include a copy of this SMP in all contracts signed with Contractors and shall provide a copy of this SMP to all third party contractors working in the subsurface at the site, such as utility contractors. The Contractor shall be responsible for adhering to this SMP, following project specifications, and job and site safety. The Contractor also is responsible for providing a copy of this SMP to its subcontractors. The Consultant, on behalf of the Port, may observe construction activities but is not responsible for directing/supervising the Contractor's operations/work.

5.2 MODIFICATIONS OF SMP

This SMP was developed based on AMEC's understanding of current conditions at the site and applicable regulations. It may be necessary to modify this SMP from time to time for any of several reasons, including:

- change in property use (e.g., addition of buildings to the site);
- change in understanding of environmental conditions (e.g., newly identified chemicals);
- intrusive activity that is not addressed by this SMP;
- new chemical toxicity information for chemicals present at the site, such as lead; or
- new legal requirements.

The Port is responsible for providing a modified SMP to the Water Board when substantial changes to the assumptions or conditions documented in the SMP occur.

6.0 SCOPE, REPRESENTATIONS, AND LIMITATIONS

This SMP was developed exclusively to address lead in soil and petroleum product present in the subsurface at the site. This SMP does not address issues related to other chemicals or media that may be encountered during construction projects, including but not limited to, demolition and construction debris, asphalt, concrete, asbestos-containing materials, and lead-based paint. If such materials are encountered during a construction project, Contractors and workers are responsible for complying with all applicable laws pertaining to the handling and disposal of these materials.

This SMP is based on current known site conditions and current laws, policies, and regulations. No representation is made with respect to future site conditions, other than those specifically identified within this report.

AMEC disclaims any responsibility for any unintended or unauthorized use of this SMP. It is expressly understood that while this SMP is intended to provide guidance and establish a framework for the management of residual product in the subsurface and lead in soil to protect human health and the environment, this SMP shall not create any warranties or obligations to AMEC as to implementation, adequacy, or success of protective measures under this SMP.

7.0 REFERENCES

Alameda County Health Care Services Agency, 1997, Case Closure, Hadley Auto Transport, aka Chrysler Auto Unloading Site, Maintenance Shop, 1407 Middle Harbor Road, Oakland, California 94607, May 28.

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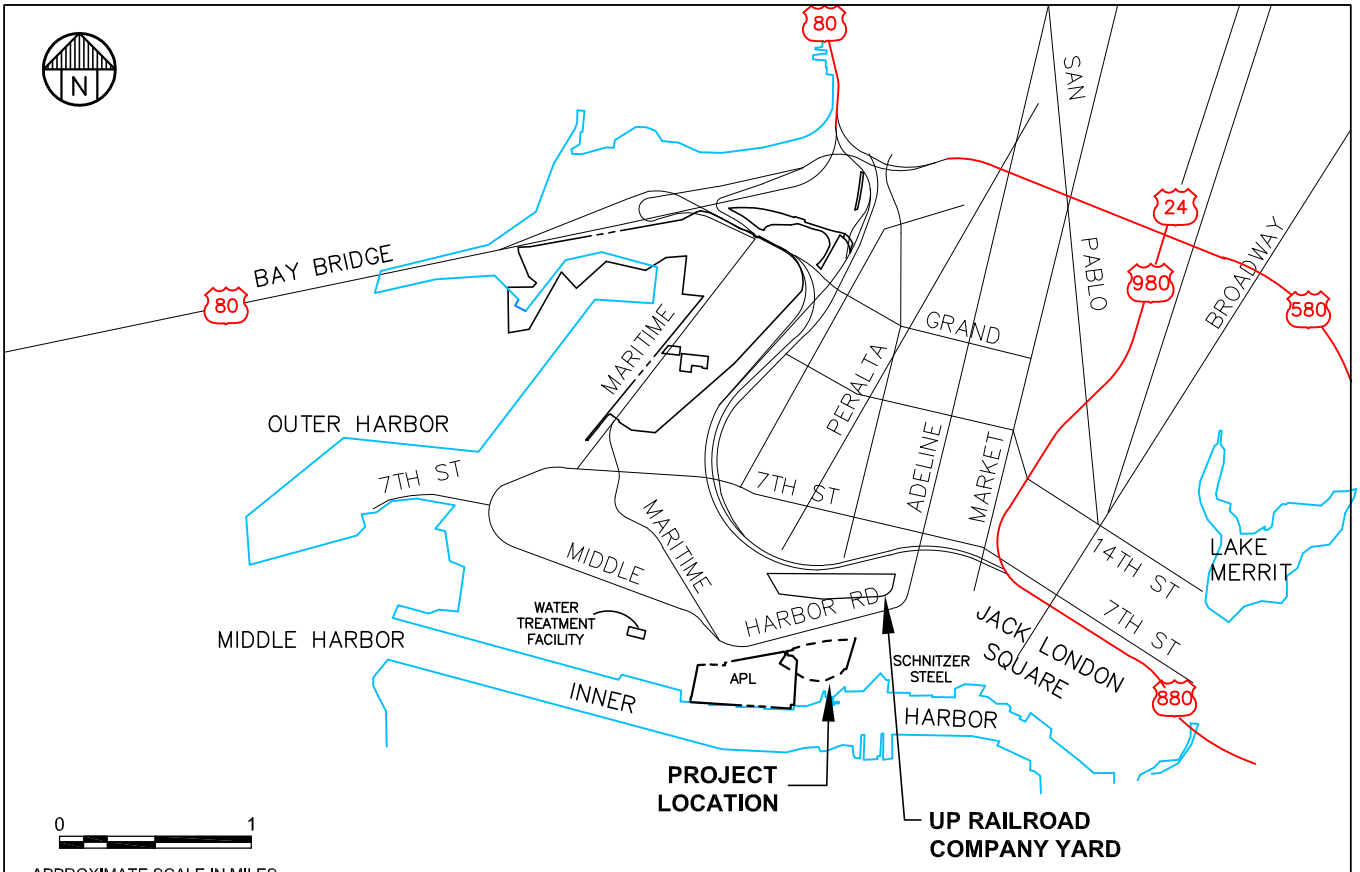
Kleinfelder, Inc., 1998, Report of Supplemental Remedial Investigation, Former Union Pacific Roundhouse, Oakland, California, October 14.

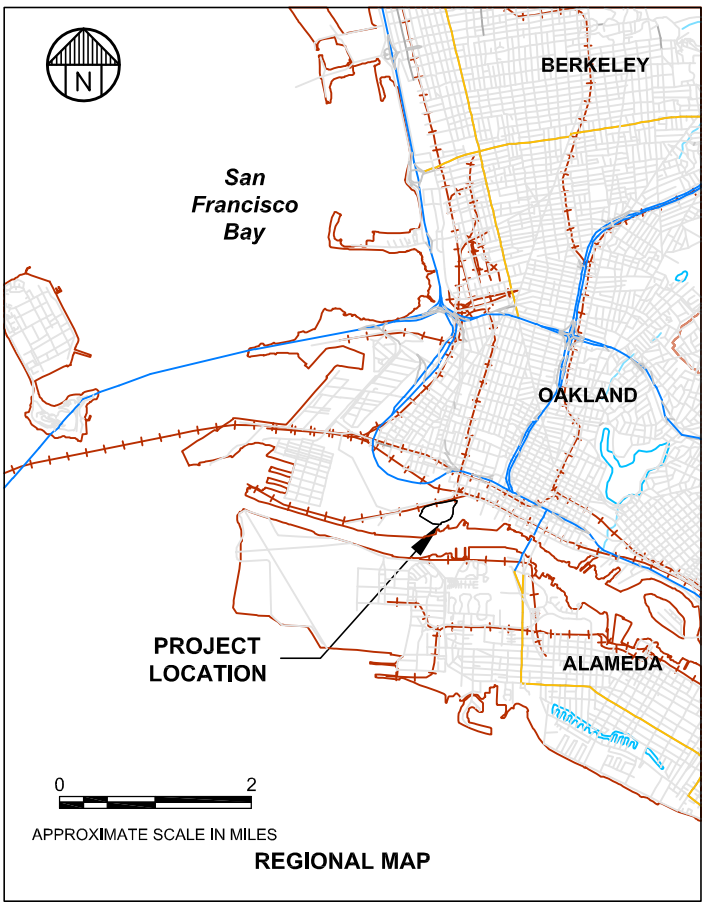
Kleinfelder, Inc., 1999a, Remediation and Risk Management Plan, Former Union Pacific Roundhouse Site, Oakland, California, March 15.

Kleinfelder, Inc., 1999b, Supplement to Remediation and Risk Management Plan, Former Union Pacific Roundhouse Site, 1407 Middle Harbor Road, Oakland, California, June 14.

FIGURES



SITE VICINITY MAP



REGIONAL MAP

REGIONAL AND VICINITY MAPS
Former UP Roundhouse Site
1407 Middle Harbor Road
Oakland, California

By: —	Date: 12/19/08	Project No. 8207.016
AMEC Geomatrix		Figure 1

Plot Date: 12/19/08 - 10:13am, Plotted by: ann.mcglibery
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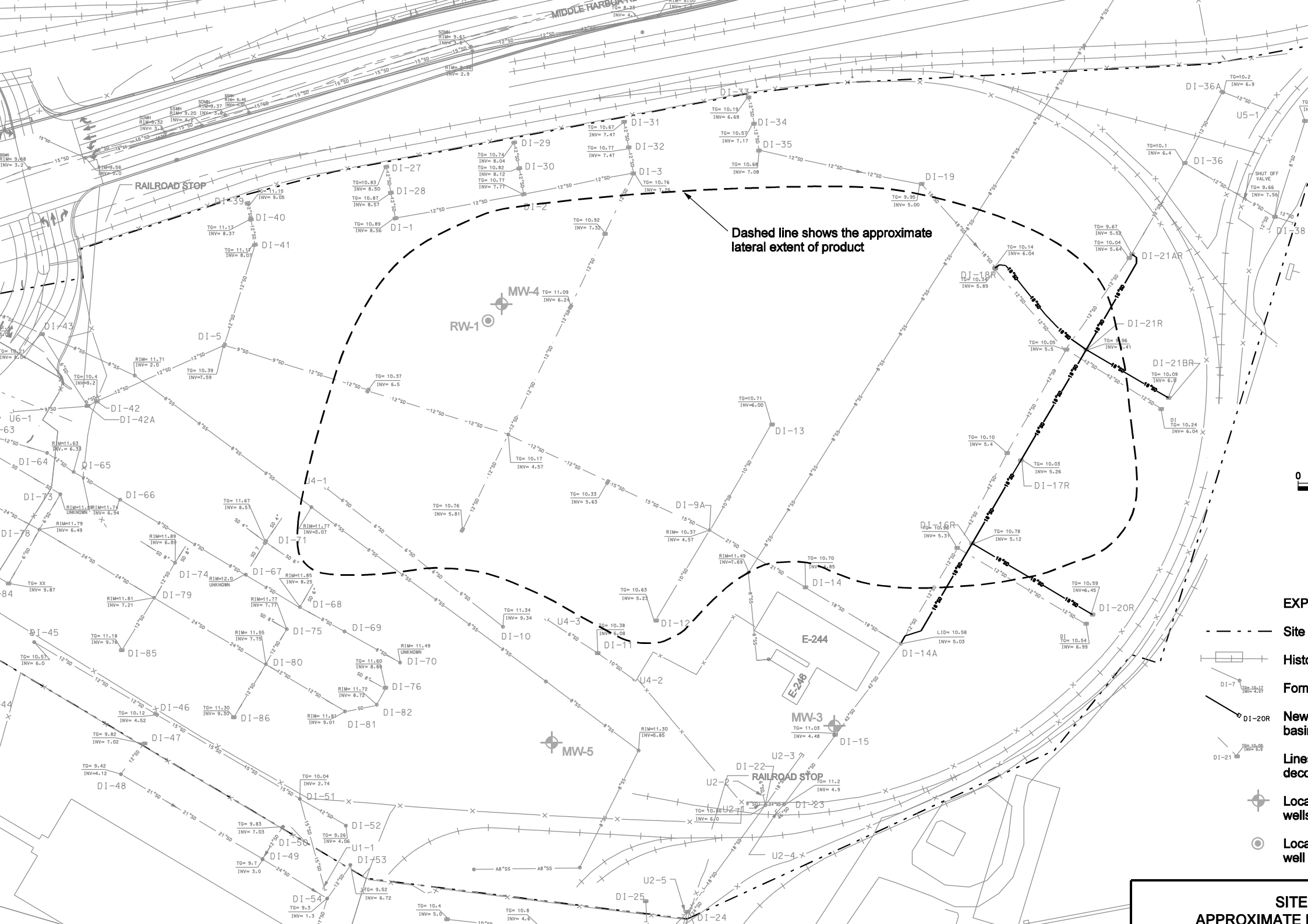
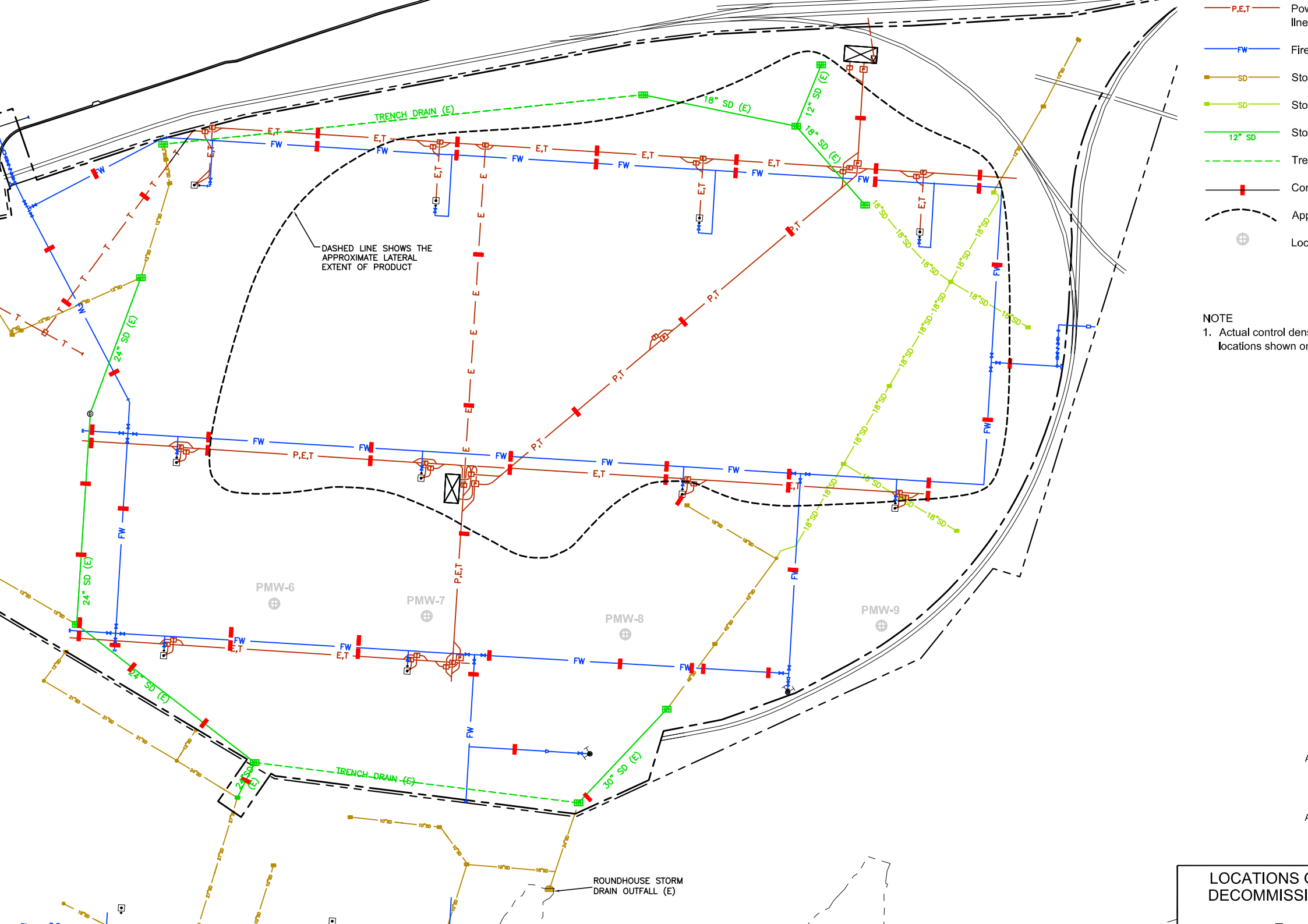
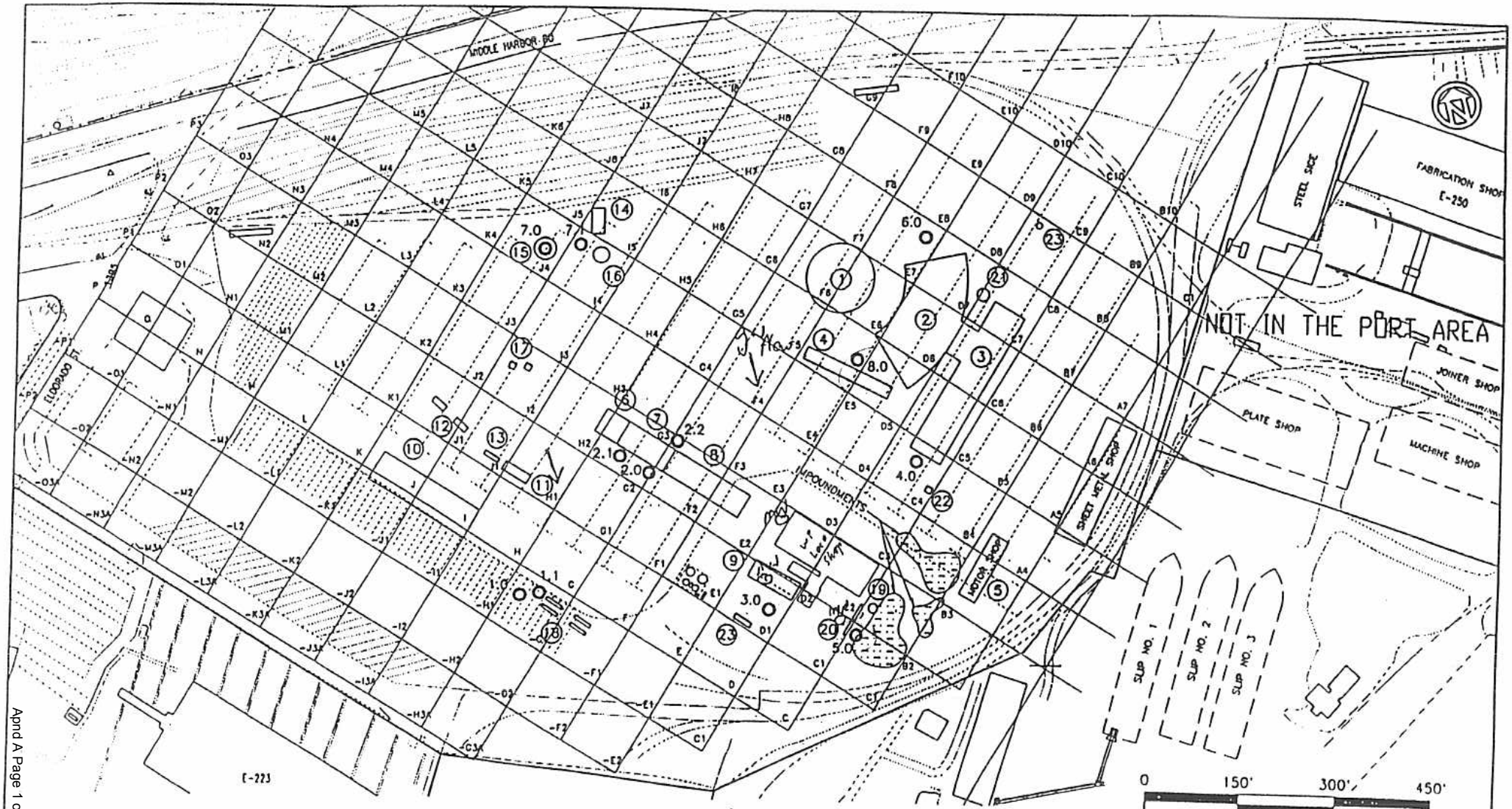

MIDDLE HARBOR
RAILROAD STOP
Dashed line shows the approximate lateral extent of product
MW-4
RW-1
MW-5
MW-3
E-244
E-246
SHUT OFF VALVE
EXP
Site
Histo
Form
New basi
Lines deco
Loca wells
Loca well
SITE
APPROXIMATE


TRENCH DRAIN (E)
18" SD (E)
12" SD (E)
18" SD (E)
DASHED LINE SHOWS THE APPROXIMATE LATERAL EXTENT OF PRODUCT
24" SD (E)
24" SD (E)
24" SD (E)
24" SD (E)
30" SD (E)
TRENCH DRAIN (E)
PMW-6
PMW-7
PMW-8
PMW-9
ROUNDHOUSE STORM DRAIN OUTFALL (E)
P,E,T
FW
SD
12" SD
NOTE
1. Actual control dens
locations shown on
LOCATIONS O
DECOMMISSI

APPENDIX A

Analytical Testing Results



1. 110 FT DIA. TURNTABLE
2. ROUNDHOUSE
3. MACHINE SHOP
4. CONC. WASHING STAND
5. MOTOR CAR REPAIR
7. PAINT AND REPAIR
8. PIPING MILL
9. PAINT SHOP
10. DIESEL LOCOMOTIVE BLDG.
11. WASTE HO
13. 2,000 GAL TANK
14. OIL HOUSE
15. 75,000 GAL OIL TANK
16. WATER TANK
17. SEPARATOR AND SURGE
19. 20,000 GAL SETTLING TANK
20. OIL TRAP
21. HOT WATER TANK
22. OIL SUMP

PORT OF OAKLAND

U.P. ROUNDHOUSE
PHASE II SITE ASSESSMENT

TABLE 1A

UP Roundhouse Phase II Site Assessment

Laboratory Analytical Results-Groundwater, Metals

All results in micrograms per liter (ug/L)

Sample ID	Date	antimony	arsenic	barium	beryllium	cadmium	chromium	cobalt	copper	lead	mercury	molybdenum	nickel	selenium	silver	thallium	vanadium	zinc
3.0	7/30/96	ND	289	12900	6.89	42.4	1060	195	4390	13100	10.9	48.4	2260	ND	35.3	608	1530	8870
4.0	7/31/96	ND	460	6560	51.9	ND	4880	1130	4910	6780	30	ND	5270	ND	75.4	3060	4020	8720
5.0	7/31/96	ND	475	6260	18.2	ND	2070	384	1940	1470	6.76	ND	2200	ND	ND	1280	1680	2290
6.0	7/30/96	644	ND	3150	8.57	19.1	1210	248	11100	67200	7.68	46.2	2270	ND	22.8	719	1970	10200
7.1	7/31/96	ND	7450	5700	16.9	ND	2220	404	1510	707	2.36	ND	2740	ND	ND	1390	1620	2660
8.0	7/30/96	ND	262	3580	7.82	7.43	960	180	1740	9110	8.73	42.4	1070	ND	15.3	691	780	3580

Footnotes

ND=Not Detected
ug/L=micrograms per liter
Sample 1 not collected - no water in boring
Sample 2 not collected - boring terminated due to obstructions
Sample 7.1 contained a separate phase observed as small dark globules
Antimony, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, vanadium, and zinc analyzed by EPA 6010
Mercury analyzed by EPA 7471
Arsenic analyzed by EPA 7060
Selenium analyzed by EPA 7740

TABLE 1B

UP Roundhouse Phase II Site Assessment

Laboratory Analytical Results-Groundwater, Organics

All results in micrograms per liter (ug/L)

Sample ID	Date	TPH-gas	TPH-diesel	8080	8240	8270
3.0	7/30/96	470	150000	ND	ND	[1]
4.0	7/31/96	ND	1600	ND	ND	ND
5.0	7/31/96	82	10000	ND	ND	[2]
6.0	7/30/96	ND	22000	ND	ND	[3]
7.1	7/31/96	1,200	800000	ND	ND	[4]
8.0	7/30/96	630	28000	ND	ND	[5]

Footnotes

ND=Not Detected
ug/L=micrograms per liter
Sample 1 not collected - no water in boring
Sample 2 not collected - boring terminated due to obstructions
Sample 7.1 contained a separate phase observed as small dark globules
[1]=12 ug/L phenanthrene
[2]=52 ug/L 2-methylnaphthalene, 11 ug/L acenaphthene, 11 ug/L dibenzofuran, 25 ug/L fluorene, 33 ug/L phenanthrene, 88 ug/L anthracene, 17 ug/L di-n-butylphthalate, 12 ug/L bis(2-ethylhexyl)phthalate
[3]=11 ug/L naphthalene, 12 ug/L 2-methylnaphthalene, 43 ug/L fluoranthene, 55 ug/L pyrene, 12 ug/L benzo(a)anthracene, 17 ug/L chrysene, 13 ug/L benzo(k) fluoranthene, 11 ug/L benzo(a)pyrene
[4]=6,200 ug/L 2-methylnaphthalene, 530 ug/L fluorene, 1,400 ug/L phenanthrene, 74 ug/L pyrene
[5]=11 ug/L naphthalene, 1,200 ug/L 2-methylnaphthalene, 22 ug/l acenaphthene, 58 ug/L phenanthrene, 17 ug/L fluoranthene, 26 ug/L pyrene

TABLE 2A

UP Roundhouse Phase II Site Assessment

Laboratory Analytical Results-Soil, Metals

All results in milligrams per kilogram (mg/kg)

Sample ID	Date	antimony	arsenic	barium	beryllium	cadmium	chromium	cobalt	copper	lead	mercury	molybdenum	nickel	selenium	silver	thallium	vanadium	zinc
1.1 at 5.5	7/30/96	ND	49.1	60.6	0.24	ND	6.37	3.27	35.3	12.6	0.122	ND	4.47	ND	1.02	12.3	9.34	96.8
1.1 at 10	7/30/96	ND	4.78	23.1	0.312	ND	40.3	5.82	140	7.23	0.107	2.39	37.3	ND	ND	33.3	32	86
1.1 at 15	7/30/96	ND	2.61	20.1	0.183	0.667	20.7	13.6	85.1	ND	ND	6.75	37.8	ND	ND	16.9	33.1	56.7
3.0 at 2.5	7/30/96	ND	5.68	54.2	0.186	ND	36.3	7.51	36.1	39	0.28	ND	66.2	ND	ND	26.7	30.6	71.9
3.0 at 4.5	7/30/96	ND	5.27	248	0.244	0.691	47.8	14.2	83.8	82.6	1.19	ND	54.9	ND	0.894	42	42.5	109
3.0 at 10	7/30/96	ND	3.23	132	0.194	ND	58.5	15.3	42.1	7.13	0.0705	ND	52	ND	ND	47.6	45.5	63.8
4.0 at 3	7/31/96	ND	1.4	53.1	0.204	ND	24.5	3.7	15.3	19	0.134	ND	15	ND	ND	14.1	17.7	35.8
4.0 at 5	7/31/96	ND	ND	24.1	0.267	ND	37.1	4.38	30.3	27.7	0.098	ND	29.1	ND	ND	28.9	29	58.1
4.0 at 7.5	7/31/96	ND	1.75	63.1	0.0868	ND	19.2	2.9	14.3	ND	ND	ND	14.4	ND	ND	7.12	11.3	18
4.0 at 9.5	7/31/96	ND	1.16	36.1	0.341	0.439	40.3	6.89	413	51.2	0.312	ND	39.3	ND	ND	31.3	35	191
5.0 at 3	7/31/96	ND	3.83	68.8	0.209	ND	38.2	7.35	37.9	8.13	0.125	ND	54.7	ND	ND	26.4	23.4	53.7
5.0 at 5.5	7/31/96	ND	13.6	66	0.174	ND	44.2	6.67	51	17.7	0.485	ND	43.3	ND	0.555	20.8	22.1	52.8
5.0 at 10	7/31/96	ND	21.6	12.2	0.215	1.11	29	5.33	64.9	6.84	ND	16.9	35.8	ND	ND	22.5	35.3	49.8
6.0 at 3	7/30/96	ND	6.85	136	0.106	0.643	83.2	4.28	136	11200	0.0985	ND	41.2	ND	ND	32.5	46.3	59.3
6.0 at 5	7/30/96	1010	8.19	60.8	0.128	0.552	11.4	3.56	418	13600	0.318	ND	64.8	ND	1.06	31.3	57.9	264
6.0 at 9.5	7/30/96	11.8	2.55	26.5	0.123	ND	30.3	4.4	45.5	259	0.0371	ND	30.1	ND	ND	14.4	22.2	55.1
7.1 at 2.5	7/31/96	ND	16.9	69.4	0.157	ND	16.1	5.02	17.8	6.61	0.0475	ND	18.1	ND	ND	14.7	24.6	31.2
7.1 at 4.5	7/31/96	ND	115	82.2	0.216	ND	44.2	7.9	16.3	8.61	0.101	ND	52	ND	ND	27.2	25.4	38.3
7.1 at 9.5	7/31/96	ND	2.17	18	0.288	ND	39.4	5.33	475	6.69	0.0272	3.09	35.8	ND	ND	29.6	31.6	230
8.0 at 5	7/30/96	ND	4.89	81.6	0.25	ND	63.4	9.8	38	10.3	0.0394	ND	82.4	ND	0.636	35.6	27.1	56.7
8.0 at 10	7/30/96	ND	1.79	35.1	0.176	ND	34.5	4.89	45.3	13.2	0.0702	ND	31.8	ND	ND	21	23	42.4

Footnotes

ND=Not Detected
NA=Not Analyzed
No samples collected at Location 2 due to obstructions during boring operations
mg/l=milligrams per liter
Antimony, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, thallium, vanadium, and zinc analyzed by EPA 6010
Mercury analyzed by EPA 7471
Arsenic analyzed by EPA 7060
Selenium analyzed by EPA 7740

TABLE 2B

UP Roundhouse Phase II Site Assessment

Laboratory Analytical Results-Soil, Organics

All results in milligrams per kilogram (mg/kg)

Sample ID	Date	TPH-gas	TPH-diesel	8080	8150	8240	8270
1.1 at 5.5	7/30/96	ND	8.1	ND	ND	ND	ND
1.1 at 10	7/30/96	ND	18	ND	NA	[1]	ND
1.1 at 15	7/30/96	ND	110	ND	NA	ND	ND
3.0 at 2.5	7/30/96	ND	140	ND	ND	ND	ND
3.0 at 4.5	7/30/96	ND	250	ND	NA	ND	ND
3.0 at 10	7/30/96	ND	160	ND	NA	ND	ND
4.0 at 3	7/31/96	ND	6.4	ND	ND	ND	ND
4.0 at 5	7/31/96	ND	26	ND	NA	ND	ND
4.0 at 7.5	7/31/96	ND	ND	ND	NA	ND	ND
4.0 at 9.5	7/31/96	ND	6.2	ND	NA	[2]	ND
5.0 at 3	7/31/96	ND	16	ND	ND	ND	ND
5.0 at 5.5	7/31/96	12	4800	[3]	NA	[4]	[5]
5.0 at 10	7/31/96	ND	30	ND	NA	[6]	ND
6.0 at 3	7/30/96	ND	330	ND	ND	[7]	ND
6.0 at 5	7/30/96	ND	240	ND	NA	ND	ND
6.0 at 9.5	7/30/96	ND	190	ND	NA	ND	ND
7.1 at 2.5	7/31/96	37	7300	ND	ND	ND	[8]
7.1 at 4.5	7/31/96	84	5300	ND	NA	ND	[9]
7.1 at 9.5	7/31/96	ND	38	ND	NA	[10]	ND
8.0 at 5	7/30/96	81	1800	ND	ND	[11]	[12]
8.0 at 10	7/30/96	29	5000	ND	NA	[13]	[14]

Footnotes ND=Not Detected

NA=Not Analyzed

No samples collected at Location 2 due to obstructions during boring operations

mg/l=milligrams per liter

[1]=0.10 mg/kg acetone

[2]=0.0067 mg/kg carbon disulfide

[3]=0.041 mg/kg PCB-1260

[4]=0.068 mg/kg total xylenes

[5]=5.5 mg/kg 2-methylnaphthalene, 1.6 mg/kg acenaphthene, 2.0 mg/kg dibenzofuran, 5.3 mg/kg fluorene, 9.8 mg/kg phenanthrene, 30 mg/kg anthracene

[6]=0.0082 mg/kg carbon disulfide

[7]=0.19 mg/kg acetone

[8]=26 mg/kg 2-methylnaphthalene, 3.0 mg/kg fluorene, 7.2 mg/kg phenanthrene

[9]=30 mg/kg 2-methylnaphthalene, 0.68 mg/kg acenaphthene, 2.6 mg/kg fluorene, 6.7 mg/kg phenanthrene, 0.57 mg/kg anthracene, 0.36 mg/kg pyrene

[10]=0.0072 mg/kg carbon disulfide

[11]=0.096 mg/kg total xylenes

[12]=50 mg/kg 2-methylnaphthalene, 0.43 mg/kg acenaphthene, 8.5 mg/kg phenanthrene, 0.76 mg/kg pyrene

[13]=0.13 mg/kg total xylenes

[14]=9.4 mg/kg 2-methylnaphthalene, 0.66 mg/kg phenanthrene

Compound	Det Limit (ug/L)	SG-1	SG-2	SG-3	SG-4	SG-5	SG-6	SG-7	SG-8	SG-9	SG-10	SG-11
carbon tetrachloride	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroform	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
dichlorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
dichloromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tetrachloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	0.1	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichlorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichloro-trifluoroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
vinyl chloride	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
acetone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
toluene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chlorobenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ethylbenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m-/p-xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-pentanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Compound	Det Limit (ug/L)	SG-12	SG-13	SG-14	SG-15	SG-16	SG-17	SG-18	SG-19	SG-20	SG-21	SG-22
carbon tetrachloride	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroform	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
dichlorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
dichloromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tetrachloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichlorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichloro-trifluoroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
vinyl chloride	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
acetone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
toluene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chlorobenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ethylbenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m-/p-xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-pentanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Compound	Det Limit (ug/L)	SG-23	SG-24	SG-25	SG-26	SG-27	SG-28	SG-29	SG-30	SG-31	SG-32	SG-33
carbon tetrachloride	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroform	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
dichlorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
dichloromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tetrachloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichlorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trichloro-trifluoroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
vinyl chloride	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
acetone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
toluene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chlorobenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ethylbenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m-/p-xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-pentanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Compound	Det Limit (ug/L)	SG-34	SG-35	SG-36	SG-37	SG-38	SG-39	SG-40	SG-41	SG-42
carbon tetrachloride	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
chloroethane	1.0	NA	ND	ND	ND	ND	ND	ND	ND	ND
chloroform	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethane	1.0	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloroethane	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
dichlorofluoromethane	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
dichloromethane	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
tetrachloroethene	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-tetrachloroethane	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-trichloroethane	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
trichloroethene	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
trichlorofluoromethane	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
trichloro-trifluoroethane	0.1	NA	ND	ND	ND	ND	ND	ND	ND	ND
vinyl chloride	1.0	NA	ND	ND	ND	ND	ND	ND	ND	ND
acetone	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
toluene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
chlorobenzene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
ethylbenzene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
m-/p-xylene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
o-xylene	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-pentanone	0.5	NA	ND	ND	ND	ND	ND	ND	ND	ND

SOIL GAS SAMPLE RESULTS

E NAME: Union Pacific Yard - Port of Oakland
LAB NAME: Optimal Technology Inc.
DATE: 8-13 to 8-15-96
ALYST: Timothy L. Theisen
INSTRUMENT ID: HP5890-2
LLECTOR: Timothy L. Theisen
DETECTORS: ECD and PID
PAGE: 1 of 6

		BLANK	SG-1	SG-2	SG-3	SG-3 DUP	SG-4	SG-5	SG-6	BLANK	SG-7
ple ID	N/A										
pling Depth (ft.)	N/A	NA	3.5	3.5	3.5	3.5	3.5	3.5	3.5	NA	3.5
Volume (ml)	N/A	NA	1,000	1,000	1,000	1,000	1,000	1,000	1,000	NA	1,000
um (in. of Water)	N/A	NA	0	0	0	0	0	0	0	NA	0
tion Volume PID/ECD	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500
on Factor PID/ECD	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
COMPOUND	DET. LIMIT	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)
on Tetrachloride	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
oethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
oform	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
,2-Dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
orofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
oromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
chloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
-Trichloroethane	0.1	ND	ND	ND	1.6	1.5	ND	ND	ND	ND	ND
-Trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
orofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
oro-trifluoroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
one	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ne	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
obenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
hexane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
anone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
thyl-2-Pentanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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DETECTORS: ECD and PID
PAGE: 2 of 6

ple ID	N/A	SG-8	SG-9	SG-10	SG-11	SG-12	SG-13	SG-14	SG-15	BLANK	SG-16
pling Depth (ft.)	N/A	3.5	3.5	3.5	3.5	3.5	3.0	3.5	3.5	NA	4.0
e Volume (ml)	N/A	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	NA	1,000
uum (in. of Water)	N/A	0	0	0	25	0	20	0	0	NA	10
tion Volume PID/ECD	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500
tion Factor PID/ECD	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
COMPOUND	DET. LIMIT	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)
on Tetrachloride	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
roethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
roform	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
s-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
achloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
l,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
l-Trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loro-trifluoroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
on	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
en	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
obenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
hexane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
anone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
thyl-2-Pentanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

SOIL GAS SAMPLE RESULTS

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DETECTORS: ECD and PID
PAGE: 3 of 6

ple ID	N/A	SG-17	SG-18	SG-19	SG-19 DUP	SG-20	SG-21	SG-22	SG-23	SG-24	BLANK
pling Depth (ft.)	N/A	3.5	3.5	3.0	3.0	3.5	3.0	3.5	3.5	3.5	NA
e Volume (ml)	N/A	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	NA
uum (In. of Water)	N/A	0	15	0	0	0	10	0	10	0	NA
tion Volume PID/ECD	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500
ion Factor PID/ECD	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
COMPOUND	DET. LIMIT	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)
on Tetrachloride	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
roethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
roform	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
s-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
achloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loro-trifluoroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
l Chloride	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
on	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
en	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
en	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
robenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
-Xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
lene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ohexane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ethyl-2-Pentanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

SOIL GAS SAMPLE RESULTS

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DETECTORS: ECD and PID
PAGE: 4 of 6

ple ID	N/A	SG-25	BLANK	SG-26	SG-27	BLANK	SG-28	SG-29	SG-30	BLANK	SG-31
pling Depth (ft.)	N/A	3.5	NA	3.5	3.5	NA	3.5	3.5	3.5	NA	3.5
ge Volume (ml)	N/A	1,000	NA	1,000	1,000	NA	1,000	1,000	1,000	NA	1,000
uum (in. of Water)	N/A	0	NA	30	0	NA	55	0	0	NA	0
ction Volume PID/ECD	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500	500/500
tion Factor PID/ECD	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
COMPOUND	DET. LIMIT	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)
on Tetrachloride	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
roethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
roform	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
s-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loromethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
achloroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
l,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Tetrachloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
l-Trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Trichloroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loroethene	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
loro-trifluoroethane	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ne	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
obenzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
benzene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
hexane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
anone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
thyl-2-Pentanone	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

SOIL GAS SAMPLE RESULTS

TE NAME: Union Pacific Yard - Port of Oakland
LAB NAME: Optimal Technology Inc.
DATE: 8-13 to 8-15-96
NALYST: Timothy L. Theisen
INSTRUMENT ID: HP5890-2
OLLECTOR: Timothy L. Theisen
DETECTORS: ECD and PID
PAGE: 5 of 6

ıple ID	N/A	SG-32	SG-32-DUP	SG-33	SG-34	SG-35	SG-36	SG-37	SG-38	SG-39	SG-39-DUP
ıpling Depth (ft.)	N/A	3.5	3.5	3.5	NS	3.5	3.5	3.5	3.5	3.5	3.5
ge Volume (ml)	N/A	1,000	1,000	1,000	NS	1,000	1,000	1,000	1,000	1,000	1,000
uum (in. of Water)	N/A	0	0	0	NS	0	0	0	40	0	0
ction Volume PID/ECD	500/500	500/500	500/500	500/500	NS	500/500	500/500	500/500	500/500	500/500	500/500
tion Factor PID/ECD	1/1	1/1	1/1	1/1	NS	1/1	1/1	1/1	1/1	1/1	1/1
COMPOUND	DET. LIMIT	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)
bon Tetrachloride	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
oroethane	1.0	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
oroform	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
Dichloroethane	1.0	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
Dichloroethane	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
Dichloroethene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
s-1,2-Dichloroethene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
loromethane	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
achloroethene	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
1,2-Tetrachloroethane	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
2,2-Tetrachloroethane	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
1-Trichloroethane	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
2-Trichloroethane	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
loroethene	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
lorofluoromethane	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
loro-trifluoroethane	0.1	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
l Chloride	1.0	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
lor	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
ene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
robenzene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
lbenzene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
-Xylene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
lene	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
ohexane	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
tanone	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND
thyl-2-Pentanone	0.5	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND

Attached Page 1 of 2

SOIL GAS SAMPLE RESULTS

TE NAME: Union Pacific Yard - Port of Oakland
LAB NAME: Optimal Technology Inc.
DATE: 8-13 to 8-15-96
NALYST: Timothy L. Theisen
INSTRUMENT ID: HP5890-2
OLLECTOR: Timothy L. Theisen
DETECTORS: ECD and PID
PAGE: 6 of 6

ple ID	N/A	SG-40	SG-41	SG-42							
pling Depth (ft.)	N/A	3.5	3.5	3.5							
ge Volume (ml)	N/A	1,000	1,000	1,000							
uum (In. of Water)	N/A	0	0	0							
ction Volume PID/ECD	500/500	500/500	500/500	500/500							
tion Factor PID/ECD	1/1	1/1	1/1	1/1							
COMPOUND	DET. LIMIT	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)	CONC. (ug/L)
bon Tetrachloride	0.1	ND	ND	ND							
roethane	1.0	ND	ND	ND							
roform	0.1	ND	ND	ND							
Dichloroethane	1.0	ND	ND	ND							
Dichloroethane	0.5	ND	ND	ND							
Dichloroethene	0.5	ND	ND	ND							
l,2-Dichloroethene	0.5	ND	ND	ND							
s-1,2-Dichloroethene	0.5	ND	ND	ND							
lorofluoromethane	0.1	ND	ND	ND							
loromethane	0.5	ND	ND	ND							
achloroethene	0.1	ND	ND	ND							
1,2-Tetrachloroethane	0.1	ND	ND	ND							
2,2-Tetrachloroethane	0.1	ND	ND	ND							
1-Trichloroethane	0.1	ND	ND	ND							
2-Trichloroethane	0.1	ND	ND	ND							
loroethene	0.1	ND	ND	ND							
lorofluoromethane	0.1	ND	ND	ND							
loro-trifluoroethane	0.1	ND	ND	ND							
l Chloride	1.0	ND	ND	ND							
Lobe	0.5	ND	ND	ND							
ene	0.5	ND	ND	ND							
ene	0.5	ND	ND	ND							
robenzene	0.5	ND	ND	ND							
lbenzene	0.5	ND	ND	ND							
-Xylene	0.5	ND	ND	ND							
lene	0.5	ND	ND	ND							
ohexane	0.5	ND	ND	ND							
tanone	0.5	ND	ND	ND							
ethyl-2-Pentanone	0.5	ND	ND	ND							

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Table 1-UP Roundhouse Phase II Task 3 Site Assessment

Laboratory Analytical Results-Soil

All results in milligrams per kilogram (mg/kg)

Sample ID	Date	TPH-Diesel	TPH-Bunker C	lead	chromium +6	Napthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	PLyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benao(k)fluoranthene	Benzo(a)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Indeno(1,2,3-cd)pyrene
9 @3	11/13/96	14000	ND	ND	ND	ND	ND	ND	8.8	13000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9 @5	11/13/96	690	ND	37.2	ND	ND	ND	ND	0.65	0.93	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9 @8	11/13/96	21	ND	8.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9 @12	11/13/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10 @ 3	11/11/96	ND	540	40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10 @ 5	11/11/96	18	ND	8.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10 @ 10	11/11/96	18	ND	5.55	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10 @ 14.5	11/11/96	21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11 at 1.5	11/11/96	3800	ND	9.14	ND	ND	ND	ND	4.9	8.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11 at 5.5	11/11/96	120	550	6.61	ND	ND	ND	ND	0.04	0.091	0.075	0.48	0.65	0.19	ND	0.29	0.11	0.45	ND	0.39	0.35
11 at 9.5	11/11/96	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11 at 10.5	11/11/96	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11 @ 14.5	11/11/96	22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12 @ 3	11/13/96	3500	ND	78.7	ND	ND	ND	ND	1.2	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12 @ 5	11/13/96	4300	ND	497	ND	ND	ND	ND	3.8	7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12 @ 8	11/13/96	38	ND	ND	ND	ND	ND	0.25	0.18	0.78	1.6	0.45	0.38	0.076	ND	0.048	0.028	0.049	ND	0.04	ND
12 @ 12.5	11/13/96	36	ND	ND	ND	ND	ND	ND	ND	ND	0.033	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13 @ 2.5	11/12/96	79	350	6.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13 @ 5.5	11/12/96	8300	ND	10.4	ND	ND	ND	ND	7	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13 @ 8.5	11/12/96	53	210	10.2	ND	ND	ND	ND	ND	0.05	0.035	0.3	0.38	0.098	0.18	0.21	0.072	0.26	ND	0.25	0.19
13 @ 12.5	11/12/96	ND	ND	4.94	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14 @ 2.5	11/12/96	ND	130	16.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14 @ 5	11/12/96	3100	ND	23.5	ND	ND	ND	ND	1.8	2.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14 @ 8.5	11/12/96	ND	ND	11.7	ND	ND	ND	ND	ND	0.036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14 @ 12.5	11/12/96	ND	ND	10.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14 @ 14	11/12/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15 @ 2.5	11/13/96	1300	ND	33.1	ND	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15 @ 4.5	11/13/96	1500	ND	60.4	ND	ND	ND	ND	0.068	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 1-UP Roundhouse Phase II Task 3 Site Assessment

Laboratory Analytical Results-Soil

All results in milligrams per kilogram (mg/kg)

Sample ID	Date	TPH-Diesel	TPH-Bunker C	lead	chromium +6	Napthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	PLyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benao(k)fluoranthene	Benzo(a)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Indeno(1,2,3-cd)pyrene
15 @ 8	11/13/96	ND	17	4.91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15 @ 12.5	11/13/96	29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16 @ 2.5	11/12/96	12000	ND	448	ND	ND	ND	ND	11	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16 @ 5	11/12/96	2800	11000	8.6	ND	ND	ND	0.34	1.2	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16 @ 8.5	11/12/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16 @ 12.5	11/12/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16 @ 14.5	11/12/96	ND	ND	6.96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17 @ 3	11/11/96	9100	ND	12.7	ND	ND	ND	ND	4.2	8.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17 @ 5	11/11/96	13000	ND	34.6	ND	ND	ND	ND	13	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17 @ 8.5	11/11/96	26	ND	83.5	ND	ND	ND	ND	13	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17 @ 12.5	11/11/96	ND	ND	4.85	ND	ND	ND	ND	13	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17 @ 14	11/11/96	ND	ND	4.56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18 @ 3	11/12/96	ND	620	981	ND	ND	ND	ND	ND	0.26	ND	0.3	0.26	ND	ND	0.28	ND	0.23	ND	ND	0.29
18 @ 5.5	11/12/96	ND	ND	4.09	ND	ND	ND	ND	ND	0.018	ND	ND	0.017	ND	ND	ND	ND	0.02	ND	ND	0.024
18 @ 7.5	11/12/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18 @ 13	11/12/96	ND	80	9.49	ND	ND	ND	ND	0.055	0.16	ND	0.17	0.13	0.021	ND	0.019	ND	0.018	ND	ND	ND
18 @ 14	11/12/96	ND	54	8.53	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19 @ 2.5	11/11/96	17	ND	13.6	ND	ND	ND	ND	ND	0.019	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19 @ 5	11/11/96	22	ND	3.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19 @ 8.5	11/11/96	23	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19 @ 12.5	11/11/96	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20 @ 3	11/11/96	ND	310	13.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.092	ND	ND	ND	ND	ND
20 @ 5	11/11/96	ND	1900	23.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20 @ 9.5	11/11/96	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20 @ 14	11/11/96	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Footnotes

ND=Not Detected

mg/l=milligrams per liter

[1]=The result for Bunker C is elevated due to the presence of diesel

Table 2-UP Roundhouse Phase II Task 3 Site Assessment

Laboratory Analytical Results-Water

All results in micrograms per Liter (µg/L) u.o.n.

Sample ID	Date	TPH-Diesel (mg/L)	TPH-Bunker C (mg/L)	Lead	chromium +6 (mg/L)	Napthlalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	PLyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benao(k)fluoranthene	Benzo(a)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Indeno(1,2,3-cd)pyrene
9	11/13/96	0.4	ND	ND	0.0636	ND	ND	ND	2.7	ND	ND	0.088	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	11/11/96	ND	ND	ND	0.24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12	11/13/96	1.3	ND	5600	ND	ND	ND	27	29	33	33	12	8.5	1.3	4.3	0.79	ND	0.78	ND	ND	ND
13	11/12/96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	11/12/96	0.3	ND	358	ND	10	ND	8.9	8.9	8.6	0.91	0.4	0.24	ND	ND	ND	ND	ND	ND	ND	ND
20	11/11/96	ND	ND	0.18	ND	ND	ND	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Footnotes

ND=Not Detected

mg/L=milligrams per liter

u.o.n. = unless otherwise noted

All water samples were filtered by Pace

Table 3. Analytical Results of Reconnaissance Groundwater Samples
Supplemental Remedial Investigation
Former U.P. Roundhouse
Port of Oakland
Oakland, California

Boring	TPH-d [1] (mg/L) unfiltered	TPH-d [2] (mg/L) filtered	TDS (mg/L)	Pb (mg/L)	Sb (mg/L)
K1B	24	0.20 [Y]	–	–	–
K2B	64	0.97 [Y]	–	–	–
K3B	9.4	0.97 [Y]	–	–	–
K4	140	0.94 [Y]	–	–	–
K5	2.1	0.46 [Y]	–	–	–
K6	<0.05	<0.064	4,100	–	–
K7	95	0.56 [Y]	–	–	–
K8	<0.05	0.054	–	<0.003	–
K9	<0.05	<0.094	–	<0.003	<0.060
K10	–	–	–	<0.003	–

Notes:

TPH-d [1]	Total petroleum hydrocarbons quantified as diesel (extractables); modified EPA Method 8015 with silica gel cleanup.
TPH-d [2]	Total petroleum hydrocarbons quantified as diesel (extractables); modified EPA Method 8015 with 0.7-micron glass fiber filtering and silica gel cleanup.
TDS	Total dissolved solids; EPA Method 160.1
Pb	Lead; EPA Method 6010
Sb	Antimony; EPA Method 6010
mg/L	Milligrams per liter
Y	Sample exhibits fuel pattern which does not resemble standard.
--	Not analyzed

Table 4. Analytical Results from Monitoring Well Sampling, July 1998
Supplemental Remedial Investigation
Former U.P. Roundhouse
Port of Oakland
Oakland, California

Boring	TPH-d [1] (mg/L) unfiltered	TPH-d [2] (mg/L) filtered	BTEX (mg/L)	TDS (mg/L)	Pb (mg/L)	pH SU
MW3	<0.05	<0.05	<0.0005	1760	<0.003	7.1
dup	–	–	<0.0005	–	–	–
MW4	8.2	1.8 [Y]	–	600	<0.003	6.7

Notes:

TPH-d [1]	Total petroleum hydrocarbons quantified as diesel (extractables); modified EPA Method 8015 with silica gel cleanup.
TPH-d [2]	Total petroleum hydrocarbons quantified as diesel (extractables); modified EPA Method 8015 with 0.7-micron glass fiber filtering and silica gel cleanup.
BTEX	Benzene, toluene, ethylbenzene, xylenes; EPA Method 8021B
TDS	Total dissolved solids; EPA Method 160.1
Pb	Lead; EPA Method 6010
pH	Hydrogen ion index; EPA Method 150.1
mg/L	Milligrams per liter
SU	Standard units
Y	Sample exhibits fuel pattern which does not resemble standard.
–	Not analyzed
dup	Duplicate

Table 2. Analytical Results from Monitoring Well Sampling, January 13 and 14, 1999
Former UP Roundhouse Site
Port of Oakland
Oakland, California

Boring	TPH-d [1] (mg/L) unfiltered	TPH-d [2] (mg/L) filtered	BTEX (mg/L)	TDS (mg/L)	Pb (mg/L)	pH SU
MW-3	<0.05	<0.05	<0.001	1,620	0.003	7.2
MW-4	85	1.5	<0.001	900	<0.003	6.7
MW-4 dup.	100	1.5	<0.001	920	<0.003	6.8

Notes:

TPH-d [1]	Total petroleum hydrocarbons quantified as diesel (extractables); modified EPA Method 8015 with silica gel cleanup.
TPH-d [2]	Total petroleum hydrocarbons quantified as diesel (extractables); modified EPA Method 8015 with 0.7-micron glass fiber filtering and silica gel cleanup.
BTEX	Benzene, toluene, ethylbenzene, xylenes; EPA Method 8260
TDS	Total dissolved solids; EPA Method 160.1
Pb	Lead; EPA Method 6010
pH	Hydrogen ion index; EPA Method 150.1
mg/L	Milligrams per liter
SU	Standard units
Y	Sample exhibits fuel pattern which does not resemble standard.
–	Not analyzed
dup.	Duplicate sample

TABLE 1
ANALYTICAL RESULTS OF SOIL GAS SAMPLING
FORMER UNION PACIFIC ROUNDHOUSE SITE
OAKLAND, CALIFORNIA

Soil Gas Probe	Methane (%)	Oxygen (%)	Nitrogen (%)	Carbon dioxide (%)
KG-1	3.0	14	80	2.5
KG-2	23	14	57	5.7
KG-3	27	7.4	58	7.6
KG-4	6.9	19	73	1.1
KG-4 (duplicate)	6.8	18	74	1.1
KG-5	<0.001	21	79	0.049
KG-6	7.9	16	74	2.2
KG-7	3.7	13	80	2.8
KG-8	<0.001	20	80	0.047
KG-9	<0.001	20	80	0.2
KG-10	0.005	19	80	1.0
KG-11	<0.001	21	79	0.047

Notes
Samples collected January 14, 1999.
Analyzed by ASTM D-1945.

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR SOIL SAMPLES [1]

Former UP Roundhouse Site
1407 Middle Harbor Road
Oakland, California

Boring	Date Sampled	Sample Identification	Depth (ft bgs)	TPHd (mg/kg)	TPHmo (mg/kg)
B-1	3/31/2005	B-1-3.0	3.0	8.0 HY	19
		B-1-5.0	5.0	2.0 HY	7
B-2	3/31/2005	B-2-2.5	2.5	3,500 HY	15,000
		B-2-5.0	5.0	960 HY	4,000
B-3	4/7/2005	B-3-3.5	3.5	1.5 HY	5.9
		B-3-7.5	7.5	23 HY	52 L
B-4	4/7/2005	B-4-4.5	4.5	2.3 HY	9.9
		B-4-7.0	7.0	1.3 HY	<5.2
B-5	4/7/2005	B-5-4.5	4.5	<1.0	<5.0
		B-5-7.5	7.5	63 HY	230
B-6	4/7/2005	B-6-4.5	4.5	70 HY	270
		B-6-6.5	6.5	8.2 HY	25
B-7	4/7/2005	B-7-5.5	5.5	1.1 HY	<5.0
B-9	4/7/2005	B-9-3.0	3.0	370 HY	4,100
		B-9-5.0	5.0	8.7 HY	16 L
B-10	4/7/2005	B-10-3.0	3.0	17 HY	71 L
		B-10-5.0	5.0	2.0 HY	13
B-11	4/8/2005	B-11-3.0	3.0	5.8 HY	16
		B-11-5.0	5.0	<1.0	<5.0
B-12	4/8/2005	B-12-5.0	5.0	160 HY	760

Notes:

[1] Samples collected by Geomatrix Consultants, Inc. and analyzed at Curtis & Tompkins, Ltd., a California-certified analytical laboratory located in Berkeley, California

Abbreviations:

TPHd = Total petroleum hydrocarbons quantified as diesel using U.S. Environmental Protection Agency (EPA) Method 8015B
TPHmo = Total petroleum hydrocarbons quantified as motor oil using EPA Method 8015B
ft bgs = depth measured in feet below the surrounding ground surface
mg/kg = concentrations reported in milligrams per kilogram
< = target analyte not detected at or above the laboratory reporting limit shown.
H = Result qualified by the analytical laboratory; heavier hydrocarbons contributed to the quantitation
Y = Result qualified by the analytical laboratory; lighter hydrocarbons contributed to the quantitation
S = Result qualified by the analytical laboratory; sample exhibits chromatographic pattern which does not resemble standard

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR GRAB GROUNDWATER SAMPLES [1]

Former UP Roundhouse Site
1407 Middle Harbor Road
Oakland, California

Boring	Sample Identification	Date Sampled	TPHd (µg/L)	TPHmo (µg/L)	BTEX (µg/L)	VOCs (µg/L)	SVOCs[2] (µg/L)	PAHs (µg/L)	TDS (mg/L)
B-1	B-1-033105	3/31/2005	71 Y	<300	ND (<0.50)	--	ND (<9.3 to <46)	ND (<0.95)	1,360
B-2	B-2-033105	3/31/2005	1000 HY	320 LY	ND (<0.50)	--	ND (<9.6 to <48)	ND (<4.9)	770
B-3	B-3-0405	4/7/2005	<50	<300	--	ND (<0.5 to <10)	ND (<9.6 to <48)	ND (<0.98)	590
B-4	B-4-0405	4/7/2005	<50	<300	--	ND (<0.5 to <10)	ND (<9.6 to <48)	ND (<1.0)	4,000
B-5	B-5-0405	4/7/2005	<50	<300	--	ND (<0.5 to <10)	ND (<9.6 to <48)	ND (<0.95)	550
B-6	B-6-0405	4/7/2005	<50	<300	ND (<0.50)	--	ND (<9.5 to <48)	ND (<0.96)	1,580
dup	B-60-0405	4/7/2005	<50	<300	ND (<0.50)	--	ND (<9.6 to <48)	ND (<0.97)	2,020
B-7	B-7-0405	4/7/2005	<50	<300	ND (<0.50)	--	ND (<9.4 to <47)	ND (<0.98)	240
B-8	B-8-0405	4/7/2005	<50	<300	ND (<0.50)	--	ND (<9.6 to <48)	ND (<0.95)	2,260
B-9	B-9-0405	4/7/2005	74 Y	<300	ND (<0.50)	--	ND (<9.9 to <50)	ND (<1.0)	670
B-10	B-10-0405	4/7/2005	<50	<300	ND (<0.50)	--	ND (<9.9 to <50)	ND (<1.2)	340
B-11	B-11-0405	4/8/2005	<50	<300	ND (<0.50)	--	ND (<10 to <50)	ND (<1.3)	860
B-12	B-12-0405	4/8/2005	<50	<300	ND (<0.50)	--	ND (<11 to <56)	ND (<1.0)	490

Notes:

[1] Samples collected by Geomatrix Consultants, Inc. and analyzed at Curtis & Tompkins, Ltd., a California-certified analytical laboratory located in Berkeley, California

[2] SVOCs analyzed outside of sample holding time. Results should be considered approximate.

Abbreviations:

TPHd = Total petroleum hydrocarbons quantified as diesel using U.S. Environmental Protection Agency (EPA) Method 8015B after silica gel preparation (EPA Method 3630C) and filtration through a 0.7-micron, glass fiber filter.

TPHmo = Total petroleum hydrocarbons quantified as motor oil using EPA Method 8015B after silica gel preparation (EPA Method 3630C) and filtration through a 0.7-micron, glass fiber filter.

BTEX = Benzene, toluene, ethylbenzene, and total xylenes using EPA Method 8021B analysis

VOCs = volatile organic compounds (including BTEX) using EPA Method 8260B

SVOCs = Semi-Volatile Organic Compounds using EPA Method 8270 following filtration through 0.7-micron, glass fiber filter

PAHs = polycyclic aromatic hydrocarbons using EPA Method 8270 SIM following filtration through 0.7-micron, glass fiber filter

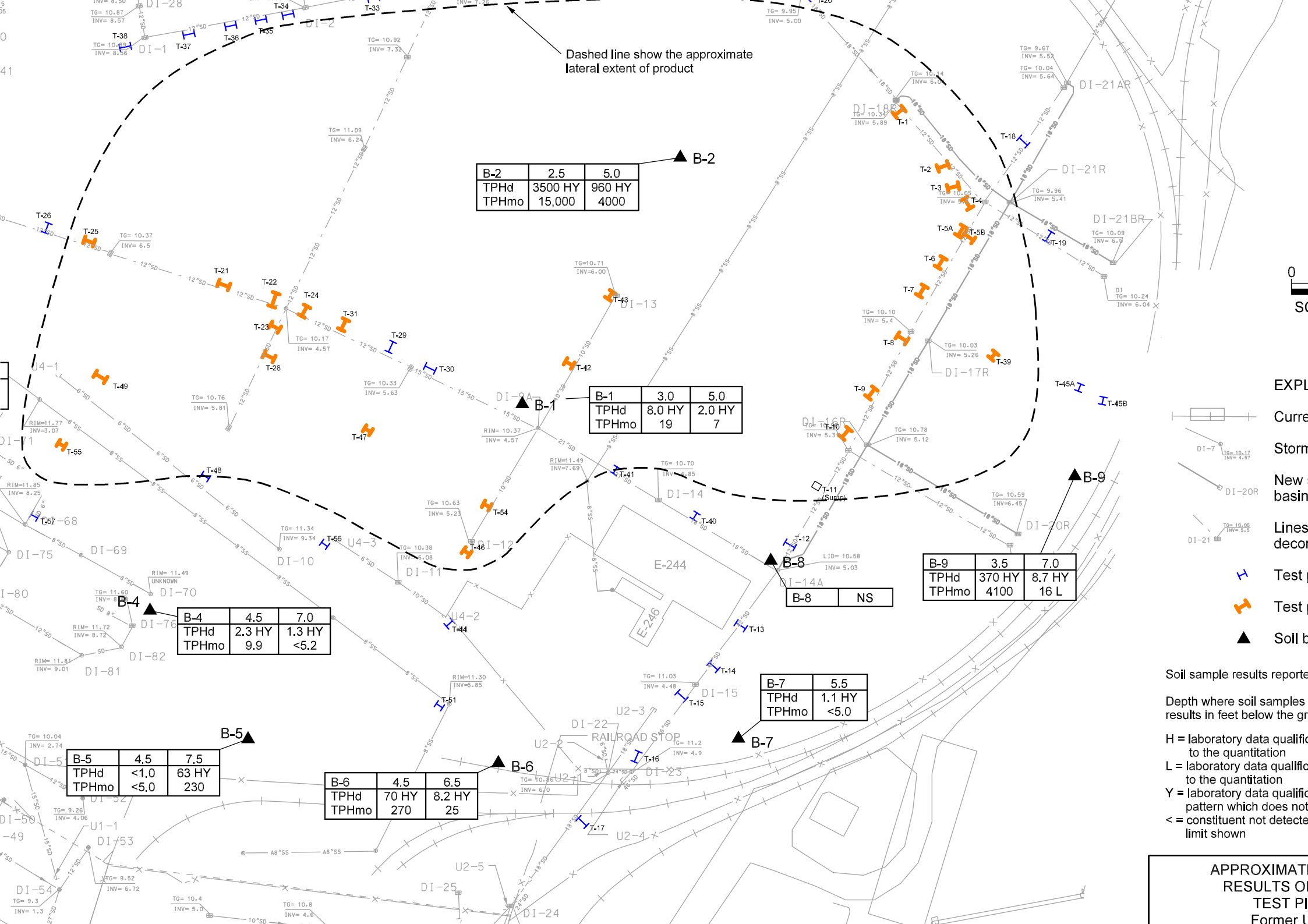
TDS = Total dissolved solids using EPA Method 160.1

µg/L = concentrations reported in micrograms per liter

mg/L = concentrations reported in milligrams per liter

ND = target analytes not detected at or above laboratory reporting limit, or range limit range, shown in parentheses.

< = target analyte not detected at or above the laboratory reporting limit shown.



B-2	2.5	5.0
TPHd	3500 HY	960 HY
TPHmo	15,000	4000

B-1	3.0	5.0
TPHd	8.0 HY	2.0 HY
TPHmo	19	7

B-4	4.5	7.0
TPHd	2.3 HY	1.3 HY
TPHmo	9.9	<5.2

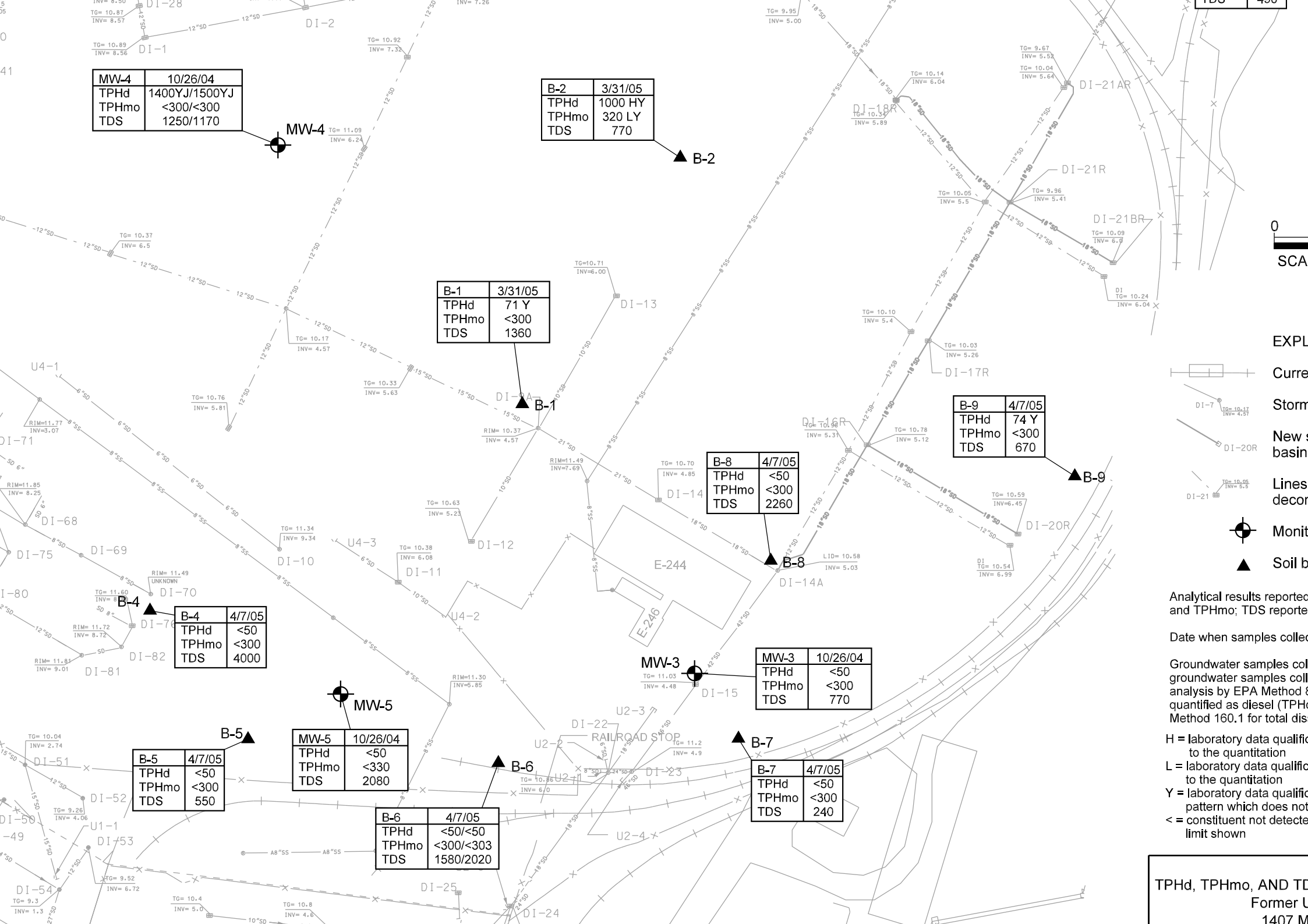
B-5	4.5	7.5
TPHd	<1.0	63 HY
TPHmo	<5.0	230

B-6	4.5	6.5
TPHd	70 HY	8.2 HY
TPHmo	270	25

B-7	5.5
TPHd	1.1 HY
TPHmo	<5.0

B-8	NS

B-9	3.5	7.0
TPHd	370 HY	8.7 HY
TPHmo	4100	16 L


MW-4
10/26/04
TPHd 1400YJ/1500YJ
TPHmo <300/<300
TDS 1250/1170
B-2
3/31/05
TPHd 1000 HY
TPHmo 320 LY
TDS 770
B-1
3/31/05
TPHd 71 Y
TPHmo <300
TDS 1360
B-9
4/7/05
TPHd 74 Y
TPHmo <300
TDS 670
B-8
4/7/05
TPHd <50
TPHmo <300
TDS 2260
B-4
4/7/05
TPHd <50
TPHmo <300
TDS 4000
MW-3
10/26/04
TPHd <50
TPHmo <300
TDS 770
MW-5
10/26/04
TPHd <50
TPHmo <330
TDS 2080
B-5
4/7/05
TPHd <50
TPHmo <300
TDS 550
B-6
4/7/05
TPHd <50/<50
TPHmo <300/<303
TDS 1580/2020
B-7
4/7/05
TPHd <50
TPHmo <300
TDS 240
E-244
E-246
RAILROAD STOP
DI-21AR
DI-21R
DI-21BR
DI-18R
DI-17R
DI-16R
DI-14A
DI-20R
DI-13
DI-12
DI-11
DI-10
DI-15
DI-22
DI-23
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DI-54
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DI-68
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DI-71
DI-75
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DI-81
DI-82
U4-1
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U2-1
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Analytical results reportec
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Date when samples collec
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analysis by EPA Method 8
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Method 160.1 for total dis
H = laboratory data qualific
to the quantitation
L = laboratory data qualific
to the quantitation
Y = laboratory data qualific
pattern which does not
< = constituent not detecte
limit shown
TPHd, TPHmo, AND TD
Former U
1407 M

APPENDIX B

Photographs

APPENDIX B
PHOTOGRAPHS

Former Union Pacific Roundhouse Area
1407 Middle Harbor Drive
Oakland, California

Photograph B-1 – Repaving of Former UP Roundhouse site, facing north.

Photograph B-2 – Following Phase 2 Engineering Activities, facing west.

Photograph B-3 – Following decommissioning of PMW-7, facing west.

Photograph B-4 – Following decommissioning of PMW-8, facing north.

Photograph B-5 Facing east at Former UP Roundhouse.–

Appendix D
Port of Oakland's Emergency Plan of Action for Discoveries of Unknown Historic or Archaeological Resources

PORT OF OAKLAND

Emergency Plan of Action

For Discoveries of Unknown Historic or Archaeological Resources

The construction crew plays a vital role in the cultural resources monitoring process and should always be alert for these resources. More often than not, heavy equipment operators make the first discoveries of cultural finds, so it is extremely important that those involved in such activities be aware of the proper procedures to follow in the event of discovery.

When operating in the field, crewmembers should always keep an eye open for historic and archaeological resources. It is also important to remember that cultural resources of importance might be present in imported fill and dump deposits. Therefore, vigilance should occur during all operations, in both fill and undisturbed deposits.

During all excavations, crews should be especially alert for cultural resources anytime they observe the following conditions:

1. Soil and deposit changes, such as color or type. A soil color change can indicate the presence of an historic trash dump, remnants of submerged or buried wooden structures, remnants of a shipwreck, cargo lost off the loading docks, or debris thrown overboard from a moored ship. Although it is unlikely, soil color changes might also indicate Native American remains such as living surfaces or hearths.
2. Presence of charcoal particles in soil. Charcoal, as larger chucks, small flecks, or in thick, black horizontal deposits, might indicate the presence of burned ships, burned cargo, or even dock fires. Remnants from these activities might relate to local events important to Bay Area history.
3. Any buried objects or structures.

Given the geological history of the area, many of the above indicators will more than likely be associated with natural phenomena such as siltation, marsh and mud deposits, and various other typical coastal marine/submarine features. Merritt Sands overlain by Young Bay Muds, both of which are undisturbed, dominate the stratigraphy. In many excavation and dredging areas, these naturally occurring layers have been capped by artificial fill, consisting of hydraulically placed marine materials, and terrestrial materials (sand, gravel). The point is simply to be aware of the potential if the above conditions are noted. More often that not, a brief but thorough 30 second visual inspection will clarify whether cultural resources are present in any given excavated deposit.

Which Cultural Resources are Important?

The significance of unknown archaeological and historical finds cannot usually be determined until the materials have actually been uncovered. Generally, all cultural materials must be considered significant until assessed otherwise. However, the crew can follow some basic guidelines to establish the level of attention and response required for detected cultural materials.

1. A cluster, cache, or deposit (i.e., lens) of materials should be considered historically or archaeologically important by the crew until it has been assessed otherwise. During dredging and excavation operations, these might appear as large concentrations of bottles, tools, plates, or a mixture of these and various unidentifiable finds. Likewise, any submerged or buried structure, or part of a structure, should be considered important until assessed otherwise. These might include vessels, parts of vessels, pier or piling structural fragments, or various other features. All artifacts will be considered property of the Port of Oakland, unless determined or agreed otherwise, and must always be handed over to Port authorities.
2. Normally, both Federal and State evaluation criteria do not consider isolate finds significant. However, isolates can contribute to the overall understanding and appreciation of history and prehistory. Their location should be noted and isolates should be put aside until the appropriate specialist can properly examine them. Isolates can be recognized either as lone finds, or between one (1) and three (3) finds, that have been detected at least 50 meters from any other archaeological or historical finds. All isolates will be considered property of the Port of Oakland, unless determined or agreed otherwise, and must always be handed over to Port authorities.

If cultural resources are discovered, a crewmember or contractor supervisor should note the find spot. This will be vital if a position needs to be relocated for general documentation or, later, the crew needs to be made aware of cultural resource sensitivities in a specific project area.

General Emergency Reporting Procedures

In the event that the contractor's operations expose or detect any of the structural remnants or artifacts noted above, the contractor shall recover and secure, as best as possible, the materials. The contractor shall report the finds immediately to the Project Construction Manager and the Port. The Port will determine the disposition in accordance with prescribed regulations. All cultural remains discovered shall remain the property of the Port, and will not become the property of the person(s) making or reporting the discovery.

When significant archaeological materials, such as those previously noted, are encountered during the operations, the contractor shall immediately suspend all construction activities with 50 yards of that location and notify the Port. Work shall not resume in that location until an approval by appropriate authorities has been given to continue. Construction activities may be moved to another location to avoid loss of work

time. If the Port believes that such resources require scientific investigation, the contractor shall allow five (5) calendar days for completion of the archaeological investigation. The scientific excavation, analysis and reporting of the results shall be conducted after the archaeological investigation, but not more than 180 days from the date of discovery.

Emergency Procedures for the Work Crew

In the event that cultural resources are uncovered during dredging and excavation, crew and equipment operators must adhere to the procedures outlined below. The following measures apply when non-isolate finds are detected:

1. Dredging and excavation work, or any other activities at the locations and within 50 yards of the finds must halt.
2. The crew member(s) should immediately notify the Project Construction Manager and the Port Project Environmental Coordinator.
3. In the event that the Project Construction Manager is not available, the Port Project Environmental Coordinator and/or the Port Cultural Resources Specialist should be contacted directly.
4. Work can be shifted to other project areas to avoid loss of work time. However, work should only resume in the suspected area once the situation has been properly examined and assessed, and the Port has given notification that work may resume.

If there is ever any doubt or confusion upon discovery of cultural materials, or in the event that no Port representatives can be located, the contractor supervisor and crew should temporarily halt work until the proper personnel can be notified and the situation clarified.

Emergency Plan of Action Scenarios

The table below presents two Plan of Action scenarios for the crew once cultural resources have been discovered. This provides quick Plan of Action reference, although the crew should be aware that unexpected scenarios might arise. If there us uncertainty about a discovery, consult with the proper project personnel before continuing work in the area.

FINDS	IMMEDIATE ACTION	REQUIRED ACTION
Isolates (a bottle or two, a tool, fragments of a plate, etc.)	Set find(s) safely aside Continue working	Notify Port Project Inspector at the most convenient time (e.g., coffee break, lunch break) and turn over the find for examination.
Cache of bottles, plates, metal work, structural remains, shipwreck, etc. Human remains	STOP ALL WORK WITHIN 50 YARDS	Follow the outlined procedures. Do not resume work until the finds have been properly assessed, and Port has given go-ahead to resume.

Human Remains

Human remains discovered on non-Federal lands, even if the project is under Federal (lead agency) jurisdiction, must apply with the State procedures outlined below. If the human remains are on Federal lands, then the NAGPRA protocols must be followed. Although discovery of human remains is not considered a likely possibility, there are a few points to bear in mind if they are detected:

1. The contractor shall immediately notify the Port upon the initial discovery of human remains. At this point, the County Coroner will be contacted for an escorted site visit.
2. Human skeletal remains must never be handled or removed from their initial discovery location until an archaeologist is present to direct the treatment of such remains.
3. If human remains are only noticed once a dredge, or similar operation, has re-deposited the materials, then the materials should be left alone, along with the entire associated deposit, until the County Coroner arrives for assessment of the remains.
4. Human remains should never be "temporarily" moved by the contractor to another location, including assumed "safe storage" locations, until the appropriate authoritative person(s) have examined the remains and approved these activities.
5. During any recovery and treatment, human remains shall be handled by the archaeologist with due care and respect, and protected from inadvertent damage.
6. The Port, after consultation with the appropriate officials, shall ensure the ultimate disposition of any human remains.

When directed by the Port, the contractor shall cooperate in salvage activities to the fullest extent possible through the use of available personnel and/or equipment for limited removal of overburden, physical removal of large objects, transportation of Port staff and equipment, and protection of the discovered items. Should the discovery site require archaeological or related studies resulting in delays and/or additional work, the Port will coordinate with the contractor as appropriate.