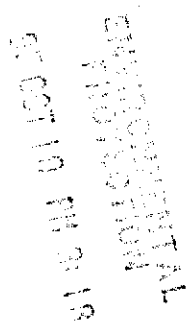
Jonas & Associates Inc.

REMEDIAL DESIGN AND IMPLEMENTATION PLAN
CYPRESS FREEWAY RE-ALIGNMENT
OAKLAND, CALIFORNIA

September 12, 1995



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September 12, 1995

Prepared for:

Department of Transportation
Cypress Construction Office
1121 7th Street, 2nd Floor
Oakland, California 94607

Prepared by:

Jonas & Associates Inc.
Rothwell Consulting Group
Performance Excavators, Inc.

Remedial Design and Implementation Plan
J&A Truck Repair
500 Kirkham Street
Oakland, California

Prepared for:

Department of Transportation
Cypress Construction Office
1121 7th Street, 2nd Floor
Oakland, California 94607

CYPRESS FREEWAY RE-ALIGNMENT
Contract Number: 04-192204
Jonas & Associates Inc., Job No. CLT-212

Prepared by

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OAKLAND, CALIFORNIA

INTRODUCTION

MCM Construction, Inc., (MCM) has been contracted under Contract Number 04-192204 by the State of California Department of Transportation (Caltrans) to perform site remediation via excavation and disposal of contaminated material from the J & A Truck Repair property located at 500 Kirkham Street, Oakland, California. Figure 1-1, regional site location map identifies J & A Truck Repair (Site).

The site remediation work is associated with the reconstruction of a segment of the Interstate 880 (I-880) corridor known as the Cypress, which collapsed during the 1989 Loma Preita earthquake. Various site investigations have been performed on the aforementioned site by several consultants. The results of previous investigations have indicated presence of contamination in soils and possibly groundwater. Caltrans has contracted MCM to perform removal action at this facility.

Prior to field activities, this Remedial Design and Implementation Plan (RDIP) has been prepared to provide guidelines and specifications for removal of contaminated soil at the J & A Truck Repair. This RDIP includes and references documents previously presented for the site, including:

Geo/Resource Consultants, Inc., Site Investigation Report - Area 8, Department of Transportation T.O. Number: 04-192201-01, Highway 880, Cypress Reconstruction, Oakland, California, August 1992.

California Regional Water Quality Control Board, San Francisco Bay Region, File No. 2223.09 (SA), Permit East Bay Municipal Utility District, Account No. 502-87681 for Contract No. 04-192204.

Memorandum from Office of Scientific Affairs to Barbara Cook, DTSC, Site Mitigation Branch Region 2, Subject: Cypress Freeway Re-alignment, Oakland, California, July 22, 1993.

Correspondence from Lynn Nakashima, Associate Hazardous Materials Specialist, DTSC, Site Mitigation Branch Region 2, to Allan Chow, Caltrans, District 4

Environmental Engineering, Subject: Health Based Screening Levels (HBSLs) for Cypress Freeway Re-alignment Project, BoB's Junkyard/Urban Park Area, Oakland, October 22, 1993.

Correspondence from Raymond C. Pang, Resident Engineer, Caltrans, Cypress Construction Office to Said Najafi of MCM Construction, Inc., Subject: Response to Jonas & Associates' Questions on Contaminated/Hazardous Materials, February 27, 1995.

Environmental Solutions, Inc., Preliminary Endangerment Assessment, J & A Truck Repair, prepared for California Department of Transportation, Environmental Engineering Branch, Oakland, California, April 3, 1995.

Correspondence from Frank Cannizzaro, Resident Engineer, PE, Caltrans to MCM Construction, Inc., Subject: Site Remediation, July 26, 1995.

Preparation of RDIP, project management and site remediation supervision are being performed by Performance Excavators Inc. (PerFex).

This RDIP provides the basis for excavation of contaminated soil. It does not address groundwater investigations and/or cleanup procedures.

The overall objectives of the RDIP are:

- To inform all concerned parties of the scope of work and procedures to be followed;
- To ensure that field work objectives and protocols are well planned; and
- To provide field personnel with specific guidance for each activity conducted in the field.

SECTION 1.0
SUMMARY OF BACKGROUND DATA

Majority of historic site information presented in this section of the RDIP has been retrieved from the Preliminary Endangerment Assessment (PEA) report prepared by Environmental Solutions Inc. (ESI), in April 1995.

1.1 LOCATION

J & A Truck Repair is located at 500 Kirkham Street in the City of Oakland, County of Alameda, California 94607 along the proposed reconstruction alignment of Interstate 880, referred to as the Cypress freeway. Its Latitude and Longitude are 37/48/12.0 and 122/17/30.0, respectively, and it is located in Section 34 of Township T1S and Range R4W.

1.2 ENVIRONMENTAL SETTING

1.2.1 Topography of the Site and Surrounding Areas

The topography of the Site and vicinity is generally flat, and slopes toward the south/southwest at a grade of approximately 1 percent (ESI, 1995).

1.2.2 Geology of Site and Vicinity

On the basis of borings drilled and logged at the Site by ESI (ESI, 1995), the soil types as described by ESI consist of the following:

- Artificial fill - Dark yellowish brown gravelly sand and clay with brick, glass, and wood debris observed from ground surface to depths ranging from 6 inches to 6 ft bgs. Based on engineering data, the maximum known thickness of this material in west Oakland is 25 feet (United States Geological Survey [USGS], 1957).

- Bay Mud - Dark gray silt, clay, and sand, with shell fragments observed at depths ranging from 2 to 8 feet bgs. May represent fill material dredged from bay. Based on engineering data, the known thickness of the Bay mud is from several inches to 85 feet (USGS, 1957).

- Merritt Sand - Moderate yellowish brown silty and clayey sands observed at depth ranging from 4 to 13 feet bgs. Water bearing unit. Based on engineering data, the known thickness is several inches to 65 feet (USGS, 1957).

- Temescal Formation - Gray silty clay with zones of shell and sand from 55 to 120 feet bgs. This formation acts as an aquitard between the overlying Merritt Sand and Alameda Formation. Estimated thickness of this formation is 15 to 120 feet (Harding Lawson Associates [HLA], 1988).

- Alameda Formation - Oliver gray to Moderate yellowish brown gravels, sands, silts, and clays with occasional shell and organic material from 120 to 160 feet bgs. This formation is a water bearing unit. Based on engineering data, the maximum known thickness is 1,050 feet (USGS, 1957).

- Franciscan Group - Sandstones and shale (bedrock) from 160 feet bgs. Maximum thickness is unknown (USGS, 1957).

The artificial fill has a variable permeability due to variation in composition across the Site. In general, bay mud possesses a low permeability. The Merritt Sand has a high permeability and represents the first water bearing unit present in the Site vicinity (based on engineering studies, USGS, 1957) (ESI, 1995).

1.2.3 Site Hydrogeology

According to ESI's 1995 PEA report, the Merritt Sand is the first encountered subsurface aquifer, and is usually unconfined. Perched groundwater was not encountered in the artificial fill. The Merrit Sand is believed to be continuous across much of west Oakland south to Alameda Island. At the Site, the depth to groundwater in the Merritt Sand was reported to be approximately 7 feet bgs. The Merrit Sand aquifer extends to a depth of approximately 60 feet bgs, where the Temescal Formation is believed to provide a competent aquitard between it and the deeper confined aquifer present in the Alameda Formation. Based on aquifer pump test data, the Merritt Sand has a hydraulic conductivity on the order of 10^{-3} to 10^{-2} centimeters per second (cm/sec) (HLA, 1988). There are drinking water wells or production wells in the west Oakland area which utilize groundwater from the Merritt Sand aquifer (CH_2M Hill, 1990).

1.2.4 Surface Slope

According to ESI's 1995 PEA report, the slope of the site is generally flat, sloping toward the south/southwest at a grade of approximately 1 percent. There is no intervening terrain between the Site and the Oakland inner harbor waterway which would prohibit the movement of surface water down slope toward the harbor. Additionally, the surface waters in the Site vicinity flow into a storm drain system which drains into the San Francisco Bay.

1.2.5 Site Access

In April 1995, all the structures on the J & A Truck Repair were demolished by MCM. Currently, a chain-link fence surrounds the entire Site. There are two vehicle gates, and one pedestrian gate, in the fence which surrounds the property. Of the three gates, one vehicle gate is located on the western side of the Site by Kirkham Street, the other vehicle gate is located on the east side of the Site, on Poplar Court, and dead end street. The pedestrian gate is located to the south of the vehicle gate on Poplar Court.

1.2 LAND USE

1.2.1 Prior Land Use

Prior to 1866, the land was on the margin of the San Francisco Bay and consisted of undeveloped wetland. Artificial fill was placed between 1866 and 1890 as part of the construction of training jetties at the Port of Oakland Naval Supply Center (ESI, 1995).

1.2.2 Facility Ownership/Operations

Present owners: California Department of Transportation
Environmental Engineering Branch
111 Grand Avenue, 14th Floor
Oakland, California 94623-0660
Attention: Mr. Christopher Wilson

Caltrans is a division of the California State government. There are currently no active operations at the Site.

J & A Truck Repair: 1984 to 1994
Mr. Barney Smilo, property owner
240 Santa Ana Avenue
San Francisco, California
(415) 753-5800/731-3131

It is unknown who maintained operational control of the Site while J & A Truck Repair was an operating facility.

Smilo Chemical: 1954 to 1984
Mr. Barney Smilo, President
240 Santa Ana Avenue
San Francisco, California
(415) 753-5800/731-3131
Mike Mieir, Manager

Mr. Smilo was the president of Smilo Chemical Company, and reportedly appeared to rarely be present during operations at the Site. Mike Meier managed the daily operations of the company (DHS, 1983).

Prior to 1954: Unknown

1.2.3 Property Owners

The Site is currently owned by Caltrans. The State purchased the property in the summer of 1994 from Mr. barney Smilo. Records at the Alameda County Assessors and Recorders office indicate that Mr. Smilo purchased the property in 1976 from John and Catherine Metcalf. The Metcalfs owned the property from 1946 to 1976. They purchased the property in 1946 from the Golden West Brewing Corporation. Records were not readily accessible prior to the sale of the property in 1946 (ESI, 1995). Figure 1-2 presents the assessor's parcel map for J & A Truck Repair. Figure 1-3 offers a detailed site diagram of the subject site.

1.2.4 Surrounding Land Use

Currently, the area north and east of the Site is vacant land, but was previously occupied by the access ramps to Interstate 880, which were demolished in early 1994 in preparation for the freeway reconstruction. Across Kirkham Street to the west is the Red Star Yeast Company, and a Bay Area Rapid Transit (BART) commuter parking area (see Figure 1-4). The elevated BART railroad tracks are present on the adjacent parcel to the south. The land adjacent to the south of the Site, under the

BART tracks, has been vacant since 1967. The parcel adjacent to the south was utilized by Southern Pacific Rail Road Company as a flour wholesale facility from 1951 to 1967. From 1935 to 1951, this same parcel was a storage facility operated by W. H. Lawrence.

Interstate 880 was constructed in 1957. Prior to 1957, the current warehouse on the Site extended onto the parcel to the northeast. This portion of the warehouse was removed when the Interstate construction began.

1.3 HAZARDOUS SUBSTANCE/WASTE MANAGEMENT INFORMATION

1.3.1 Business/Manufacturing Activities

Site activities for J & A Truck Repair and Smilo Chemical Company are presented in Table 1-1. In addition to the activities described in Table 1-1, there is also a one, approximately, 1100-gallon underground storage tank (UST) at the Site. The UST is reported to contain gasoline.

1.3.2 Onsite Storage, Treatment, and Disposal

Former Storage, Treatment, and Disposal activities for J & A Truck Repair and Smilo Chemical Company are presented in Table 1-2.

1.3.3 Regulatory Status

According to a DHS preliminary assessment summary, completed in 1983, while completing a Resource Conservation and Recovery Act (RCRA) Part A application, Mr. Smilo inadvertently listed his company as a treatment, storage, and disposal facility (TSDF), as well as a generator. Smilo Chemical Company had an Interim Status Document (ISD) issued by DHS on April 6, 1981. In April 1983, Mr. Smilo requested that the ISD be rescinded. DHS responded that the ISD would be rescinded after an inspection to verify that no treatment, storage or disposal activities were occurring. An inspection was scheduled, then cancelled and was not rescheduled (ESI, 1995).

1.3.4 Inspection Results

An inspection of the Site in 1979 by the Alameda County health Department (the County) revealed the presence of a white pigment, titanium oxide, (TiO2) in a storm drain southwest of the site. The inspector for the Alameda County noted the presence

of a creamy white liquid in a drainage channel (Figure 1-3) directing water runoff from the Site toward a storm drain on Poplar Court (Figure 1-5).

DHS performed an inspection on October 28, 1980, due to a citizen complaint. The inspector found "*improper storage and disposal of hazardous wastes which include spills on soil, disposal into dumpster and onto adjacent property and storage in a pit*" (EPA, 1980).

In March 1981, DHS performed an inspection, due to an employee complaint about inadequate safety precautions and truck decontamination rinsate being released to the ground. The DHS inspector at the Site noticed an area of dead vegetation adjacent to a hole in the perimeter fencing on the east side of the Site. Soil in this area was darkened and had an odor of polystyrene. DHS collected an unknown quantity of soil samples at the Site. Analysis of the soil samples revealed the presence of pesticides and heavy metals in the surface soils. DHS and the RWQCB recommended corrective action to clean up contaminated soil and prevent future releases. No documentation exists to verify if any corrective action was performed at the Site (ESI, 1995).

1.3.5 Prior Assessments/Remediation

1.3.5.1 DHS Inspection

As stated previously, unknown number of soil samples were collected during a DHS inspection in March 1981. Analysis of the soil samples indicated the presence of heavy metals and pesticides in the surface soils at the Site. DHS and the RWQCB recommended corrective action to remediate the contaminated soil. The inspection report states that California Environmental Technology (CET) was contracted by Smilo Chemical Company to remove the contaminated soil. According to the PEA prepared by ESI, CET did not document their actions with DHS, therefore ESI could not verify whether the contaminated soil was actually removed from the Site. DHS also recommended removal of two sumps at the Site. Again due to lack of documentation, the report stated that there is no evidence that this activity was performed (ESI, 1995).

1.3.5.2 GeoResource Consultants, Inc., 1992 Site Investigation

On June 23, 1992, GeoResource Consultants, Inc. (GeoResource) drilled one soil boring in the southeastern portion of the Site, as part of a series of investigation in the Site area performed for Caltrans. The boring was advanced using a hand auger to a depth of 3.5 ft bgs. Soil samples were collected at 1 and 3 feet bgs, and

submitted for laboratory analysis of organochlorine pesticides and Title 26 metals. No organochlorine pesticides were detected in either of the two soil samples (see Table 1-3, Figure 1-6). The soil sample collected from 1 foot bgs contained 81 milligrams per kilogram (mg/kg) of lead. A Waste Extraction Test (WET) was performed on this soil sample, and lead was detected at 3.4 mg/l, which is below the STLC of 5 mg/l. The GeoResource report concluded that the potential for soil and groundwater contamination at the Site was low, and it appeared that remedial actions at the Site would not be required (ESI, 1995).

1.3.5.3 Environmental Solutions Inc., 1994 Site Investigation

1.3.5.3.1 Wipe Sampling

In October 1994, ESI collected wipe samples of the warehouse interior walls and floor, and soil and groundwater samples in the UST area, and the remaining portion of the Site. Six wipe samples and one field blank were collected from the interior of the warehouse on October 6, 1994, to assess if chemical residues are present (Figure 1-7). The samples were analyzed for the following parameters:

- Total Recoverable Petroleum Hydrocarbon (TRPH): EPA Method 418.1
- Heavy Metal Scan (Metals): EPA Method 6010
- Polychlorinated biphenyls (PCBs) and Pesticides: EPA Method 8080
- Volatile Organic Compounds (VOCs): EPA Method 8240
- Semi Volatile Organic Compounds (SVOCs): EPA Method 8270

Results of the wipe sample analysis (Table 1-4 and Figure 1-8) showed detectable concentrations of TRPH, Metals, Organochlorine pesticides, PCBs, SVOCs and VOCs on the interior walls of the warehouse.

1.3.5.3.2 Soil Sampling

Twelve borings were drilled at the Site by ESI on October 20 and 21, 1994, to depths ranging from 4 to 13 feet below ground surface (bgs) (Figure 1-9). Soil samples were collected from each boring for chemical testing at 1, 5, and 8 feet bgs. The soil samples were analyzed for the following constituents:

- Total Extractable Petroleum Hydrocarbon as diesel (TEPH-d): EPA Method 8015 modified for diesel
- Total Petroleum Hydrocarbon as gasoline (TPH-g): EPA Method 8015 modified for gasoline
- Total Oil and Grease (Total O&G): EPA Method 5520 E & F

- TRPH: EPA Method 418.1
- Heavy Metal Scan: EPA Method 6010
- PCBs and Pesticides: EPA Method 8080
- VOCs: EPA Method 8240
- SVOCs: EPA Method 8270
- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX): EPA Method 8020

Based on laboratory analysis (Table 1-5) of soil samples collected from borings B1, B11 and B12 during the site investigation performed by ESI, the soils in the vicinity of the 2000-gallon UST was reported to be impacted by gasoline, oil and grease, lead, acetone, BTEX, and SVOCs. A WET for soluble lead was performed on one soil sample (B12-1), with an elevated total lead value, collected from the UST area. The WET results for the sample showed a concentration of lead at 20 mg/l, which is above the STLC of 5 mg/l. Soils with concentrations of soluble lead above the STLC are classified as hazardous waste under Title 22 of the State of California Code of Regulations (CCRs) (ESI, 1995).

In general, soils on the Site have been reported to be impacted by TRPH, lead, and low concentrations of SVOCs and VOCs (Figure 1-10). A WET for soluble lead was performed on four soil samples (B4-1, B6-1, B6-5, B7-1) in two of the former sump locations, and adjacent to the former railroad spur, which showed high concentrations of total lead. Three of the four samples analyzed showed a concentration of lead above the STLC of 5 mg/l (B4-1 = 5.6 mg/l, B6-1 = 5.9 mg/l, B6-5 = 6.1 mg/l). Soils with concentrations of soluble lead above the STLC are classified as hazardous waste according to CCR Title 22 (ESI, 1995).

1.3.5.3.3 Groundwater Sampling

Temporary slotted Polyvinyl Chloride (PVC) casings were installed in six boring scheduled for water sampling. These boreholes were overdrilled to between 10 and 13 feet bgs. Groundwater samples were collected from the borings using a 1 inch diameter stainless steel bailer. The groundwater samples were analyzed for the same constituents as the soil samples, except for BTEX.

According to ESI (Table 1-6 and Figure 1-11), groundwater beneath the UST has been impacted by gasoline, oil and grease, metals, and VOCs. Heavy metals and VOCs detected in groundwater samples collected from this area are at or exceed their respective MCLs. Due to only one grab groundwater sample being collected from this area, insufficient data is present to discuss up and down gradient concentration differences, specific source areas, and concentration plume delineations.

Groundwater underneath the remaining portion of the Site has been reported to be impacted by TRPH, metals, VOCs, and unknown compounds in the diesel and motor oil range. Heavy metals and VOCs detected in groundwater samples collected from beneath the Site are at or exceed their respective MCLs. Source areas for groundwater contamination has been reported to appear to be in the vicinity of the former and present sumps, the former railroad spur, and the former drainage channel (Figure 1-3). According to ESI, insufficient data is available at this time to adequately assess groundwater contaminant concentration plumes (ESI, 1995).

1.3.6 Documentation of Spills or Releases

A DHS inspection in 1980 identified improper storage and disposal of hazardous materials in the warehouse, discharge of chemicals to the ground, disposal of chemicals into a dumpster, storage of hazardous waste in a pit, unlabelled chemical containers, dead vegetation,and stained soil. Analytical results from soil samples collected during the inspection indicated the presence of pesticides (chlordane, DDT), PCBs (arochlor 1016) and heavy metals (lead) in the Site soils at a depth of 1 foot bgs (ESI, 1995).

GeoResource was contracted by Caltrans to perform a soil investigation at the Site. In June 1992, GeoResource drilled one soil boring in the southeastern portion of the Site. Soil samples were collected at 1 and 3 ft bgs, and submitted for laboratory analysis of organochlorine pesticides and Title 26 metals. No organochlorine pesticides were detected in either of the two soil samples. Lead was detected in one of the soil samples, and WET results indicated that lead concentrations were below the STLC of 5 mg/l (ESI, 1995).

In August 1994, after the last tenant vacated the Site, an UST was discovered onsite by a Caltrans' right of way agent. In a personal conversation between an ESI field geologist and Mr. Barney Smilo, Mr. Smilo indicated that the UST had a capacity of approximately 2000 gallons, that he had not known about the UST when he purchased the property, and that he had last used the UST to hold gasoline in the 1970s during the Arab oil embargo. No permits for an UST were found during regulatory agency file searches (ESI, 1995).

1.3.7 Contaminants of Concern

Based on previous site investigations, ESI (1995) has identified the following contaminant of concerns (COCs) at J & A Truck Repair:

Total Petroleum Hydrocarbons (TPH) as Gasoline
TRPH
Total Oil and Grease
VOCs
Heavy Metals
Semivolatile Organic Compounds (SVOCs).

1.3.8 Preliminary Endangerment Assessment Summary and Clean-Up Standards

A Preliminary Endangerment Assessment (PEA) was completed for the Site by ESI in April 1995. The evaluation was based on analytical data accumulated during ESI's 1994 site investigation, as well as an assessment of the physical setting of the Site, land use considerations and various conservative assumptions regarding fate and transport of COCs. The PEA also incorporated Preliminary Remediation Goals (PRGs) developed by DTSC specifically for estimating potential health risks/hazards at sites along the Cypress Realignment Project area. The PRGs and associated guidance were detailed in an intradepartmental memorandum form the Office of Scientific Affairs (OSA) to Ms. Barbara Cook, Chief of the Site Mitigation Branch, Region 2, dated July 22, 1993 (Memorandum).

Figure 1-12 presents clean-up levels in soil for the Site as developed by DTSC.

According to the PEA, "*A potential threat of exposure to the construction workers may exist during the construction and demolition activities. Fugitive dust inhalation and direct dermal contact are potential pathways of exposure to workers at the Site. These threats can be mitigated by the use of proper personal protective equipment (PPE), and the implementation of engineering controls (dust suppression).*

Potential health risks associated with exposure to each of the COCs are summarized in Table 1-7, in conjunction with the exposure point concentrations and applicable PRGs (ESI, 1995).

SECTION 2.0
SITE PREPARATION

2.1 WORK PERFORMED PRIOR TO EXCAVATION ACTIVITIES

Prior to excavation activities a site visit will be performed by the Contractors and Caltrans. The area to be excavated will be flagged. Underground utility lines will be identified and marked by Caltrans. The Contractor will procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work, including registration for transporting vehicles carrying the contaminated soils and the hazardous material.

2.2 IDENTIFICATION OF EXCLUSION ZONE, CONTAMINATION REDUCTION ZONE AND SUPPORT ZONE

An Exclusion Zone, Contamination Reduction Zone and a Support Zone will be designated with boundary tape or safety fencing and signs. The Exclusion Zone will consist of areas where inhalation, oral contact, or dermal contact with contaminants is considered to be possible. It is anticipated that the Exclusion Zone will encompass the immediate confines of the excavation area with a 10 foot buffer zone from the edge of the excavation to the Exclusion Zone boundary, if practical. The Contamination Reduction Zone will be established between the Exclusion Zone and the Support Zone. In this area, personnel will begin the sequential decontamination process required to exit the Exclusion Zone. The Support Zone will consist of a clearly marked area where the office, break areas, and changing facilities will be located.

2.3 HEALTH AND SAFETY TRAINING

Both the Contractor and Caltrans employees working on this project will complete a safety training program which meets 29 CFR 1910.120 and 8 CCR 5192 covering the potential hazards. The training will be provided by the Contractor and shall be held prior to the start of work. Topics to be discussed shall include health and safety hazards associated with the day's activities and any safety-related issues from prior work done on the property. Pre-entry briefings shall be held prior to initiating any site activity in contaminated areas, and at such other times as necessary to ensure that employees are apprised of the Site health and safety plan. For operations defined as hazardous substance removal work, a pre-job health and safety conference shall be held before the start of actual work.

2.4 WASTE CONTAINMENT

An area at the Site will be identified for waste containment. All discarded materials, waste materials, or other objects will be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or littering. All potentially contaminated materials, e.g., personal protective equipment will be bagged as necessary, and segregated for disposal. Section 3.3 addresses waste disposal procedures.

2.5 SANITARY FACILITIES

2.5.1 Potable Water

An adequate supply of potable water shall be provided at the Site. Portable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap, and shall be otherwise designed, constructed, and serviced so that sanitary conditions are maintained. Water shall not be dipped from containers. Any container used to store, dispense, or distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.

Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

2.5.2 Non-Potable Water

Outlets for non-potable water, such as water for equipment decontamination, dust control, or firefighting purposes, shall be identified to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes. There shall be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing non-potable water.

2.5.3 Toilet Facilities

A minimum of one separate toilet facility shall be provided for each 20 employees or fraction thereof of each sex. Such facilities may include both toilets and urinals provided that the number of toilets shall not be less than one half of the minimum required number of facilities. EXCEPTION: Where there are less than 5 employees, separate toilet facilities for each sex are not required, provided the toilet facilities can

be locked from the inside and contain at least one toilet. Under temporary field conditions, provisions shall be made to assure that at least one toilet facility is available.

If the Site is not provided with a sanitary sewer, it shall be provided with one of the following toilet facilities unless prohibited by local codes:

- Chemical toilets
- Recirculating toilets
- Combustion toilets
- Flush toilets

Doors entering toilet facilities shall be provided with entrance locks controlled from inside the facility. Toilet facilities shall be kept clean, maintained in good working order, and provided with an adequate supply of toilet paper.

Washing facilities shall be on Site for washing of hands and shall be kept clean. Such facilities shall be in near proximity to the Contamination Reduction Zone.

2.6 PERSONAL AND EQUIPMENT DECONTAMINATION PROCEDURES

All employees and equipment leaving the exclusion zone shall be appropriately decontaminated. Appendix I - Health and Safety Plan provides detail description of decontamination procedures.

SECTION 3.0
EXCAVATION, SAMPLING, AND WASTE DISPOSAL PLAN

3.1 SITE EXCAVATION

The proposed scope of work, as identified by Caltrans, includes excavation of contaminated soil to a maximum depth of 6 feet bgs and/or above the first water table.

3.1.1 Applicable Rules and Regulations

Excavation, transport and disposal of contaminated soils and hazardous material shall be in accordance with the rules and regulations of the following agencies:

- United States Department of Transportation (USDOT)
- United States Environmental Protection Agency (USEPA)
- California Environmental Protection Agency (CAL-EPA)
  - Department of Toxic Substance Control (DTSC)
  - Integrated Waste Management Board
  - Regional Water Quality Control Board, Region 2 (RWQCB)
  - State Air Resources Board Bay Area Air Quality Management District (BAAQMD)
- East Bay Municipal Utilities District (EBMUD)
- Alameda County Department of Environmental Health
- Alameda County Department of Flood Control and Water Conservation, Zone 7
- California Division of Occupational Safety and Health Administration (CAL-OSHA)

3.1.2 Soil Excavation, Sampling and Analysis

Soil will be excavated to a maximum depth of 6 feet bgs (assumed by Caltrans to be above the water table) within the boundary of the site previously flagged by Caltrans. Figure 3-1 presents boundaries of the area slated for excavation. The estimated volume of soil to be excavated from the property is approximately 4,000 cubic yards.

Confirmation soil samples will be collected as follow:

- 1 sample for every 200 square feet at the bottom of the excavation.
- 1 sample for every 20 linear feet and 2 feet in depth at the walls of the excavation.

The soil samples for the Site will be analyzed for the following:

- Organochlorine Pesticides and PCBs: EPA Method 8080
- Title 22 CAM 17 Metals: EPA Methods 6010 and 7000 series
- Total Petroleum Hydrocarbons as gasoline and BTEX: EPA Methods 5030/8015 + 5030/8020
- TRPH: EPA Method 418.1
- Oil and Grease: EPA Method 5520 E & F
- Volatile Organic Compounds: EPA Method 8240
- Semi Volatile Organic Compounds: EPA Method 8270

All soil samples will be analyzed within 48-hours, except those methods that are restricted due to analytical limitations. The soil samples will be submitted to ChromaLab, Inc. (ChromaLab), a State of California analytical laboratory located in Pleasanton, California for analysis.

Upon receipt of the laboratory reports, analytical results will be submitted to DTSC for their review. In addition, the results will also be compared to the Preliminary Remedial Goals (PRGs) which were established by the Department of Toxic Substances Control Board for Cypress Reconstruction listed in Figure 1-12.

Soil excavation shall be temporarily terminated at this point until further instructions are provided by DTSC.

During the life of the field activities the following tasks will also be performed:

- A temporary fence will be placed around the excavation pit.

- During excavation a water truck will be maintained on Site to be used for dust control. Soil moisture levels along all Site access roads, haul roads, and in all active excavation and loading areas will be kept above 70% of soil field capacity to prevent dust suspension. Particulate will be monitored at an air quality monitoring station (see Appendix III) and if elevated contaminant levels are detected, remediation activities will be suspended until the appropriate precautions can be implemented. All monitoring results will be documented in project field notebooks.

- During excavation, particular attention will be given to the clean-up around the area where the sump pumps were located.

Upon completion of the excavation activities and approval from DTSC and Caltrans, the excavation will be available for backfilling by others.

3.2 FIELD SAMPLING PROCEDURES

The area to be sampled will be identified by the project geologist/engineer. The backhoe operator will scoop soil from that area. The field geologist/engineer will collect the sample from the backhoe in a glass jar or a 6 inch brass sleeve. The sleeve will be capped on both ends and labeled.

The person conducting the sampling will note the soil type, along with a description of any visible or odorous contamination present.

Samples will be placed in an ice chest with ice packs. Each cooler will contain sufficient ice and/or ice packs to ensure that proper temperature of 4° Celsius is maintained and will be packed in a manner to prevent damage to sample containers. Field Chain-of-Custody records, completed at the time of sample collection, will accompany the samples inside the cooler for shipment to the ChromaLab. All coolers will be delivered to the Chromalab by the Contractor within 24 hours after sampling. A detailed summary on sampling procedures is represented in Appendix II of this RDIP.

3.3 DISPOSAL OF CONTAMINATED WASTE GENERATED DURING SAMPLING ACTIVITIES

During the soil sampling and equipment decontamination, the following wastes may be generated: 1) wastewater, 2) contaminated soils, and 3) debris such as field gloves, tyveks, wipes, etc.

3.3.1 Wastewater

Equipment rinse water will be stored in holding tank(s) provided by MCM. The wastewater will be treated by another contractor. If the treated water meet the Caltrans Project's storm water discharge permit requirements, then the wastewater will be discharged into the storm drain. Otherwise, other treatment methodologies will be employed.

3.3.2 Contaminated Soils

All excavated soil will be placed in transport vehicles and hauled directly to a Class I disposal facility (no stockpiles). As specified by Caltrans, the excavated "*..material shall be considered to be Non-RCRA since the contamination is not source specific*" (Cannizzaro F., 1995). No contaminated soils or hazardous material will be deposited on public roads. All contaminated soils and hazardous material on exteriors of transport vehicles will be removed and placed either into the current transport vehicle or the excavation prior to the vehicle leaving the Site and/or the Exclusion Zone.

3.3.3 Debris

All potentially contaminated materials, e.g., personal protective equipment will be bagged as necessary, and segregated for disposal.

3.3.4 Waste Profile and Manifest

According to Caltrans, all solid waste will be considered a Non-RCRA waste and will be transported to a Class I landfill. PerFex will prepare the waste profiles and manifests. However, Caltrans will review, approve, and sign the documents.

SECTION 4.0
TRANSPORTATION TO LANDFILL

A Transportation and Traffic Control Plan (see Appendix VI) has been prepared which outlines the requirements and procedures for trucking the soils to Class I landfills. Specific requirements for landfill acceptance are currently being addressed.

For detail information on transportation requirements refer to Appendix VI of this RDIP.

SECTION 5.0
HEALTH AND SAFETY COMPLIANCE

All activities performed at the Site will be in accordance with the PerFex's Site Health and Safety Plan (HSP) attached as Appendix I of this RDIP. The Health and Safety Officer for the project, Mr. Greg Rainey will oversee all on-site personnel, their activities and implementation of the Site HSP.

The HSP was developed for PerFex, by Rothwell Consulting Group (RCG). The plan pertains to site remediation operations performed for the prime contractor (MCM) by PerFex in contaminated areas of the Cypress Freeway Re-alignment project, Section B, located in the City of Oakland, County of Alameda.

The Plan establishes the policies and procedures that protect the workers and the general public from potential heath and safety hazards posed at this Site. All contaminated soil removal activities will be conducted in a manner that minimizes the probability of injury, illness, property damage, or damage to the environment and will be performed in accordance with PerFex's Injury and Illness Prevention Program. The H&S Plan is prepared in accordance with and in reference to the following regulations and guidelines:

- United States Department of Labor, OSHA standards, specifically:
  - Title 29 CFR Part 1910.120 - Hazardous Waste Site Operations and Emergency.
  - Title 29 CFR Part 1926 - Health and Safety Regulations for Construction.
- California Occupational Health and Safety Regulations, specifically:
  - Title 8 CCR 5192 - Hazardous Waste Site Operations and Emergency Response.
  - Title 8 CCR 5094 - Hazard Communication.
  - Title 8 CCR 5095-5100- Hearing Conservation.
  - Title 8 CCR Chapter 4, Subchapter 4 - Construction Safety Orders.
  - Title 8 CCR 3203 - Injury and Illness Prevention Program.
- United States Environmental Protection Agency's Standard Operating Safety Guides, July 1988.
- NIOSH/OSHA/USCG/EPA Occupational Heath and Safety Guidance Manual for Hazardous Waste Activities, October 1985.
- PerFex's Injury and Illness Prevention Program.

SECTION 6.0
IMPLEMENTATION SCHEDULE

ACTIVITY	COMPLETION DATE
Submission of RDIP	September 12, 1995
Review and Comment Period	September 18, 1995
Final RDIP for Remedial Action	September 25, 1995
Remedial Action at 500 Kirkham Rd. Oakland, California	September 28, 1995
Submittal of Laboratory Analytical Results	October 25, 1995
Remedial Action Completion Report - Draft	To be determined
Review and Comment Period	To be determined
Remedial Action Completion Report - Final	To be determined

SECTION 7.0
REFERENCES

Geo/Resource Consultants, Inc., Site Investigation Report - Area 8, Department of Transportation T.O. Number: 04-192201-01, Highway 880, Cypress Reconstruction, Oakland, California, August 1992.

Memorandum from Office of Scientific Affairs to Barbara Cook, DTSC, Site Mitigation Branch Region 2, Subject: Cypress Freeway Re-alignment, Oakland, California, July 22, 1993.

Correspondence from Lynn Nakashima, Associate Hazardous Materials Specialist, DTSC, Site Mitigation Branch Region 2, to Allan Chow, Caltrans, District 4 Environmental Engineering, Subject: Health Based Screening Levels (HBSLs) for Cypress Freeway Re-alignment Project, BoB's Junkyard/Urban Park Area, Oakland, October 22, 1993.

TRC Environmental Corporation, Soil and Groundwater Investigation Report of Findings-Contract A, Union Pacific Railroad Property, Cypress Reconstruction, Oakland, California, July 6, 1994.

Environmental Solutions, Inc., Report of Findings Contract A-Supplemental Union Pacific Railroad Property, Oakland, California, November 16, 1994.

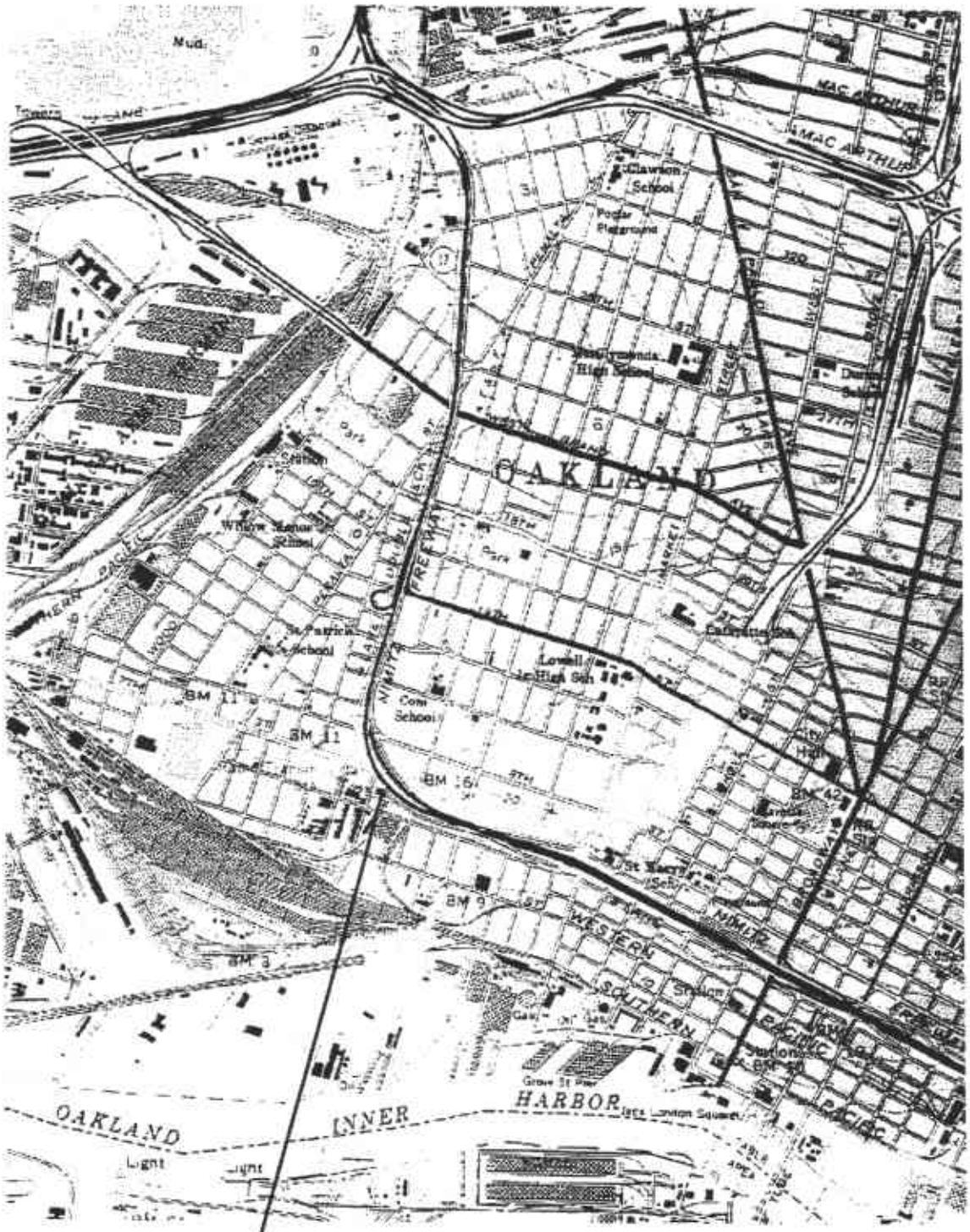
California Regional Water Quality Control Board, San Francisco Bay Region, File No. 2223.09 (SA), Permit East Bay Municipal Utility District, Account No. 502-87681 for Contract No. 04-192204.

Correspondence from Raymond C. Pang, Resident Engineer, Caltrans, Cypress Construction Office to Said Najafi of MCM Construction, Inc., Subject: Response to Jonas & Associates' Questions on Contaminated/Hazardous Materials, February 27, 1995.

Environmental Solutions, Inc., Preliminary Endangerment Assessment, J & A Truck Repair, prepared for California Department of Transportation, Environmental Engineering Branch, Oakland, California, April 3, 1995.

Correspondence from Frank Cannizzaro, Resident Engineer, PE, Caltrans to MCM Construction, Inc., Subject: Site Remediation, July 26, 1995.

FIGURES

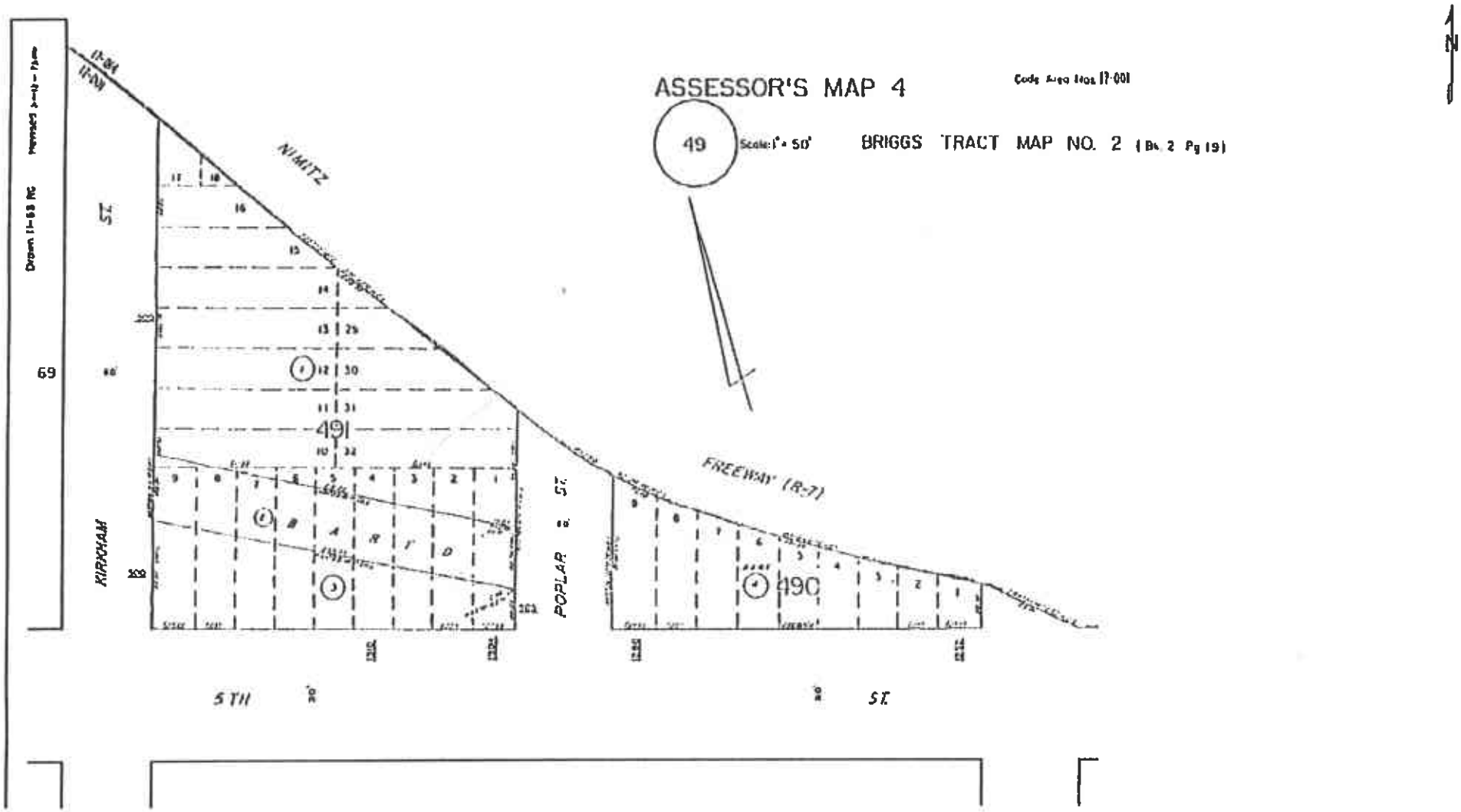


Regional Site Location Map
J & A Truck Repair
Cypress Reconstruction
Oakland, California

USGS 1:24,000 SCALE
Oakland East, California
7.5 Minute Series (Topographic)

Prepared by
Jonas & Associates Inc.

Date	Figure 1-1	CLT-212
9/5/95		



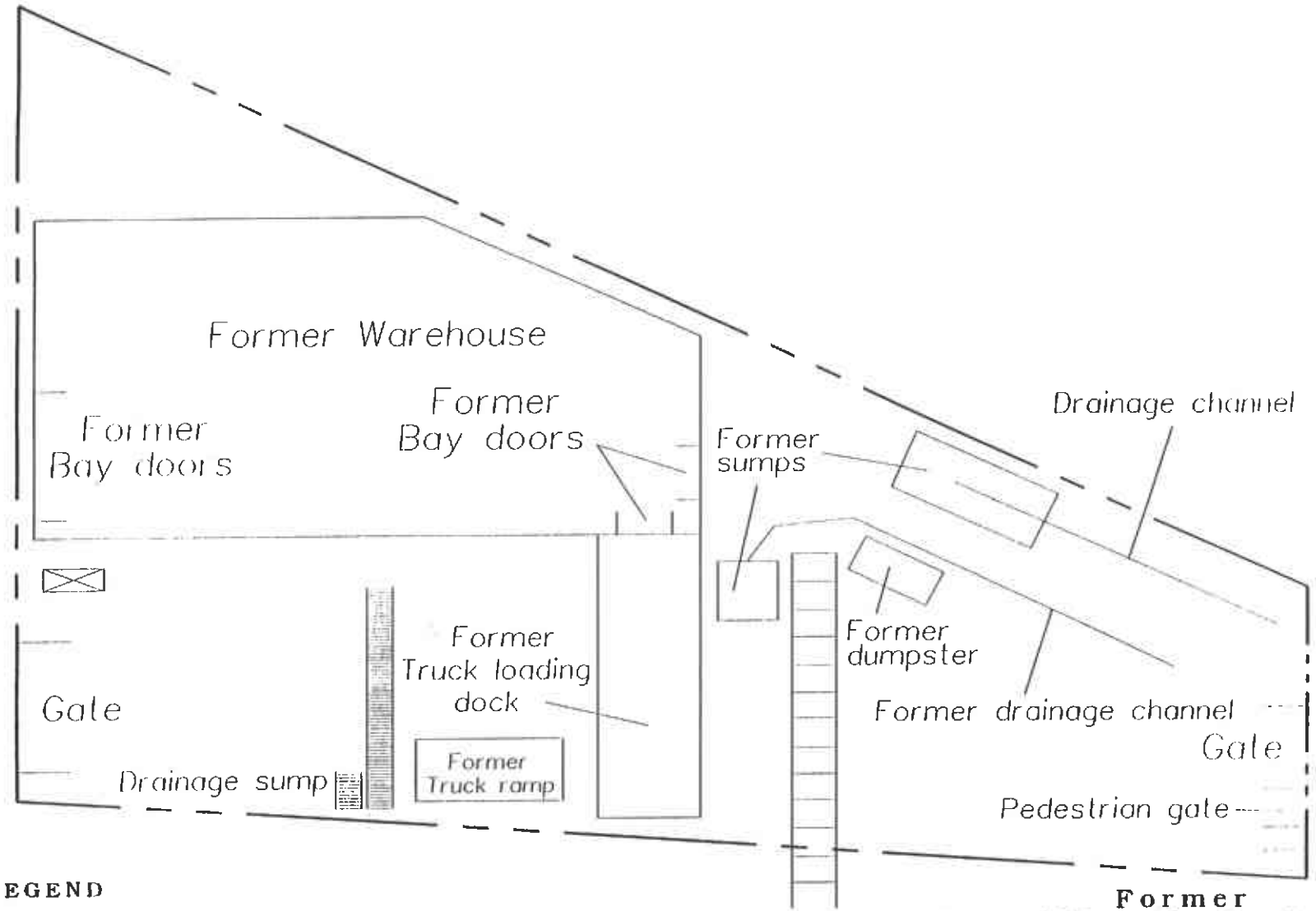
Assessor's Parcel Map for J & A Truck Repair Cypress, California

Prepared by
Jonas & Associates Inc.

Assessor's Parcel Number - 004-0049-001

Source: ESI,1995

Date	Figure 1-2	CLT-212
9/5/95		



Drawn by S.Y. 9-1-95

Drawing Number CLT212F1-3

Figure 1-3

Former Business/Manufacturing Activities
J & A Truck Repair
Prepared for
Department of Transportation
District 4
Prepared by
JONAS & ASSOCIATES INC.

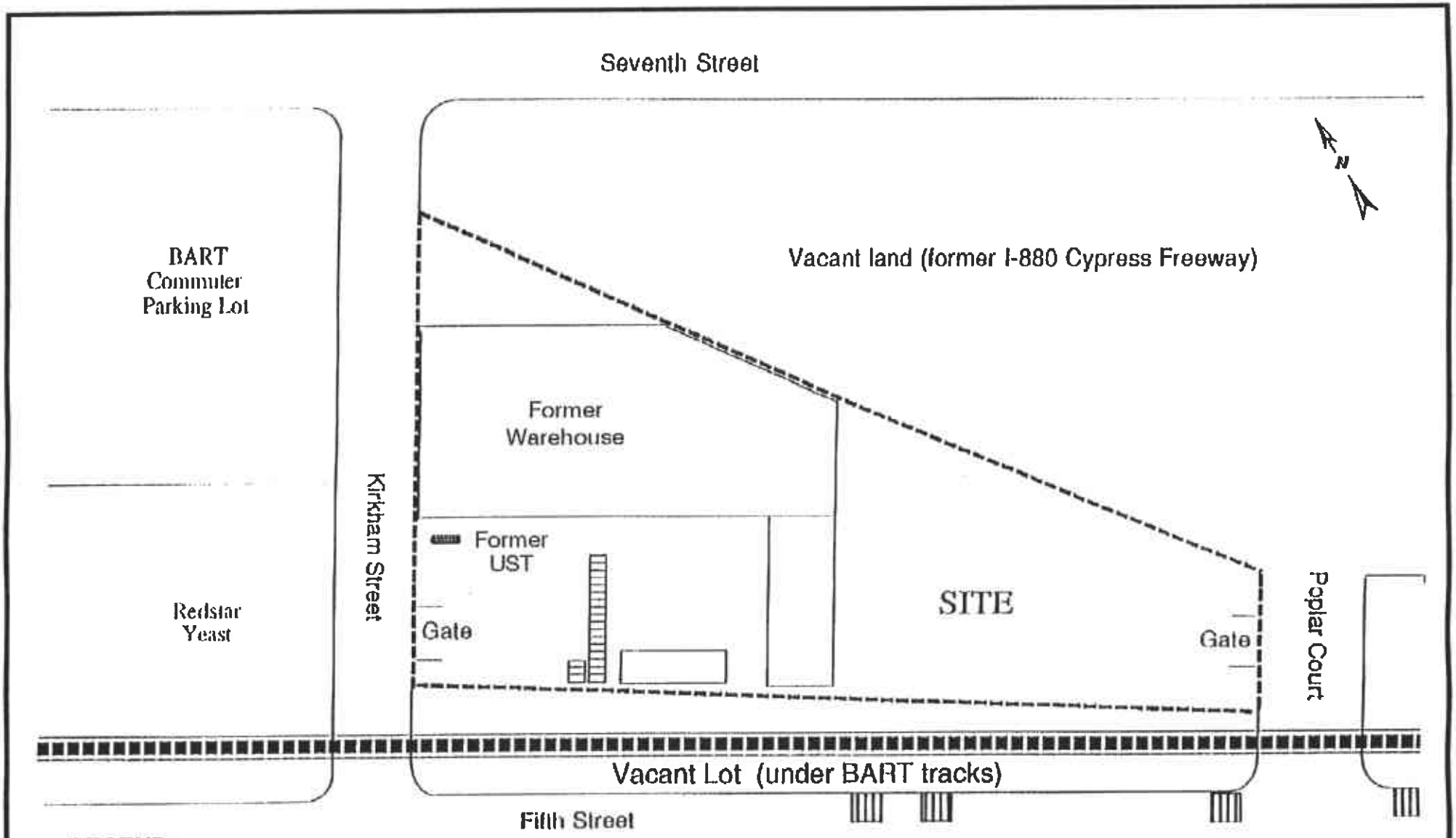
Source: ESI,1995

Scale
35 0 17.5 35 Feet

Date: 9-1-95
Locations Approx.

Figure 1-3

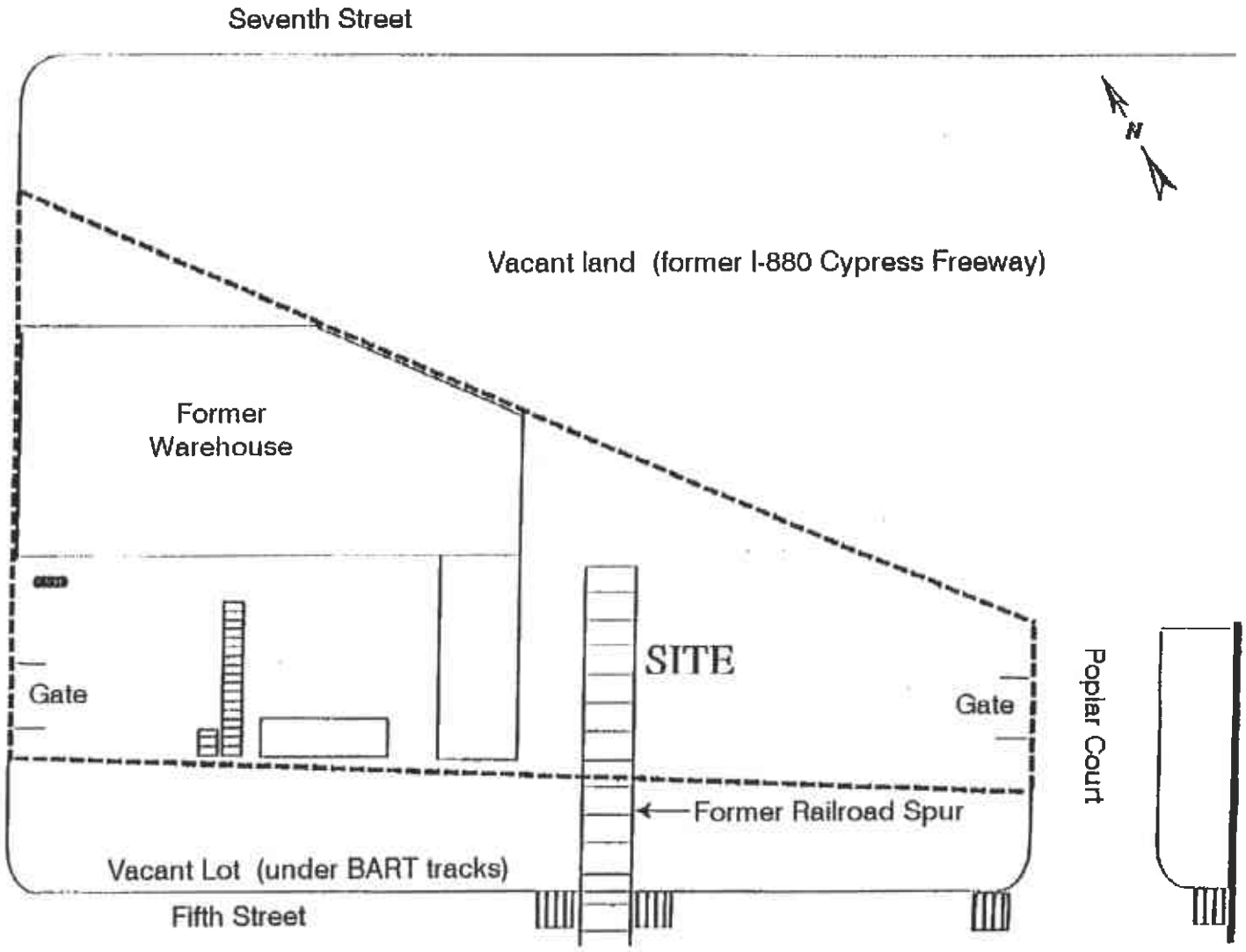
Drawing Number
CLT212F1-3



Surrounding Land Use Map
J & A Truck Repair
Cypress, California

Prepared by
Jonas & Associates Inc.

Date	Figure 1-4	CLT-212
9/5/95		



LEGEND

- Former Storm drain
- Former 2,000-gallon UST

0 60

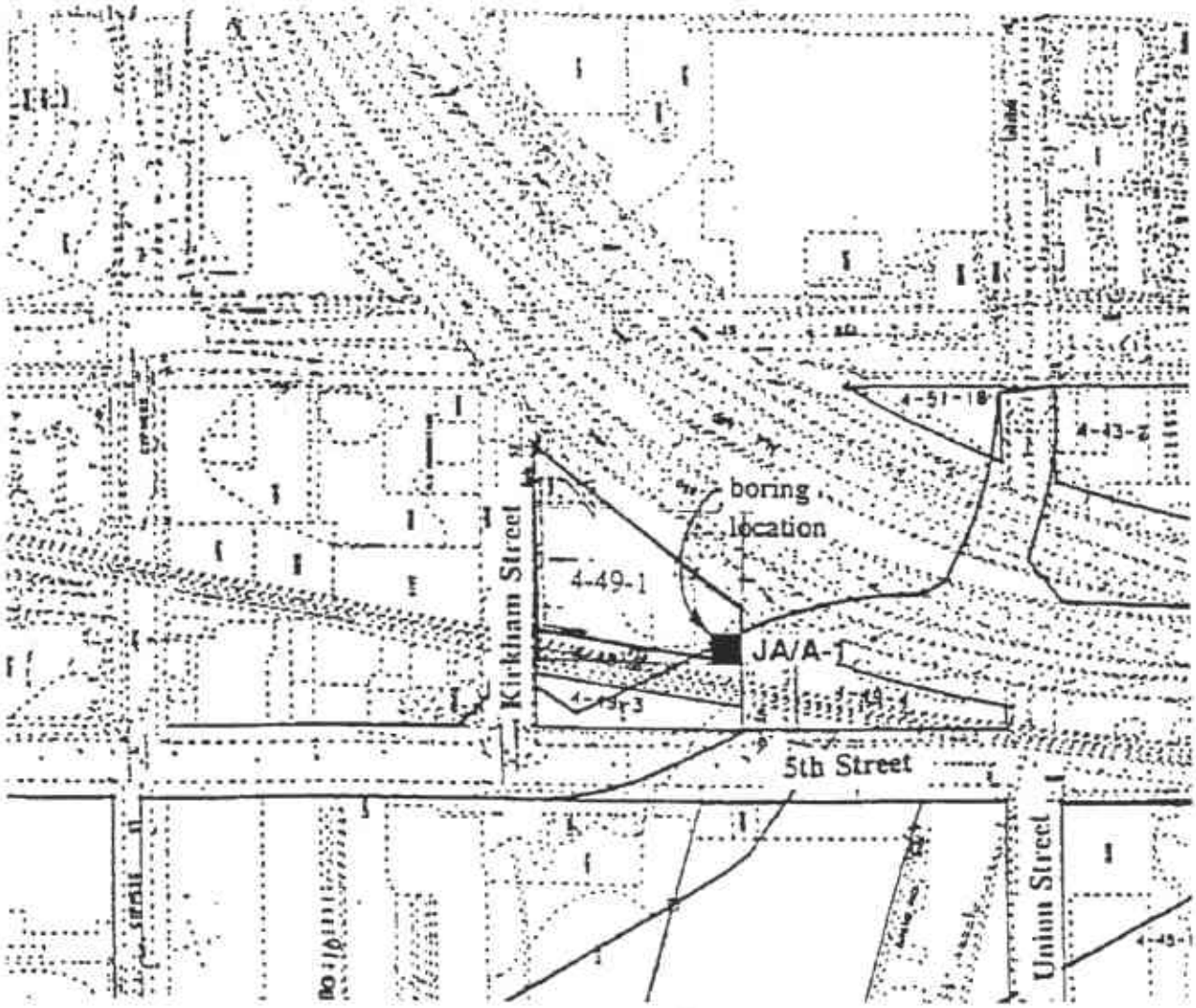
Approximate Scale
one inch = 60 feet

Source: ESI,1995

Storm Drain Locations
J & A Truck Repair
Cypress, California

Prepared by
Jonas & Associates Inc.

Date	Figure 1-5	CLT-212
9/5/95		



Source: Geo/Resource Consultants, Inc., August,1992

EXPLANATION

Hand Auger Location

June 1992 Sampling Borehole Locations J & A Truck Repair Cypress, California

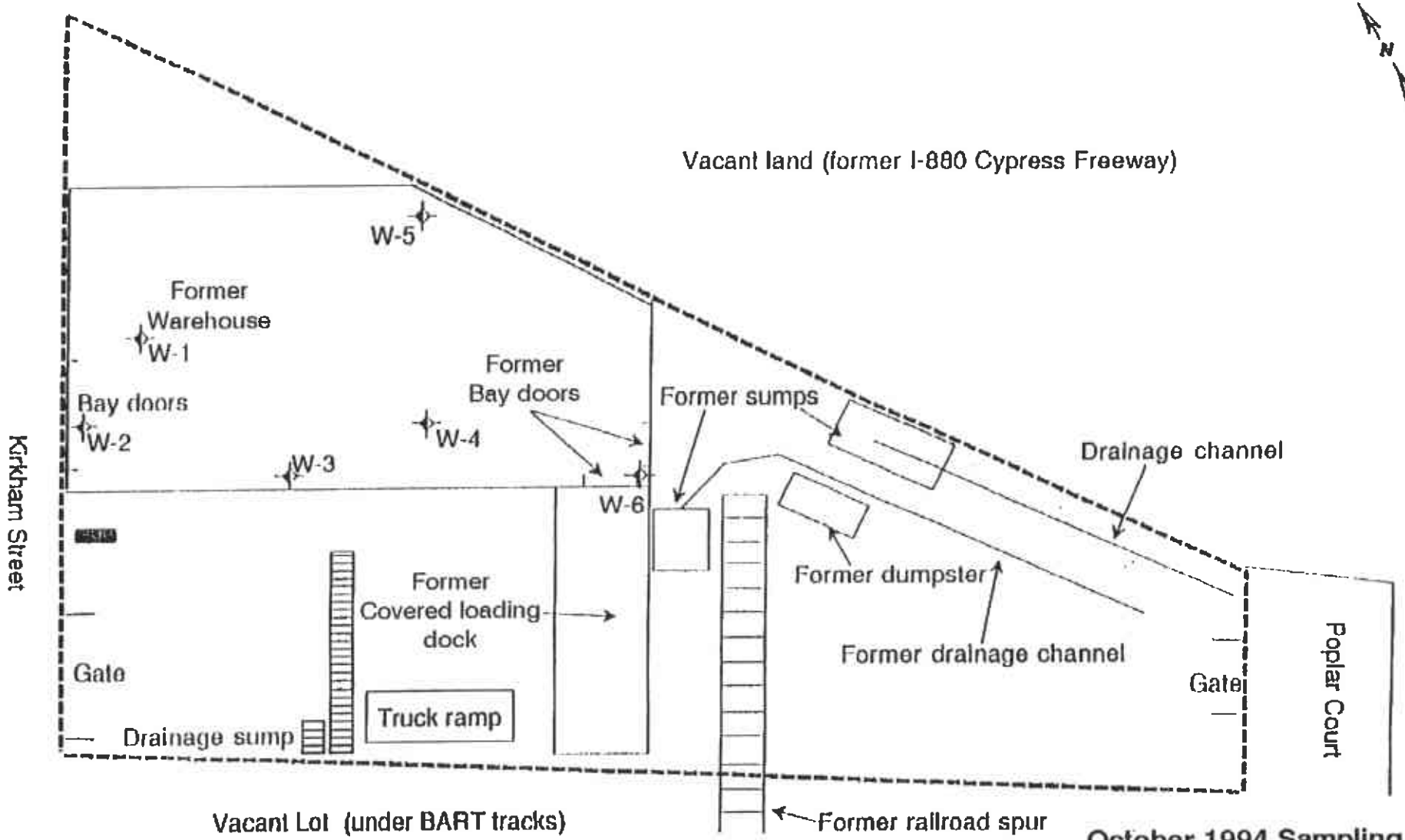
0 200

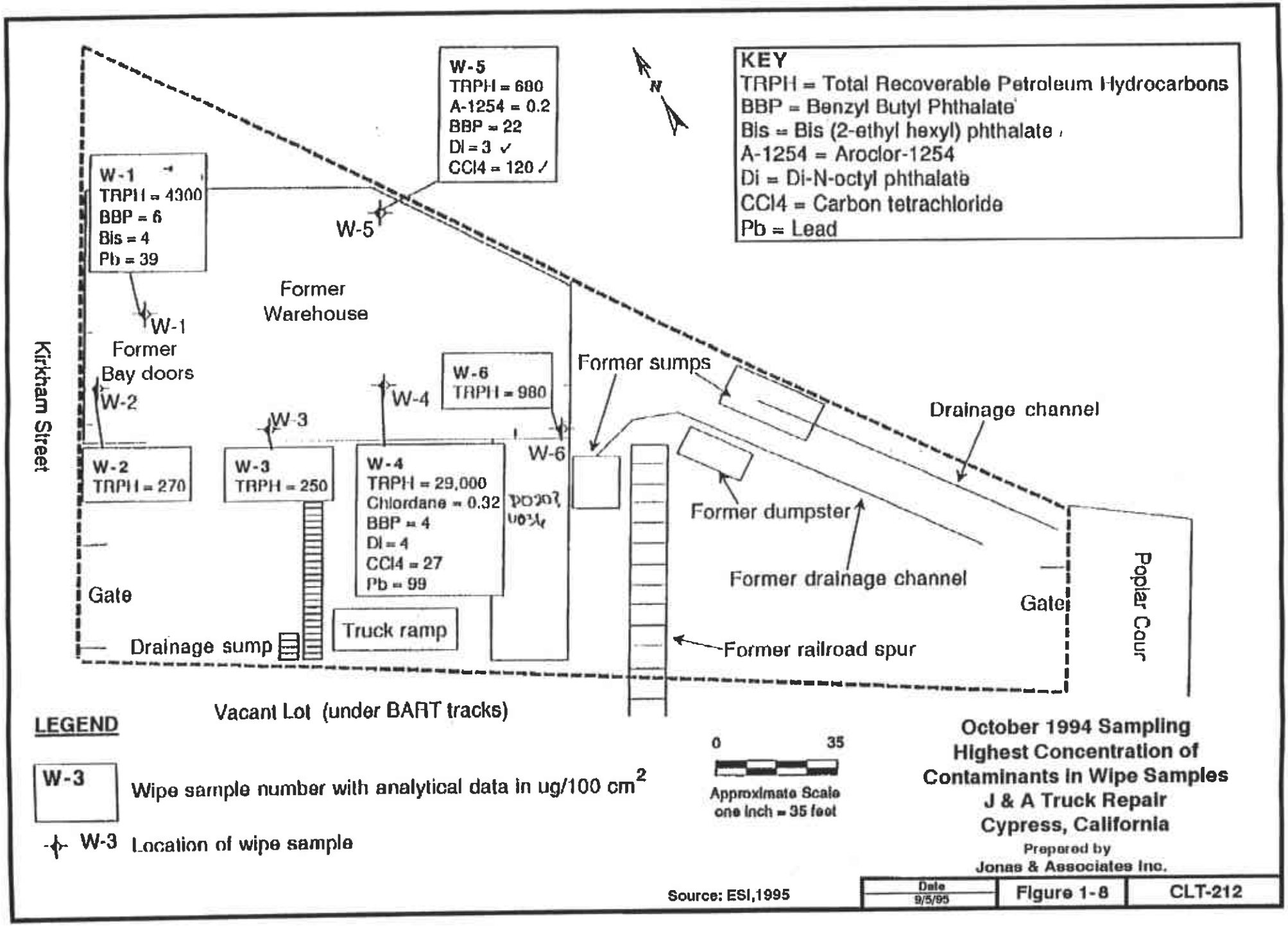
SCALE IN FEET

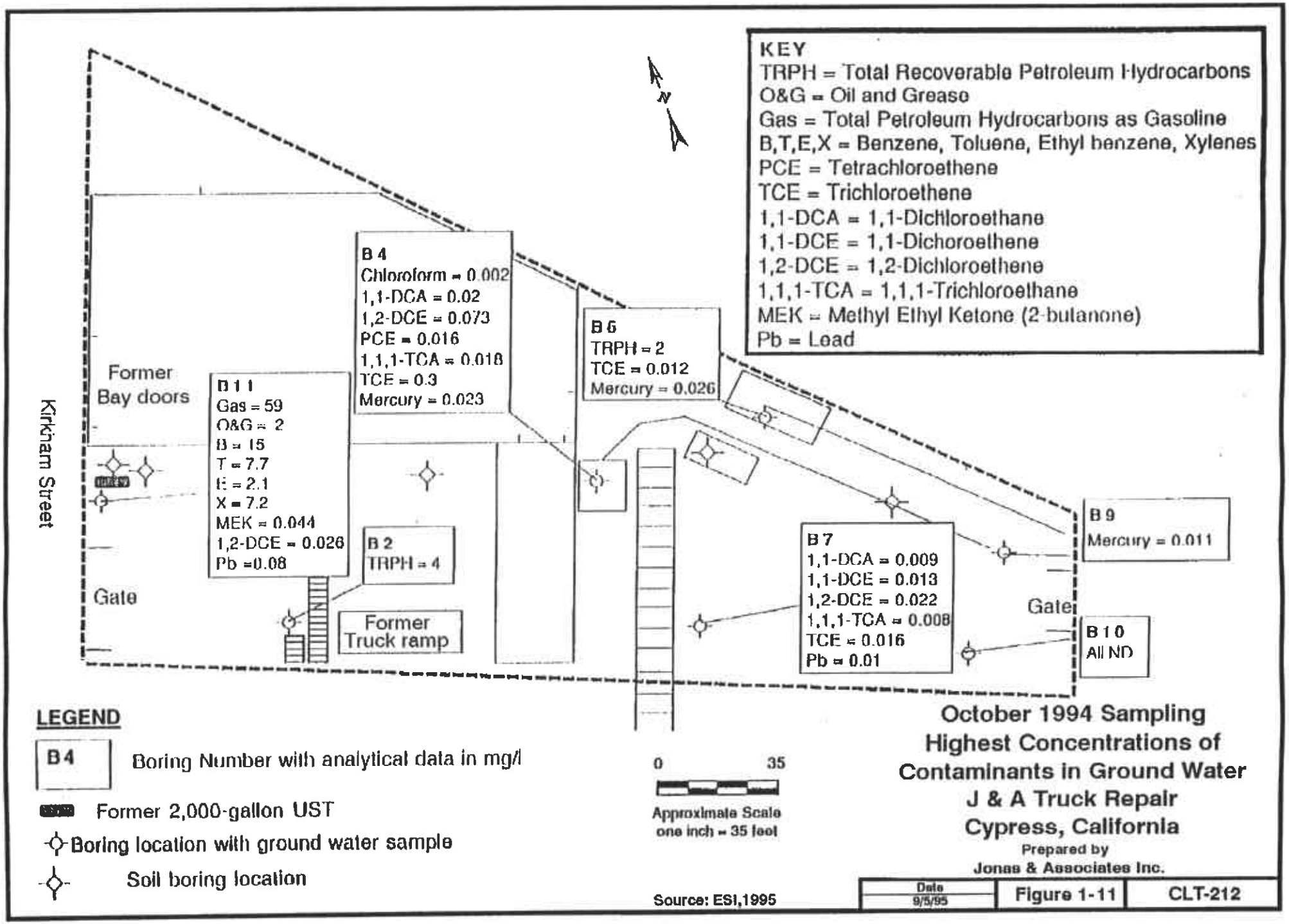
Prepared by

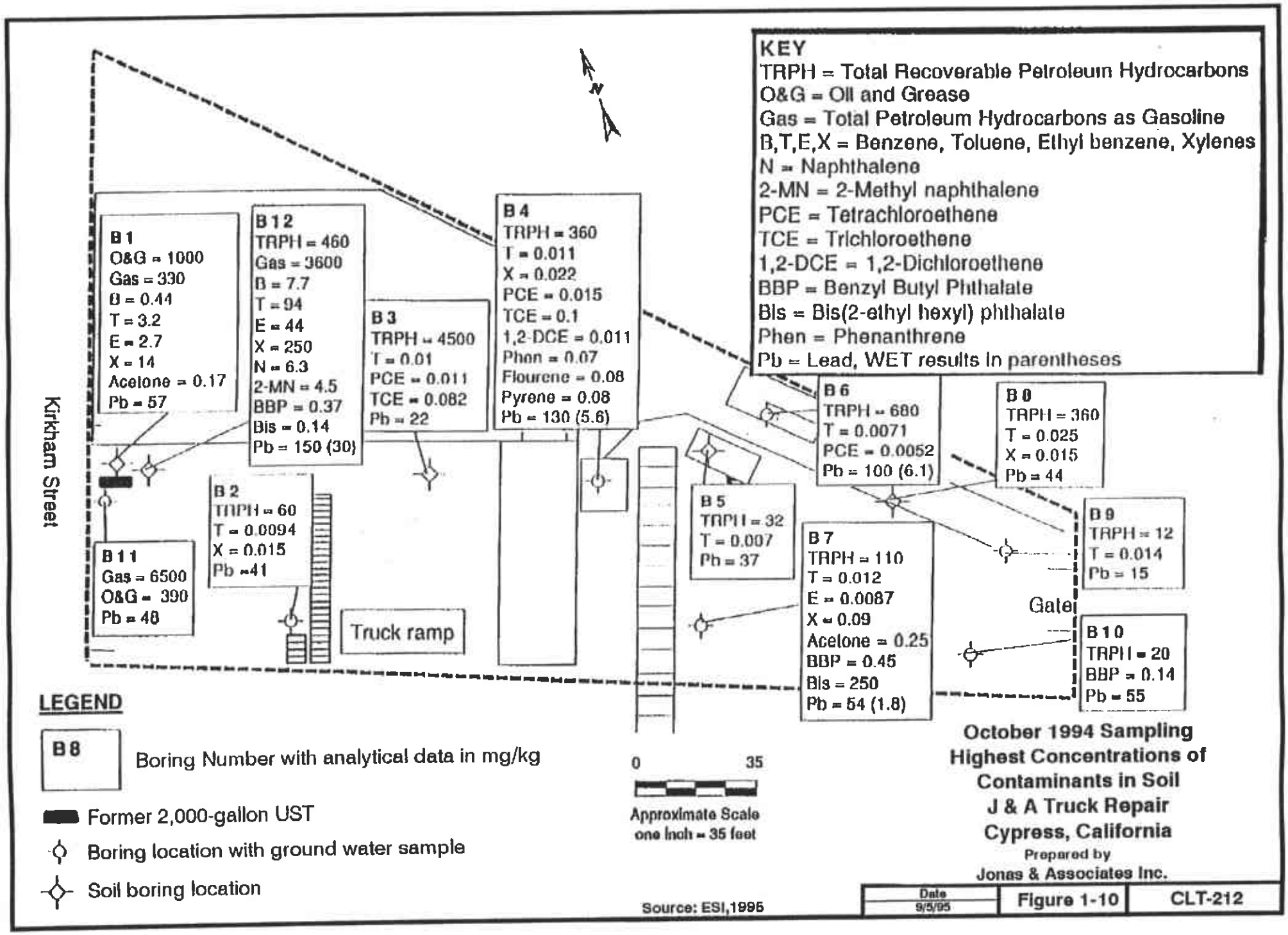
Jonas & Associates Inc.

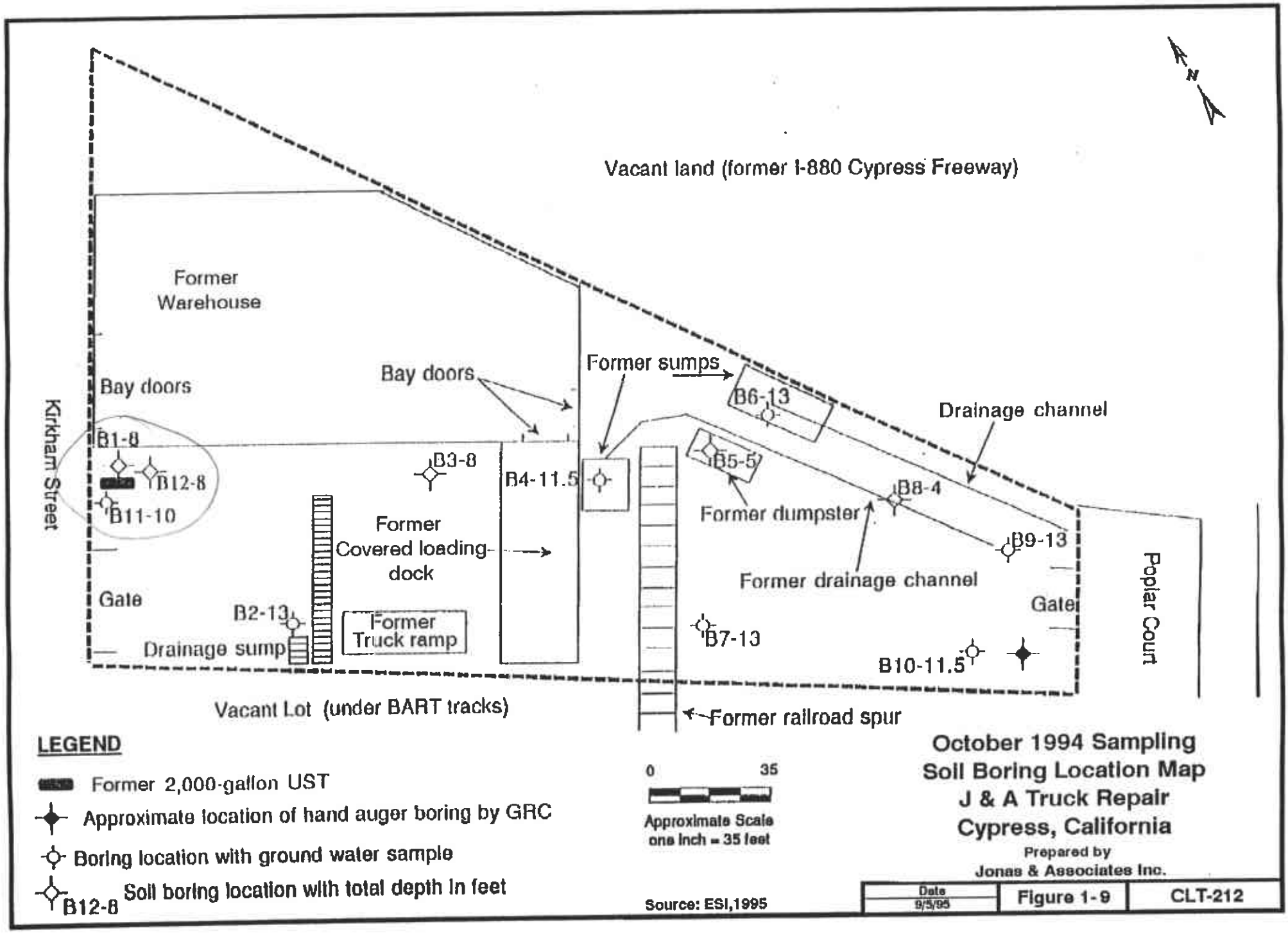
Date	Figure 1-6	CLT-212
9/5/95		


Vacant land (former I-880 Cypress Freeway)
W-5
Former Warehouse
W-1
Bay doors
W-2
W-3
Former Bay doors
W-4
W-6
Former sumps
Drainage channel
Kirkham Street
Former Covered loading dock
Former dumpster
Former drainage channel
Gate
Truck ramp
Drainage sump
Gate
Poplar Court
Vacant Lot (under BART tracks)
Former railroad spur
LEGEND
2,000-gallon UST
W-3 Location of wipe sample
0
35
Approximate Scale
one inch = 35 feet
Source: ESI,1995
October 1994 Sampling
Wipe Sample location
J & A Truck Repair
Cypress, California
Prepared by
Jonas & Associates Inc.
Date
9/5/95
Figure 1-7
CLT-212


KEY
TRPH = Total Recoverable Petroleum Hydrocarbons
BBP = Benzyl Butyl Phthalate
Bis = Bis (2-ethyl hexyl) phthalate
A-1254 = Aroclor-1254
Di = Di-N-octyl phthalate
CCl4 = Carbon tetrachloride
Pb = Lead
N
W-5
TRPH = 680
A-1254 = 0.2
BBP = 22
Di = 3
CCl4 = 120
W-1
TRPH = 4300
BBP = 6
Bis = 4
Pb = 39
W-2
TRPH = 270
W-3
TRPH = 250
W-4
TRPH = 29,000
Chlordane = 0.32
BBP = 4
Di = 4
CCl4 = 27
Pb = 99
W-6
TRPH = 980
Kirkham Street
Former Warehouse
Former Bay doors
Former sumps
Drainage channel
Former dumpster
Former drainage channel
Gate
Poplar Cour
Truck ramp
Drainage sump
Former railroad spur
Vacant Lot (under BART tracks)
LEGEND
W-3
Wipe sample number with analytical data in ug/100 cm2
W-3
Location of wipe sample
0
35
Approximate Scale
one inch = 35 feet
October 1994 Sampling
Highest Concentration of
Contaminants in Wipe Samples
J & A Truck Repair
Cypress, California
Prepared by
Jonas & Associates Inc.
Source: ESI,1995
Date
9/5/95
Figure 1-8
CLT-212


KEY
TRPH = Total Recoverable Petroleum Hydrocarbons
O&G = Oil and Grease
Gas = Total Petroleum Hydrocarbons as Gasoline
B,T,E,X = Benzene, Toluene, Ethyl benzene, Xylenes
PCE = Tetrachloroethene
TCE = Trichloroethene
1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichoroethene
1,2-DCE = 1,2-Dichloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
MEK = Methyl Ethyl Ketone (2-butanone)
Pb = Lead
N
Kirkham Street
Former Bay doors
Gate
Former Truck ramp
Gate
B 1 1
Gas = 59
O&G = 2
B = 15
T = 7.7
E = 2.1
X = 7.2
MEK = 0.044
1,2-DCE = 0.026
Pb =0.08
B 2
TRPH = 4
B 4
Chloroform = 0.002
1,1-DCA = 0.02
1,2-DCE = 0.073
PCE = 0.016
1,1,1-TCA = 0.018
TCE = 0.3
Mercury = 0.023
B 6
TRPH = 2
TCE = 0.012
Mercury = 0.026
B 7
1,1-DCA = 0.009
1,1-DCE = 0.013
1,2-DCE = 0.022
1,1,1-TCA = 0.008
TCE = 0.016
Pb = 0.01
B 9
Mercury = 0.011
B 1 0
All ND
LEGEND
B 4
Boring Number with analytical data in mg/l
Former 2,000-gallon UST
Boring location with ground water sample
Soil boring location
0
35
Approximate Scale
one inch = 35 feet
Source: ESI,1995
October 1994 Sampling
Highest Concentrations of
Contaminants in Ground Water
J & A Truck Repair
Cypress, California
Prepared by
Jonas & Associates Inc.
Date
9/5/95
Figure 1-11
CLT-212


KEY
TRPH = Total Recoverable Petroleum Hydrocarbons
O&G = Oil and Grease
Gas = Total Petroleum Hydrocarbons as Gasoline
B,T,E,X = Benzene, Toluene, Ethyl benzene, Xylenes
N = Naphthalene
2-MN = 2-Methyl naphthalene
PCE = Tetrachloroethene
TCE = Trichloroethene
1,2-DCE = 1,2-Dichloroethene
BBP = Benzyl Butyl Phthalate
Bis = Bis(2-ethyl hexyl) phthalate
Phen = Phenanthrene
Pb = Lead, WET results in parentheses
N
Kirkham Street
B 1
O&G = 1000
Gas = 330
B = 0.44
T = 3.2
E = 2.7
X = 14
Acetone = 0.17
Pb = 57
B 12
TRPH = 460
Gas = 3600
B = 7.7
T = 94
E = 44
X = 250
N = 6.3
2-MN = 4.5
BBP = 0.37
Bis = 0.14
Pb = 150 (30)
B 3
TRPH = 4500
T = 0.01
PCE = 0.011
TCE = 0.082
Pb = 22
B 4
TRPH = 360
T = 0.011
X = 0.022
PCE = 0.015
TCE = 0.1
1,2-DCE = 0.011
Phen = 0.07
Flourene = 0.08
Pyrene = 0.08
Pb = 130 (5.6)
B 6
TRPH = 680
T = 0.0071
PCE = 0.0052
Pb = 100 (6.1)
B 8
TRPH = 360
T = 0.025
X = 0.015
Pb = 44
B 2
TRPH = 60
T = 0.0094
X = 0.015
Pb = 41
B 5
TRPH = 32
T = 0.007
Pb = 37
B 9
TRPH = 12
T = 0.014
Pb = 15
B 11
Gas = 6500
O&G = 390
Pb = 48
Truck ramp
B 7
TRPH = 110
T = 0.012
E = 0.0087
X = 0.09
Acetone = 0.25
BBP = 0.45
Bis = 250
Pb = 54 (1.8)
Gate
B 10
TRPH = 20
BBP = 0.14
Pb = 55
LEGEND
B 8
Boring Number with analytical data in mg/kg
Former 2,000-gallon UST
Boring location with ground water sample
Soil boring location
0
35
Approximate Scale
one inch = 35 feet
Source: ESI,1995
October 1994 Sampling
Highest Concentrations of
Contaminants in Soil
J & A Truck Repair
Cypress, California
Prepared by
Jonas & Associates Inc.
Date
9/5/95
Figure 1-10
CLT-212


N
Vacant land (former I-880 Cypress Freeway)
Former Warehouse
Bay doors
Bay doors
Former sumps
B6-13
Drainage channel
Kirkham Street
B1-8
B12-8
B11-10
B3-8
B4-11.5
B5-5
B8-4
Former dumpster
B9-13
Former Covered loading-dock
Former drainage channel
Poplar Court
Gate
B2-13
Former Truck ramp
Drainage sump
B7-13
Gate
B10-11.5
Vacant Lot (under BART tracks)
Former railroad spur
LEGEND
Former 2,000-gallon UST
Approximate location of hand auger boring by GRC
Boring location with ground water sample
B12-8 Soil boring location with total depth in feet
0
35
Approximate Scale
one inch = 35 feet
Source: ESI,1995
October 1994 Sampling
Soil Boring Location Map
J & A Truck Repair
Cypress, California
Prepared by
Jonas & Associates Inc.
Date
9/5/95
Figure 1-9
CLT-212

Preliminary Remedial Goals:

for Organic Compounds	PRG (mg/kg soil)
carcinogens	
Benz[a]anthracene	0.037 - 0.33
Benzo[b]fluoranthene	0.037 - 0.33
Benzo[k]fluoranthene	0.037 - 0.33
Benzo[a]pyrene	0.037 - 0.33
Chrysene	0.037 - 0.33
Dibenz[ah]anthracene	0.037 - 0.33
Indeno(1,2,3-cd]pyrene	0.037 - 0.33
Benzene	3.5 - 31
Tetrachloroethylene	10 - 92
Trichloroethylene	27 - 250
Vinyl chloride	0.1 - 0.94
Chloroform	12 - 110
1,1 - Dichloroethylene	0.42 - 3.8
1,4 - Chlorobenzene	13 - 120
noncarcinogens	
Fluoranthene	2300
Pyrene	1700
Ethyl benzene	74
Toluene	280
Xylene	99
1,1 - Dichloroethane	380
1,1,1 - Trichloroethane	470
Chlorobenzene	160
1,2 - Dichlorobenzene	360
Naphthalene	82
for Metals	
Antimony	67
Arsenic	4.6 - 0.51
Barium	12000
Beryllium	1.8 - 0.2
Cadmium	24 - 2.7
Chromium (III)	170,000
Chromium (VI)	0.68 - 0.076
Copper	5,000
Fluorine	10,000
Lead	340 ⟷ Changed by DTSC to 840 mg/kg
Mercury	45
Molybdenum	830
Nickel	400 - 44
Selenium	830
Silver	830
Thallium	14
Vanadium	1,200
Zinc	50,000

Additional PRG provided by DTSC

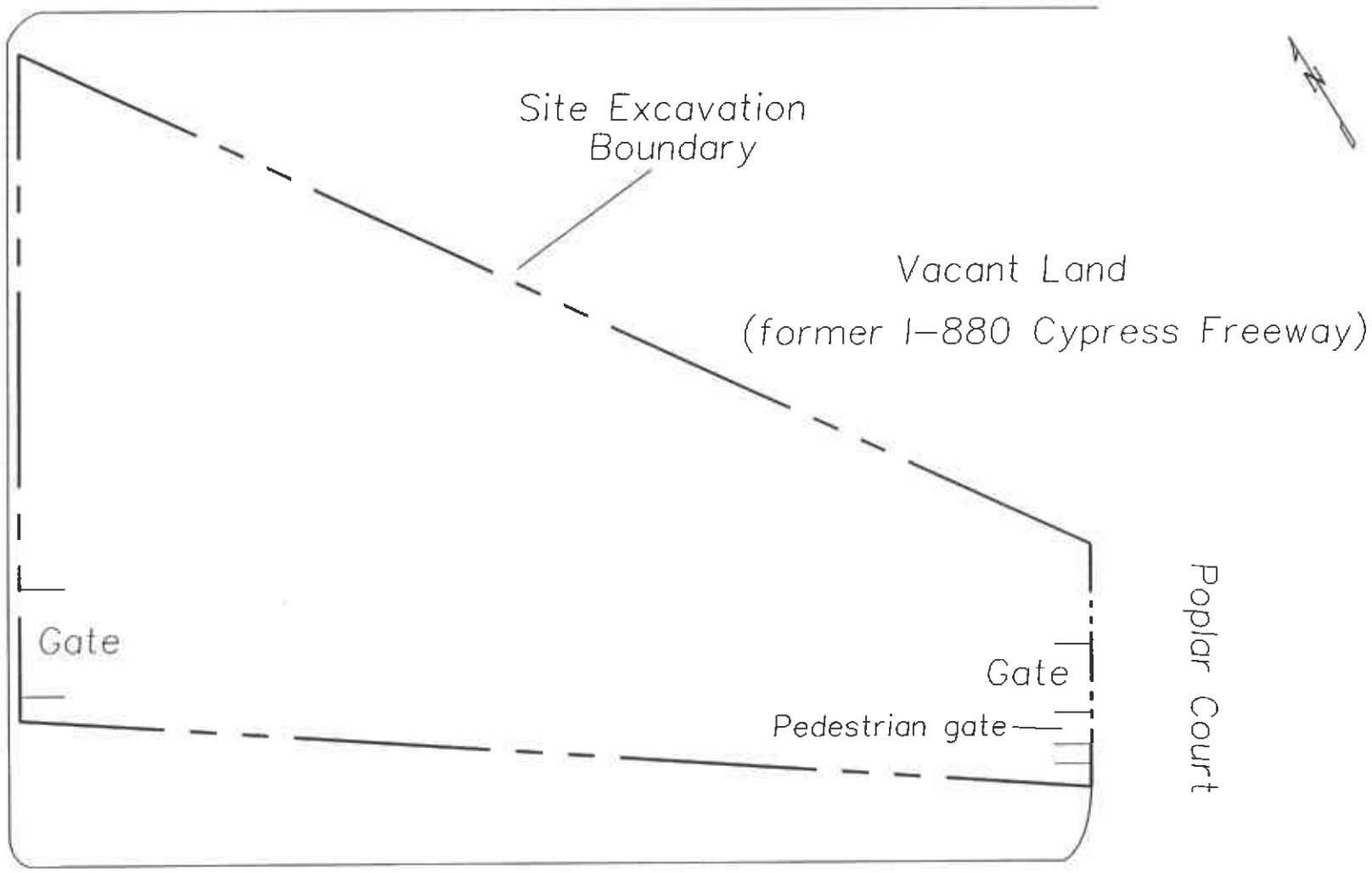
TEPH-diesel	100
TPH-gas	100

Source: Caltrans Addendum No. 3
Dated November 21,1994
Kathleen Leiga, Caltrans, September 6,1995

Preliminary Remedial Goals

Prepared by
Jonas & Associates Inc.

Date		
9/5/95	Figure 1-12	CLT-212



Site Excavation Boundary
J & A Truck Repair
Prepared for
Department of Transportation
District 4
Prepared by
JONAS & ASSOCIATES INC.

Source: ESI,1995

Not to Scale

Drawn by	S.Y.
	9-1-95

Drawning Number CLT212F3-1

Figure 3-1

Date: 9-1-95	Figure 3-1	Drawing Number
Locations Approx.		CLT212F3-1

CHROMALAB, INC.

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798

Chain of Custody

DATE _____ PAGE _____ OF _____

PROJ MGR _____
COMPANY _____
ADDRESS _____
_____
SAMPLERS (SIGNATURE) (PHONE NO.)

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	ANALYSIS REPORT: TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTeX (EPA 602,8020)	TPH - Diesel (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520 E&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)		METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	EXTRACTION (TCLP, STLC)					NUMBER OF CONTAINERS

PROJECT INFORMATION

PROJECT NAME
PROJECT NUMBER
SHIPPING ID NO
VIA

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS
CHAIN OF CUSTODY SEALS
RECD GOOD CONDITION/COLD
CONFORMS TO RECORD
LAB NO

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2	RELINQUISHED BY 3
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1	**RECEIVED BY 2**	**RECEIVED BY (LABORATORY) 3**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	(LAB)

Chain-of-Custody Form

Prepared by
Jonas & Associates Inc.

Date		
9/5/95	Figure APII-1	CLT-212

CHROMALAB, INC.
SAMPLE CONDITION REPORT

Client Name_____ Date/Time Received_____
Date Time

Project_____ Received by_____

Reference/Subm #_____ Carrier name_____

Checklist completed by:_____ Logged in by_____
Signature Date Initials Date

Matrix_____

Shipping container in good condition? NA____ Yes____ No____

Custody seals present on shipping container? Intact____ Broken____ Yes____ No____

Custody seals on sample bottles? Intact____ Broken____ Yes____ No____

Chain of custody present? Yes____ No____

Chain of custody signed when relinquished and received? Yes____ No____

Chain of custody agrees with sample labels? Yes____ No____

Samples in proper container/bottle? Yes____ No____

Samples intact? Yes____ No____

Sufficient sample volume for indicated test? Yes____ No____

VOA vials have zero headspace? NA____ Yes____ No____

Trip Blank received? NA____ Yes____ No____

All samples received within holding time? Yes____ No____

Container temperature?_____

pH upon receipt _____pH adjusted_____Check performed by:_____ NA____

Any NO response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted?_____ Date contacted?_____

Person contacted?_____ Contacted by?_____

Regarding?_____

Comments:_____

_____

_____

_____

Corrective Action:_____

_____

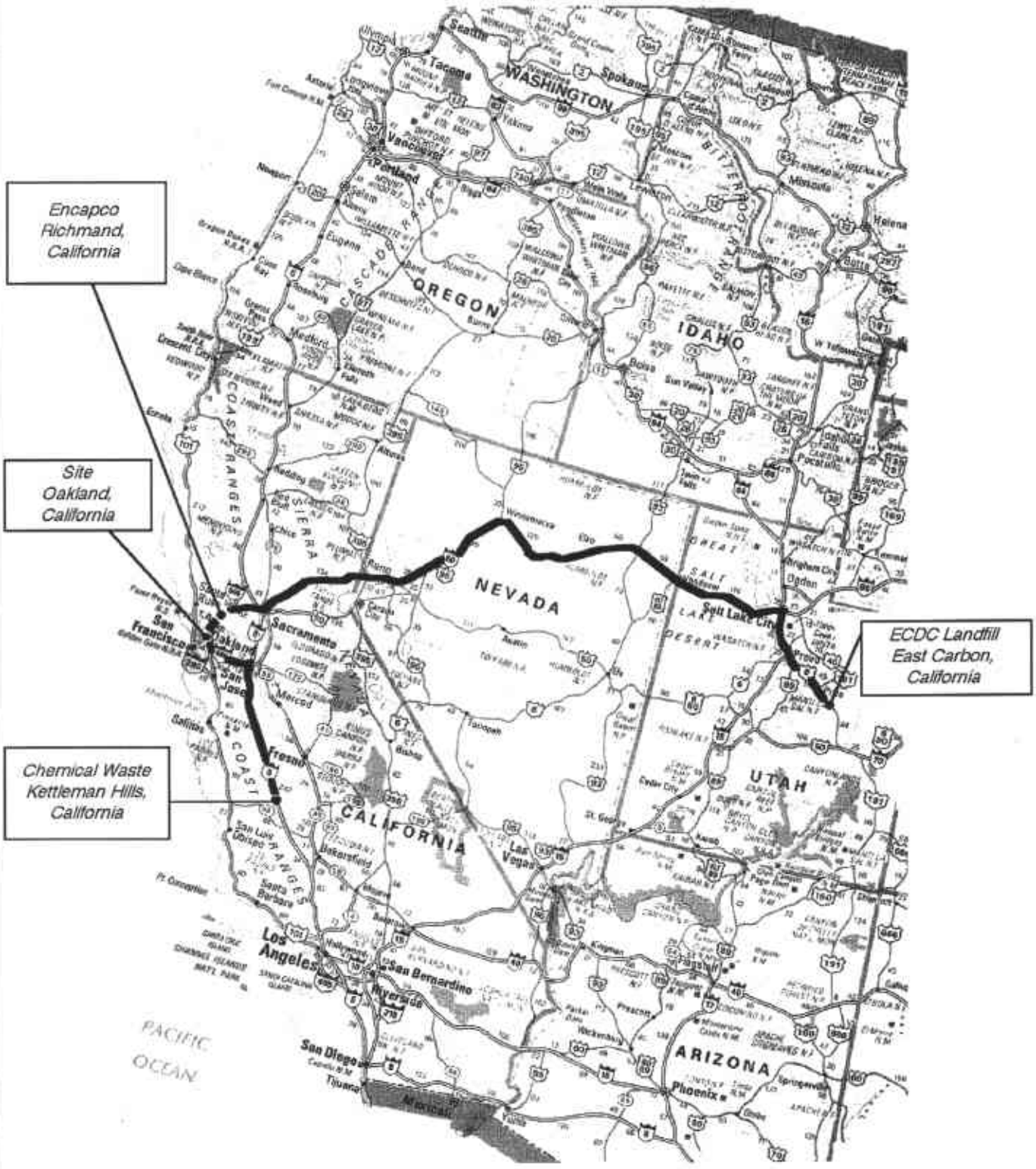
_____

_____

SAMPLRECD.CTX

Sample Condition Report
Prepared by
Jonas & Associates Inc.

Date		
9/5/95	Figure APII-2	CLT-212



Transportation Plan

Class I and Out-Of-State
Class II Landfills

Date	Figure APV-1	CLT-212
9-7-95		

TABLES

Table 1-1 Business/Manufactoring Activities - J & A Truck Repair

TYPE OF BUSINESS	J & A Truck Repair Large truck repair	Smilo Chemical Company Chemical resale
TYPE OF PRODUCTS SOLD OR SERVICES PERFORMED	Automotive repair service	Chemicals
ANNUAL QUANTITIES OF PRODUCTS SOLD	Unknown	Unknown
TYPE AND AMOUNT OF HAZARDOUS SUBSTANCES AND/OR WASTES GENERATED ANNUALLY	Used motor oil Used engine coolant (ethylene glycol)	Solvents, paint sludge, oil, latex waste, corrosives, oxidizers, pesticides, polystyrene solvents, TCE, TFE, MEK, MIBK 5,000 gallons/41,600 pounds
PRIMARY MATERIALS AND CHEMICALS USED, HANDLED, AND SOLD ONSITE	Motor oil, lubricating grease Engine coolant (ethylene glycol) Solvents and degreasers Truck parts	acids, sodium chromate, poly vinyl chloride, xylene, barium sulfonate Halogenated solvents Non halogenated solvents
MAJOR PHYSICAL/CHEMICAL PROCESSESS USED	Truck repair Truck washing	Wholesale distribution Chemical repackiging

Table 1-2 Onsite Storage, Treatment, and Disposal - J & A Truck Repair

FACILITY	J & A Truck Repair	Smilo Chemical Company
TYPE, CAPCITY, CONTENTS, AND LOCATION OF HAZARDOUS SUBSTANCE/WASTE STORAGE	55-gallon drums stored onsite in various locations, quantity and contents unknown	Warehouse conained 55-gallon drums and unknowned sized packages of various chemicals. 55-gallon drum storage areas throughout site containing various chemicals. Two sumps and a dumpster (size and contents unknown) present in north central portion of site.
TYPE, CAPACITY, AND LOCATION OF HAZARDOUS WASTE TREATMENT FACILITIES ONSITE	None present	None present
HAZARDOUS WASTE DISPOSAL PRACTICES	Unknown	Disposal to dumpster, sumps, and neighboring property. Disposal of solvents at Casmalia Class I landfill, Santa Maria, California
HAZARDOUS SUBSTANCE AND/OR WASTE CONTAINMENT MEASURES	Waste contained in 55-gallon drums stored onsite	Warehouse contains usable chemical products. Two sumps and one dumpster
WASTE RECOVERY AND/OR RECYCLING PRACTICES	None known	Chemicals from broken containers are swept up and repackaged for resale.
ORIGIN, TYPE, AND QUANTITIES OF OFFSITE WASTE TREATED STORED, OR DISPOSED OF ONSITE	None known	None known
IDENTIFICATION OF LEAKS, SPILLS AND RELEASES OF HAZARDOUS SUBSTANCES AT OR FROM THE SITE	Used motor oil spill to storm drain in 1988	1979 - release of titanium oxide to drainage channel on ground. 1980 - unknown chemical spills on soil, unknown chemicals released onto neighboring property and to open pit. 1981 - soil sample analytical results indicate presence of pesticides and heavy metals in surface soils at site.

Table 1-3
J & A Truck Repair - Summary of Soil Sample Results, 1992

SAMPLE DATE	CONSULTANT	# OF BOREHOLES & SOIL SAMPLES	BOREHOLE NUMBERS & DEPTHS (BELOW GROUND SURFACE)	SOIL SAMPLE DEPTHS (FEET)	ANALYSES PERFORMED
6/23/92	Geo/Resource Consultants, Inc.	1 Borehole 2 Samples	JA/A-1: 3'	JA/A-1-1: 1' JA/A-1-3: 3'	Pesticides and PCBs: EPA Method 8080 Title 26 Metals: EPA Method 6010
Detected Chemicals and Concentration Ranges:	Metals: detected within background concentrations Lead: (JA/A-1: 81 mg/kg) exceeded ten times STLC. WET: (JA/A-1: lead 3.4 mg/l)				

Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

Sample Location	Depth in feet	Hydrocarbons 418.1-TRPH ug/wipe	6010 Metals (ug/wipe)												
			6010 Metals (ug/wipe)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (total)	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel
Wipe-1	n/a	2,100		ND(50)	ND(12.5)	20	ND(2.5)	ND(2.5)	ND(25)	ND(25)	40	39	ND(2.5)	ND(12.5)	ND(12.5)
Duplicate-1	n/a	4,300		--	--	--	--	--	--	--	--	--	--	--	--
Wipe-2	n/a	270		ND(50)	ND(12.5)	ND(12.5)	ND(2.5)	ND(2.5)	ND(25)	ND(25)	ND(12.5)	ND(25)	ND(2.5)	ND(12.5)	ND(12.5)
Duplicate-2	n/a	--		--	--	--	--	--	--	--	--	--	--	--	--
Wipe-3	n/a	250		ND(50)	ND(12.5)	ND(12.5)	ND(2.5)	ND(2.5)	ND(25)	ND(25)	ND(12.5)	ND(25)	ND(2.5)	ND(12.5)	ND(12.5)
Duplicate-3	n/a	--		ND(50)	ND(12.5)	ND(12.5)	ND(2.5)	ND(2.5)	ND(25)	ND(25)	ND(12.5)	ND(25)	ND(2.5)	ND(12.5)	ND(12.5)
Wipe-4	n/a	29,000		ND(50)	ND(12.5)	48	ND(2.5)	2.6	ND(25)	ND(25)	30	99	ND(2.5)	ND(12.5)	ND(12.5)
Duplicate-4	n/a	--		--	--	--	--	--	--	--	--	--	--	--	--
Wipe-5	n/a	680		ND(50)	ND(12.5)	28	ND(2.5)	ND(2.5)	ND(25)	ND(25)	ND(12.5)	ND(25)	ND(2.5)	ND(12.5)	ND(12.5)
Duplicate-5	n/a	--		--	--	--	--	--	--	--	--	--	--	--	--
Wipe-6	n/a	980		ND(50)	ND(12.5)	ND(12.5)	ND(2.5)	ND(2.5)	ND(25)	ND(25)	ND(12.5)	ND(25)	ND(2.5)	ND(12.5)	ND(12.5)
Wipe-7	Field Blank	180*		ND(50)	ND(12.5)	ND(12.5)	ND(2.5)	ND(2.5)	ND(25)	ND(25)	ND(12.5)	ND(25)	ND(2.5)	ND(12.5)	ND(12.5)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are considered to be 100cm^2

Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

Sample Location	Depth in feet	6010 Metals (ug/wipe)					8080 PCBs and Pesticides (ug/wipe)								
		Selenium	Silver	Thallium	Vanadium	Zinc	8080-PCBs and Pest. (ug/wipe)	PCBs*	Aldrin	Dieldrin	Endrin Aldehyde	Endrin	Heptachlor	Heptachlor Epoxide	p,p' - DDT	p,p' - DDE
Wipe-1	n/a	ND(25)	ND(12.5)	ND(100)	ND(25)	360		ND(0.15)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)
Duplicate-1	n/a	--	--	--	--	--		--	--	--	--	--	--	--	--	--
Wipe-2	n/a	ND(25)	ND(12.5)	ND(100)	ND(25)	48		ND(0.15)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)
Duplicate-2	n/a	--	--	--	--	--		ND(0.15)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)
Wipe-3	n/a	ND(25)	ND(12.5)	ND(100)	ND(25)	ND(12.5)		ND(0.15)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)
Duplicate-3	n/a	ND(25)	ND(12.5)	ND(100)	ND(25)	ND(12.5)		--	--	--	--	--	--	--	--	--
Wipe-4	n/a	ND(25)	ND(12.5)	ND(100)	ND(25)	200		ND(0.15)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)
Duplicate-4	n/a	--	--	--	--	--		--	--	--	--	--	--	--	--	--
Wipe-5	n/a	ND(25)	ND(12.5)	ND(100)	ND(25)	48		0.20	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)
Duplicate-5	n/a	--	--	--	--	--		--	--	--	--	--	--	--	--	--
Wipe-6	n/a	ND(25)	ND(12.5)	ND(100)	ND(25)	41		ND(0.15)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)
Wipe-7	Field Blank	ND(25)	ND(12.5)	ND(100)	ND(25)	ND(12.5)		ND(0.15)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.03)

*PCBs include Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are consklered to be 100cm^2

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Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

		8080 PCBs and Pesticides (ug/wipe)											8270 Semi VOCs			
Sample Location	Depth in feet	p,p' - DDD	Endosulfan I	Endosulfan II	α - BHC	β - BHC	γ - BHC (Lindane)	δ - BHC	Endosulfan Sulfate	p,p' - Methoxychlor	Toxaphene	Chlordane	8270 Semi VOCs (ug/wipe)	Phenol	Bis(2-Chloroethyl)Ether	2-Chlorophenol
Wipe-1	n/a	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)		ND(2)	ND(2)	ND(2)
Duplicate-1	n/a	--	--	--	--	--	--	--	--	--	--	--		--	--	--
Wipe-2	n/a	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)		ND(2)	ND(2)	ND(2)
Duplicate-2	n/a	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)		--	--	--
Wipe-3	n/a	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)		ND(2)	ND(2)	ND(2)
Duplicate-3	n/a	--	--	--	--	--	--	--	--	--	--	--		--	--	--
Wipe-4	n/a	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	0.32		ND(2)	ND(2)	ND(2)
Duplicate-4	n/a	--	--	--	--	--	--	--	--	--	--	--		ND(2)	ND(2)	ND(2)
Wipe-5	n/a	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)		ND(2)	ND(2)	ND(2)
Duplicate-5	n/a	--	--	--	--	--	--	--	--	--	--	--		--	--	--
Wipe-6	n/a	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)		ND(2)	ND(2)	ND(2)
Wipe-7	Field Blank	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.15)	ND(0.15)	ND(0.15)	ND(0.15)		ND(2)	ND(2)	ND(2)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are considered to be 100cm^2

Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

		8270 Semi VOCs (ug/wipe)																		
Sample Location	Depth in feet	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Benzyl Alcohol	1,2-Dichlorobenzene	2-Methylphenol	Bis(2-Chloroisopropyl)Ether	4-Methylphenol	N-Nitrosodi-N-Propylamine	Hexachloroethane	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	Benzoic Acid	Bis(2-Chloroethoxy)Methane	2,4-Dichlorophenol	1,2,4-Trichlorobenzene	Naphthalene	4-Chloroaniline
Wipe-1	n/a	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)
Duplicate-1	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-2	n/a	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)
Duplicate-2	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-3	n/a	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)
Duplicate-3	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-4	n/a	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)
Duplicate-4	n/a	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)
Wipe-5	n/a	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)
Duplicate-5	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-6	n/a	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)
Wipe-7	Field Blank	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(4)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are considered to be 100cm^2

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Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

		8270 Semi VOCs (ug/wipe)																		
Sample Location	Depth in feet	Hexachlorobutadiene	4-Chloro-3-Methylphenol	2-Methylnaphthalene	Hexachlorocyclopentadiene	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2-Chloronaphthalene	2-Nitroanaline	Dimethyl Phthalate	Acenaphthylene	3-Nitroanaline	Acenaphthene	2,4-Dinitrophenol	4-Nitrophenol	Dibenzofuran	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Diethyl Phthalate	4-Chlorophenyl-Phenyl Ether
Wipe-1	n/a	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-1	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-2	n/a	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-2	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-3	n/a	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-3	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-4	n/a	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-4	n/a	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Wipe-5	n/a	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-5	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-6	n/a	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Wipe-7	Field Blank	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	ND(10)	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are considered to be 100cm^2

Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

Sample Location	Depth in feet	8270 Semi VOCs (ug/wipe)																		
		Fluorene	4-Nitroaniline	4,6-Dinitro-2-Methyl Phenol	N-Nitrosodiphenylamine	4-Bromophenyl-Phenyl Ether	Hexachlorobenzene	Pentachlorophenol	Phenanthrene	Anthracene	Di-N-Butyl Phthalate	Fluoranthene	Pyrene	Butyl Benzyl Phthalate	3,3'-Dichlorobenzidine	Benzo(A)Anthracene	Bis(2-Ethylhexyl)Phthalate	Chrysene	Di-N-Octyl Phthalate	Benzo(B)Fluoranthene
Wipe-1	n/a	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	6[b]	ND(2)	ND(2)	6	ND(4)	ND(2)	4	ND(2)	ND(2)	ND(2)
Duplicate-1	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-2	n/a	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	5[b]	ND(2)	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-2	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-3	n/a	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	6[b]	ND(2)	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-3	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-4	n/a	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	3[b]	ND(2)	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Duplicate-4	n/a	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	4[b]	ND(2)	ND(2)	4	ND(4)	ND(2)	ND(2)	ND(2)	4	ND(2)
Wipe-5	n/a	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	13[b]	ND(2)	ND(2)	22	ND(4)	ND(2)	ND(2)	ND(2)	3	ND(2)
Duplicate-5	n/a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-6	n/a	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	7[b]	ND(2)	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Wipe-7	Field Blank	ND(2)	ND(10)	ND(10)	ND(2)	ND(2)	ND(2)	ND(10)	ND(2)	ND(2)	6[b]	ND(2)	ND(2)	ND(2)	ND(4)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are considered to be 100cm^2

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Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

		8270 Semi VOCs (ug/wipe)					8010/8260 VHOC's (ug/wipe)								
Sample Location	Depth in feet	Benzo(K)Fluoranthene	Benzo(A)Pyrene	Indeno(1,2,3-C,D) Pyrene	Dibenzo(A,H)Anthracene	Benzo(G,H,I)Perylene	8010/8260 VHOC's (ug/wipe)	Chloromethane	Vinyl Chloride	Bromochloromethane	Chloroethane	Trichlorofluoromethane	1,1-Dichloroethene	Methylene Chloride	Trans-1,2-Dichloroethene	Cis-1,2-Dichloroethene
Wipe-1	n/a	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-1	n/a	--	--	--	--	--		--	--	--	--	--	--	--	--	--
Wipe-2	n/a	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-2	n/a	--	--	--	--	--		--	--	--	--	--	--	--	--	--
Wipe-3	n/a	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-3	n/a	--	--	--	--	--		--	--	--	--	--	--	--	--	--
Wipe-4	n/a	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-4	n/a	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		--	--	--	--	--	--	--	--	--
Wipe-5	n/a	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-5	n/a	--	--	--	--	--		--	--	--	--	--	--	--	--	--
Wipe-6	n/a	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Wipe-7	Field Blank	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)		ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are considered to be 100cm^2

Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

Sample Location	Depth in feet	8010/8260 VHOC's (ug/wipe)											
		1,1-Dichloroethane	Chloroform	1,1,1-Trichloroethane	Carbon Tetrachloride	1,2-Dichloroethane	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	2-Chloroethyl Vinyl Ether	Trans-1,3-Dichloropropene	Cis-1,3-Dichloropropene	1,1,2-Trichloroethane
Wipe-1	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-1	n/a	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-2	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-2	n/a	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-3	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-3	n/a	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-4	n/a	ND(0.005)	ND(0.005)	ND(0.005)	0.009	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-4	n/a	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-5	n/a	ND(0.005)	ND(0.005)	ND(0.005)	0.036	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-5	n/a	--	--	--	--	--	--	--	--	--	--	--	--
Wipe-6	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Wipe-7	Field Blank	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)

ND (0 5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are considered to be 100cm^2

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Table 1-4 Analytical Results - Wipe Samples - J & A Truck Repair

Sample Location	Depth in feet	8010/8260 VHOC's (ug/wipe)								
		Tetrachloroethene	Dibromochloromethane	Chlorobenzene	Bromoform	1,1,2,2-Tetrachloroethane	1,3- Dichlorobenzene	1,4- Dichlorobenzene	1,2- Dichlorobenzene	Trichlorotrifluoroethane
Wipe-1	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-1	n/a	--	--	--	--	--	--	--	--	--
Wipe-2	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-2	n/a	--	--	--	--	--	--	--	--	--
Wipe-3	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-3	n/a	--	--	--	--	--	--	--	--	--
Wipe-4	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-4	n/a	--	--	--	--	--	--	--	--	--
Wipe-5	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Duplicate-5	n/a	--	--	--	--	--	--	--	--	--
Wipe-6	n/a	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Wipe-7	Field Blank	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes
n/a = not applicable

Wipe sample areas are consklered to be 100cm^2

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	Hydrocarbons					6010 Metals (mg/kg)												
		Hydrocarbons	8015m-Diesel (mg/kg)	8015m-Gasoline (mg/kg)	5520 E F-Oil and Grease (mg/kg)	418.1-TRPH (mg/kg)	6010 Metals (mg/kg)	TTLC	500	500	10000	75	100	2500	8000	2500	1000	5000	3500	2000	100
								10XSTLC	150	50	1000	8	10	5600	800	250	50	2500	3500	200	10
									Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (total)	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium
B1-1	1		ND(1.0)	ND(1.0)	1000	--			ND(1.0)	ND(0.25)	54	0.25	0.61	17	3.6	7.7	57	0.09	ND(0.25)	12	ND(0.5)
B1-5	5		ND(1.0)	ND(1.0)	ND(50)	--			ND(1.0)	ND(0.25)	51	0.31	0.73	20	5.9	6.3	3.7	ND(0.05)	ND(0.25)	16	ND(0.5)
B1-8	8		ND(1.0)	3.30	ND(50)	--			ND(1.0)	ND(0.25)	50	0.4	1.3	41	2.1	7.2	5.5	ND(0.05)	ND(0.25)	19	ND(0.5)
B2-1	1		ND(1.0)	ND(1.0)	--	85			ND(1.0)	4.9	57	0.23	0.77	12	3.5	16	41	0.06	ND(0.25)	12	ND(0.5)
B2-5	5		ND(2.0)[c]	ND(1.0)	--	60			ND(1.0)	ND(0.25)	35	0.13	0.19	7.4	2.2	4.9	12	0.06	ND(0.25)	4.4	ND(0.5)
B2-8	8		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	3.5	47	0.52	0.6	41	2.2	8.0	1.7	ND(0.05)	ND(0.25)	15	ND(0.5)
B3-1	1		ND(1.0)	ND(1.0)	--	4,500			ND(1.0)	ND(0.25)	46	0.14	0.53	7.0	1.7	5.2	22	0.05	ND(0.25)	5.4	ND(0.5)
B3-5	5		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	ND(0.25)	47	0.15	0.26	12	2.1	4.4	13	ND(0.05)	ND(0.25)	7.1	ND(0.5)
B3-8	8		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	3.1	23	0.31	0.43	10	2.3	5.5	3.0	0.09	ND(0.25)	12	ND(0.5)
B4-1	1		ND(1.0)	ND(1.0)	--	360			ND(1.0)	15	97	0.17	0.88	15	2.9	33	130	0.25	0.3	8.7	ND(0.5)
B4-5	5		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	2.7	49	0.16	0.38	8.4	2.2	5.9	14	ND(0.05)	ND(0.25)	6.5	ND(0.5)
B4-8	8		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	5.5	41	0.35	0.6	15	3.7	5.4	41	ND(0.05)	ND(0.25)	18	ND(0.5)
B5-1	1		ND(1.0)	ND(1.0)	--	28			2.7	3.3	54	0.16	0.59	8.2	3.2	10	37	0.40	ND(0.25)	6.4	ND(0.5)
B5-5	5		ND(1.0)	ND(1.0)	--	32			ND(1.0)	3.2	54	0.24	0.39	10	4.5	4.8	22	0.18	ND(0.25)	4.2	ND(0.5)
B6-1	1		ND(1.0)	ND(1.0)	--	680			ND(1.0)	5.4	85	0.26	0.86	7.7	7.3	34	100	0.16	ND(0.25)	12	ND(0.5)
B6-5	5		ND(1.0)	ND(1.0)	--	150			ND(1.0)	27	100	0.16	1.1	12	3.2	21	90	0.29	0.32	7.3	ND(0.5)
B6-8	8		ND(1.0)	--	--	--				--	--	--	--	--	--	--	--	--	--	--	--
B7-1	1		ND(1.0)[c]	ND(1.0)	--	110			ND(1.0)	11	93	0.19	1.6	15	5.6	19	54	0.66	ND(0.25)	9.7	ND(0.5)
B7-5	5		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	ND(0.25)	43	0.15	0.11	12	2.5	4.4	2.0	ND(0.05)	ND(0.25)	7.9	ND(0.5)
B7-8	8		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	ND(0.25)	50	0.44	0.59	37	2.0	7.6	2.7	ND(0.05)	ND(0.25)	17	ND(0.5)
B8-1	1		ND(1.0)	ND(1.0)	--	ND(10)			ND(1.0)	3.6	74	0.27	0.37	ND(0.5)	10	17	5.9	0.11	ND(0.25)	3.2	ND(0.5)
B8-4	4		ND(1.0)	ND(1.0)	--	360			ND(1.0)	6.5	76	0.31	0.65	11	4.9	8.7	44	0.09	ND(0.25)	17	ND(0.5)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

ENVIRONMENTAL SOLUTIONS

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	6010 Metals (mg/kg)					Sol.Met.		pH	8080 PCBs and Pesticides (ug/kg)										
		500	700	2400	5000															
		50	70	240	2500															
		Silver	Thallium	Vanadium	Zinc	Chrome VI	Soluble Metals (mg/L) WET Lead		pH Units	8080-PCBs and Pest. (ug/kg)	PCBs*	Aldrin	Dieldrin	Endrin Aldehyde	Endrin	Heptachlor	Heptachlor Epoxide	p,p' - DDT	p,p' - DDE	p,p' - DDT
B1-1	1	ND(0.25)	ND(2.0)	15	39	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B1-5	5	ND(0.25)	ND(2.0)	21	11	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B1-8	8	ND(0.25)	ND(2.0)	30	17	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND(0.25)	ND(2.0)	14	42	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B2-5	5	ND(0.25)	ND(2.0)	7.7	24	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B2-8	8	ND(0.25)	ND(2.0)	41	15	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B3-1	1	ND(0.25)	ND(2.0)	7.9	57	--	--		--	ND(5)	ND(1)	ND(1)	ND(5)	ND(1)	ND(1)	ND(1)	ND(5)	ND(1)	ND(5)	
B3-5	5	ND(0.25)	ND(2.0)	8.8	12	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B3-8	8	ND(0.25)	ND(2.0)	18	9.0	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B4-1	1	ND(0.25)	ND(2.0)	9.7	150	--	5.6		--	--	--	--	--	--	--	--	--	--	--	--
B4-5	5	ND(0.25)	ND(2.0)	9.0	21	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B4-8	8	ND(0.25)	ND(2.0)	22	12	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B5-1	1	ND(0.25)	ND(2.0)	8.5	33	--	--		--	ND(200)	ND(40)	ND(40)	ND(200)	ND(40)	ND(40)	ND(40)	ND(200)	ND(40)	ND(200)	
B5-5	5	ND(0.25)	ND(2.0)	15	17	--	--		--	ND(5)	ND(1)	ND(1)	ND(5)	ND(1)	ND(1)	ND(1)	ND(5)	ND(1)	ND(5)	
B6-1	1	ND(0.25)	ND(2.0)	13	110	--	5.9		7.9	ND(100)	ND(20)	ND(20)	ND(100)	ND(20)	ND(20)	ND(20)	ND(100)	ND(20)	ND(100)	
B6-5	5	ND(0.25)	ND(2.0)	9.1	170	--	6.1		7.3	ND(100)	ND(20)	ND(20)	ND(100)	ND(20)	ND(20)	ND(20)	ND(100)	ND(20)	ND(100)	
B6-8	8	--	--	--	--	--	--		8.5	ND(5)	ND(1)	ND(1)	ND(5)	ND(1)	ND(1)	ND(1)	ND(5)	ND(1)	ND(5)	
B7-1	1	ND(0.25)	ND(2.0)	11	240	ND(0.5)	1.8		--	ND(5)	ND(1)	ND(1)	ND(5)	ND(1)	ND(1)	ND(1)	ND(5)	ND(1)	ND(5)	
B7-5	5	ND(0.25)	ND(2.0)	8.7	8.5	ND(0.5)	--		--	--	--	--	--	--	--	--	--	--	--	--
B7-8	8	ND(0.25)	ND(2.0)	22	13	ND(0.5)	--		--	--	--	--	--	--	--	--	--	--	--	--
B8-1	1	ND(0.25)	ND(2.0)	11	29	--	--		--	--	--	--	--	--	--	--	--	--	--	--
B8-4	4	ND(0.25)	ND(2.0)	16	45	--	--		--	--	--	--	--	--	--	--	--	--	--	--

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

*PCBs include Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		8080 PCBs and Pesticides (ug/kg)										8270 Semi VOC's (ug/kg)						
Sample Location	Depth (feet, below ground surface)	Endosulfan I	Endosulfan II	α - BHC	β - BHC	γ - BHC (Lindane)	δ - BHC	Endosulfan Sulfate	p,p' - Methoxychlor	Toxaphene	Chlordane	8270 Semi VOC's (mg/kg)	Phenol	Bis(2-Chloroethyl)Ether	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Benzyl Alcohol
B1-1	1	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B1-5	5	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B1-8	8	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B2-1	1	--	--	--	--	--	--	--	--	--	--		ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(10)
B2-5	5	--	--	--	--	--	--	--	--	--	--		ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)
B2-8	8	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B3-1	1	ND(5)	ND(5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)		ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(10)
B3-5	5	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B3-8	8	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B4-1	1	--	--	--	--	--	--	--	--	--	--		ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(10)
B4-5	5	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B4-8	8	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B5-1	1	ND(200)	ND(200)	ND(40)	ND(40)	ND(40)	ND(40)	ND(200)	ND(200)	ND(200)	ND(200)		ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.50)
B5-5	5	ND(5)	ND(5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)		ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.50)
B6-1	1	ND(100)	ND(100)	ND(20)	ND(20)	ND(20)	ND(20)	ND(100)	ND(100)	ND(100)	ND(100)		ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(10)
B6-5	5	ND(100)	ND(100)	ND(20)	ND(20)	ND(20)	ND(20)	ND(100)	ND(100)	ND(100)	ND(270)		ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(10)
B6-8	8	ND(5)	ND(5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.20)
B7-1	1	ND(5)	ND(5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)		ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(10)
B7-5	5	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B7-8	8	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B8-1	1	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B8-4	4	--	--	--	--	--	--	--	--	--	--		ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(10)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8270 Semi VOC's (ug/kg)														
		1,2-Dichlorobenzene	2-Methylphenol	Bis(2-Chloroisopropyl)Ether	4-Methylphenol	N-Nitrosodi-N-Propylamine	Hexachloroethane	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	Benzoic Acid	Bis(2-Chloroethoxy)Methane	2,4-Dichlorophenol	1,2,4-Trichlorobenzene	Naphthalene
B1-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)	ND(5)
B2-5	5	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
B2-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B3-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)	ND(5)
B3-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B3-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B4-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)	ND(5)
B4-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B4-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B5-1	1	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)
B5-5	5	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)
B6-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)	ND(5)
B6-5	5	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)	ND(5)
B6-8	8	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.50)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
B7-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)	ND(5)
B7-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B7-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B8-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B8-4	4	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)	ND(5)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.

- - = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8270 Semi VOC's (ug/kg)														
		4-Chloroaniline	Hexachlorobutadiene	4-Chloro-3-Methylphenol	2-Methylnaphthalene	Hexachlorocyclopentadiene	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2-Chloronaphthalene	2-Nitroaniline	Dimethyl Phthalate	Acenaphthylene	3-Nitroaniline	Acenaphthene	2,4-Dinitrophenol	4-Nitrophenol
B1-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND(10)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(25)	ND(5)	ND(25)	ND(25)
B2-5	5	ND(1.0)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.5)	ND(0.5)	ND(0.5)	ND(2.5)	ND(0.5)	ND(2.5)	ND(2.5)
B2-8	8	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B3-1	1	ND(10)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(25)	ND(5)	ND(25)	ND(25)
B3-5	5	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B3-8	8	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B4-1	1	ND(10)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(25)	ND(5)	ND(25)	ND(25)
B4-5	5	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B4-8	8	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B5-1	1	ND(0.50)	ND(0.25)	ND(0.50)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(1.2)	ND(1.2)
B5-5	5	ND(0.50)	ND(0.25)	ND(0.50)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(1.2)	ND(1.2)
B6-1	1	ND(10)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(25)	ND(5)	ND(25)	ND(25)
B6-5	5	ND(10)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(25)	ND(5)	ND(25)	ND(25)
B6-8	8	ND(0.20)	ND(0.10)	ND(0.20)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.50)	ND(0.10)	ND(0.10)	ND(0.50)	ND(0.10)	ND(0.50)	ND(0.50)
B7-1	1	ND(10)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(25)	ND(5)	ND(25)	ND(25)
B7-5	5	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B7-8	8	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B8-1	1	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B8-4	4	ND(10)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(25)	ND(5)	ND(25)	ND(25)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet below ground surface)	8270 Semi VOC's (ug/kg)															
		Dibenzofuran	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Diethyl Phthalate	4-Chlorophenyl-Phenyl Ether	Fluorene	4-Nitroaniline	4,6-Dinitro-2-Methyl Phenol	N-Nitrosodiphenylamine	4-Bromophenyl-Phenyl Ether	Hexachlorobenzene	Pentachlorophenol	Phenanthrene	Anthracene	Di-N-Butyl Phthalate
B1-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(25)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)
B2-5	5	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.5)	ND(2.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(2.5)	ND(0.5)	ND(0.5)	0.9[d]
B2-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	1.9[d]
B3-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(25)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)
B3-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)
B3-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	0.06
B4-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(25)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)
B4-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	0.07	ND(0.05)	0.07
B4-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	0.11
B5-1	1	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)
B5-5	5	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)
B6-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(25)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)
B6-5	5	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(25)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)
B6-8	8	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.50)	ND(0.50)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.50)	ND(0.10)	ND(0.10)	0.19
B7-1	1	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(25)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)
B7-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	1.3[d]
B7-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	0.82[d]
B8-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	0.81
B8-4	4	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(25)	ND(25)	ND(5)	ND(5)	ND(5)	ND(25)	ND(5)	ND(5)	ND(5)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.

-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		8270 Semi VOC's (ug/kg)													
Sample Location	Depth (feet, below ground surface)	Fluoranthene	Pyrene	Butyl Benzyl Phthalate	3,3'-Dichlorobenzidine	Benzo(A)Anthracene	Bis(2-Ethylhexyl)Phthalate	Chrysene	Di-N-Octyl Phthalate	Benzo(B)Fluoranthene	Benzo(K)Fluoranthene	Benzo(A)Pyrene	Indeno(1,2,3-C,D) Pyrene	Dibenzo(A,H)Anthracene	Benzo(G,H,I)Perylene
B1-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND(5)	ND(5)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
B2-5	5	ND(0.5)	ND(0.5)	ND(0.5)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
B2-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B3-1	1	ND(5)	ND(5)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
B3-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B3-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B4-1	1	ND(5)	ND(5)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
B4-5	5	0.08	0.08	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B4-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B5-1	1	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.50)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)
B5-5	5	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.50)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)
B6-1	1	ND(5)	ND(5)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
B6-5	5	ND(5)	ND(5)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
B6-8	8	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.20)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
B7-1	1	ND(5)	ND(5)	ND(5)	ND(10)	ND(5)	250	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
B7-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	0.99	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B7-8	8	ND(0.05)	ND(0.05)	0.45	ND(0.10)	ND(0.05)	0.09	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B8-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B8-4	4	ND(5)	ND(5)	ND(5)	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8240 VOC's (ug/kg)	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	2-Butanone (MEK)	Carbon Tetrachloride	Chlorobenzene	Chloroethane	2-Chloroethyl Vinyl Ether	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene
B1-1	1		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-5	5		170	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B1-8	8		--	440	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-5	5		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B2-8	8		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-1	1		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B3-5	5		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-8	8		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B4-1	1		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-5	5		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	11
B4-8	8		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B5-1	1		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B5-5	5		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B6-1	1		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B6-5	5		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B6-8	8		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B7-1	1		250	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B7-5	5		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-8	8		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B8-1	1		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B8-4	4		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		8240 VOC's (ug/kg)																		
Sample Location	Depth (feet below ground surface)	trans-1,2-Dichloroethene	1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Styrene	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Total Xylenes
B1-1	1	--	--	--	--	5.2	--	--	--	--	--	--	7.0	--	--	--	--	--	--	28
B1-5	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B1-8	8	--	--	--	--	2700	--	--	--	--	--	--	3,200	--	--	--	--	--	--	14,000
B2-1	1	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	15
B2-5	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	9.4	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B2-8	8	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)
B3-1	1	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	11	ND(5.0)	ND(5.0)	ND(5.0)	82	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B3-5	5	--	--	--	--	ND(5.0)	--	--	--	--	--	--	10	--	--	--	--	--	--	ND(5.0)
B3-8	8	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B4-1	1	--	--	--	--	ND(5.0)	--	--	--	--	--	--	11	--	--	--	--	--	--	ND(5.0)
B4-5	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	15	6.8	ND(5.0)	ND(5.0)	100	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B4-8	8	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	22.0
B5-1	1	--	--	--	--	ND(5.0)	--	--	--	--	--	--	6.9	--	--	--	--	--	--	ND(5.0)
B5-5	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B6-1	1	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	7.1	ND(5.0)	ND(5.0)	5.2	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B6-5	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B6-8	8	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B7-1	1	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	8.7	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	12	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	90
B7-5	5	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)
B7-8	8	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B8-1	1	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B8-4	4	--	--	--	--	ND(5.0)	--	--	--	--	--	--	25	--	--	--	--	--	--	15.0

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	Hydrocarbons					6010 Metals (mg/kg)												
		Hydrocarbons	8015m-Diesel (mg/kg)	8015m-Gasoline (mg/kg)	5520 E F-Oil and Grease (mg/kg)	418.1-TRPH (mg/kg)	6010 Metals (mg/kg)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (total)	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium
							TTLC	500	500	10000	75	100	2500	8000	2500	1000	5000	3500	2000	100
							10XSTLC	150	50	1000	8	10	5600	800	250	50	2500	3500	200	10
B9-1	1		ND(1.0)	ND(1.0)	--	12		ND(1.0)	7.1	81	0.22	0.76	ND(0.5)	8.0	12	15	0.09	ND(0.25)	4.1	ND(0.5)
B9-5	5		ND(1.0)	ND(1.0)	--	ND(10)		ND(1.0)	2.1	53	0.16	0.35	8.7	2.3	4.7	7.3	ND(0.05)	ND(0.25)	7.5	ND(0.5)
B9-8	8		ND(1.0)	ND(1.0)	--	ND(10)		ND(1.0)	4.6	23	0.21	0.39	12	3.0	3.7	2.2	ND(0.05)	ND(0.25)	13	ND(0.5)
B10-1	1		ND(1.0)[5]	ND(1.0)	--	14		ND(1.0)	ND(0.25)	78	0.21	0.42	14	2.2	8.5	55	0.11	ND(0.25)	8.1	ND(0.5)
B10-5	5		ND(1.0)	ND(1.0)	--	20		ND(1.0)	ND(0.25)	330	0.59	0.48	8.0	2.3	9.4	32	0.07	ND(0.25)	7.0	ND(0.5)
B10-8	8		ND(1.0)	ND(1.0)	--	ND(10)		ND(1.0)	ND(0.25)	23	0.14	0.10	12	1.5	2.7	3.1	ND(0.05)	ND(0.25)	6.0	ND(0.5)
B11-1	1		ND(1.0)	ND(1.0)	390	--		ND(1.0)	ND(0.25)	49	0.22	0.96	18	89	9.1	48	0.21	ND(0.25)	13	ND(0.5)
B11-5	5		ND(1.0)	2.7	290	--		ND(1.0)	ND(0.25)	47	0.22	0.66	17	2.9	8.4	33	0.10	ND(0.25)	11	ND(0.5)
B11-8	8		ND(1.0)	6500	330	--		ND(1.0)	ND(0.25)	36	0.25	0.66	21	2.7	4.6	5.9	ND(0.05)	ND(0.25)	17	ND(0.5)
B12-1	1		ND(1.0)	ND(1.0)	ND(50)	ND(10)		ND(1.0)	ND(0.25)	58	0.21	0.47	18	2.8	5.7	150	0.09	ND(0.25)	11	ND(0.5)
B12-5	5		ND(1.0)	ND(1.0)	ND(50)	ND(10)		ND(1.0)	ND(0.25)	49	0.26	0.69	21	4.1	5.4	1.7	ND(0.05)	ND(0.25)	16	ND(0.5)
B12-8	8		ND(1.0)	3600	ND(50)	460		ND(1.0)	ND(0.25)	40	0.32	1.1	29	3.9	6.4	6.3	ND(0.05)	ND(0.25)	24	ND(0.5)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		6010 Metals (mg/kg)					Sol.Met.		pH	8080 PCBs and Pesticides (ug/kg)										
		500	700	2400	5000															
		50	70	240	2500															
Sample Location	Depth (feet, below ground surface)	Silver	Thallium	Vanadium	Zinc	Chrome VI	Soluble Metals (mg/L)	WET Lead	pH Units	8080-PCBs and Pest. (ug/kg)	PCBs*	Aldrin	Dieldrin	Endrin Aldehyde	Endrin	Heptachlor	Heptachlor Epoxide	P,P' - DDT	P,P' - DDE	P,P' - DDT
B9-1	1	ND(0.25)	ND(2.0)	15	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-5	5	ND(0.25)	ND(2.0)	8.3	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-8	8	ND(0.25)	ND(2.0)	13	9.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-1	1	ND(0.25)	ND(2.0)	11	40	--	--	--	--	ND(100)	ND(20)	ND(20)	ND(100)	ND(20)	ND(20)	ND(20)	ND(100)	ND(20	ND(100)	
B10-5	5	ND(0.25)	ND(2.0)	8.2	27	ND(0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-8	8	ND(0.25)	ND(2.0)	9.6	7.1	ND(0.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-1	1	ND(0.25)	ND(2.0)	15	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-5	5	ND(0.25)	ND(2.0)	14	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-8	8	ND(0.25)	ND(2.0)	18	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-1	1	ND(0.25)	ND(2.0)	15	19	--	--	30	--	ND(5)	ND(1)	ND(1)	ND(5)	ND(1)	ND(1)	ND(1)	ND(5)	ND(1)	ND(5)	
B12-5	5	ND(0.25)	ND(2.0)	18	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-8	8	ND(0.25)	ND(2.0)	23	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

*PCBs include Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		8080 PCBs and Pesticides (ug/kg)										8270 Semi VOC's (ug/kg)						
Sample Location	Depth (feet below ground surface)	Endosulfan I	Endosulfan II	α - BHC	β - BHC	γ - BHC (Lindane)	δ - BHC	Endosulfan Sulfate	p,p' - Methoxychlor	Toxaphene	Chlordane	8270 Semi VOC's (mg/kg)	Phenol	Bis(2-Chloroethyl)Ether	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Benzyl Alcohol
B9-1	1	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B9-5	5	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B9-8	8	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B10-1	1	ND(100)	ND(100)	ND(20	ND(20	ND(20	ND(20	ND(100)	ND(100)	ND(100)	ND(100)		ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.50)
B10-5	5	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B10-8	8	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B11-1	1	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B11-5	5	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B11-8	8	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B12-1	1	ND(5)	ND(5)	ND(1)	ND(1)	ND(1)	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B12-5	5	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)
B12-8	8	--	--	--	--	--	--	--	--	--	--		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet below ground surface)	8270 Semi VOC's (ug/kg)														
		1,2-Dichlorobenzene	2-Methylphenol	Bis(2-Chloroisopropyl)Ether	4-Methylphenol	N-Nitrosodi-N-Propylamine	Hexachloroethane	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	Benzoic Acid	Bis(2-Chloroethoxy)Methane	2,4-Dichlorophenol	1,2,4-Trichlorobenzene	Naphthalene
B9-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B9-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B9-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B10-1	1	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)
B10-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B10-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B12-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B12-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	6.3

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		8270 Semi VOC's (ug/kg)														
Sample Location	Depth (feet, below ground surface)	4-Chloroanaline	Hexachlorobutadiene	4-Chloro-3-Methylphenol	2-Methylnaphthalene	Hexachlorocyclopentadiene	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2-Chloronaphthalene	2-Nitroanaline	Dimethyl Phthalate	Acenaphthylene	3-Nitroanaline	Acenaphthene	2,4-Dinitrophenol	4-Nitrophenol
B9-1	1	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B9-5	5	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B9-8	8	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B10-1	1	ND(0.50)	ND(0.25)	ND(0.50)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(1.2)	ND(1.2)
B10-5	5	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B10-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-1	1	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B12-5	5	ND(0.10)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)
B12-8	8	ND(0.10)	ND(0.05)	ND(0.10)	4.5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.25)	ND(0.25)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet below ground surface)	8270 Semi VOC's (ug/kg)														
		Dibenzofuran	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Diethyl Phthalate	4-Chlorophenyl-Phenyl Ether	Fluorene	4-Nitroaniline	4,6-Dinitro-2-Methyl Phenol	N-Nitrosodiphenylamine	4-Bromophenyl-Phenyl Ether	Hexachlorobenzene	Pentachlorophenol	Phenanthrene	Anthracene	Di-N-Butyl Phthalate
B9-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	1.1
B9-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	0.17
B9-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	1.1
B10-1	1	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(1.2)	ND(0.25)	ND(0.25)	ND(0.25)	ND(1.2)	ND(0.25)	ND(0.25)	4.0[4]
B10-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	1.5[4]
B10-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	2.6
B12-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	0.98
B12-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.25)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.25)	ND(0.05)	ND(0.05)	1.5

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8270 Semi VOC's (ug/kg)													
		Fluoranthene	Pyrene	Butyl Benzyl Phthalate	3,3'-Dichlorobenzidine	Benzo(A)Anthracene	Bis(2-Ethylhexyl)Phthalate	Chrysene	Di-N-Octyl Phthalate	Benzo(B)Fluoranthene	Benzo(K)Fluoranthene	Benzo(A)Pyrene	Indeno(1,2,3-C,D) Pyrene	Dibenzo(A,H)Anthracene	Benzo(G,H,I)Perylene
B9-1	1	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B9-5	5	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B9-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B10-1	1	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.50)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)	ND(0.25)
B10-5	5	ND(0.05)	ND(0.05)	0.14	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B10-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-1	1	ND(0.05)	ND(0.05)	0.37	ND(0.10)	ND(0.05)	0.14	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B12-5	5	ND(0.05)	ND(0.05)	0.09	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
B12-8	8	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.10)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		8240 VOC's (ug/kg)																
Sample Location	Depth (feet below ground surface)	8240 VOC's (ug/kg)	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	2-Butanone (MEK)	Carbon Tetrachloride	Chlorobenzene	Chloroethane	2-Chloroethyl Vinyl Ether	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene
B9-1	1		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B9-5	5		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-8	8		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B10-1	1		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-5	5		ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B10-8	8		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-1	1		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-5	5		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-8	8		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-1	1		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-5	5		--	ND(5.0)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-8	8		ND(25)	7,700	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

ND (0 5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

ENVIRONMENTAL SOLUTIONS

Table 1-5 Analytical Results - Soil Samples - J & A Truck Repair

		8240 VOC's (ug/kg)																	
Sample Location	Depth (feet, below ground surface)	trans-1,2-Dichloroethene	1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Styrene	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Total Xylenes
B9-1	1	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B9-5	5	--	--	--	--	ND(5.0)	--	--	--	--	--	--	14	--	--	--	--	--	--	ND(5.0)
B9-8	8	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B10-1	1	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)
B10-5	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
B10-8	8	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)
B11-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-5	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-8	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B12-1	1	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	7.8
B12-5	5	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)	--	--	--	--	--	--	ND(5.0)
B12-8	8	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	44,000	ND(5.0)	ND(25)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	94,000	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	250,000

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	Hydrocarbons					6010 Metals (mg/L)											
		Hydrocarbons	8015m-Diesel (ug/L)	8015m-Gasoline (mg/L)	5520 E F-Oil and Grease (mg/L)	418.1-TRPH (mg/L)	6010 Metals (mg/L)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (total)	Cobalt	Copper	Lead	Mercury	Molybdenum
B2-W	water		ND(50)[6,9]	ND(0.05)	--	4		ND(0.02)	0.44	1.3	0.009	0.040	0.50	0.14	0.18	ND(0.01)	ND(0.001)	ND(0.005)
B4-W	water		--	ND(0.05)	--	--		ND(0.02)	0.005	0.083	ND(0.001)	ND(0.001)	ND(0.01)	0.01	0.01	ND(0.01)	ND(0.001)	0.023
B6-W	water		ND(50)	ND(0.05)	--	2		ND(0.02)	0.035	0.10	ND(0.001)	ND(0.001)	ND(0.01)	ND(0.01)	0.01	ND(0.01)	0.002	0.026
B7-W	water		ND(50)	ND(0.05)	--	ND(1)		ND(0.02)	0.61	1.9	0.013	0.062	0.92	0.23	0.34	0.01	0.001	ND(0.005)
B9-W	water		ND(50)	ND(0.05)	--	ND(1)		ND(0.02)	0.010	0.047	ND(0.001)	ND(0.001)	ND(0.01)	ND(0.01)	0.01	ND(0.01)	ND(0.001)	0.011
B10-W	water		--	--	--	ND(1)		--	--	--	--	--	--	--	--	--	--	--
B11-W	water		ND(250)	59	2	--		ND(0.02)	ND(0.005)	0.66	0.003	0.005	0.33	0.04	0.09	0.08	ND(0.001)	ND(0.005)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses..
- - = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	6010 Metals (mg/L)						pH	8080 Pesticides and PCB's (ug/L)								
		Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	pH Units	8080-PCBs and Pest (ug/L)	PCBS*	Aldrin	Dieldrin	Endrin Aldehyde	Endrin	Heptachlor	Heptachlor Epoxide	p,p' - DDT
B2-W	water	0.64	ND(0.01)	ND(0.005)	ND(0.01)	0.59	0.48	--		ND(0.50)	ND(0.04)	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.03)	ND(0.05)	ND(0.1)
B4-W	water	0.05	ND(0.01)	ND(0.005)	ND(0.01)	ND(0.01)	0.04	--		ND(0.50)	ND(0.04)	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.03)	ND(0.05)	ND(0.1)
B6-W	water	ND(0.02)	0.01	ND(0.005)	ND(0.01)	0.01	0.01	--		ND(0.50)	ND(0.04)	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.03)	ND(0.05)	ND(0.1)
B7-W	water	1.0	ND(0.01)	ND(0.005)	ND(0.01)	0.85	0.83	--		ND(0.50)	ND(0.04)	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.03)	ND(0.05)	ND(0.1)
B9-W	water	ND(0.02)	ND(0.01)	ND(0.005)	ND(0.01)	ND(0.01)	ND(0.01)	--		ND(0.50)	ND(0.04)	ND(0.03)	ND(0.1)	ND(0.05)	ND(0.03)	ND(0.05)	ND(0.1)
B10-W	water	--	--	--	--	--	--	7.4		--	--	--	--	--	--	--	--
B11-W	water	0.27	ND(0.01)	ND(0.005)	ND(0.01)	0.25	0.2	--		--	--	--	--	--	--	--	--

*PCBs include Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8080 Pesticides and PCB's (ug/L)											
		p,p' - DDE	p,p' - DDD	Endosulfan I	Endosulfan II	α - BHC	β - BHC	γ - BHC (Lindane)	δ - BHC	Endosulfan Sulfate	p,p' - Methoxychlor	Toxaphene	Chlordane
B2-W	water	ND(0.04)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)	ND(0.50)	ND(0.50)
B4-W	water	ND(0.04)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)	ND(0.50)	ND(0.50)
B6-W	water	ND(0.04)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)	ND(0.50)	ND(0.50)
B7-W	water	ND(0.04)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)	ND(0.50)	ND(0.50)
B9-W	water	ND(0.04)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)	ND(0.50)	ND(0.50)
B10-W	water	--	--	--	--	--	--	--	--	--	--	--	--
B11-W	water	--	--	--	--	--	--	--	--	--	--	--	--

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet below ground surface)	8270 Semi VOC's (mg/L)	Phenol	Bis(2-Chloroethyl)Ether	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Benzyl Alcohol	1,2-Dichlorobenzene	2-Methylphenol	Bis(2-Chloroisopropyl)Ether	4-Methylphenol	N-Nitrosodi-N-Propylamine	Hexachloroethane	Nitrobenzene	Isophorone	2-Nitrophenol
			8270 Semi VOC's (mg/L)														
B2-W	water		ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B4-W	water		ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B6-W	water		ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B7-W	water		ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B9-W	water		ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B10-W	water		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-W	water		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8270 Semi VOC's (mg/L)															
		2,4-Dimethylphenol	Benzoic Acid	Bis(2-Chloroethoxy)Methane	2,4-Dichlorophenol	1,2,4-Trichlorobenzene	Naphthalene	4-Chloroanaline	Hexachlorobutadiene	4-Chloro-3-Methylphenol	2-Methylnaphthalene	Hexachlorocyclopentadiene	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2-Chloronaphthalene	2-Nitroanaline	Dimethyl Phthalate
B2-W	water	ND(002)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(002)
B4-W	water	ND(002)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(002)
B6-W	water	ND(002)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(002)
B7-W	water	ND(002)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(002)
B9-W	water	ND(002)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(002)	ND(004)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(002)
B10-W	water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-W	water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet below ground surface)	8270 Semi VOC's (mg/L)															
		Acenaphthylene	3-Nitroaniline	Acenaphthene	2,4-Dinitrophenol	4-Nitrophenol	Dibenzofuran	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Diethyl Phthalate	4-Chlorophenyl-Phenyl Ether	Fluorene	4-Nitroaniline	4,6-Dinitro-2-Methyl Phenol	N-Nitrosodiphenylamine	4-Bromophenyl-Phenyl Ether	Hexachlorobenzene
B2-W	water	ND(002)	ND(010)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)
B1-W	water	ND(002)	ND(010)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)
B6-W	water	ND(002)	ND(010)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)
B7-W	water	ND(002)	ND(010)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)
B9-W	water	ND(002)	ND(010)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(010)	ND(010)	ND(002)	ND(002)	ND(002)
B10-W	water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-W	water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND (0 5) = Not Detected at or above reporting limit, reporting limit in parentheses.
- - = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8270 Semi VOC's (mg/L)															
		Pentachlorophenol	Phenanthrene	Anthracene	Di-N-Butyl Phthalate	Fluoranthene	Pyrene	Butyl Benzyl Phthalate	3,3'-Dichlorobenzidine	Benzo(A)Anthracene	Bis(2-Ethylhexyl)Phthalate	Chrysene	Di-N-Octyl Phthalate	Benzo(B)Fluoranthene	Benzo(K)Fluoranthene	Benzo(A)Pyrene	Indeno(1,2,3-C,D) Pyrene
B2-W	water	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(2)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B4-W	water	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(2)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B6-W	water	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(2)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B7-W	water	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(2)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B9-W	water	ND(010)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(004)	ND(2)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)	ND(002)
B10-W	water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-W	water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet, below ground surface)	8270 Semi VOC's		8240 VOC's (ug/L)														
		Dibenzo(A,H)Anthracene	Benzo(G,H,I)Perylene	8240 VOC's (ug/L)	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	2-Butanone (MEK)	Carbon Tetrachloride	Chlorobenzene	Chloroethane	2-Chloroethyl Vinyl Ether	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane
B2-W	water	ND(002)	ND(002)		ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B4-W	water	ND(002)	ND(002)		ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	2.0	ND(2.0)	ND(2.0)	20
B6-W	water	ND(002)	ND(002)		ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B7-W	water	ND(002)	ND(002)		ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	9.0
B9-W	water	ND(002)	ND(002)		ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B10-W	water	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-W	water	--	--		ND(50)	15000	ND(20)	ND(20)	ND(20)	44	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)

ND (0 5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

		8240 VOC's (ug/L)																
Sample Location	Depth (feet below ground surface)	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Ethylbenzene	2-Hexanone	Methylene Chloride	4-Methyl-2-Pentanone	Styrene	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane
B2-W	water	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B4-W	water	ND(2.0)	ND(2.0)	73	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	16	ND(2.0)	18	ND(2.0)
B6-W	water	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B7-W	water	ND(2.0)	13	22	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	8.0	ND(2.0)
B9-W	water	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B10-W	water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B11-W	water	ND(20)	ND(20)	26	ND(20)	ND(20)	ND(20)	ND(20)	2100	ND(20)	ND(50)	ND(20)	ND(20)	ND(20)	ND(20)	7700	ND(20)	ND(20)

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-6 Analytical Results - Groundwater Samples - J & A Truck Repair

Sample Location	Depth (feet below ground surface)	8240 VOC's (ug/L)				
		Trichloroetnene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Total Xylenes
B2-W	water	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B4-W	water	300	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B6-W	water	12	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B7-W	water	16	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B9-W	water	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
B10-W	water	--	--	--	--	--
B11-W	water	ND(20)	ND(20)	ND(20)	ND(20)	7200

ND (0.5) = Not Detected at or above reporting limit, reporting limit in parentheses.
-- = Sample not tested for these analytes.

Table 1-7 Summary of Potential Health Risks Exposure to Soils at J & A Truck Repair Site

CONSTITUENT OF CONCERN	MAXIMUM CONCENTRATION (mg/kg)	PRG[2] CANCER (mg/kg)	CANCER RISK ($\times 10^{-6}$)	PERCENT CONTRIBUTION	PRG NONCANCER (mg/kg)	NONCANCER HAZARD INDEX	PERCENT CONTRIBUTION
Antimony	2.7	NA	NA	NA	67.0	0.04	0.94
Arsenic	27	0.51 - 4.60	5.9 - 52.9	84.28	NA	NA	NA
Barium	330	NA	NA	NA	12000.00	0.03	0.64
Beryllium	0.59	0.20 - 1.80	0.3 - 3.0	4.70	NA	NA	NA
Cadmium	1.6	2.70 - 24.06	0.1 - 0.6	0.94	NA	NA	NA
Chromium III	41	NA	NA	NA	170000.0	0.0002	0.006
Copper	34	NA	NA	NA	5000.0	0.007	0.16
Lead	150	NA	NA	NA	340.0	0.4	10.3
Mercury	0.66	NA	NA	NA	45.0	0.01	0.34
Molybdenum	0.32	NA	NA	NA	830.0	0.0004	0.01
Nickel	24	44 - 400	0.06 - 0.5	0.87	NA	NA	NA
Vanadium	41	NA	NA	NA	1200.0	0.03	0.8
Zinc	240	NA	NA	NA	5000.0	0.005	0.11
Benzene	7.7	3.50 - 31.30	0.2 - 2.2	3.50	NA	NA	NA
Toluene	94	NA	NA	NA	283.0	0.3	7.77
Ethylbenzene	44	NA	NA	NA	73.5	0.6	14.0
Xylenes (Mixed)	250	NA	NA	NA	98.8	2.5	59.2
Naphthalene	6.3	NA	NA	NA	82.0	0.08	1.8
Tetrachloroethylene	0.015	10.0 - 91.50	0.0002 - 0.002	0.002	202.0	0.00007	0.002
Trichloroethylene	0.1	27.0 - 245.0	0.0004 - 0.004	0.01	297.0	0.0003	0.008
Bis(2-ethylhexyl)phthalate	250	69.80 - 628.00	0.4 - 3.6	5.70	1510.0	0.2	3.87
Di-n-butyl phthalate	4	NA	NA	NA	7540.0	0.0005	0.01
Fluoranthene	0.08	NA	NA	NA	2280.0	0.00004	0.0008
Pyrene	0.08	NA	NA	NA	1710.0	0.00005	0.001
TOTALS			7.0 - 62.8	100.0		4.3	100.0

94 911 (2/23/95/js)

(1) See Table A-1 for details of calculations.
(2) PRG – Preliminary Remediation Goal (per DTSC 1993)

Table APII-1
Sample Containers and Preservatives

Analyses	Test Method	Holding Time	Sample Container	Preservative
SOIL SAMPLES				
Organochlorine Pesticides and PCBs	8080	7 days	6" Brass Sleeve	None Cool to 4° C
Title 22 CAM 17 Metals	6010 and 7000 Series	14 days	6" Brass Sleeve	None Cool to 4° C
Total Petroleum Hydrocarbons as gasoline and BTEX	5030/8015+ 5030/8020	14 days	6" Brass Sleeve	None Cool to 4° C
TRPH	418.1	28 days	6" Brass Sleeve	None Cool to 4° C
Oil and Grease	5520 E & F	28 days	6" Brass Sleeve	None Cool to 4° C
Volatile Organic Compounds	8240	14 days	6" Brass Sleeve	None Cool to 4° C
Semi Volatile Organic Compounds	8270	14 days	6" Brass Sleeve	None Cool to 4° C
WATER				
Organochlorine Pesticides and PCBs	8080	7 days	1 Ltr glass bottle	None Cool to 4° C
Title 22 CAM 17 Metals	6010 and 7000 Series	14 days	200 ml plastic bottle	HNO_3 Cool to 4° C
Total Petroleum Hydrocarbons as gasoline and BTEX	5030/8015 & /8020	14 days	2-40 ml VOAs	HCl Cool to 4° C
TRPH	418.1	28 days	1 Ltr glass bottle	HCl Cool to 4° C

Table APII-1 (Continued)
Sample Containers and Preservatives

Analyses	Test Method	Holding Time	Sample Container	Preservative
Oil and Grease	5520 E & F	28 days	2-1 Ltr glass bottles	None Cool to 4° C
Volatile Organic Compounds	8240	14 days	1 Ltr glass bottle	HCl Cool to 4° C
Semi Volatile Organic Compounds	8270	14 days	2-40 ml VOAs	None Cool to 4° C

APPENDICES

APPENDIX I
HEALTH AND SAFETY PLAN

Health and Safety Plan

Contract Number: 04-192204
Cypress Freeway Re-Alignment, Contract A
Site Remediation
State of California Department of Transportation
Oakland, California

Performance Excavators, Inc.
3060 Kerner Boulevard, Suite A
San Rafael, California 94901
(415) 457-8506

Prepared By

Rothwell Consulting Group, Inc.
40376 Grimmer Boulevard
Fremont, CA 94538

September 12, 1995

Health and Safety Plan

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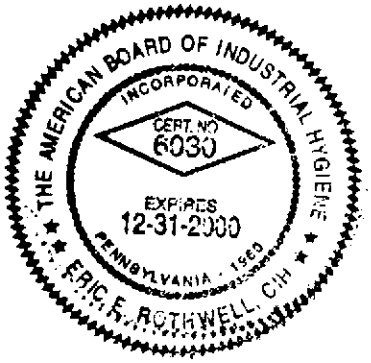
Fremont, CA 94538

September 12, 1995

CIH Statement

This Health and Safety Plan has been prepared according to California Title 8 CCR Section 5192, Hazardous Waste Site Operations and Emergency Response. It is written as a guide to performing construction activities in a manner that reduces the probability of employee overexposure to health ans safety hazaards found at the site. Any changes to this plan must be made by or at the consent of the Certified Industrial Hygienist.

Eric Rothwell, CIH



Signature Page

I have read, understand, accept and will abide by all provisions of this Health, Safety and Work Plan. I also agree to inform my supervisor and/or the Site Safety Officer of any conditions which are or appear to be unsafe.

Name (Printed)	Signature	Company	Date

Table of Contents

1.0 Introduction

This Health and Safety Plan (HASP) was developed for Performance Excavators, Inc. by Rothwell Consulting Group, Inc. (RCG). This HASP pertains to site remediation operations performed for the prime contractor, MCM Construction, Inc., by Performance Excavators in contaminated areas of J&A Truck Repair. J&A Truck Repair is located within the construction right-of-way of the Cypress Freeway Re-alignment Project, Contract A, located in the City of Oakland, County of Alameda, California.

The work will consist of:

- Placement of a temporary fence around the area of remediation
- Soil excavation and underground storage tank removal
- Staging of excavated soil
- Pump and treat groundwater infiltration inside the excavation
- Soil sample collection, shipment to the laboratory, and laboratory analysis
- Sampling equipment decontamination; and
- Report preparation

The following are the key personnel with health and safety responsibilities for the hazardous substance removal operations:

Name	Job Title	Job Tasks	Telephone Number
Said Najafi	Project Manager for MCM Construction.	Overseeing and managing hazardous substance removal operations.	(510) 452-9453 Site Phone Number
Mark Warner	Project Manager and Certified Supervisor	Overseeing and managing field operations during underground work.	(415) 456-4952
Greg Rainey	Qualified Person and Site Safety Officer	Maintaining a safe and healthy work environment.	(415) 456-4952
Eric Rothwell	Certified Industrial Hygienist	Overseeing and managing air monitoring.	(510) 490-5222
Various	Equipment Operators	Excavating, staging, and loading soil.	

This HASP establishes the policies and procedures that protect the workers and the general public from potential health and safety hazards posed at this site. All contaminated soil removal activities will be conducted in a manner that minimizes the probability of injury, illness, property damage, or damage to the environment and will

be performed according to Performance Excavators' Injury and Illness Prevention Program. This HASP is prepared in accordance with and in reference to the following regulations and guidelines:

- United States Department of Labor, OSHA standards, specifically:
  Title 29 CFR Part 1910.120 - Hazardous Waste Site Operations and Emergency.
  Title 29 CFR Part 1926 - Health and Safety Regulations for Construction
- California Occupational Health and Safety Regulations, specifically:
  Title 8 CCR §5192 - Hazardous Waste Site Operations and Emergency Response
  Title 8 CCR §5094 - Hazard Communication
  Title 8 CCR §5095-5100 - Hearing Conservation
  Title 8 CCR Chapter 4, Subchapter 4 - Construction Safety Orders
  Title 8 CCR §3203 - Injury and Illness Prevention Program
- United States Environmental Protection Agency's Standard Operating Safety Guides, July 1988.
- NIOSH/OSHA/USCG/EPA Occupational Health and Safety Guidance Manual for Hazardous Waste Activities, October 1985.

Since site conditions are subject to change and unforeseen conditions may arise, amendments or additions may need to be made to this HASP during the course of work. Modifications to this plan can only be made by the Contractor with the assistance of Performance Excavators' Certified Industrial Hygienist.

1.1 Description of Site

J&A Truck Repair comprises the contaminated area requiring remediation. J&A Truck Repair is located at 500 Kirkham Street, Oakland, California.

1.2 Site Conditions

Soil

Gasoline, oil and grease, lead, acetone, BTEX, and SVOCs were found in the soil in the vicinity of the 2,000 gallon underground storage tank. Soils in the rest of the site were found to be contaminated with TRPH, lead, and low concentrations of SVOCs and VOCs.

Groundwater

Gasoline, oil and grease, metals, and VOCs were found in the groundwater beneath the 2,000 gallon underground storage tank. Groundwater under the rest of the site was found to be contaminated with TRPH, metals, VOCs, and petroleum hydrocarbons in the diesel to motor oil range.

1.3 Risk Assessment

Contaminants found during the site investigation pose a potential health threat to employees working on the site during remedial activities. Theoretical airborne concentrations of total dust required to generate levels of aerosols exceeding their respective permissible exposure limits (and action levels) are shown below in Table 1.

Table 1 - Airborne Dust Concentrations Above Which Permissible Exposure Limits Could Be Exceeded

Contaminant	Maximum Concentration Found in the Soil	PEL-TWA (Action Level) [Ceiling Limit]	Total Dust Concentration Above Which PEL Would Be Exceeded
Copper	1,100 mg/kg	1 mg/m^3	909 mg/m^3
Lead	30,500 mg/kg	0.05 mg/m^3 (0.03 mg/m^3)	1.6 mg/m^3 1 mg/m^3
Selenium	19 mg/kg	0.2 mg/m^3	10,526 mg/m^3
Diesel	20,700 mg/kg	None established	N/A
Total recoverable petroleum hydrocarbons	17,800 mg/kg	None established	N/A
Semi-volatile organics (coal tar pitch volatiles)	1,690 mg/kg	0.05 mg/m^3	29.58 mg/m^3 (in solid form)

Total Dust Concentration Above Which PEL Would Be Exceeded (mg/m^3) = ((PEL)/(Maximum Concentration Found in the Soil)) x 1 million

By calculating the theoretical airborne contaminant concentrations using the available soil sampling data, it appears that lead contamination could likely present an airborne exposure hazard. However, employee exposures to lead can be easily controlled if dust control measures are properly employed. Dust concentrations at similar construction projects rarely exceed 3 mg/kg during any part of the day, much less continuously.

In areas where contamination levels may be unknown or where previously unidentified contaminants are discovered, employee exposures by inhalation can be effectively controlled through the use of respiratory protection and protective clothing.

Note that this risk assessment does not take into account petroleum hydrocarbon contamination and does not adequately characterize theoretical exposure to volatile and semi-volatile organic compounds. Theoretical airborne concentrations of petroleum hydrocarbons are difficult to calculate due to variables such as temperature, humidity, wind speed and direction, and employees' proximity to the contamination. Based on the soil sampling data, it is unlikely that hazardous levels of airborne petroleum hydrocarbon vapors will be seen in the sampled locations during

the course of work. However, because of these variables, continuous air monitoring will be performed in areas where petroleum contamination and semi-volatile organic compounds have been identified or are suspected. Proper personal protective equipment shall be worn until exposures have been adequately quantified by air monitoring.

1.4 Pathways for Hazardous Substance Dispersion

Hazardous substances may have been and could possibly be dispersed from the source by air or groundwater. Further dispersion by air shall be controlled using dust control measures, enforcing site control measures, establishing work zones, and erecting perimeter fencing.

1.5 Health and Safety Plan Availability

This written Health and Safety Plan shall be made available to any contractor or subcontractor or their representative who will be involved with the hazardous waste operation; to employees; to employee designated representatives; to Division representatives, and to personnel of other federal, state, or local agencies with regulatory authority over the site.

2.0 Organizational Structure

The organizational structure part of this Health and Safety Plan establishes the specific chain of command and specifies the overall responsibilities of supervisors and employees relating to health and safety. The organizational structure shall be reviewed and updated as necessary to reflect the current status of site operations. The following are the key supervisory personnel:

2.1 Certified Supervisor

Mark Warner is named as the general supervisor (or certified supervisor for hazardous substance removal work). He has the responsibility and authority to direct all operations involving hazardous waste and materials.

2.2 Site Safety Officer

Greg Rainey is named as the Site Safety Officer. He has the responsibility and authority to develop and implement the site health and safety plan and verify compliance.

2.3 Qualified Person

Greg Rainey has authority to implement the site health and safety plan and verify compliance. He is also responsible for operations defined as hazardous substance removal work. He is responsible for scheduling and overseeing any air sampling,

calibration of sampling equipment, and for evaluation of soil or other contaminated materials sampling results.

2.4 Miscellaneous Personnel

All other personnel needed for hazardous waste site operations and emergency response and their general functions and responsibilities shall be determined and named on as as-needed basis. These personnel shall be briefed on the special hazards of the site and shall sign the signature page of this plan.

2.5 Employee Safety Responsibility

Although the employer is responsible for providing a safe and healthful workplace, each employee is responsible for his/her own safety, as well as the safety of those around him/her. The employee shall use all equipment in a safe and responsible manner, and as directed by supervisory personnel.

2.6 Logs, Reports, and Recordkeeping

Recordkeeping is a crucial component of any effective health and safety program. Site safety records shall therefore be updated daily. The following logs, reports, and records shall be maintained on site:

- Site safety meetings
- Employee training records - site specific and visitors
- Daily safety inspection logs
- Weekly safety reports
- Health and safety plan signature page
- Employee and visitor sign-in sheets
- Ambient and personal air monitoring results
- OSHA 200 log

3.0 Safe Work Practices

3.1 Contaminated Area Safe Work Practices

- Ingestion can occur through eating, drinking, or smoking with hands or faces that are contaminated with contaminated soil. An additional concern is that shoes or clothing contaminated with contaminated soils would be taken to cars, offices, or homes and provide a source for secondary exposures.
- Keep blowing dust to an absolute minimum with water or other approved dust reducing agents.
- Minimize cross-contamination by using protective/sacrificial clothing and footwear (rubber boots/jobsite only boots) that is used on jobsite only. Store this clothing on

the jobsite or in a manner that will prevent contamination. Clean boots before leaving jobsite.

- Prevent soil ingestion by not eating, smoking, or drinking near work operations. Wash hands and face before eating, drinking, smoking, or using bathroom. This requires an adequate supply of wash water, soap, and towels on site.) Store food and water so it will not be contaminated.
- Read and review the Health and Safety Plan.

3.2 Excavation Safe Work Practices

- Excavation equipment shall not be operated near tops of cuts, banks, and cliffs if employees are working below.
- Tractors, bulldozers, scrapers and carryalls shall not operate where there is possibility of overturning in dangerous areas like edges of deep fills, cut banks, and steep slopes.
- All excavations shall be visually inspected before backfilling, to ensure that it is safe to backfill.
- The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation.
- All Regional Notification Centers as defined by Government Code Section 4216(a) in the area involved and all known owners of underground facilities in the area who are not members of a Notification Center shall be advised of the proposed work at least 2 working days prior to the start of any digging or excavation work except for emergency repair work to underground facilities.
- When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.
- While the excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard employees.
- Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.
- Means of egress from trench excavations: A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.
- Exposure to vehicular traffic: Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

- Exposure to falling loads: No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped to provide adequate protection for the operator during loading and unloading operations.
- When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.
- Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations where hazardous substances are identified, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet in depth.
- Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen, in excess of 10 percent of the lower flammable limit of a gas, or other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation.
- When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.
- Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.
- Materials and equipment shall be kept at least 2 feet from the edge of excavations or retaining devices shall be used that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.
- Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rain storm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.
- Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

3.3 Dust Control

Dust must not be created during staging, moving, or loading of soils. If necessary, a hose or water truck will be provided to moisten soil being moved or loaded. At no time shall runoff be generated as a result of wetting of soil. In addition, all site dust caused by vehicles, equipment or wind shall also be controlled.

4.0 Personnel Training Requirements

All employees working on site during the removal of contaminated soils who may be exposed to hazardous substances, health hazards, or safety hazards, and their supervisors and managers responsible for the site shall receive training meeting the requirements of this section before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards.

4.1 Hazardous Waste Site Training

General site workers (such as equipment operators, general laborers, and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained and experienced supervisor.

Workers on site only occasionally for a specific limited task (such as, but not limited to, groundwater monitoring, land surveying, or geophysical surveying) and who are unlikely to be exposed over Permissible Exposure Limits and published exposure levels shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations shall receive 40 hours initial training, and three days of supervised field experience and at least eight additional hours of specialized hazardous waste operations management training at the time of job assignment on such topics as, but not limited to, the employer's health and safety program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.

Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

Table 2 - Training Requirements

Job Title	Job Tasks	Training Requirements
Project Manager and Certified Supervisor	Overseeing and managing hazardous substance removal operations.	40 hours-Hazardous Waste Site Operations
Certified Industrial Hygienist and Qualified Person	Overseeing and managing air monitoring, soil sampling, and maintaining a safe and healthy work environment.	40 hours-Hazardous Waste Site Operations
Site Safety Officer	Maintaining a safe and healthy work environment.	40 hours-Hazardous Waste Site Operations
Equipment operators and laborers entering Exclusion Zones during hazardous substance removal operation	Performing hazardous substance removal.	40 hours-Hazardous Waste Site Operations
Visitors entering Exclusion Zones during hazardous substance removal operation	Various.	40 hours-Hazardous Waste Site Operations
All other visitors	Various.	Site indoctrination conveying site work zones, rules and regulations

4.1.1 Hazardous Waste Site Training Elements

The hazardous waste site training shall thoroughly cover the following:

- Names of personnel and alternates responsible for site health and safety
- Engineering controls and work practices by which the employee can minimize risks for hazards
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards
- The biological, chemical, radiological and physical hazards present on the site and their respective properties
- The potential routes of exposure to chemicals, the possible toxic effects, the IDLH and Permissible Exposure Limit values of chemical hazards, and the level of personal exposure which can be anticipated, acute and chronic effects of toxic chemicals
- Heat and/or cold stress prevention, treatment, and monitoring
- Personal cleanliness and restrictions on eating, drinking, and smoking on the job

- The availability of on-site potable water and toilet facilities
- Applicable provisions of the OSHA standards and the Injury and Illness Prevention Program
- Permit-required confined space entry procedures
- Spill containment program
- The functions, capabilities, limitations, use, and maintenance of monitoring equipment
- The use, care, and disposal of the specific PPE selected for this work. The PPE shall be available for hands-on familiarity and practice donning, as needed.
- Handling of medical emergencies including the locations of telephones and numbers for ambulance service, and hospital locations.
- The decontamination procedures
- The emergency contingency procedures
- The fire and accident response procedures
- Basic operational safety, emphasizing the hazards expected on the site
- Employee rights and responsibilities under OSHA
- Site-specific, task-specific activity hazard analysis

4.2 Qualifications for Trainers

Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.

4.3 Training Certification

Employees and supervisors that have received and successfully completed the training and field experience shall be certified by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A written certificate shall be given to each person so certified.

Any person who has not been so certified or who does not meet these training requirements shall be prohibited from engaging in operations where exposures to hazardous substances are possible.

4.4 Refresher Training

Employees, managers and supervisors specified in Section 4.1 shall receive eight hours of refresher training annually on the items specified in Subsection 4.1.1, any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics.

5.0 Medical Surveillance Program

The medical surveillance program shall be instituted for the following employees:

- All personnel working in or entering the Exclusion Zones during hazardous substance removal including equipment operators, laborers, technicians, and supervisors.
- Any employee who is or may be exposed to hazardous substances or health hazards at or above the Permissible Exposure Limits or, if there is no Permissible Exposure Limit above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year.
- Any employee who wears a respirator during any part of a day for a period of 30 days or more in a year, or as required by 8 CCR 5144.
- Employees exhibiting symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.

5.1 Frequency of Medical Examinations and Consultations

Medical examinations and consultations shall also be made available by the employer to each employee covered under Section 5.0 on the following schedules:

- Prior to assignment.
- At least once every twelve months for each employee covered, unless the attending physician believes a longer interval (not greater than biennially) is appropriate.
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months.
- As soon as possible, upon notification by an employee either that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards or that the employee has been injured or exposed above the Permissible Exposure Limits or published exposure levels in an emergency situation.
- At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary.

For employees who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or who have been exposed during an emergency incident to hazardous substances at concentrations above the Permissible Exposure Limits or the published exposure levels without the necessary personal protective equipment being used shall undergo a medical examination:

- As soon as possible following the emergency incident or development of signs or symptoms;
- At additional times, if the examining physician determines that follow-up examinations or consultations are medically necessary.

5.2 Content of Medical Examinations or Consultations

The content of initial medical examinations shall contain, at a minimum, the following:

1. Complete medical and occupational history;
2. General physical examination including an evaluation of all major organ systems;
3. Pulmonary function testing including FVC and FEV_1;
4. Urinalysis for heavy metals;
5. Serum lead; and
6. Serum ZPP.

5.3 Examination by a Physician and Costs

All medical examinations and procedures shall be performed by or under the supervision of a licensed physician certified in occupational medicine by the American Board of Preventative Medicine, and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

5.4 Information Provided to the Physician

The employer shall provide one copy of this standard and its appendices to the attending physician, and in addition, the following for each employee:

- A description of each employee's duties as they relate to the employee's exposures.
- Each employee's exposure levels or anticipated exposure levels.
- A description of any PPE used or to be used by each employee.
- Information from previous medical examinations of each employee which is not readily available to the examining physician.
- Information required by 8 CCR 5144 for each employee.

5.5 Physician's Written Opinion

The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures. The physician shall provide the results of the medical examination and tests to the employee if requested. The employer shall obtain and furnish the employee with a copy of a written opinion from the examining physician containing the following:

- The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response, or from respirator use.
- The physician's recommended limitations upon the employee's assigned work.
- A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

5.6 Medical Surveillance Recordkeeping

An accurate record of the medical surveillance shall be retained. This record shall be retained for the period specified and meet the criteria of 8 CCR 3204. The record shall include at least the following information:

- The name and social security number of the employee.
- Physician's written opinions, recommended limitations, and results of examinations and tests.
- Any employee medical complaints related to exposure to hazardous substances.
- A copy of the information provided to the examining physician by the employer, with the exception of the standard and its appendices.

6.0 Site Safety Meetings

Tailgate safety meetings shall be held prior to the start of work and weekly thereafter. Topics to be discussed shall include health and safety hazards associated with the day's activities and any safety-related issues from the previous week's work.

Pre-entry briefings shall be held prior to initiating any site activity in contaminated areas, and at such other times as necessary to ensure that employees are apprised of the site health and safety plan and that this plan is being followed. For operations defined as hazardous substance removal work, a pre-job health and safety conference shall be held before the start of actual work. The conference shall include representatives of the owner or contracting agency, the contractor, the employer, employees, and employee representatives; and shall include a discussion of the employer's health and safety program and the means, methods, devices, processes, practices, conditions, or operations which the employer intends to use in providing a safe and healthy place of employment.

Visitors who are find it necessary to enter the Exclusion Zone or the Contamination Reduction Zone must receive a short orientation covering the relevant safety information contained in this plan.

6.1 Documentation of Site Safety Meetings

A detailed record of each safety meeting and health and safety conference shall be made on a Safety Meeting Form. Visitor training shall also be recorded on this form.

7.0 Site Characterization and Hazard Evaluation

The site has been characterized by Geo/Resource Consultants to identify any environmental contaminant and evaluate their human health risks. This information has been evaluated by Rothwell Consulting Group to determine the appropriate health and safety control procedures needed to protect employees from the identified hazards during remedial activities.

7.1 Preliminary Evaluation and Hazard Identification

A preliminary evaluation of a site's characteristics has been performed by a Certified Industrial Hygienist to aid in the selection of appropriate employee protection methods prior to site entry. After the start of work, a more detailed evaluation of the site's specific characteristics shall be performed by the qualified person, under the direct supervision of a Certified Industrial Hygienist, to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed. All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH) or other conditions that may cause death or serious harm have been identified during the preliminary site investigation and evaluated during the contamination investigation.

7.2 Chemical Hazards

The chemical listed in Table 3 have been identified in detectable concentrations in the soil and/or the groundwater in the vicinity of the construction area.

Table 3 - Summary of Chemical Contaminants

Compound	Cal/OSHA Permissible Exposure Limit†	Route of Exposure††	Characteristics and Signs and Symptoms of Overexposure.
Copper	1 mg/m^3 (PEL)	Inhalation Skin contact	Gray solid or powder that irritates the skin and mucous membranes. May cause hoarse voice. Type A1 carcinogen.
Lead	0.05 mg/m^3 (PEL) 0.03 mg/m^3 (AL)	Inhalation	Gray solid or powder that causes fatigue, constipation, insomnia, weight loss. Damages central and peripheral nervous system. Causes learning disabilities in children and fetal injury.
Selenium	0.2 mg/m^3 (PEL)	Inhalation	Gray or red powder or red crystals. Some selenium compounds are strong irritant to the upper respiratory tract and eyes, and may cause may cause irritation of the stomach. May cause dermatitis and "pink eye".
Petroleum hydrocarbons (as diesel)	None established	Inhalation Absorption	Several types of petroleum hydrocarbons exist. All have a characteristic petroleum odor and may produce acute narcosis at high levels and can cause defatting dermatitis.
Semi-volatile organics (as coal tar pitch volatiles)	0.2 mg/m^3 (PEL) (benzene soluble fraction)	Inhalation Skin contact	Dark heavy liquid to solid material with a tar-like to mothball-like odor. Some are known human carcinogens.

† Permissible Exposure Limit = Permissible Exposure Limit as an 8-hour time-weighted average.
STEL = Short-Term Exposure Limit as a 15-minute time-weighted average.
C = Ceiling Limit which shall never be exceeded at any time.

†† This indicates the most likely route of occupational exposure. While ingestion can be a route of exposure in nearly every instance, it is unlikely in the occupational setting when using effective decontamination procedures and good work practices.

7.3 Physical Hazards

Performance Excavators has developed standard operating procedures to minimize physical hazards. All personnel, contractors, and subcontractors shall become familiar with the field activities. Hard hats and safety shoes are required in all areas of the site. The following are physical hazards which may be present at the site:

7.3.1 Fire and Explosion Hazards

Tank pulling operations pose the risks of fire and explosion. Excavations have a tendency to trap heavy petroleum vapors and allow a concentration of combustible vapors to accumulate. All excavations in petroleum contaminated areas shall be tested frequently using a combustible gas indicator that reads in percent of the lower explosive limit. Whenever combustible gas levels exceed 10% of the lower explosive limit, all personnel and equipment shall move upwind away from the excavation until vapor concentrations have dissipated to a safe level.

All tanks shall be tested using a combustible gas indicator prior to extraction. If combustible gas levels exceed 10% of the lower explosive limit within the tank, the tank shall be inerted with dry ice until vapor concentrations within the tank have dissipated to a safe level.

7.3.2 Tripping, Slipping, and Falling Hazards

Personnel will be reminded daily to maintain sure footing on all surfaces. Use of safety harnesses will be required for any personnel working six or more feet above any surface, including on manlifts. Use of hand rails when climbing stairs will be enforced, and handrails will remain secure until the support structure itself is removed and lowered to ground level. Work surfaces of unknown or suspect integrity will be strengthened or overlain with a work platform capable of supporting all personnel and equipment in use in that area. In order to minimize tripping hazards caused by construction debris, material will be removed daily from the work areas and stockpiled in appropriate designated storage areas. This "house cleaning" effort will be enforced by the Site Safety Officer at the end of each day.

7.3.3 Head, Eye, and Back Injuries

As minimum requirements, hard hats will be donned prior to performing any site activities. This will prevent minor injuries caused by bumping one's head while working around and under construction equipment. Personnel will be trained in and required to use proper lifting techniques when lifting heavy objects.

7.3.4 Falling Objects

All tasks can be accomplished without any object free-falling to the ground. All equipment and material will be slowly lowered to the ground using a crane or skip bucket. No personnel shall work under this equipment at any time. Also, the Site Safety Officer will ensure that an adequate area is clear of personnel while the equipment is in operation.

7.3.5 Heavy Equipment and Traffic

The use of heavy equipment on site presents the greatest potential for injury to personnel. In order to minimize these hazards, designated routes will be established for mobilization through the facility and specific traffic patterns will be established. All trucks will use spotters for backing procedures. All personnel working along roadsides are required to wear orange safety vests.

Personnel needing to approach heavy equipment during operation will observe the following protocols:

1. Make eye contact with the operator.
2. Signal the operator to cease heavy equipment activity.
3. Approach the equipment and inform the operator of intentions.

Only qualified personnel, as determined by the Site Superintendent, will operate heavy equipment. Those crew members directly involved with spotting for the operator will be the only personnel allowed within the operating radius of the heavy equipment. All other personnel will remain a safe distance away from these operations. Vehicles will yield to all bikes, pedestrians, and railroad crossings.

Equipment that is in safe working order will only be used. To maintain this policy, all equipment brought onto the project site will be inspected for structural integrity, smooth operational performance, and proper functioning of all critical safety devices in accordance with the manufacturer's specifications. This inspection will be performed by a qualified equipment operator and Site Safety Officer. Equipment not conforming to the operational and safety requirements during this inspection will not be put into service until all necessary repairs are made to the satisfaction of the inspection group. Only qualified operators familiar with the equipment will be permitted to operate equipment.

7.3.6 Electrical Hazards

In order to prevent accidents caused by electric shock, the Site Safety Officer will inspect all electrical connections on a daily basis. He will shut down and lock out any equipment which is found to have frayed wiring or loose connections until a qualified electrician can be contacted and repairs effected. Electrical equipment will be de-energized and tested by an electrician before any electrical work is done. All equipment will be properly grounded prior to and during all work. Underground Service Alert will be notified at least two (2) working days prior to excavation in any area. In addition, ground fault circuit interrupters (GFCIs) will be installed whenever possible in each circuit between the power source and tool, unless the presence of a potentially explosive atmosphere precludes this procedure. In the event that generators are used to supply power, these generators will be equipped with GFCIs.

7.3.7 Noise

Historical noise monitoring data collected during work using heavy equipment have shown noise levels exceeding the Permissible Exposure Limit of 90 dBA. Hearing protection will be required of all employees working on or within 25 feet of diesel-powered construction equipment. Employee exposures exceeding the Action Level of 85 dBA require implementation of the Hearing Conservation Program where personnel undergo annual audiograms. Personnel will be restricted from high noise exposure should a standard threshold shift be detected during the audiometric testing. A sound level meter shall be used during noisy operations to identify noise sources or operations that require the use of hearing protection. Hearing protection will be required whenever sustained noise levels exceed 85 dBA during a particular operation.

7.3.8 Biting, Stinging Insects

Employees may be affected by biting and stinging insects. If mosquitoes prove to be a problem, insect repellent may be worn. Personnel who are allergic to bee, wasp, or hornet stings and who require epinephrine injections must notify the Site Safety Officer and all co-workers of this condition.

7.3.9 Weather and Heat Stress

With the possible combination of ambient factors such as high air temperature, high relative humidity, low air movement, high radiant heat, and protective clothing, the potential for heat stress is a concern. The potential exists for heat cramps, heat exhaustion, and heat stroke.

Heat cramps are the result of electrolyte imbalances in the muscles causing involuntary spasms. Intake of electrolyte-containing fluids during extreme heat conditions should reduce the probability of heat cramps.

Heat exhaustion is caused by dehydration and electrolyte imbalances. It is characterized by headache, nausea, and fatigue. The skin is often wet and clammy. Victims should retire to a cooler environment and slowly drink cool fluids.

Heat stroke is a life-threatening situation where the body's ability to cool itself fails. Heat stroke it characterized by hot, dry skin; red, blotchy complexion; mental confusion or unconsciousness; rapid pulse; and rapid, shallow breathing. Victims of heat stroke must be cooled immediately and medical attention must be sought.

The action level for heat stress observation is set at 75° F. Whenever the ambient temperature is greater than or equal to this action level, the Performance Excavators Site Safety Officer will alert his crew to be vigilant for symptoms of heat-related illness. The Performance Excavators Site Safety Officer will also advise the crew to increase the amount of water intake. Work-rest cycles will be increased as necessary to

prevent heat-related illnesses. Workers will be encouraged to increase consumption of water and electrolyte-containing beverages such as Gatorade during warm weather. Water and electrolyte-containing beverages will be provided on-site and will be available for consumption during work breaks. Fluids should be consumed not only when thirsty but at regular intervals. Workers will also be encouraged to take rests whenever they feel any adverse effects, especially those effects that may be heat-related.

7.4 Site Topography and Accessibility by Air and Roads

The sites are located in an urban, semi-industrial areas. Topography consists of flat terrain covered with concrete, asphalt, and some vegetation. The site is readily accessible by adjacent city streets.

8.0 Site Control Program

Appropriate site control procedures shall be implemented to control employee exposure to hazardous substances before clean-up work begins and during removal operations. The site control program may be modified as necessary as new information becomes available.

8.1 Site Plan

See Figure 1.

8.2 Site Work Zones

To prevent migration of contamination caused by personnel or equipment, work areas and personal protective equipment are clearly specified prior to beginning operations. Designated work areas or zones shall be established and delineated, as suggested by the Occupational Health and Safety Guidance Manual for Hazardous Waste Site Activities. Each contaminated work area will be divided into three zones: an Exclusion Zone (EZ), a Contamination Reduction Zone (CRZ), and a Support Zone (SZ).

8.2.1 Exclusion Zone

The Exclusion Zone will consist of areas where inhalation, oral contact, or dermal contact with contaminants is considered to be possible. It is anticipated that the Exclusion Zone will encompass the immediate confines of the excavation area with a 10 foot buffer zone from the edge of the excavation to the Exclusion Zone boundary, if practical. The size and configuration of this area will vary with wind direction, type of operations being conducted, and perimeter air monitoring results. The Exclusion Zone boundary will be clearly and conspicuously marked using boundary tape or safety fencing and signs. The signs will specify that only trained and authorized personnel are allowed to enter. Authorization to be obtained from the foreman/site

supervisor. A single entry and exit point will be established through the Contamination Reduction Zone. Entry shall be limited to essential personnel or pre-approved visitors.

8.2.2 Contamination Reduction Zone

The Contamination Reduction Zone will be established between the Exclusion Zone and support zone. In this area, personnel will begin the sequential decontamination process required to exit the exclusion zone. To prevent off-site migration of contamination and to facilitate personnel accountability, all personnel will enter and exit the exclusion zone through the Contamination Reduction Zone.

All waste materials generated in the Contamination Reduction Zone shall be collected and effectively contained through the use of drums, bags, plastic sheeting, and/or tanks. All waste materials shall be labeled as such and properly disposed of according to their hazard classifications.

8.2.3 Support Zone

The Support Zone will consist of a clearly marked area where the office, break areas, and changing facilities are located. Smoking, drinking, and eating will be allowed only in designated areas. Sanitation facilities (toilets, drinking and washing water) are provided in the Support Zone.

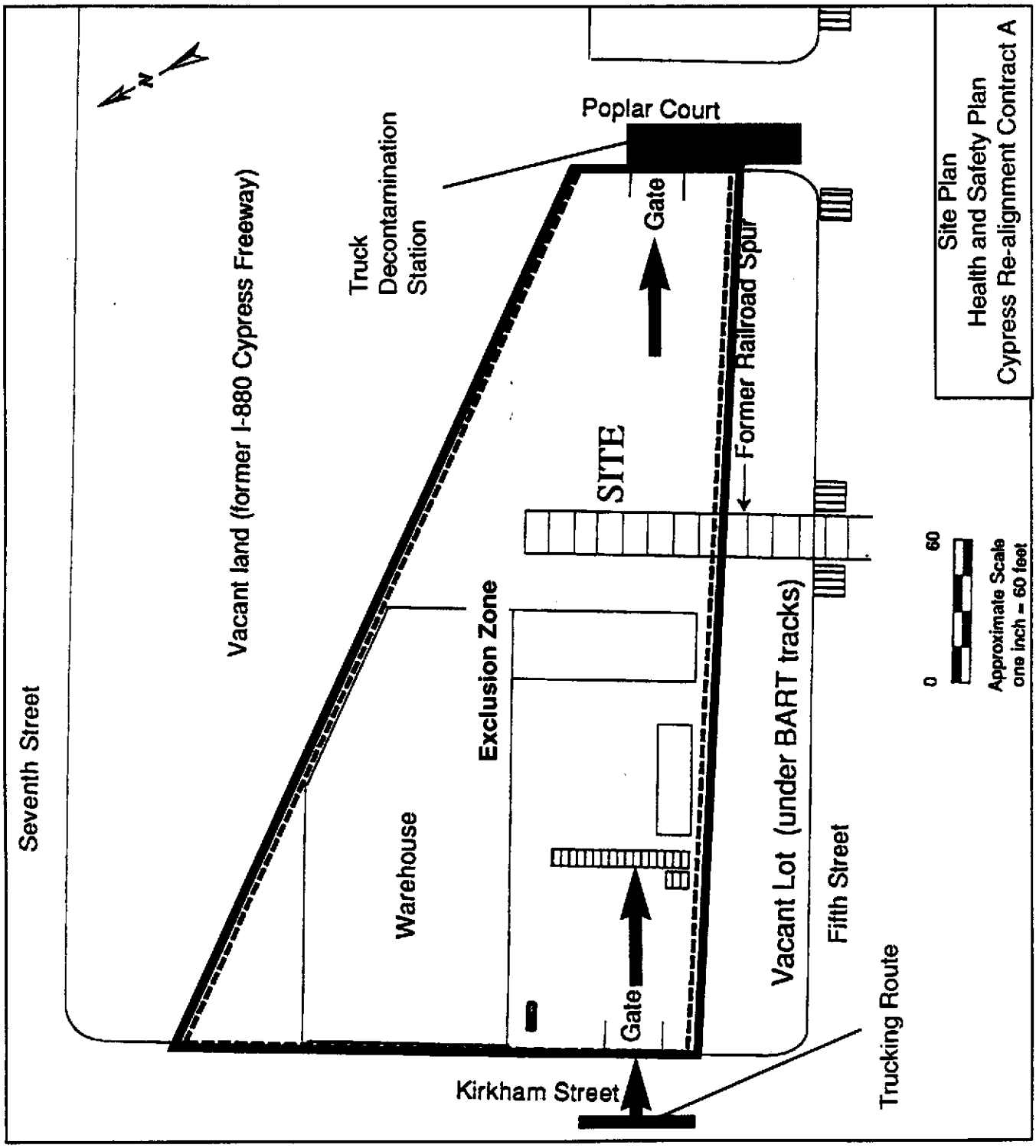
8.3 Access Controls During Removal Operations

Physical boundaries shall be established around each work zone using safety fencing and/or barricade tape during hazardous material removal operations as specified in Section 8.2. Supervisors shall instruct all workers and visitors on the limits of the restricted areas. No one shall be allowed to enter a restricted area without the required protective equipment for that area. The Site Safety Officer shall ensure compliance with all restricted area entry and exit procedures.

A decontamination point shall be designated for personnel to exit from the contaminated area and enter into the clean area where they may rest and drink fluids.

Visitors should check in immediately upon arrival. Only authorized visitors will be allowed access to the contaminated areas. Each visitor will be required to provide and wear the necessary protective equipment during visits and shall be escorted by supervisory personnel while on site. All visitors, subcontractors and other personnel will be required to sign a safety plan acknowledgment sheet to certify that they have read and will comply with the site Health and Safety Plan. Failure to comply with this site entry procedure will result in expulsion from the site.

Figure 1 - Site Plan



8.4 Buddy System

The buddy system shall be used at all times at the site. Employees shall be organized into work groups in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide quick assistance to employees in the event of an emergency.

9.0 Personal Protective Equipment

Personal protective equipment (PPE) has been selected which will protect employees from the hazards and potential hazards they are likely to encounter as identified during the site characterization and analysis. The level of protection provided by PPE selection shall be increased when additional information on site conditions shows that increased protection is necessary to reduce employee exposures below established Permissible Exposure Limits and published exposure levels for hazardous substances and health hazards.

9.1 PPE Selection and Action Levels

Initial PPE requirements shall be EPA Level C as outlined in Table 4 at all locations in the designated exclusion zones. If representative air monitoring indicates airborne concentrations of contaminants below the Action Levels and/or Permissible Exposure Limits for all known contaminants, and if photoionization detector levels are consistently below 5 ppm in the breathing zones of employees, PPE shall be downgraded to the level shown in Table 5. Also, if a previously unidentified material is discovered during work operations, PPE shall be modified as necessary and at the determination of the Certified Industrial Hygienist.

Table 4 - Initial Level C PPE Requirements

Location	Tasks	EPA Level	Equipment Required
Exclusion Zones	All tasks.	C	• Half-mask air purifying respirator equipped with HEPA/organic vapor combination cartridges • Hard hat • Tyvek coveralls • Rubber overboots • Nitrile gloves • Cotton inner gloves • Orange safety vests
Contamination Reduction Zone	All tasks.	D	• Hard hat • Tyvek coveralls • Rubber overboots • Nitrile gloves • Cotton inner gloves • Orange safety vests
Support Zone	All tasks.	D	• Hard hat • Orange safety vests

Table 5 - Level C PPE Requirements

Location	Tasks	EPA Level	Equipment Required
Exclusion Zones	All tasks involving contact with contaminated materials.	D	• Hard hat • Tyvek coveralls • Rubber overboots • Nitrile gloves • Cotton inner gloves • Orange safety vests
Contamination Reduction Zone	All tasks.	D	• Hard hat • Tyvek coveralls • Rubber overboots • Nitrile gloves • Cotton inner gloves • Orange safety vests
Support Zone	All tasks.	D	• Hard hat • Orange safety vests

9.2 PPE Limitations

The PPE selected for use at the site provides limited protection against chemical contaminants. Tyvek protective clothing must not be worn in areas where splashing of hazardous liquids on the skin is possible. Tyvek clothing must not be worn by persons performing hot work such as welding, brazing, and metal cutting.

Half mask air-purifying respirators, as specified in the Table 4, must not be worn in an oxygen deficient atmosphere or where concentrations exceed the capabilities of the respirator cartridge. Also, respirator cartridges must conform to the chemical hazards present at the site. Always read the respirator cartridge prior to use to ensure that it is the correct type.

9.3 PPE Work Mission Duration

Disposable protective clothing is to be disposed of after each use. Disposable protective clothing must be replaced upon re-entry into the Exclusion Zone, or if the suit becomes damaged or saturated during use. Repairs to small rips may be made to protective clothing using duct tape.

9.4 PPE Maintenance, Storage, and Disposal

All PPE, including overboots and gloves, shall be maintained in good condition. Any PPE found to be torn, cut, punctures, or otherwise damaged shall be dispose of immediately. All used PPE shall be contained in labeled bags and disposed of with landfilled contaminated soils. After use and decontamination, respirators shall be

stored overnight in a closed container. The following day, the closed container shall be transported to the PPE donning area for reuse.

9.5 PPE Training and Proper Fitting

All personnel shall be thoroughly trained in the proper use and limitations of the equipment they are assigned to wear. Annual qualitative respirator fit tests are required of all personnel wearing negative pressure respirators. Qualitative fit tests will utilize isoamyl acetate or irritant smoke. Fit tests must incorporate the make and size of respirator to be used. Additionally, a positive and negative fit test shall be conducted each time a respirator is donned.

9.6 PPE Donning and Doffing Procedures

All PPE shall be donned prior to entering the Exclusion Zone. PPE shall be donned with the assistance of a "buddy" to verify that equipment is worn properly. All PPE shall be worn in accordance with the manufacturer's recommendations. At no time shall a person remove the designated PPE while in the designated work zones. Disposable PPE shall only be removed in the Contamination Reduction Zone upon exiting the Exclusion Zone. Personnel shall utilize seating (during decontamination and doffing procedures) to prevent tripping and falling.

9.7 PPE Inspection Procedures

PPE shall be inspected by employees prior to donning. Boots, gloves, and disposable clothing found to be defective shall not be worn and shall be disposed of. Defective respirators, safety glasses, and hard hats shall be reported to the Site Safety Officer.

9.8 Evaluation of the Effectiveness of the PPE Program

Periodic inspections and observations of personnel using PPE shall be made by the Site Safety Officer to ensure that the PPE Program elements are being followed.

10.0 Respiratory Protection Program

This respiratory protection program provides the minimum requirements for respiratory protection whenever Level C or higher levels of personal protection are required.

10.1 Respirator Cartridges

The crew members working in an EPA Level C ensemble shall wear half-mask air purifying respirators equipped with HEPA/organic vapor cartridges, depending on site conditions. HEPA/organic vapor cartridges hold approval for dust, mists, fumes,

asbestos, and radionuclides, as well as organic vapors at concentrations less that 1,000 ppm.

10.2 Cartridge Changes

All cartridges will be changed a minimum of once daily. However, increased airborne concentrations and breathing rates may necessitate more frequent changes. Changes will occur when personnel begin to experience increased breathing resistance, notice any unusual odor inside the respirator, or experience excessive heat generation in the cartridges. All cartridge changes will take place in the CRZ after decontamination of the exterior part of the PPE ensemble.

10.3 Respirator Inspection, Cleaning and Storage

Respirators shall be maintained by the employee to whom they are assigned. All respirators and associated equipment shall be inspected and cleaned, as necessary, prior to use. Respirators shall be decontaminated, cleaned, and disinfected by the user during each decontamination episode. Harsh detergents or solvents must not be used to clean respirators. Cleaned respirators must be thoroughly dried before storing. Respirators will be checked periodically by the Site Safety Officer. Respirators shall be stored in a clean, dry container and out of direct sunlight. Respirators must also be stored in such a way that the facepiece is not misshapen.

10.4 Respirator Use with Facial Hair

No personnel with facial hair which interferes with the respirator's sealing surface shall be permitted to wear a respirator.

10.5 Respirator Use With Corrective Lenses

Full-face respirator use is not anticipated at the site. However, normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses who also must don full-face respiratory protection, special spectacles designed for use with respirators will be provided.

10.6 Respirator Use With Contact Lenses

Contact lenses shall not be worn with any type of respirator.

10.7 Medical Certification for Respirator Use

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator.

10.8 Respirator Limitations

The respirators specified for this site have their limitations. Respiratory protection specified in Table 4 may not be worn in atmospheres immediately dangerous to life or health (IDLH), or in oxygen deficient atmospheres. They may not be worn in concentrations which exceed ten times the Permissible Exposure Limit of any airborne contaminant. HEPA/organic vapor cartridges may not be worn in organic vapor concentrations exceeding 1,000 ppm.

11.0 Air Monitoring Program

Air monitoring shall be performed to quantify airborne levels of hazardous substances in order to determine the appropriate level of employee protection needed on site, and to evaluate engineering controls and work practices. Monitoring shall be performed continuously where airborne concentrations of hazardous substances are anticipated to be the highest, as determined by the Certified Industrial Hygienist. Perimeter monitoring shall also be conducted upwind and downwind of each construction area during operations involving the most heavily contaminated soils.

11.1 Employee Air Monitoring

After the actual hazardous waste operation commences; for example, when soils are disturbed, monitoring of exposures to hazardous substances shall be performed on those employees likely to have the highest exposures to hazardous substances and health hazards. Upon initial entry into the most heavily contaminated work areas, representative air monitoring shall be performed on employees of each job task. Samples shall be collected using portable air sampling pumps equipped with the proper sampling media. Air samples shall be analyzed at an AIHA-accredited laboratory. Also, the Exclusions Zones shall be monitored continuously using a calibrated photoionization detector. If the employees likely to have the highest exposure are over Permissible Exposure Limits or action levels, then monitoring shall continue in order to identify all employees likely to be above those limits.

11.2 Environmental Air Monitoring

Because of the potential for off-site migration of contaminants to downwind residents, environmental air monitoring stations shall be set up at locations upwind and downwind of the site using portable air sampling pumps equipped with the proper sampling media. Location of the monitoring stations will be established depending upon prevailing wind conditions on the day of monitoring. If monitoring indicates that downwind contamination concentrations are greater than upwind levels on any given day, engineering controls and work practices shall be changed to further minimize the off-site migration of dust. If environmental monitoring indicates downwind levels exceeding 110% of the upwind levels or if net downwind lead levels exceed regulatory limits, work shall cease until additional control measures can be implemented.

11.3 Types of Monitoring Equipment, Locations, and Frequencies

Table 6 - Employee Monitoring Requirements

Contaminant and Equipment	Method	Frequency and Location	Calibration Schedule
Lead Air sampling pump equipped with 37 mm MCE filter cassettes.	NIOSH 7300	One sample per job task for an 8-hour period, three days per week.	Twice daily using primary standard calibration device.
Total dust Air sampling pump equipped with 37 mm matched weight MCE cassettes.	OSHA 0500	One sample per job task for an 8-hour period, three days per week.	Twice daily using primary standard calibration device.
Coal tar pitch volatiles Air sampling pump equipped with 37 mm GFF cassettes.	OSHA 58	One sample per job task for an 8-hour period, three days per week.	Twice daily using primary standard calibration device.
Petroleum hydrocarbons Photoionization detector.		Continuously in the EZs during excavation.	Once per day.

Table 7 - Perimeter Monitoring Requirements

Contaminant and Equipment	Method	Frequency and Location	Calibration Schedule
Lead Air sampling pump equipped with 37 mm MCE filter cassettes.	NIOSH 7300	One sample upwind and one sample downwind three days per week.	Twice daily using primary standard calibration device.
Total dust Air sampling pump equipped with 37 mm matched weight MCE cassettes.	EPA IP-10B	One sample upwind and one sample downwind three days per week.	Twice daily using primary standard calibration device.
Coal tar pitch volatiles Air sampling pump equipped with 37 mm GFF cassettes.	OSHA 58	One sample upwind and one sample downwind three days per week.	Twice daily using primary standard calibration device.
Petroleum hydrocarbons Photoionization detector.		Continuously downwind of the EZ during excavation.	Once per day.

11.4 Training Requirements of Monitoring Personnel

Personnel conducting air monitoring shall have the training and experience necessary to properly perform the air monitoring and equipment calibration. The air monitoring shall be performed under direct supervision of a Certified Industrial Hygienist.

11.5 Documentation of Monitoring

Records of monitoring results shall be maintained at the site. Records shall include the date, time, contaminants or hazards monitored, person conducting monitoring, calibration date and method, operations and location of monitoring, and results. An air monitoring data sheet shall be completed for each sample.

12.0 Informational Programs

The contractor shall inform employees, contractors, and subcontractors (or their representatives) actually engaged in hazardous waste operations shall be informed of the nature, level, and degree of exposure likely as a result of participation in such hazardous waste operations. Any information concerning the chemical, physical, and toxicological properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities.

The company's Injury and Illness Prevention and Hazard Communication Programs shall be available in the job trailer. Employees, contractors, and subcontractors shall also be informed and shall share information on chemical hazards at the site, as required by the Hazard Communication standard. MSDS for all hazardous materials used on site shall be made readily available to site personnel. Employees, contractors, and subcontractors working outside of the operations part of a site shall only be notified of chemical hazards as required by the Hazard Communication standard.

13.0 Material Handling

Hazardous substances and contaminated soils, liquids, and other residues shall be handled, transported, labeled, and disposed of in accordance with this section.

13.1 Drums and Containers

If unlabeled drums and containers are encountered, they shall be considered to contain hazardous substances, work shall stop, and the Engineer shall be notified of the discovery.

Drums and containers used during the clean-up shall meet the appropriate U.S. Department of Transportation (DOT), OSHA, and EPA regulations for the wastes that they contain. When practical, drums and containers shall be inspected and their integrity shall be assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions (i.e., buried beneath the earth, stacked behind other drums, stacked several tiers high in a pile, etc.) shall be moved to an accessible location and inspected prior to further handling.

13.2 Shipping and Transport of Drums and Containers

Drums and containers shall be identified and classified prior to packaging for shipment. Drum or container staging areas shall be kept to the minimum number necessary to safely identify and classify materials and prepare them for transport. Staging areas shall be provided with adequate access and egress routes.

14.0 Decontamination Procedures

All employees leaving the exclusion zone shall be appropriately decontaminated; all contaminated clothing and equipment leaving a contaminated area shall be appropriately disposed of or decontaminated.

Decontamination procedures shall be monitored by the Site Safety Officer to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.

14.1 Personnel Decontamination Procedures

Upon exiting the Exclusion Zone, personnel shall remove all visible contamination from their PPE using soap, water, and brushes. Personnel shall use the following decontamination procedure:

Step 1: Hardhat removal
Step 2: Boot, glove, and coverall wash
Step 3: Boot, glove, and coverall rinse
Step 4: Tape removal
Step 5: Overboot removal
Step 6: Suit removal
Step 7: Outer glove removal
Step 8: Respirator removal (optional)
Step 9: Respirator cartridge removal (optional)
Step 10: Cotton inner glove removal
Step 11: Wash hands, face.

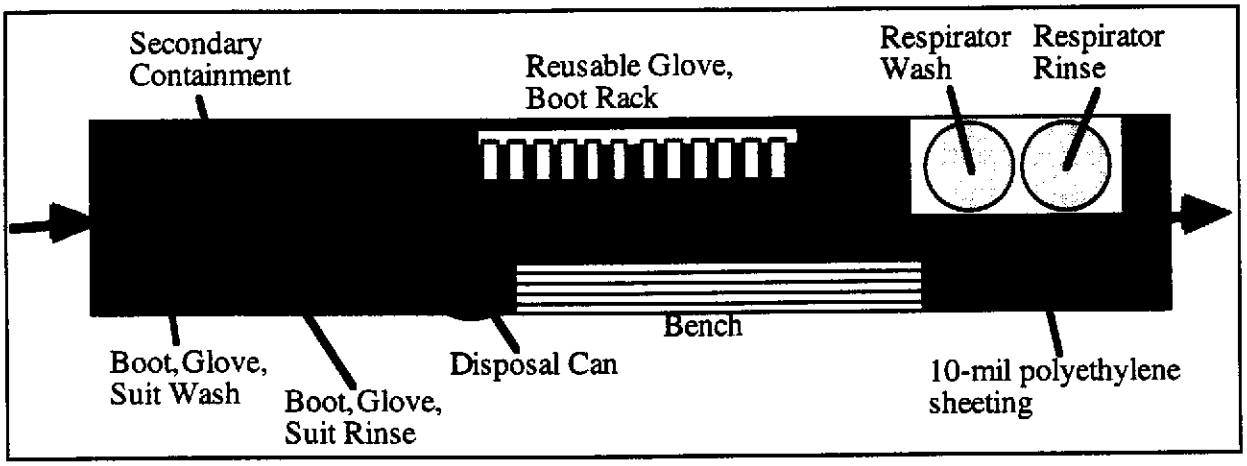


Figure 2 - Personnel Decontamination Layout

All disposable protective clothing shall be removed during decontamination and shall be disposed of in a lidded container lined with a labeled drum liner. All waste generated at the site shall be disposed of according to the hazard classification of the debris.

14.2 Equipment Decontamination Procedures

Upon exit from the Exclusion Zone, personnel shall drive equipment onto visqueen in the Contamination Reduction Zone and remove all visible contamination from their equipment using brushes and brooms. The tracks and tires of equipment shall be scraped to remove the gross contamination before driving off of the decontamination pad and out of the Contamination Reduction Zone.

14.3 Location and Layout of Decontamination Facilities

Employee decontamination shall be performed at the Contamination Reduction Zone, adjacent to the Support Zone. This location will minimize the exposure of uncontaminated employees, areas, and equipment to contaminated employees or equipment. The decontamination facility shall be arranged in such a way that personnel and equipment must exit the Exclusion Zone only through the CRZ.

14.4 Employee Wash Facilities

After employee exit the Contamination Reduction Zone (where they have decontaminated and removed their PPE), they shall proceed to a wash facility to wash hands and face prior to eating, drinking, smoking, or leaving the site. Disposable towels shall be provided for drying.

14.5 Storage and Disposal of Decontamination Water

All water used for decontamination shall be contained and stored in storage tanks. All decontamination water shall be sampled for the contaminants of concern. A proper disposal plan will then be devised.

15.0 Emergency Response Plan

This emergency response plan explains how to handle anticipated emergencies prior to the commencement of hazardous waste operations.

15.1 Emergency Procedures

Employees may respond to low danger emergencies, such as administration of first aid, fighting small fires (with fire extinguishers), and clean-ups of small chemical spills (of less than 55 gallons or 500 pounds). All employees shall evacuate from the danger area when an emergency not listed above occurs, and shall not assist in handling the emergency.

Should outside medical or other emergency assistance be required, personnel shall notify the job trailer of the nature of the emergency and a call shall be to 9-1-1.

If the injury or illness appears to be minor, the affected person may be driven to the emergency room of the nearest hospital.

15.2 Site Communications and Alerting Means for Emergencies

Temporary radio and telephone communications are be established at the job trailer and at the site. Emergency alerts shall be made using two-way radios from the job trailer to the site, or vice versa. Personnel working on the site shall be alerted by air horns using the following alerts:

3 short blasts in sequence..... Exit the work area
1 long blast..... All clear

15.3 Places of Refuge

All personnel, when alerted during emergencies, shall exit the Exclusion Zone through the Contamination Reduction Zone and muster in the Support Zone. Personnel are to remain in the staging area and await further instructions.

15.4 Identification of Nearest Medical Assistance

Summit Medical Center
350 Hawthorne Avenue
Oakland, CA 94609
(510) 655-4000

In an emergency, call 9-1-1

15.5 Status and Capabilities of Emergency Response Providers

Local emergency responders (fire department, medical providers and transporters) are on full time alert and have the capabilities to respond to any anticipated site emergency.

15.6 Pre-emergency Planning

The types of emergencies anticipated include personal injuries, fire, and small chemical spills. An OSHA-approved first aid kit shall be made available at the site. Also, two employees trained and currently certified in first aid and CPR shall be on site at all times. A charged and inspected fire extinguisher shall be available on each piece of equipment. Spill containment equipment will be made available if hazardous materials are stored on site.

15.7 Personnel Roles, Lines of Authority, and Communication

The Site Safety Officer shall act as the incident commander during an emergency response. He shall coordinate and direct emergency response procedures to all site personnel. An emergency shall be communicated to all persons on site by radio and/or verbal communications.

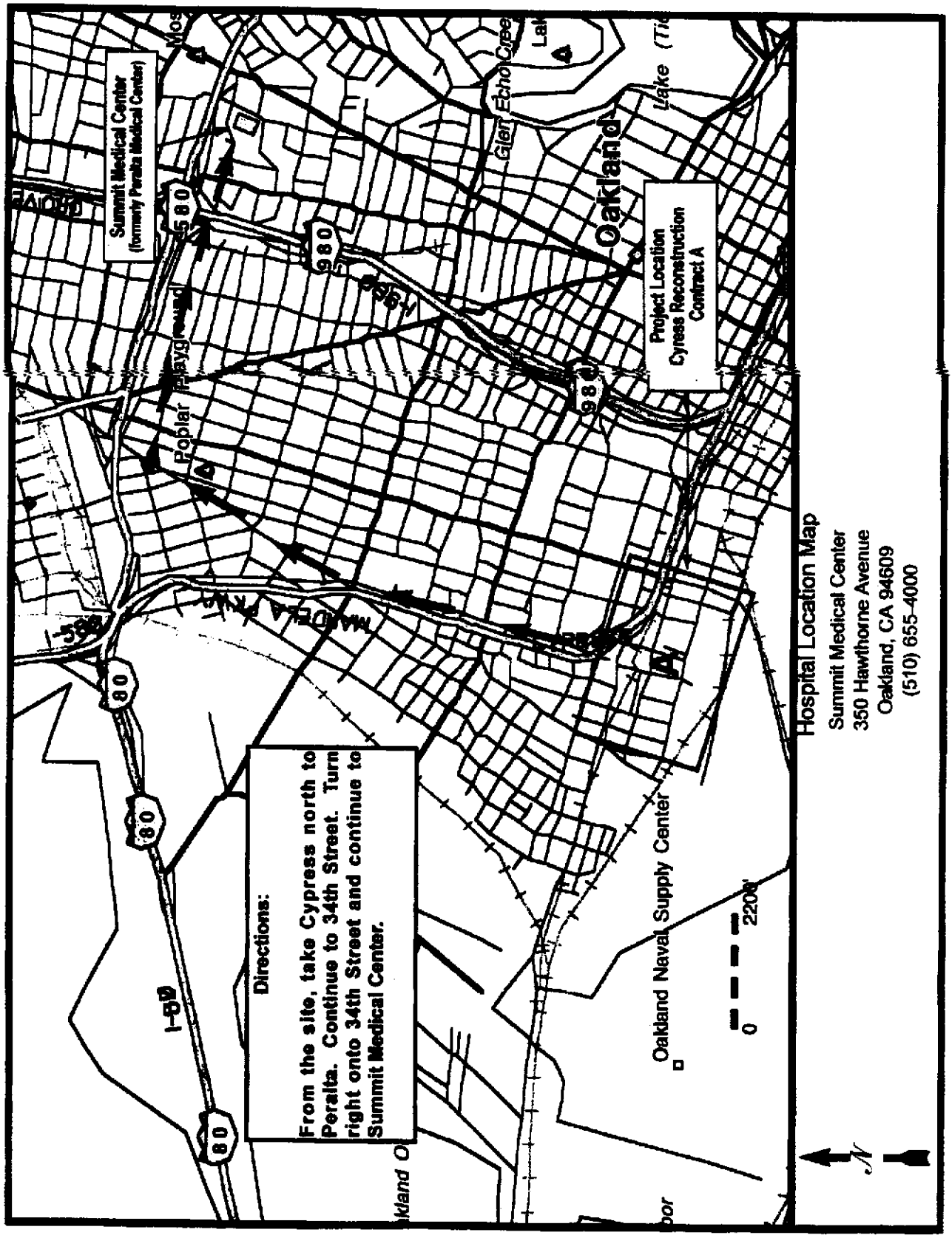
15.8 Emergency Recognition and Prevention

All site personnel shall be trained to recognize when an emergency situation has arisen and shall know how to notify the Site Safety Officer of the incident. Site personnel shall use safe work practices to minimize the potential for an incident. Regular safety meeting shall be held to identify and communicate problem areas at the site.

15.9 Site Security and Control

During an emergency situation, all personnel are responsible for assuring the public's safety and shall keep all bystanders and unauthorized personnel from entering the site. All no time shall personnel give statements regarding an emergency to persons not associated with emergency response or management.

Figure 3 - Hospital Location Map



15.10 Decontamination of Injured Workers

Due to the relatively low levels of contamination at the site, decontamination procedures for injured workers may be limited to removal of outer coveralls and boots so long as such action will not aggravate the injury. If the injury is minor, and does not require immediate medical attention, workers may decontaminate as usual.

15.11 Accident Reporting and Follow-Up

All incident scenes shall be preserved so that a thorough incident investigation may be performed. All causes of the incident shall be investigated and the findings presented to site personnel to prevent future incidents.

16.0 Spill Containment

It is not anticipated that large volumes of hazardous materials will be stored on site. However, if large volumes of hazardous or potentially-hazardous liquids are stored on site, adequate secondary containment shall be provided around the storage area. In addition, spill containment equipment (absorbent socks, clay, and shovels, and a salvage drum) shall be kept at the site to respond to small spills of hazardous liquids or solids. Should a spill occur, immediate steps to contain the spill must be taken. Such steps include shutting of valves, closing doors or vents, protecting sanitary sewers and surface waters, or shutting off pumps. At no time shall a spill be contained if such action presents a hazard. The Site Safety Officer must then be notified of the situation so that he may direct the clean-up.

17.0 Sanitation at Temporary Workplaces

17.1 Potable Water

An adequate supply of potable water shall be provided on the site. Portable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap, and shall be otherwise designed, constructed, and serviced so that sanitary conditions are maintained. Water shall not be dipped from containers. Any container used to store, dispense, or distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.

Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

17.2 Non Potable Water

Outlets for non potable water, such as water for equipment decontamination, dust control, or firefighting purposes, shall be identified to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes. There shall

be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing non potable water.

17.3 Toilet Facilities

A minimum of one separate toilet facility shall be provided for each 20 employees or fraction thereof of each sex. Such facilities may include both toilets and urinals provided that the number of toilets shall not be less than one half of the minimum required number of facilities. EXCEPTION: Where there are less than 5 employees, separate toilet facilities for each sex are not required provided the toilet facilities can be locked from the inside and contain at least one toilet. Under temporary field conditions, provisions shall be made to assure that at least one toilet facility is available.

If the site is not provided with a sanitary sewer, it shall be provided with one of the following toilet facilities unless prohibited by local codes:

- Chemical toilets
- Recirculating toilets
- Combustion toilets
- Flush toilets

Doors entering toilet facilities shall be provided with entrance locks controlled from inside the facility. Toilet facilities shall be kept clean, maintained in good working order, and provided with an adequate supply of toilet paper.

Washing facilities shall be on site for washing of hands and face following decontamination procedures. Such facilities shall be in near proximity to the CRZ.

18.0 Site Illumination

Table 8 - Minimum Illumination Intensities in Foot-Candles

Foot Candles	Area or Operations
5	General site areas.
3	Excavation and waste areas, accessways. active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: Warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas. (EXCEPTION: Minimum of 10 foot- candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Health and Safety Administration approved cap lights shall be acceptable for use in the tunnel heading.)
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dwelling rooms, dining areas, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

19.0 Confined Space Entry

It is not anticipated that the work activities will include confined space entry. However, this section is added for completeness and for compliance with Title 8 GISO 5192.

In any confined space, dangerous air contaminants cannot always be prevented from accumulating or be removed by natural ventilation. Whenever an employee works in this type of environment, the chance always exists that an oxygen-deficient, explosive, or toxic atmosphere may be present upon entry or develop while working or even as a result of work being performed in the space.

Since all confined spaces represent a potential hazard, special precautionary measures must be implemented to protect the workers. This program outlines the precautionary measures necessary for each entry into a confined space during hazardous material removal operations. With thorough training, quality equipment, clear thinking, and responsible actions, the employee who enters the confined space should exit alive and unharmed.

19.1 Definitions of Confined Spaces

A confined space as a space that is:

- Large enough and so configured that an employee can bodily enter and perform work.
- Has limited or restricted means of entry or exit
- Is not designed for human occupancy

19.2 Permit-required Confined Spaces

An area is considered a permit-required confined space if it presents or has the potential to contain hazards related to atmospheric conditions, engulfment, configuration or any other recognized serious hazard. If excavations or bridge interiors have any of these potential hazards, they shall be considered confined spaces.

The Site Safety Officer shall conduct evaluations of the workplace and determine if there are any permit-required confined spaces. He/she then shall inform workers through signs or other means and prevent unauthorized entry. The most likely confined space on this project will be open excavations where an accumulation of flammable and/or toxic vapors may be present. Oxygen deficiency is less likely given the natural dilution ventilation provided from the excavation being open to the atmosphere.

19.2.1 Permit System

The Site Safety Officer shall act as entry supervisor. The entry supervisor must authorize entry, prepare and sign written permits, order corrective measures and cancel permits when work is completed.

19.3 Entry Supervisor

The entry supervisor must know the hazards of confined spaces, verify that all tests have been conducted and procedures and equipment are in place. The entry supervisor shall terminate entry and cancel permits and verify that rescue service are available. He/she is also responsible for removing unauthorized workers who enter confined spaces and determine that acceptable conditions continue.

19.4 Rescue Services

The fire department shall be called whenever a confined space entry is performed. They shall be notified of the location and nature of the entry so that they can provide prompt assistance, if needed.

19.5 Lockout/Tagout Procedures

Any equipment (electrical or mechanical) that is capable of being reenergized remotely or dissipating potential energy must have all switches, valves, etc. capable of doing so physically disconnected or locked out prior to commencement of work.

The steps of a lockout/tagout procedure include:

- Inform the operator and all area personnel of work to be performed.
- Lockout device is attached, with tag, to switch, valve, or other actuator.
- All involved personnel attach separate locks to lockout device and pocket keys.
- All locks and therefore lockout device remain in place until work is complete and all personnel are clear of hazard.
- Lockout device is removed and operator and area personnel are informed of work completion.

19.6 Atmospheric Testing of Confined Spaces

19.6.1 List of Equipment

- Photoionization detector equipped with a 10.6 eV lamp if a toxic environment is possible..
- Catalytic hot wire combustible gas indicator that reads in percent of the lower explosive limit and oxygen combination meter that reads in percent oxygen if flammability and/or oxygen deficiency are possible.
- Ten foot non-sparking pole
- Tygon tubing

19.6.2 Testing for Explosive Atmosphere

A hot wire combustible gas indicator and oxygen combination instrument shall be used for testing any confined space. Explosivity shall be tested simultaneously with oxygen concentration.

Warning

1. The LEL instrument provides false reading in an oxygen-depleted environment.
2. The catalytic hot wire LEL instrument does not detect many hazardous gases.
3. Leaded gasoline and chlorinated solvents can poison the meter very quickly causing malfunction.
4. The LEL instrument does not detect explosive dust atmospheres.
5. Nearby electrical equipment may cause erratic readings.

19.6.3 LEL Monitor Preparation

1. The meter should be calibrated within 5 days of use.
2. Start and check the meter according to manufacturer's instruction.
3. Warm up and zero the meter in a clean area.
4. Test the meter with a known positive source (such as an unlit butane lighter).
5. Zero the meter at 5%. This allows the operator to see negative reactions which may indicate unexpected gases.

19.6.4 LEL Monitor Operation

It is best to provide a pole and a tube to collect the sample from a distance. The retention time for the tubing should be considered. Sample in an imaginary diamond very slowly.

- If the needle goes to 100% and then drops to zero, the UEL has been exceeded.
- If the needle quickly drops below zero, this indicates an oxygen deficient atmosphere.
- If the needle deflects upscale and then comes back down to zero, this any be caused by a gas that is heavier than air.
- If there is a constant upscale erratic deflection of the needle, there may be high levels of chlorinated solvents and some heavier inert gases.

- If more than 100% of the LEL, this is very dangerous and must be made explosive before it is safe to enter.
- If 100% of the LEL, it is immediately explosive and must be made ventilated before it is safe to enter.
- If more than 10% of the LEL, it is illegal to enter according to OSHA regulations and must be ventilated.
- If less than 10% of the LEL, it is legal to enter but may still be toxic.

19.6.5 Testing for Oxygen Deficiency

Monitoring for oxygen deficiency should be performed in the same manner and at the same time as explosivity.

- If oxygen concentration is less than 19.5%, it is oxygen deficient and illegal to enter according to OSHA regulations and must be ventilated.
- If oxygen concentration is more than 23.5%, it is oxygen enriched and illegal to enter according to OSHA regulations and must be ventilated.

19.6.6 Testing for Toxic Airborne Contaminants

If a toxic atmosphere is suspected, testing should be conducted for the contaminant(s) suspected and compared with their permissible exposure limits. Testing is most easily done using a photoionization detector.

19.7 Ventilation

Exhaust ventilation may be used to draw or push dense gases and vapors from bottom of space, allowing fresh air to replace them. The source of ventilating air must be uncontaminated. Consider destination of exhausted gases/vapors before beginning ventilation.

19.8 Extraction and Rescue Equipment

A rescue harness is to be worn at all times during entry into confined spaces with recognized hazards and limited and limited access or egress. A tripod shall be available for overhead rescue. Observer shall be in constant communication with entry personnel. The entry procedure shall be aborted at the first indication of difficulty.

20.0 Hot Work Permits

No hot work, including welding, torch cutting, and brazing shall take place without first acquiring a hot work permit from the Site Safety Officer. A copy of the hot work permit is in Appendix E.

21.0 Site Excavations

Site excavations created during initial site preparation or during hazardous waste operations shall be shored or sloped as appropriate to prevent accidental collapse in accordance with 8 CCR, Chapter 4, Subchapter 4, Article 6.

22.0 Safety Inspections

Inspections shall be conducted by the Site Safety Officer or, in the absence of that individual, another individual who is knowledgeable in occupational health and safety, acting on behalf of the employer as necessary to determine the effectiveness of the site health and safety plan. Any deficiencies in the effectiveness of the site health and safety plan shall be corrected by the employer.

Appendix A

Site Assessment Report

94-911

PRELIMINARY ENDANGERMENT ASSESSMENT
J & A TRUCK REPAIR
500 KIRKHAM STREET
OAKLAND, CALIFORNIA

Prepared For:

CALIFORNIA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ENGINEERING BRANCH
OAKLAND, CALIFORNIA

Contract Number 53U495
Task Order Number 04-192211-05

Submitted By:

ENVIRONMENTAL SOLUTIONS, INC.
PETALUMA, CALIFORNIA

April 3, 1995

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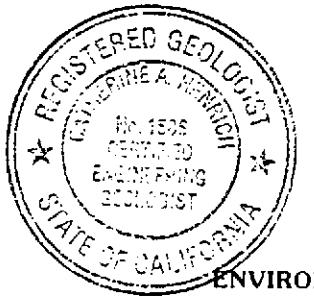

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EXECUTIVE SUMMARY

1. The California State Department of Transportation (Caltrans) purchased a parcel of land in west Oakland, the former J & A Truck Repair facility (Site), located at 500 Kirkham Street, for the purpose of local road realignment and construction of a freeway on-ramp for the Cypress Freeway realignment, and demolishing the existing warehouse on the Site. Environmental Solutions, Inc. was contracted to perform a soil and ground water investigation at the Site, a wipe sample investigation of the interior of the warehouse, and a Preliminary Endangerment Assessment (PEA) for the Site as a whole.

2. At the time this report was prepared, the Site was unused, having been vacated by the former tenant, J & A Truck Repair, in August 1994. J & A Truck Repair occupied the Site from 1984 to 1994. Prior to being a truck repair facility, the Site was occupied by the Smilo Chemical Company from 1954 to 1984. Smilo Chemical was in the business of wholesale distribution of chemicals and allied products, and the repackaging and resale of chemical products. Mr. Barney Smilo, owner of Smilo Chemical Company, owned the property at the Site from 1954 to 1994, when he sold the property to Caltrans. Prior to Smilo Chemical Company, the Site was occupied by Haslett Wholesale/SP Wholesale from 1951 to 1954. Very little is known concerning the Site activities during Haslett Wholesale/SP Wholesale's occupancy.

3. Investigation activities by Environmental Solutions, Inc. determined that releases of hazardous materials and/or wastes had occurred at the Site. A Department of Health Services (DHS) employee documented a release that occurred in 1980, and various investigation activities in 1981, 1992 and 1994 revealed releases of pesticides, heavy metals, petroleum hydrocarbons, and organic solvents to the soil and/or ground water at the Site.

4. Contamination detected on the interior walls of the warehouse included total recoverable petroleum hydrocarbons (TRPH), lead, pesticides, polychlorinated biphenyls (PCBs), and phthalates. In general, concentrations of compounds detected were slightly above the laboratories detection limits for each respective compound. TRPH results appear to have been influenced by the use of laboratory grade methanol as a wipe matrix wetting agent. TRPH was detected by the laboratory in a field blank.

5. Significant contamination (contamination exceeding Maximum Contaminant Levels [MCLs], and/or exceeding ten times the Soluble Threshold Limit Concentration [STLC] for heavy metals) at the Site has been detected in the vicinity of a 2000-gallon underground storage tank (UST), located on the northern portion of the Site, adjacent to Kirkham Street. Soil and ground water in the vicinity of the UST has been impacted by leaded gasoline, which was last stored in the UST during the Arab oil embargo in the early 1970's. Other contaminants detected in the UST area include oil and grease, and organic solvents.

6. Contamination has been detected in every boring drilled at the Site. TRPH, lead, and organic solvents were detected in soil and/or ground water throughout the Site.

7. The local road realignment and construction of a freeway on-ramp in the southeast portion of the Site will involve removal of the asphalt/concrete paving, and several feet of the surface soils. Ground water is not expected to be encountered during construction activities. Demolition of the warehouse will take place concurrently with the roadway construction. A potential threat of exposure to the construction workers may exist during the construction and demolition activities. Fugitive dust inhalation and direct dermal contact are potential pathways of exposure to workers at the Site.

These threats can be mitigated by the use of proper personal protective equipment (PPE), and the implementation of engineering controls (dust suppression).

8. Although significant contamination exists at the Site, freeway construction activities will occur in one of its least contaminated areas. Demolition of the warehouse will not involve significant exposure to contaminated soils.

9. Environmental Solutions, Inc. recommends further subsurface investigation at the Site to fully assess the extent of contamination, in order to complete this PEA. Removal of the UST and excavation of contaminated soils surrounding the UST is recommended. Installation of at least three ground water monitoring wells in the vicinity of the UST is recommended, as the Regional Water Quality Control Board (RWQCB) will almost surely make this a requirement. The Department of Toxic Substances Control (DTSC) requests installation of ground water monitoring wells in the central and eastern portions of the Site to determine the extent of volatile organic compound (VOC) contamination, therefore, Environmental Solutions, Inc. recommends installation of at least three ground water monitoring wells in the vicinity of Soil Borings B6, B7, and B9.

10. Further soil investigations should be performed in the area of Soil Borings B6 and B7, to assess the extent of lead contamination, as the soil in these areas exceed the STLC for lead of 5 milligrams per liter (mg/l).

11. An asbestos inspection will be required by the Bay Area Air Quality Management District (BAAQMD) for the warehouse building in order to obtain a demolition permit. A Health and Safety Plan should be prepared to protect the workers involved in demolition. Environmental Solutions, Inc. recommends the interior of the warehouse be decontaminated prior to demolition. A Waste Management Plan should be prepared to address the handling and disposal of the demolition debris. Demolition activities will begin concurrently with construction of the roadway realignment in the southeastern portion of the Site.

1.0 INTRODUCTION

1. This report presents the results of a PEA performed by Environmental Solutions, Inc. at a Site located at 500 Kirkham Street, Oakland, California (Figure 1). The work was performed for Caltrans under Task Order Number 04-192211-05 of Caltrans Contract Number 53U495.

2. From 1984 to 1994, the Site was occupied by J & A Truck Repair, a truck repair facility. From 1954 to 1984, the Site was the location for Smilo Chemical Company, a chemical distributor and repackaging facility.

3. The Site is located along the proposed reconstruction alignment of Interstate 880, referred to as the Cypress Freeway. Caltrans is performing the reconstruction to replace a portion of the Cypress freeway which collapsed during the Loma Prieta earthquake in 1989. The collapsed portion of the freeway was demolished and removed in 1994. The replaced portion of the freeway will follow a different alignment than the preexisting structure.

4. The California Environmental Protection Agency (Cal-EPA) DTSC has required that properties located along the Cypress reconstruction, which have been purchased by Caltrans, have a PEA performed.

5. This PEA has been prepared in accordance with DTSC's *Preliminary Endangerment Assessment Guidance Manual*, dated January 1994.

1.1 PURPOSE AND SCOPE OF WORK

1. A PEA is defined in California Health and Safety Code, Division 20, Chapter 6.8, Section 25319.5 as "an activity which is performed to determine whether current or past waste management practices have resulted in the release or threatened release of hazardous substances which may pose a threat to public health or the environment".

2. Specific objectives of this PEA include:

   - Determining if a release of hazardous wastes/substances occurred at the Site, and, if a release has occurred, delineating the extent of contamination.
   - Estimating the potential threat to public health and/or the environment posed by the Site and providing an indicator of relative risks between Sites.
   - Determining if an emergency response action is necessary to reduce an existing or potential threat to public health or the environment.
   - Completing preliminary Site investigations to determine if additional data is required to identify remedial action strategies for the Site.
   - Assessing and providing for the informational needs of the surrounding community.

3. The scope of work for this PEA included:

   - Preparing a Work Plan and Health and Safety Plan for Site specific field activities.
   - Collecting six wipe samples and one field blank for analytical testing from the interior walls and floor of the existing warehouse.
   - Drilling 12 soil borings to a depth of between 8 and 13 feet below ground surface (ft bgs).
   - Collecting soil samples for analytical testing from each boring, at depths of 1, 5 and 8 ft bgs.

- Collecting ground water samples for analytical testing from 7 of the 12 borings.
- Preparing this PEA Report.

4. The analytical program for the samples collected during field activities is presented in Section 6.2 of this PEA Report.

2.0 SITE DESCRIPTION

2.1 SITE IDENTIFICATION INFORMATION

2.1.1 SITE NAME

1. J & A Truck Repair

2.1.2 CONTACT PERSON

1. Mr. Christopher Wilson - Caltrans Contract Manager, Environmental Engineering Branch

2.1.3 SITE ADDRESS

1. 500 Kirkham Street
   Oakland, California
   Alameda County, 94607

2.1.4 MAILING ADDRESS

1. California Department of Transportation
   Environmental Engineering Branch
   111 Grand Avenue, 14th Floor
   Oakland, California 94623-0660

   Attention: Mr. Christopher Wilson

2.1.5 PHONE NUMBER

1. (510) 286-5647

2.1.6 OTHER SITE NAMES

1. J & A Truck Repair

2. Smilo Chemical Company

3. Haslett Wholesale/SP Wholesale

2.1.7 USEPA IDENTIFICATION NUMBER

1. CAD 029 247 319

2.1.8 CALSITES DATABASE NUMBER

1. 01510022

2.1.9 ASSESSOR'S PARCEL NUMBER AND MAPS

1. 004-0049-001

2. See Figure 2 for copy of County Assessor's plat map.

2.1.10 TOWNSHIP, RANGE, SECTION, AND MERIDIAN

1. Latitude - 37/48/12.0
   Longitude - 122/17/30.0
   Township - T1S
   Range - R4W
   Section - 34

2.1.11 LAND USE AND ZONING

1. Current land use is designated as light industrial, zoned as M-20.

2.2 SITE MAPS

2.2.1 GENERAL LOCATION MAP

1. Refer to Figure 1.

2.2.2 DETAILED SITE DIAGRAM

1. Refer to Figure 3.

3.0 BACKGROUND

3.1 SITE STATUS/HISTORICAL SITE INFORMATION

3.1.1 BUSINESS TYPE

1. Site is currently unoccupied.

2. J & A Truck Repair - A truck repair facility for tractors which pull semitrailers. Performed general automotive repairs (visual observation, 1994).

3. Smilo Chemical Company - Wholesale distribution of chemicals and allied products. Repackaging and resale of products (DHS, 1983).

4. Haslett Wholesale/SP Wholesale - Business type unknown.

3.1.2 YEARS OF OPERATION

1. Unoccupied since August 1994, when Caltrans purchased the property.

2. J & A Truck Repair - 1984 to 1994.

3. Smilo Chemical Company - 1954 to 1984 (DHS, 1983).

4. Haslett Wholesale/SP Wholesale - 1951 to 1954 (DHS, 1983).

3.1.3 PRIOR LAND USE

1. Prior to 1866, the land was on the margin of the San Francisco bay and consisted of undeveloped wetland. Artificial fill was placed between 1866 and 1890 as part of the construction of training jetties at the Port of Oakland Naval Supply Center (personal communication, 1995).

3.1.4 FACILITY OWNERSHIP/OPERATORS

1. Present owners: California Department of Transportation
   Environmental Engineering Branch
   111 Grand Avenue, 14th Floor
   Oakland, California 94623-0660
   (510) 286-5647

   Attention: Mr. Christopher Wilson

2. Caltrans is a division of the California State government. There are currently no active operations at the Site.

3. J & A Truck Repair: Mr. Barney Smilo, property owner

   1984 to 1994 — 240 Santa Ana Avenue
   San Francisco, California
   (415) 753-5800/731-3131 (Pac Bell, 1994)

4. It is unknown who maintained operational control of the Site while J & A Truck Repair was an operating facility.

5. Smilo Chemical: Mr. Barney Smilo, President

   1954 to 1984 — 240 Santa Ana Avenue
   San Francisco, California
   (415) 753-5800/731-3131

   Mike Meier, Manager
   (Current address and phone number unknown)

6. Mr. Smilo was the president of Smilo Chemical Company, and appeared to rarely be present during operations at the Site. Mike Meier managed the daily operations of the company (DHS, 1983).

7. Previous operators: Unknown prior to 1954

3.1.5 PROPERTY OWNERS

1. The Site is currently owned by Caltrans. The state purchased the property in the summer of 1994 from Mr. Barney Smilo. Records at the Alameda County Assessors and Recorders office indicate that Mr. Smilo purchased the property in 1976 from John and Catherine Metcalf. The Metcalfs owned the property from 1946 to 1976. They purchased the property in 1946 from the Golden West Brewing Corporation. Records were not readily accessible prior to the sale of the property in 1946. Mailing addresses and phone numbers for Caltrans and Mr. Barney Smilo are presented on the preceding page in Section 3.1.4. Current addresses and phone numbers for previous owners are unavailable.

3.1.6 SURROUNDING LAND USE

1. Currently, the area north and east of the Site is vacant land, but was previously occupied by the access ramps to Interstate 880, which were demolished in early 1994 in preparation for the freeway reconstruction. Across Kirkham Street to the west is the Red Star Yeast Company, and a Bay Area Rapid Transit (BART) commuter parking area (see Figure 4). The elevated BART railroad tracks are present on the adjacent parcel to the south. The land adjacent to the south of the Site, under the BART tracks, has been vacant since 1967. The parcel adjacent to the south was utilized by Southern Pacific Rail Road Company as a flour wholesale facility from 1951 to 1967. From 1935 to 1951, this same parcel was a storage facility operated by W. H Lawrence.

2. Interstate 880 was constructed in 1957. Prior to 1957, the current warehouse on the Site extended onto the parcel to the northeast. This portion of the warehouse was removed when the Interstate construction began.

3.2 HAZARDOUS SUBSTANCE/WASTE MANAGEMENT INFORMATION

3.2.1 BUSINESS/MANUFACTURING ACTIVITIES

1. Site activities for J & A Truck Repair and Smilo Chemical Company are presented in Table 1.

3.2.2 ONSITE STORAGE, TREATMENT, AND DISPOSAL

1. Storage, Treatment, and Disposal activities for J & A Truck Repair and Smilo Chemical Company are presented in Table 2.

3.2.3 REGULATORY STATUS

1. According to a DHS preliminary assessment summary, completed in 1983, (see Section 11) while completing a Resource Conservation and Recovery Act (RCRA) Part A application, Mr. Smilo inadvertently listed his company as a treatment, storage, and disposal facility (TSDF), as well as a generator. Smilo Chemical Company had an Interim Status Document (ISD) issued by DHS on April 6, 1981. In April 1983, Mr. Smilo requested that the ISD be rescinded. DHS responded that the ISD would be rescinded after an inspection to verify that no treatment, storage or disposal activities were occurring. An inspection was scheduled, then cancelled and was not rescheduled.

3.2.4 INSPECTION RESULTS

1. An inspection of the Site in 1979 by the Alameda County Health Department (the County) revealed the presence of a white pigment, titanium oxide, (TiO_2) in a storm drain southwest of the Site. The inspector for the County noted the presence of a creamy white liquid in a drainage channel (Figure 3) directing water runoff from the Site toward a storm drain on Poplar Court (Figure 6).

2. DHS performed an inspection on October 28, 1980, due to a citizen complaint. The inspector found *"improper storage and disposal of hazardous wastes which include spills on soil, disposal into dumpster and onto adjacent property and storage in a pit"* (EPA, 1980).

3. In March 1981, DHS performed an inspection, due to an employee complaint about inadequate safety precautions and truck decontamination rinsate being released to the ground. The DHS inspector at the Site noticed an area of dead vegetation adjacent to a hole in the perimeter fencing on the east side of the Site. Soil in this area was darkened and had an odor of polystyrene. DHS collected an unknown quantity of soil samples at the Site. Analysis of the soil samples revealed the presence of pesticides and heavy metals in the surface soils. DHS and the RWQCB recommended corrective action to clean up contaminated soil and prevent future releases. No documentation exists to verify if corrective action was performed.

3.2.5 PRIOR ASSESSMENTS/REMEDIATION

1. An unknown number of soil samples were collected during a DHS inspection in March 1981. Analysis of the soil samples indicated the presence of heavy metals and pesticides in the surface soils at the Site. DHS and the RWQCB recommended corrective action to remediate the contaminated soil. The inspection report states that California Environmental Technology (CET) was contracted by Smilo Chemical Company to remove the contaminated soil. CET did not document their actions with DHS, therefore Environmental Solutions, Inc. cannot verify whether the contaminated soil was actually removed from the Site. DHS also recommended removal of two sumps at the Site. Again due to lack of documentation, the DHS report stated that there is no evidence that this activity was performed.

2. On June 23, 1992, GeoResource Consultants, Inc. (GeoResource) drilled one soil boring in the southeastern portion of the Site, as part of a series of investigations in the Site area performed for Caltrans. The boring was advanced using a hand auger to a depth of 3.5 ft bgs. Soil samples were collected at 1 and 3 feet bgs, and submitted for laboratory analysis of organochlorine pesticides and Title 26 metals. No organochlorine pesticides were detected in either of the two soil samples. The soil sample collected from 1 foot bgs contained 81 milligrams per kilogram (mg/kg) of lead. A Waste Extraction Test (WET) was performed on this soil sample, and lead was detected at 3.4 mg/l, which is below the STLC of 5 mg/l. The GeoResource report concluded that the potential for soil and ground water contamination at the Site was low, and it appeared that remedial actions at the Site would not be required.

4.0 APPARENT PROBLEM

4.1 DOCUMENTATION OF SPILLS OR RELEASES

1. A DHS inspection in 1980 identified improper storage and disposal of hazardous materials in the warehouse, discharge of chemicals to the ground, disposal of chemicals into a dumpster, storage of hazardous waste in a pit, unlabelled chemical containers, dead vegetation, and stained soil. Analytical results from soil samples collected during the inspection indicated the presence of pesticides (chlordane, DDT), PCBs (arochlor 1016) and heavy metals (lead) in the Site soils at a depth of 1 foot bgs.

2. GeoResource was contracted by Caltrans to perform a soil investigation at the Site. In June 1992, GeoResource drilled one soil boring in the southeastern portion of the Site. Soil samples were collected at 1 and 3 ft bgs, and submitted for laboratory analysis of organochlorine pesticides and Title 26 metals. No organochlorine pesticides were detected in either of the two soil samples. Lead was detected in one of the soil samples, and WET results indicated that lead concentrations were below the STLC of 5 mg/l.

3. In August 1994, after the last tenant vacated the Site, a UST was discovered onsite by a Caltrans' right-of-way agent. In a personal conversation between an Environmental Solutions, Inc. field geologist and Mr. Barney Smilo, Mr. Smilo indicated that the UST had a capacity of approximately 2000 gallons, that he had not known about the UST when he purchased the property, and that he had last used the UST to hold gasoline in the 1970s during the Arab oil embargo. No permits for a UST were found during regulatory agency file searches.

4.2 CONTAMINANTS OF CONCERN

1. Based on previous site investigations, and Environmental Solutions, Inc.'s Soil and Ground Water Investigation, the contaminants of concern (COCs) are:

- Total Petroleum Hydrocarbons (TPH) as Gasoline
- TRPH
- Total Oil and Grease
- VOCs
- Heavy Metals
- Semivolatile Organic Compounds (SVOCs).

4.3 PRIMARY HUMAN AND ENVIRONMENTAL SOURCES OF CONCERN

1. The primary human and environmental sources of concern in the immediate vicinity of the Site are:

- Construction workers involved in freeway on-ramp and road realignment construction.
- Motorists utilizing the re-aligned freeway.

2. No environmental receptors were considered during the preparation of this PEA, due to the lack of any sensitive species or habitats within a one mile radius of the Site (Figure 5).

3. No other sources of concern were addressed in DTSC's Preliminary Remediation Goals (PRG's) for the Cypress freeway re-alignment project.

4.4 EXPOSURE PATHWAYS OF CONCERN

1. Soil exposure pathways of concern are as follows:

- Direct Dermal Contact
- Incidental Ingestion
- Fugitive Dust Inhalation
- Vapor Inhalation

2. Ground water was not considered as an exposure pathway. Ground water is not expected to be encountered during roadway realignment, warehouse demolition, or freeway on-ramp construction. Additionally, ground water beneath the Site is not known to be utilized for human consumption, irrigation, public or private industry, or other purposes.

5.0 ENVIRONMENTAL SETTING

5.1 FACTORS RELATED TO SOIL PATHWAYS

5.1.1 TOPOGRAPHY OF THE SITE AND SURROUNDING AREAS

1. The topography of the Site and vicinity is generally flat, and slopes toward the south/southwest at a grade of approximately 1 percent. However, there is a loading dock in the center of the Site which is approximately 2 feet above the original grade. The loading dock area slopes toward the northwest at a grade of approximately 3 percent.

5.1.2 EVIDENCE OF ENVIRONMENTAL IMPACTS

1. An inspection of the Site in 1979 by the Alameda County Health Department revealed the presence of a white pigment, titanium oxide, (TiO_2) in a storm drain southwest of the Site. The Alameda County inspector noted the presence of a creamy white liquid in a drainage channel (Figure 3) directing water runoff from the Site toward a storm drain on Poplar Court (Figure 6).

2. DHS performed an inspection on October 28, 1980, due to a citizen complaint. The inspector found *"improper storage and disposal of hazardous wastes which include spills on soil, disposal into dumpster and onto adjacent property and storage in a pit"* (EPA, 1980).

3. DHS performed an inspection in March 1981, due to an employee complaint about inadequate safety precautions and truck decontamination rinsate being released to the ground. The DHS inspector at the Site noticed an area of dead vegetation adjacent to a hole in the perimeter fencing on the east side of the Site. Soil in this area was darkened and had an odor of polystyrene. DHS collected an unknown quantity of soil samples at the Site. Analysis of the soil samples revealed the presence of pesticides

and heavy metals in the surface soils. DHS and the RWQCB recommended corrective action to clean up contaminated soil and prevent future releases. No documentation exists to verify if corrective action was performed (DHS, 1983).

5.1.3 GEOLOGY OF SITE AND VICINITY

1. On the basis of borings drilled and logged at the Site (Section 12.2) the soil types present at the Site consist of the following:

- Artificial fill - Dark yellowish brown gravelly sand and clay with brick, glass, and wood debris observed from ground surface to depths ranging from 6 inches to 6 ft bgs. Based on engineering data, the maximum known thickness of this material in west Oakland is 25 feet. (United States Geological Survey [USGS], 1957)

- Bay Mud - Dark gray silt, clay, and sand, with shell fragments observed at depths ranging from 2 to 8 ft bgs. May represent fill material dredged from bay. Based on engineering data, the known thickness of the Bay mud is from several inches to 85 feet. (USGS, 1957)

- Merritt Sand - Moderate yellowish brown silty and clayey sands observed at depths ranging from 4 to 13 ft bgs. Water bearing unit. Based on engineering data, the known thickness is several inches to 65 feet. (USGS, 1957)

- Temescal Formation - Gray silty clay with zones of shell and sand from 55 to 120 ft bgs. This formation acts as an aquitard between the overlying Merritt Sand and Alameda Formation. Estimated thickness of this formation is 15 to 120 feet. (Harding Lawson Associates [HLA], 1988)

- Alameda Formation - Olive gray to Moderate yellowish brown gravels, sands, silts, and clays with occasional shell and organic material from 120 to 160 ft bgs. This formation is a water bearing unit. Based on engineering data, the maximum known thickness is 1,050 feet. (USGS, 1957)

- Franciscan Group - Sandstones and shale (bedrock) from 160 ft bgs. Maximum thickness is unknown. (USGS, 1957)

2. The artificial fill has a variable permeability due to variation in composition across the Site. In general, bay mud possesses a low permeability. The Merritt Sand has a high permeability and represents the first water bearing unit present in the Site vicinity (Based on engineering studies, USGS, 1957).

5.1.4 SURFACE SLOPE

1. The slope of the Site is generally flat, sloping toward the south/southwest at a grade of approximately 1 percent. There is a loading dock area in the center of the Site which was constructed approximately 2 feet above the original grade. The loading dock area slopes toward the northwest at a grade of approximately 3 percent. There is no intervening terrain between the Site and the Oakland inner harbor waterway which would prohibit the movement of surface water down slope toward the harbor. Additionally, the surface waters in the Site vicinity are channelized into a storm drain system which empties into the San Francisco Bay.

5.1.5 SITE ACCESS

1. There are two vehicle gates, and one pedestrian gate, in the fence which surrounds the property outside of the warehouse (Figure 3). Of the three gates, one vehicle gate is located on the western side of the Site by Kirkham Street, the other vehicle gate is located on the east side of the Site, on Poplar Court, a dead end street. The pedestrian gate is located to the south of the vehicle gate on Poplar Court.

2. The west side of the warehouse has two bay doors on Kirkham Street, suitable for large vehicle access. Two bay doors are also present at the southeast corner of the warehouse, accessible only from within the fenced perimeter. Two pedestrian doors to the warehouse are also present, one on the west side entering off of Kirkham Street, and one on the east side, accessible only from within the fenced perimeter.

5.1.6 MEASURES TO PREVENT CONTACT WITH HAZARDOUS SUBSTANCES/WASTES

1. Locked gates at the Site prevent unauthorized persons from entering the Site and potentially being exposed to hazardous substances or wastes which may exist in or on the soil. Also, the entire Site is covered with concrete, which prevents direct contact with the soil.

5.1.7 POTENTIALLY AFFECTED RECEPTORS WITHIN A ONE MILE RADIUS

1. Distance and direction of potentially affected residential areas, schools, day care centers, nursing homes, senior citizen communities, and hospitals within one mile of the site are presented in Table 3. Businesses were exempted from this study per agreement between Jim Ross (Caltrans) and Barbara Cook (DTSC).

5.2 FACTORS RELATED TO WATER PATHWAYS

5.2.1 GROUND WATER PATHWAY

5.2.1.1 Site Hydrogeology

1. The Merritt Sand is the first encountered subsurface aquifer, and is usually unconfined. Perched ground water was not encountered in the artificial fill. The Merritt Sand is believed to be continuous across much of west Oakland south to Alameda Island. At the Site, the depth to ground water in the Merritt Sand was approximately 7 ft bgs. The Merritt Sand aquifer extends to a depth of approximately 60 ft bgs, where the Temescal Formation is believed to provide a competent aquitard between it and the deeper confined aquifer present in the Alameda formation. Based on aquifer pump test data, the Merritt Sand has a hydraulic conductivity on the order of 10^{-3} to 10^{-2} centimeters per second (cm/sec) (HLA, 1988). There are no drinking water wells or production wells in the west Oakland area which utilize ground water from the Merritt Sand aquifer (CH_2M Hill, 1990).

2. The next aquifer below the Merritt Sand aquifer is the Alameda Formation which ranges from 120 to 160 ft bgs. In general, this aquifer is confined, and is believed to be continuous across much of west Oakland, with a thickness of over 200 feet. Several industrial production wells in the area are completed in this formation. Ground water from this aquifer generally meets California secondary drinking water quality standards (HLA, 1988). Based on grain size distribution within the Alameda Formation, hydraulic conductivity is estimated to be on the order of 10^{-3} to 10^{2} meters per day (Ground Water Hydrology, 1980).

5.2.1.2 Contaminated Aquifers

1. Based on a soil and ground water investigation performed at the Site in October 1994 by Environmental Solutions, Inc., the Merritt Sand aquifer has been contaminated by TPH-Gas, heavy metals, VOCs and SVOCs.

5.2.1.3 Water Wells Within A Three Mile Radius Of Site

1. No wells could be located in the Site vicinity which produce ground water from the Merritt Sand aquifer. There are no drinking water wells located within 3 miles of the Site (OnSite Technologies [OST], 1993).

2. The nearest production wells are at the Alameda Naval Air Station, located between one and two miles to the west. These production wells produce ground water from the Alameda Formation aquifer, and are used for industrial purposes only (GeoResource, 1992).

3. The ground water flow direction in the Merritt Sand aquifer is generally toward the west, with local variations in flow direction due to stratigraphic variations within this hydrologic unit. On the basis of a porosity of 10 percent and hydraulic gradients of

0.001 to 0.03 feet per foot, estimated average flow velocities are on the order of 0.01 to 5 feet/day (OST, 1993).

4. There are no public drinking water service connections to ground water from either the Merritt Sand or Alameda Formation aquifers (OST, 1993).

5.2.2 SURFACE WATER PATHWAY

5.2.2.1 Contamination Migration Routes Due to Flooding

1. Because the Site is entirely covered with concrete, which acts as a deterrent to surface water infiltration, it does not appear that subsurface contaminants from the Site could migrate to nearby surface waters, marshlands, wetlands, or wildlife habitats due to surface water runoff or flooding. Contaminants on the interior walls and floor of the warehouse are not exposed to the elements, therefore they are unlikely to migrate offsite.

5.2.2.2 Location and Use of Nearby Surface Waters and Wildlife Habitats

1. Figure 5 presents the locations of nearby surface waters, and the location of sensitive species. The Oakland inner harbor waters are within a one mile radius of the Site. There are no sensitive species within a one mile radius of the Site. Several sensitive species and habitats are present within five miles of the Site, however, none of these species or habitats are expected to be impacted by current or future activities at the Site (CDFG, 1994).

5.2.2.3 Site Surface Water Runoff Prevention Measures

1. Currently, a surface water collection and drainage system exists at the bottom of the slope on the west side of the loading dock platform (Figure 3). A steel grate covers a drain which leads to a collection sump at the southwest edge of the Site. A drainage ditch is also present in the northeastern portion of the Site, draining surface waters to

Poplar Court. Storm drains are present along the north side of Fifth Street, at both corners of the intersection with Poplar Court, and on either side of the location where the former railroad spur crossed Fifth Street (Figure 6). Currently, there are no measures in place to prevent surface water runoff once the loading dock collection sump is filled.

2. Before the Site was paved with concrete in 1984, two sumps existed in the northeastern portion of the Site. No provisions were made to prevent surface water runoff in the event that these sumps overflowed (DHS, 1983).

5.2.2.4 Population Served by Surface Water Intake

1. There are no surface water intakes within three miles of the Site which are utilized by human populations as a drinking water source (OST, 1993).

5.2.2.5 Surface Slope

1. There is an approximate 1 percent surface slope between the Site and the Oakland inner harbor waters, located approximately 3,500 feet south of the Site.

5.3 FACTORS RELATED TO AIR PATHWAYS

1. Environmental Solutions, Inc. did not encounter sampling data which documents known releases of hazardous substances/wastes to the atmosphere at the Site.

2. Due to the Site being entirely covered with concrete at this time, there is little to no threat of a potential release to the atmosphere due to fire or explosion at the Site.

3. Potential atmospheric releases related to future construction activities at the Site are addressed in Chapter 7.0, Human Health Screening Evaluation.

6.0 SAMPLING ACTIVITIES AND RESULTS FROM PEA INVESTIGATION

6.1 SUMMARY OF ACTIVITIES PERFORMED BY ENVIRONMENTAL SOLUTIONS, INC.

1. This section presents a description of the sampling activities performed by Environmental Solutions, Inc. in October 1994. Sampling activities included wipe sampling of the warehouse interior walls and floor, and soil and ground water sampling in the UST area, and the remaining portion of the Site.

2. Six wipe samples and one field blank were collected from the interior of the warehouse on October 6, 1994, to assess if chemical residues are present (Figure 7). A wipe sample was collected from the inside of each exterior wall in the building in areas of visible staining, or in the center of the wall if no staining was present, for a total of four wall samples. Two samples were collected from the floor in areas of visible staining. One field blank sample was also collected.

3. Twelve borings were drilled at the Site on October 20 and 21, 1994, to depths ranging from 4 to 13 ft bgs (Figure 8). Two borings were terminated short of the proposed 8 foot depth due to the presence of brick or concrete. One of the terminated borings was located within a former concrete sump area, and the concrete lining at the bottom of the concrete sump may have caused auger refusal. The soils at the site proved too dense to drive the Hydropunch® tool, therefore the six borings scheduled for water sampling were overdrilled to between 10 and 13 ft bgs. Temporary slotted Polyvinyl Chloride (PVC) casings were installed in each boring scheduled for water sampling.

4. Drilling was performed by Precision Sampling of San Rafael, California, under the direction of an Environmental Solutions, Inc. geologist. The borings were drilled using a bobcat-mounted hydraulic drilling rig equipped with a 3-inch diameter Envirocore sampling system. Soil samples were collected from each boring for chemical testing at 1, 5, and 8 ft bgs. The soil samples were lithologically classified using the Unified Soil Classification System (USCS) and Munsell color standards. An organic vapor meter (OVM) was used to take readings on selected soil samples, and from the borehole to monitor conditions during drilling (OVM readings are included on the boring logs presented in Section 12.2). Soil samples were collected using a 36-inch long Envirocore sampling system, lined with six 6-inch long, 1.5-inch diameter stainless steel tubes. After collection, the ends of the sample tubes were capped with teflon tape, followed by a plastic cap. No adhesive tape was used on the sample containers. The containers were labeled and placed in a cooler with blue ice, and transported under Chain-of-Custody documentation to Chromalab, Inc. (Chromalab), a State Certified Laboratory located in San Ramon, California.

5. Ground water samples were collected from the borings using a 1 inch diameter stainless steel bailer. The ground water samples were released into laboratory supplied, sterile sample containers. The sample containers were labeled, placed in a cooler with blue ice, and transported under Chain-of-Custody documentation to Chromalab.

6. All drilling and sampling tools were decontaminated by either a high pressure hot water wash, or alconox wash with deionized water rinse, before and between each use. Decontamination water was drummed and stored onsite in labeled Department of Transportation (DOT) 55-gallon drums. The soil cuttings were placed in labeled 5-gallon pails, and stored onsite pending disposal.

6.2 ANALYTICAL PROGRAM

6.2.1 WIPE SAMPLES

1. The wipe samples collected from the interior of the warehouse, including one field blank, were analyzed for the following constituents:

   - TRPH by EPA Test Method 418.1
   - Heavy Metal Scan by EPA Test Method 6010
   - PCBs and Pesticides by EPA Test method 8080
   - SVOCs by EPA Test Method 8270
   - VOCs by EPA Test Method 8010/8260

6.2.2 SOIL SAMPLES

1. The soil samples collected from the site were analyzed for the following constituents:

   - TPH as Diesel by EPA Test Method 8015 modified for diesel
   - TPH as Gasoline by EPA Test Method 8015 modified for gasoline
   - Total Oil and Grease by EPA Test Method 5520 E & F
   - TRPH by EPA Test Method 418.1
   - Heavy Metal Scan by EPA Test Method 6010
   - PCBs and Pesticides by EPA Test method 8080
   - SVOCs by EPA Test Method 8270
   - VOCs by EPA Test Method 8240
   - Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by EPA Test Method 8020

6.2.3 GROUND WATER SAMPLES

1. The ground water samples collected from the site were analyzed for the following constituents:

   - TPH as Diesel by EPA Test Method 8015 modified for diesel
   - TPH as Gasoline by EPA Test Method 8015 modified for gasoline
   - Total Oil and Grease by EPA Test Method 5520 E & F
   - TRPH by EPA Test Method 418.1
   - Heavy Metal Scan by EPA Test Method 6010
   - PCBs and Pesticides by EPA Test method 8080
   - SVOCs by EPA Test Method 8270
   - VOCs by EPA Test Method 8240

6.3 PRESENTATION OF DATA

1. Analytical data for the wipe samples collected from the warehouse is presented in Table 4 and Figure 9. Analytical data for the soil samples collected from the Site is presented in Table 5 and Figure 10. Analytical data for the ground water samples collected from the Site is presented in Table 6 and Figure 11.

2. Laboratory data sheets and Quality Assurance/Quality Control (QA/QC) analysis performed by Chromalab are provided in Section 12.1 of this PEA.

6.4 DISCUSSION OF RESULTS

6.4.1 WIPE SAMPLES

1. Results of the wipe sample analysis show detectable concentrations of TRPH, Metals, Organochlorine pesticides, PCBs, SVOCs and VOCs on the interior walls of the warehouse. Demolition of the warehouse may require PPE for exposed workers, and engineering controls for dust suppression.

2. Di-N-Butyl Phthalate was detected in each of the wipe samples collected, at concentrations that ranged from 3 micrograms (ug)/100 cm^2 to 13 ug/100 cm^2, and in the laboratory method blank, at a concentration of 7 ug/100 cm^2. Because this compound was detected in the laboratory method blank, its presence may be due to laboratory contamination.

6.4.2 SOIL SAMPLES

6.4.2.1 Underground Storage Tank Location

1. Based on laboratory analysis of soil samples collected from borings B1, B11 and B12 during the soil and ground water investigation performed by Environmental Solutions, Inc., the soils in the vicinity of the 2000-gallon UST have been impacted by gasoline, oil and grease, lead, acetone, BTEX, and SVOCs.

2. A WET for soluble lead was performed on one soil sample (B12-1), with an elevated total lead value, collected from the UST area. The WET results for the sample showed a concentration of lead at 30 mg/l, which is above the STLC of 5 mg/l. Soils with concentrations of soluble lead above the STLC are classified as hazardous waste under Title 22 of the State of California Code of Regulations (CCRs).

3. Di-N-Butyl Phthalate was detected in several of the soil samples collected, at concentrations that ranged from 0.06 mg/kg to 4.0 mg/kg, and in the laboratory method blank at a concentration of 1.6 mg/kg. Because this compound was detected in the laboratory method blank, its presence may be due to laboratory contamination.

6.4.2.2 Remainder Of Site Locations

1. In general, soils on the Site have been impacted by TRPH, lead, and low concentrations of SVOCs and VOCs (Figures 9 through 11).

2. A WET for soluble lead was performed on four soil samples (B4-1, B6-1, B6-5, B7-1) in two of the former sump locations, and adjacent to the former railroad spur, which showed high concentrations of total lead. Three of the four samples analyzed showed a concentration of lead above the STLC of 5 mg/l (B4-1 = 5.6 mg/l, B6-1 = 5.9 mg/l, B6-5 = 6.1 mg/l). Soils with concentrations of soluble lead above the STLC are classified as hazardous waste according to CCR Title 22.

3. Di-N-Butyl Phthalate was detected in several of the soil samples collected and in the laboratory method blank. Because this compound was detected in the laboratory method blank, its presence may be due to laboratory contamination.

6.4.3 GROUND WATER SAMPLES

6.4.3.1 Underground Storage Tank Location

1. Ground water beneath the UST has been impacted by gasoline, oil and grease, metals, and VOCs. Heavy metals and VOCs detected in ground water samples collected from this area are at or exceed their respective MCLs. Due to only one grab ground water sample being collected from this area, insufficient data is present to discuss up and down gradient concentration differences, specific source areas, and concentration plume delineations.

6.4.3.2 Remainder Of Site Locations

1. Ground water underneath the remaining portion of the Site has been impacted by TRPH, metals, VOCs, and unknown compounds in the diesel and motor oil range. Heavy metals and VOCs detected in ground water samples collected from beneath the Site are at or exceed their respective MCLs.

2. Source areas for ground water contamination appear to be in the vicinity of the former and present sumps, the former railroad spur, and the former drainage channel (Figure 3).

3. Insufficient data is available at this time to adequately assess ground water contaminant concentration plumes.

7.0 HUMAN HEALTH SCREENING EVALUATION

7.1 INTRODUCTION

1. A health-conservative preliminary evaluation of hypothetical health risks and hazards potentially posed by exposure to COCs in soils at the J & A Truck Repair Site is discussed in the following sections. The evaluation is based on analytical data accumulated during recent soil sampling activities at the Site and summarized in Tables 4, 5 and 6, and in Figures 9, 10 and 11, as well as an assessment of the physical setting of the Site, land use considerations and various conservative assumptions regarding fate and transport of COCs. The Screening Evaluation closely follows guidance provided by the DTSC in the PEA Guidance Manual (DTSC, 1994).

2. This quantitative evaluation also incorporates Preliminary Remediation Goals (PRGs) developed by the DTSC specifically for estimating potential health risks/hazards at sites along the Cypress Realignment Project area. The PRGs and associated guidance were detailed in an intradepartmental memorandum from the Office of Scientific Affairs (OSA) to Ms. Barbara Cook, Chief of the Site Mitigation Branch, Region 2, dated July 22, 1993 (Memorandum). A copy of this Memorandum, which includes a list of the PRGs recommended by DTSC, are provided in Appendix C. As indicated in the Memorandum, the development of PRGs by the DTSC was based on a number of conservative assumptions regarding exposure pathways through which human receptors could potentially be exposed to COCs in soils at the Site. These pathways were limited to those judged to be presently complete and therefore did not include potential pathways involving ground or surface waters.

3. The Human Health Screening Evaluation (HHSE) is presented in the following sections of this PEA:

- Section 7.2: Characterization of Exposure Setting and Potential Exposure Pathways
- Section 7.3: Identification of COCs
- Section 7.4: Quantification of Potential Health Risks
- Section 7.5: Summary of Findings and Evaluation of Results

7.2 CHARACTERIZATION OF EXPOSURE SETTING AND POTENTIAL EXPOSURE PATHWAYS

7.2.1 EXPOSURE SETTING

1. As discussed previously, the Site is situated in a mixed industrial and residential part of west Oakland, approximately 3,500 feet north of the Inner Harbor of the Oakland Estuary (Figure 1). Much of the area between the Site and the Inner Harbor is used for the transfer, storage and servicing of shipping containers and associated operations (rail, marine and trucking) by various shipping and rail companies (e.g., Southern Pacific and Union Pacific Railroads).

2. Currently, the Site is unused and vacant. Numerous residential dwellings are situated throughout the area; the density of residential usage increases to the north and east and decreases to the south and west (Figure 11).

3. The Site area is relatively flat, sloping gently toward the south/southwest (i.e., in the same general direction as the regional ground water flow direction). Climate in the west Oakland area is similar to that of the surrounding region and is characterized as having a mild two-season climate with cool wet winters and warm dry summers moderated by marine air and fog. Mean annual precipitation in the Site vicinity is estimated to be approximately 18 inches.

4. Average winds are generally from the west at speeds of approximately six to ten miles per hour. Consistent with the generally urban industrial nature of the area, vegetation around the Site is very sparse, consisting primarily of native grasses and weeds in unpaved areas.

7.2.2 POTENTIAL EXPOSURE PATHWAYS

1. For the purposes of this screening level evaluation, potential exposure pathways of focus were limited to those involving soils since these were considered to be complete. Potential pathways associated with exposure to ground or surface waters or those related to uptake through the food chain were not considered to be complete and were thus not considered (DTSC, 1993; 1994). The soil exposure pathways considered in the HHSE (i.e., those pathways quantified by the DTSC in the development of PRGs for the Cypress sites) include:

   - Incidental Ingestion of Chemicals in Soil
   - Direct Dermal Contact with Chemicals in Soil
   - Inhalation of Chemicals in Fugitive Dust[1]
   - Inhalation of Chemicals in Vapors (i.e., from VOC and SVOC COCs).

2. The calculation of PRGs by DTSC and the consideration of potential human health risks presented in this Screening Evaluation primarily involved exposure scenarios for construction workers employed in rebuilding the Cypress Freeway, and secondarily for motorists who would use the realigned freeway. Regulatory guidance for conducting the HHSE (DTSC, 1994) generally requires that a residential setting be assumed; however, since both daily and lifetime calculated exposures for construction workers would be significantly greater than those for motorists and nearby residents, the

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(1) Although the description of the formalism for calculating PRGs provided by the DTSC (See Appendix A of the DTSC Memorandum, included as Appendix A of this PEA) did not include a term associated with inhalation of fugitive dust particles, discussions with key technical staff of the OSA (personal communication with Dr. James Carlisle, 1994) indicated that the actual calculation of PRGs included an additional term corresponding to dust inhalation based on soil concentrations.

exposure scenarios presented by the DTSC are considered to be conservatively protective of potential residential receptors and motorists.

7.3 IDENTIFICATION OF CONSTITUENTS OF CONCERN

1. COCs for soils at the Site have been identified as part of the scope of this Screening Evaluation. A listing of these COCs is included in Table 7. The COCs were identified based on the following two key conditions:

   - PRGs were calculated and provided by DTSC (i.e., in the July 22, 1993 Memorandum)
   - Detectable concentrations were reported by the laboratory in at least one of the soil samples collected at the Site.

2. Constituents for which PRGs were calculated by DTSC were initially included as potential COCs for the Site. However, to be consistent with applicable regulatory guidance (EPA, 1989a; 1989b; DTSC, 1993), and to facilitate appropriate calculations of potential health risks, constituents which were not detected in at least one of the soil samples collected at the Site were excluded from further consideration as COCs for the purposes of this Screening Evaluation. The latter condition was applicable to a significant number of constituents for which PRGs were provided but no detectable levels were reported by the laboratory. Although not currently included in the list of COCs provided in Table 7, these constituents can be added to the list of COCs if detectable levels are reported in the course of future investigations at the Site. These constituents are indicated in Appendix A (Table A.1) and include the following:

   - Chromium VI
   - Nickel
   - Selenium
   - Silver
   - Chlorobenzene
   - Chloroform
   - 1,2-Dichlorobenzene
   - 1,4-Dichlorobenzene
   - 1,1-Dichloroethane
   - 1,2-Dichloroethane
   - 1,1-Dichloroethene
   - Styrene

- 1,1,2,2-Tetrachloroethane
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Vinyl chloride
- Methyl iso butyl ketone
- PCBs
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(a)pyrene
- Chrysene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-cd)pyrene

3. In addition, no potential health risks were calculated for five of the constituents for which PRGs were provided, since these were not included in the scope of laboratory analyses. The following five constituents are included in Appendix A (Table A.1):

   - Fluorine
   - Triethylamine
   - 1,2-Dibromo-3-chloropropane
   - n-Hexane
   - Dioxin/furans (i.e., 2,3,7,8-TCDD).

4. These constituents are not included in the list of COCs provided in Table 7, however, they can be added if detectable levels are reported in the course of future investigations at the Site[2].

7.4 QUANTIFICATION OF POTENTIAL HEALTH RISKS

7.4.1 BACKGROUND

1. Potential health risks associated with exposure to each of the COCs identified above were calculated based on the PRGs provided by DTSC (Appendix A). The procedure for calculating the PRGs is described in the attached DTSC Memorandum and

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(2) With the exception of the two chlorinated compounds (i.e., 1,2-Dibromo-3-Chloropropane and 2,3,7,8-TCDD) the PRGs provided for these constituents are rather high; thus, even if future investigations indicated the presence of low to moderate concentrations of the three non-chlorinated compounds, they would likely not contribute significantly to calculated health risks. As will be shown in Section 7.5 below, calculated health risks are dominated by nonchlorinated constituents. Since chlorinated constituents contributed negligibly to the total calculated health risks (i.e., Tetrachloroethene and Trichloroethene were reported at levels near the applicable laboratory detection limits resulting in a combined maximum excess carcinogenic risk of 5.2E-09 and a combined Hazard Index of 0.0004), further laboratory analyses for 1,2-Dibromo-3-chloropropane and 2,3,7,8-TCDD are not warranted.

summarized herein. As indicated in this Memorandum, the calculation of PRGs incorporated exposures via each of the four soil exposure pathways described above (Section 7.1.2) for a construction (i.e., worker) scenario. The sum of chronic daily intakes from the four pathways for each constituent was then compared with the appropriate toxicity criteria (listed in Appendix B of DTSC Memorandum) to calculate PRGs applicable to each particular constituent.

2. The PRGs included in Table A.1 include thresholds based on both carcinogenic and noncarcinogenic effects (i.e., "endpoints"), as applicable. For those constituents with carcinogenic endpoints, the calculation of PRGs incorporated an acceptable excess cancer risk of 1E-06. For those constituents with noncarcinogenic endpoints, the calculation of PRGs incorporated an acceptable Hazard Index of one or unity. For some constituents the calculated noncarcinogenic PRGs exceeded saturation concentrations, in which case the recommended PRGs were arbitrarily defined as the saturation concentrations.

3. Three of the COCs identified in this Screening Evaluation were characterized as having both carcinogenic and noncarcinogenic endpoints. These include:

- Tetrachloroethylene
- Trichloroethylene
- Bis(2-ethylhexyl)phthalate.

4. Separate PRGs, and thus separate potential health risks, were calculated for each of these COCs (i.e., based on both carcinogenic and noncarcinogenic endpoints).

7.4.2 CALCULATION OF HEALTH RISKS BASED ON PRGS

1. Since the PRGs calculated by DTSC incorporated a quantification of exposures by each of the four pathways described above, as well as appropriate toxicity criteria for each of the applicable constituents, the calculation of potential health risks for this

Screening Evaluation involved a relatively simple quantitative comparison of exposure point concentrations with applicable PRGs[3]. This procedure is summarized as follows for both carcinogenic risk and noncarcinogenic hazard:

- Excess Carcinogenic Risk: For those COCs where PRGs were defined based on carcinogenic endpoints, the maximum reported COC concentration was divided by the applicable PRG and the quotient multiplied by the acceptable risk threshold of 1E-06.

- Noncarcinogenic Hazard Index: For those COCs where PRGs were defined based on noncarcinogenic endpoints, maximum reported COC concentrations were divided by the applicable PRG (i.e., the lesser of the saturation concentration or the PRG based on chronic exposure) and the quotient multiplied by the acceptable Hazard Index of one (unity).

7.5 SUMMARY OF FINDINGS AND EVALUATION OF RESULTS

1. Potential health risks associated with exposure to each of the COCs identified above (i.e., excess cancer risk and Hazard Index) are summarized in Table 7, in conjunction with the exposure point concentrations and applicable PRGs. As detailed in the preceding sections of this Screening Evaluation chapter, the potential health risks associated with exposure to soils at the Site are based on a number of conservative assumptions incorporated by the OSA in the calculation of PRGs according to the recommended methodology (DTSC, 1994). These assumptions are discussed in the DTSC Memorandum included in Appendix A. Also included in Appendix A is a summary spreadsheet detailing the calculation of potential health risks (Table A.1).

7.5.1 EXCESS CARCINOGENIC RISK

1 The calculated excess carcinogenic risk potentially posed by exposure to Site soils is expressed over a nine-fold range of values corresponding to the minimum and maximum PRG values provided by DTSC. As discussed in the Memorandum, the

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(3) Per DTSC guidance (DTSC, 1994) exposure point concentrations have been conservatively assumed to be the maximum reported constituent concentration for each COC. The procedure for calculating potential health risks using the DTSC-recommended PRGs is based on discussions with key staff of the OSA (personal communication with Dr. James Carlisle, November 1994).

calculated PRGs for constituents with cancer endpoints are divided by 9 "to account for the possibility that the cancer risk from one year of exposure may be up to nine times greater than the average yearly risk from a 70-year exposure."

2. As indicated in Table 7, the total excess carcinogenic risk due to exposure to Site soils is between approximately 6.9E-06 and 6.2E-05. Both the minimum value (i.e., that corresponding to the actual calculated PRG) and the maximum value (i.e., one-ninth of the calculated PRG) exceed the commonly acceptable threshold of 1.0E-06. The calculated total risk appears to be dominated by the following four COCs, as discussed below:

- Arsenic: ≈ 84 percent
- Bis(2-ethylhexyl)phthalate: ≈ 6 percent
- Beryllium: ≈ 5 percent
- Benzene: ≈ 4 percent

7.5.1.1 Arsenic

1. Of the 33 soil samples collected and analyzed for arsenic, 16 were reported to contain detectable levels of arsenic (i.e., > 0.25 mg/kg). The mean concentration of those detected was approximately 6.8 mg/kg, which exceeds the (maximum) PRG of 4.6 mg/kg. The maximum reported concentration of 27 mg/kg, which was conservatively assumed as the exposure point concentration in calculating potential excess cancer risk, exceeded the upper 95th percentile for either the limited subset of the sample population (i.e., neglecting nondetects) or the entire population of 33 samples.

2. Most of the soil samples which have reported arsenic concentrations exceeding the calculated PRG (i.e., 4.6 mg/kg)[4] were collected from the southeastern portion of the Site; the sole exception (i.e., surface sample at Boring B2 [B2-1]) is situated near a drainage sump in the western part of the Site and has a reported arsenic concentration of 4.9 mg/kg.

7.5.1.2 Bis(2-ethylhexyl)phthalate

1. Of the 27 soil samples collected and analyzed for bis(2-ethylhexyl)phthalate, 4 were reported to contain detectable levels; however, only one of these samples had a reported concentration exceeding 1.0 mg/kg (i.e., the surface sample at Boring B7 [B7-1] in the southern portion of the Site). This sample had a reported concentration of 250 mg/kg which is less than the calculated PRG (i.e., 628 mg/kg), but exceeds the lower PRG value (i.e., 628 ÷ 9 or 69.8 mg/kg). Thus, the excess carcinogenic risk associated with this sample value is actually below the 1E-06 threshold based on the calculated PRG, and exceeds this threshold only due to the DTSC-recommended adjustment for differences in exposure duration.

7.5.1.3 Beryllium

1. Beryllium is a naturally occurring metal and was detected in each of the 33 soil samples collected and analyzed for beryllium. The maximum reported value of 0.59 mg/kg is well below the calculated PRG of 1.80 mg/kg, and therefore, the corresponding excess carcinogenic risk is below the acceptable threshold. However, the reported value exceeds the lower PRG of 0.20 mg/kg and therefore contributes a minimum excess carcinogenic risk of 3.28E-07.

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(4) The minimum PRG for arsenic, obtained by dividing the calculated PRG by nine, is 0.51 mg/kg. This value could be considerably below background levels for the Site and region, and therefore may not be an appropriate value for identifying Site-related impacts.

7.5.1.4 Benzene

1. Detectable levels of benzene (i.e., > 0.005 mg/kg) were reported in 2 of the 31 soil samples collected and analyzed for benzene. Although one of these two samples, the maximum value of 7.7 mg/kg, exceeds the minimum.PRG value (i.e., 31.30 ÷ 9 or 3.50 mg/kg), the reported concentration is less than the calculated PRG (i.e., 31.30 mg/kg). This sample (B12-8) was collected from a depth of 8 ft bgs (i.e., near the water table).

7.5.2 NONCARCINOGENIC HAZARD

1. As indicated in Table 7, the total noncarcinogenic hazard, expressed in terms of the Hazard Index, due to exposure to Site soils is approximately 4.3. This value exceeds the acceptable threshold of 1.0. As with the case for carcinogenic risk, the calculated total Hazard Index appears to be dominated by a select number of COCs. These COCs are discussed below and include the following:

   - Xylenes (mixed): ≈ 59 percent
   - Ethylbenzene: ≈ 14 percent
   - Lead: ≈ 10 percent
   - Toluene: ≈ 8 percent
   - Bis(2-ethylhexyl)phthalate: ≈ 4 percent

2. Of these five COCs, only xylenes involve a hazard index which exceeds unity on an individual basis. The other four COCs contribute to the total Hazard Index as indicated above and in Table 7, however the individual Hazard Index applicable to each of these COCs is less than 1.0. A brief summary of these COCs and their individual contributions to the total noncarcinogenic hazard is presented below.

7.5.2.1 Xylenes (Mixed)

1. Detectable levels of xylenes (i..e, > 0.005 mg/kg) were reported in 8 of the 31 samples collected and analyzed for xylenes. The sample with the maximum reported concentration (250 mg/kg in Boring B12-8) was the only soil sample reported to

contain xylenes in excess of the applicable PRG of 98.8 mg/kg, and corresponds to a Hazard Index of 2.53. Boring B12-8 is the same sample from which the elevated benzene concentration described above was reported.

7.5.2.2 Additional Contributing COCs

1. The remaining four COCs contributed approximately 36 percent to the total noncarcinogenic Hazard Index, however, on an individual basis, the maximum concentration of each of the COCs corresponds to a Hazard Index less than the acceptable threshold of 1.0. A brief discussion of the reported detections of these additional contributing COCs is provided below.

2. Detectable levels of ethylbenzene (i..e, > 0.005 mg/kg) were reported in 4 of the 31 samples collected and analyzed for ethylbenzene, none of which corresponds to a Hazard Index in excess of the PRG of 73.5 mg/kg. The sample with the maximum reported concentration (44 mg/kg in Boring B12-8) corresponds to a Hazard Index of 0.6, and was associated with the same sample from which the elevated benzene concentration described above was reported.

3. Detectable levels of lead were reported in each of the 33 soil samples analyzed for lead, however, none of these samples were reported to contain levels in excess of the PRG of 340 mg/kg. The maximum lead concentration (i.e., 150 mg/kg) was reported for near surface soil sample B12-1, located near the northwestern part of the Site; the corresponding Hazard Index for this sample is 0.4.

4. As with the case for benzene, xylenes and ethylbenzene, elevated levels of toluene (i.e., > 0.005 mg/kg) were reported in sample B12-8. Of the 31 samples analyzed for toluene, 12 contained detectable levels (i.e., > 0.005 mg/kg), however none of these

samples had reported toluene levels in excess of the PRG of 283 mg/kg. The maximum reported toluene level (i.e., 94 mg/kg) corresponds to a Hazard Index of 0.3.

5. As reported above in Section 7.5.1, only 4 of the 27 soil samples collected and analyzed for Bis(2-ethylhexyl)phthalate were reported to contain detectable levels; the only one of these samples with levels exceeding 1.0 mg/kg (i.e., the surface sample at Boring B7 [B7-1] in the southern portion of the Site) had a reported concentration of 250 mg/kg which is less than the PRG (i.e., 1,510 mg/kg)[5]. The Hazard Index associated with this sample result is approximately 0.2.

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(5) Since PRGs were calculated for bis(2-ethylhexyl)phthalate based on both cancer and noncancer endpoints, separate calculations of potential health risks were carried out (i.e., excess carcinogenic risk and Hazard Index). However, since the PRG associated with the cancer endpoint is significantly less than that for noncancer, the corresponding cancer PRG would more appropriately dominate the assessment of health risk.

8.0 ECOLOGICAL SCREENING EVALUATION

1. An ecological screening evaluation was not performed for the J & A Truck Repair Site. There are no sensitive wildlife habitats, or threatened biological species, within one mile of the Site which could be impacted by activities at the Site. There are several threatened species within five miles of the Site (CDFG, 1994). Locations of these species are shown on Figure 5.

9.0 COMMUNITY PROFILE

1. A community profile for the J & A Truck Repair Site was not prepared as part of this PEA. Caltrans has addressed community concerns as a whole, as related to the overall project for the Cypress structure realignment and reconstruction. For information on the neighboring communities, see the *Public Participation Plan for the Environmental Investigation and Cleanup Activities in the I-880 Cypress Replacement Project Area Oakland, California*, prepared by Caltrans on October 4, 1994.

11.0 REFERENCES

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Appendix B

Air Sampling Results

Appendix C

Permits

CONFINED SPACE ENTRY PERMIT

GENERAL INFORMATION

Permit No.

Space to be Entered: _____ **Purpose of Entry:** _____

Location/Building: _____ **Authorized Duration of Permit:** Date: _____ to _____

Time: _____ to _____

PERMIT SPACE HAZARDS (Indicate specific hazards with initials.)

_____ **Oxygen deficiency** (less than 19.5%)
_____ **Oxygen enrichment** (greater than 23.5%)
_____ **Flammable gases or vapors** (greater than 10% of LFL)
_____ **Airborne combustible dust** (meets or exceeds LFL)
_____ **Toxic gases or vapors** (greater than PEL)
_____ **Mechanical hazards**
_____ **Electrical shock**
_____ **Materials harmful to skin**
_____ **Engulfment**
_____ **Other:** _____

PREPARATION FOR ENTRY (Check after steps have been taken.)

❑ **Notification** of affected departments of service interruption.
❑ **Isolation Methods:** ❑ Lockout/tagout ❑ Blank/blind
❑ Purge/clean ❑ Inert ❑ Ventilate
❑ Atmospheric test ❑ Barriers ❑ Other: _____
❑ **Personnel Awareness:**
❑ Pre-entry briefing on specific hazards and control methods
❑ Notify contractors of permit and hazard conditions
❑ Other: _____
❑ **Additional permits** required and/or attached:
❑ Hotwork ❑ Line breaking ❑ Other: _____

EMERGENCY SERVICE

Name of Service	Phone Number	Method of Contact

EQUIPMENT REQUIRED FOR ENTRY AND WORK

Specify as required:
Personal Protective Equipment: _____
Respiratory Protection: _____
Atmospheric Testing/Monitoring: _____
Communication: _____
Rescue Equipment: _____
Other: _____

COMMUNICATION PROCEDURES

To be used by attendants and entrants:

AUTHORIZED ENTRANTS (List by name or attach roster.)

AUTHORIZED ATTENDANTS (List by name.)

TESTING RECORD

Time	Acceptable Conditions	Result : AM/PM	Result : AM/PM	Result : AM/PM	Result : AM/PM	Result : AM/PM	Result : AM/PM	Result : AM/PM
Oxygen-min.	> 19.5%							
Oxygen-max.	< 23.5%							
Flammability	< 10% LEL/LFL							
H_2S	< 10 ppm							
Toxic (specify)								
Cl_2	< 0.5 ppm							
CO	< 35 ppm							
SO_2	< 2 ppm							
Heat	°F/°C							
Other								
Tester Initials								

AUTHORIZATION BY ENTRY SUPERVISORS

I certify that all required precautions have been taken and necessary equipment is provided for safe entry and work in this confined space.

Printed Name	Signature	Date	Time

THIS PERMIT MUST BE POSTED ON JOB SITE · GOOD ONLY ON INDICATED DATE

HOTWORK PERMIT

GENERAL INFORMATION

Permit No.

Worksite Identification: _____ **Hotwork to be Performed:** _____

Location/Building: _____ **Authorized Duration of Permit:** Date: _____ to _____

Time: _____ to _____

SOURCE OF IGNITION

- ❑ Acetylene torch
- ❑ Abrasive saw
- ❑ Electric arc
- ❑ Electric tools
- ❑ Heliarc welding
- ❑ Propane torch
- ❑ Soldering
- ❑ Drilling
- ❑ Other: _____

SOURCE OF IGNITION

THIS HOTWORK PERMIT MAY BE SIGNED AND HOTWORK AUTHORIZED ONLY AFTER SATISFACTORY COMPLIANCE WITH ALL ITEMS OUTLINED IN THIS PERMIT.

- ❑ Floors swept clean of combustibles?
- ❑ Remaining combustible or flammable materials 35 feet horizontally as well as vertically from source of heat?
- ❑ Non-movable combustible or flammable materials isolated, covered/shielded with fire retardant material?
- ❑ Vertical and horizontal openings within 35 feet sealed or covered for spark/vapor control?
- ❑ Heat transmission, conduction, radiation controlled?
- ❑ Hazardous material transfers disconnected within 60 feet of hot work?
- ❑ Lockout/tagout of electrical, mechanical, chemical, blanking, cap piping implemented?
- ❑ Vessels, equipment drained, purged, ventilated, cleaned?
- ❑ Inert gas blanket required?
- ❑ Welding, cutting fume ventilation or respirator required?
- ❑ Building/area air currents and outdoor wind direction known?
- ❑ Hazardous material spill release equipment and countermeasures available.
- ❑ Supervisor notified work location and time of operation?
- ❑ Involved personnel and contractor employees advised of hazards?
- ❑ Means of egress identified and available?
- ❑ Fire protection equipment available and operational?
- ❑ Automatic fire sprinkler system operational?
- ❑ Oxygen-rich environment evaluated?
- ❑ Continuous monitoring of atmospheric conditions maintained?
- ❑ Checking for flammable/combustible gas and oxygen levels?
- ❑ Special danger, caution, warning signs posted?
- ❑ Trenches over four feet deep shored or sloped?
- ❑ Firewatch provided during work and 30 minutes after completion of work?
- ❑ Work areas and adjacent areas where sparks may have spread checked out 30 minutes after work completed?

APPROVALS AND AUTHORIZATIONS

This permit is valid only so long as work conditions existing at the time of issuance continue. It expires on any change in condition that adversely affects safety of the work area while work is in progress.

STOP WORK IMMEDIATELY IF PLANT EMERGENCY ALARM SIGNALS AN EMERGENCY IN OR NEAR YOUR WORK AREA. FOLLOW FIREWATCH INSTRUCTIONS.

I have personally inspected the location where the above work is to be done. I have checked for compliance with the safety precautions listed on the permit and authorized the work to be performed.

Title	Printed Name	Signature	Date
Originator/Approver			
Safety Officer			
Welder			
Firewatch			

THIS PERMIT MUST BE POSTED ON JOB SITE · GOOD ONLY ON INDICATED DATE

Appendix D

Safety Inspection Form

CONTRACTORS JOB SITE CHECKLIST

Project Name/Number: Project Location:

Person(s) Making Inspection: Date of Inspection:

This checklist may serve as an inspection took, focusing on those areas which need attention. Any "NO" responses to the question indicates corrective action is necessary. This checklist should be completed monthly and reviewed by upper management.

	YES	NO
MANUAL MATERIAL HANDLING		
1. Are mechanical devices being used at every opportunity in place of manual handling of material. Examples: power assisted concrete and roof buggies, brick tongs, carriers, tar pump hoses, automatic nailing guns, long handle pry bars, pullies, hoist, carts, dollies, forklifts and wheel barrows?	____	____
2. Are ropes, slings, chains, hooks, cables, and chokers in good condition?	____	____
3. Proper staging of materials to minimize lifting and carrying.	____	____
4. Rigging equipment inspected regularly and in good condition.	____	____
5. Is the handling of bagged material limited to 50 lbs.?	____	____
6. When applicable, are carrying handles being used when a single worker is carrying sheeted materials?	____	____

FIRE PROTECTION AND PREVENTION (Cont.)

	YES	NO
10. Are temporary heaters located at a safe distance from combustibles?	____	____
11. Is ventilation adequate for temporary heaters?	____	____

ELECTRICAL

1. Are all switch gear, panels, and devices that are energized marked and/or guarded to prevent accidental contact?	____	____
2. Are lockout devices available, and used on all circuits and equipment, that could become energized while work is being performed?	____	____
3. Are all temporary circuits properly guarded and grounded?	____	____
4. Are extension cords in continuous lengths without splice or tape.	____	____
5. Are GFCI's being used? If not, is Assured Equipment Grounding Conductor Program being followed?	____	____
6. If temporary lighting is provided, are bulbs protected against accidental breakage?	____	____
7. Are working surfaces clear of cords so as not to create a tripping hazard to employees?	____	____
8. Is there a sufficient number of temporary outlets on the job site?	____	____
9. Any visual signs of outlet overloading?	____	____

HAZARD COMMUNICATION

Does the Hazard Communication Program include:

1. List of hazardous chemicals.	____	____
2. Container labeling.	____	____
3. Material Safety Data Sheets (MSDS), on site?	____	____
4. Employee training.	____	____
5. Personal protective equipment (PPE).	____	____
6. Emergency response.	____	____

		YES	NO
BARRICADING			
1.	Floor openings planked and secured or barricaded?	____	____
2.	Are direction signs used to inform the public of upcoming construction work?	____	____
3.	Is sidewalk protection effective?	____	____
4.	Is a flagger provided to direct traffic when needed?	____	____
5.	Has the flagger been trained on how to direct traffic and the public?	____	____
6.	Are open excavations, road drop-offs, manholes, uneven surfaces barricaded, signed and lighted?	____	____
LADDERS			
1.	Is the ladder being used properly for the job?	____	____
2.	Are ladders in good condition (no missing, broken rungs, side-rails, etc.)?	____	____
3.	Are there safety shoes/cleats on the bottom of ladders? Are they needed?	____	____
4.	Are non-conductive ladders used around live wiring?	____	____
5.	Are ladders secured or tied-off at the top?	____	____
6.	Do the side-rails extend 36 inches above the top of the landing?	____	____
7.	Are rungs or cleats uniformly spaced 10-14 inches apart?	____	____
8.	Are step ladders fully open when in use?	____	____
SCAFFOLDING			
1.	Are scaffold components visibly free of any physical damage? (No bent or corroded parts.)	____	____
2.	Is the scaffold properly erected with all pins and braces in place and locked?	____	____
3.	Are rolling scaffolds equipped with locking wheels?	____	____
4.	Are wheels locked when scaffold is in use?	____	____
5.	Is scaffold erected on a firm and substantial surface?	____	____

TOOLS: HAND AND POWER	YES	NO
1. Are tools free of any obvious physical damage?	____	____
2. Are tools inspected for frayed or damaged cords?	____	____
3. Are tools and cords properly grounded (ground pins are in good condition)?	____	____
4. Are double insulated tools in use and in good condition?	____	____
5. Are the handles on all tools in good condition (not bent, splintered or broken)?	____	____
6. Are all hoses on air or hydraulic tools in good condition?	____	____
7. Are all shields and guards in place on the tools and in good condition?	____	____
8. Workers qualified and certified to use powder actuated tools.	____	____

WELDING AND CUTTING		
1. Are non-combustible barriers, (screens/shields) provided and used when welding?	____	____
2. Welding goggles, gloves, and clothing being used.	____	____
3. Inspection for fire hazards before and after welding stops.	____	____
4. Are gas cylinders, hoses, regulators, torches, torch tips and welding carts, in good working order?	____	____
5. Flashback arrestors on hoses.	____	____

HOIST, CRANES AND DERRICKS		
1. Are cables and sheaves checked?	____	____
2. Are slings, hooks, eyelets, chokes inspected?	____	____
3. Are load capacities posted in cab?	____	____
4. Are power lines at a safe distance?	____	____
5. Do cranes have proper barricades around swing radius?	____	____
6. Are crane inspection logs with crane?	____	____

2. Waste Collection Removal (Cont.)	YES	NO
- EPA certified shipper and disposal facility?	____	____
- Certificates of insurance from shipper and disposal facility?	____	____
- Records and reports manifested for at least 3 years?	____	____

MANAGEMENT

1. Are there stop work procedures in place in the event unexpected potential pollution hazards such as abandoned tanks, buried drums, asbestos, PCBs, etc., turn up on the job site?	____	____
2. Is a copy of the company safety program at the job site?	____	____

TRAINING

1. Any documentation or evidence of training employees in the recognition and avoidance of hazards associated with the work task?	____	____

COMMENTS/REMARKS

Appendix E

Safety Meeting Form

APPENDIX II
SAMPLING PLAN

The purpose of this Sampling Plan is to provide general procedures for sampling of excavated sidewalls and bottom. All activities will follow procedures specified in this RDIP and all personnel will be trained in accordance with the project Health and Safety Plan, Appendix I of this RDIP.

1.0 SOIL EXCAVATION, SAMPLING AND ANALYSIS

Initially soil will be excavated to a depth of 6 feet bgs within the boundary of the Site previously flagged by Caltrans. The estimated volume of soil to be excavated from the property is approximately 4,000 cubic yards.

Confirmation soil samples will be collected as follow:

- 1 sample for every 200 square feet at the bottom of the excavation.
- 1 sample for every 20 linear feet and 2 feet in depth at the walls of the excavation.

The soil samples for the Site will be analyzed for the following:

- Organochlorine Pesticides and PCBs: EPA Method 8080
- Title 22 CAM 17 Metals: EPA Methods 6010 and 7000 series
- Total Petroleum Hydrocarbons as gasoline and BTEX: EPA Methods 5030/8015 + 5030/8020
- TRPH: EPA Method 418.1
- Oil and Grease: EPA Method 5520 E & F
- Volatile Organic Compounds: EPA Method 8240
- Semi Volatile Organic Compounds: EPA Method 8270

All soil samples will be analyzed within 48-hours, except those methods that are restricted due to analytical limitations. The soil samples will be submitted to ChromaLab, a State of California analytical laboratory located in Pleasanton, California for analysis.

Upon receipt of the laboratory reports, analytical results will be submitted to DTSC for their review. In addition, the results will also be compared to the Preliminary Remedial Goals (PRGs) which were established by the Department of Toxic Substances Control Board for Cypress Reconstruction, listed in Figure 1-12.

Soil excavation shall be temporarily terminated at this point until further instructions are provided by DTSC.

During the life of the field activities the following tasks will also be performed:

- A temporary fence will be placed around the excavation pit.
- All excavated soil will be placed in transport vehicles. No contaminated soils or hazardous material will be deposited on public roads. All contaminated soils and hazardous material on exteriors of transport vehicles will be removed and placed either into the current transport vehicle or the excavation prior to the vehicle leaving the Site and/or the exclusion zone.
- The Contractor will monitor the air quality continuously during hazardous material excavations and implement dust control if necessary.

Upon completion of the excavation activities and approval from Caltrans and DTSC, the excavation will be available for backfilling by others.

2.0 FIELD SAMPLING PROCEDURES

2.1 Environmental Sampling Quality Assurance

2.1.1 Sample Collection Procedures

The area to be sampled will be identified by the project geologist/engineer. The backhoe operator will scoop soil from that area. The field geologist/engineer will collect the sample from the backhoe in a 6 inch brass sleeve and/or a glass container with nonmetallic, teflon-lined screw cap. The ends of the brass sleeve will be covered with Teflon film and tight-fitting plastic caps. A normal 6-inch by 2-inch soil sample will contain approximately 18.5 cubic inches of soil. Assuming a density of 2 grams/cubic centimeter (32.78 grams/cubic inch), this should provide over 600 grams of material. The minimum sample volume required for laboratory analyses is 270 grams. Therefore, a full brass sleeve should provide sufficient soil for all analyses to be performed.

Table APII-1 lists analytical methods, holding times, sample containers, and required preservatives.

Samples will be placed in an ice chest with ice packs. Each cooler will contain sufficient ice and/or ice packs to ensure that proper temperature of 4° Celsius is maintained and will be packed in a manner to prevent damage to sample containers. Field Chain-of-Custody records, completed at the time of sample collection, will accompany the samples inside the cooler for shipment to ChromaLab. All coolers will be delivered to ChromaLab by the Contractor within 24 hours after sampling.

2.1.2 Quality Control Samples

Quality control of laboratory analytical procedures are routinely performed by analyzing a laboratory duplicate. Field quality control will include the use of the following:

- Field duplicate samples (1 in 10);
- Field blanks (periodic);
- Matrix spike (one submittal); and
- Equipment rinsate (one submittal per each day of sampling);

The duplicate sample will be collected, numbered, packaged, and sealed in the same manner as other samples, and will be submitted blind to the laboratory.

2.1.3 Decontamination and Post-Sampling Procedures

Decontamination procedures will be in accordance with 40 CFR 761.125. Decontamination of equipment used for sampling will take place in a specific zone designated at the Site. Sampling equipment will be decontaminated prior to initial use and at the completion of sampling activities. A manual scrubbing to remove foreign material followed by a thorough wash with a non-phosphate soap, will be used to decontaminate all the equipment between and prior to sampling. All non-disposable equipment will be decontaminated according to the procedures summarized below:

- Manual scrub without water or soap
- Manual scrub and wash with a non-phosphate soap solution
- Tap water rinse
- Diluted nitric acid rinse
- Distilled water rinse
- Air dry
- Distilled water rinse

2.1.4 Sample Documentation

Sample documentation will include field logbooks, sample labels, and Chain-of-Custody records. All field documentation will be written legibly in waterproof ink. Errors will be crossed out with a single line, initialed, and dated.

2.1.4.1 Sample Identification Numbers

Each sample will be assigned a unique identification number that allow retrieval of information regarding the sample. The sample identification number will consist of three main segments, which are separated by a hyphen. The first segment is determined by the borehole number, and is made up of letter "B" and a one or two-digit number representing the borehole number. The second segment is made up of the letters "E, W, N, S, B, W" representing sample location such as East, West, North, South, Bottom, Wall of the excavation pit. The third segment represents the sampling depth.

Example: B1-EW-3'

Boring one, collected at a depth of 3 feet from the east wall of the excavation pit.

Duplicate samples will be numbered the same way as the other samples.

2.1.4.2 Field Logbooks

A project field logbook will be used during the field effort to document the following:

- Date and time of log entries;
- Field conditions (weather, terrain, hazards, and the field crew arrival and departure time, etc.);
- Personnel present during field operations;
- Waste containment procedures, and a daily inventory of wastes present onsite;
- Field measurements taken, instrumentation used, and frequency of instrument calibration;
- Information recorded on sample labels, as well as the Site identification number and the sampling depth;
- Any unusual sample characterization;
- Other specific considerations pertaining to sample acquisition; and
- Excavation data (depth, lithology, and etc.).

2.1.4.3 Sample Labels

A pre-printed adhesive label will be affixed to each sample. The information below will be written on every sample label:

- Project number;
- Sample identification number;
- Date and time of sampling;
- Name of sample collector; and
- Type of analysis to be performed.

2.1.4.4 Chain-of-Custody Records

A Chain-of-Custody record will accompany all samples when they are shipped to the analytical laboratory. Information that may be noted on this form are as follow:

- Project number;
- Sample identification number;
- Date and time of sampling;
- Type of sample;
- Date of request;
- Job number;
- Client;
- Source of samples;
- Shipper;
- Arrival date;
- Condition received at laboratory; and

- Specific analyses requested.

A copy of the Chain-of-Custody form is presented in Figure APII-1. The Chain-of-Custody record documents transfer of samples from one party to another.

Figure APII-2 provides a copy of a Sample Condition Report form. The form will be completed by the laboratory at the time the samples are received. This form summarizes sample conditions. Information which are noted on this form include:

- Client name;
- Project name;
- Reference/submission number;
- Date/time sample received;
- Received by;
- Carrier name;
- Samples logged in by;
- Matrix;
- Sample condition summary; and
- Comments.

2.1.5 Sample Shipment

Contractor will notify the Project Chemist at the analytical laboratory a week prior to sampling. This will provide an opportunity for the laboratory to anticipate the arrival of the samples. In addition, coolers and sample containers will be sent from the laboratory to the Contractor.

Within 24 hours after the samples are collected, the Contractor will transport all samples to the analytical laboratory. Samples will be packaged for shipment in a cooler chilled with bags of ice. The original Chain-of-Custody record will be placed in a plastic pouch affixed to the inside lid of the cooler. The person relinquishing the sample will retain a copy of the form. When possession of the samples is transferred, the individuals relinquishing and accepting custody will write their names, the names of their organizations, and the time and date of custody transfer on the Chain-of-Custody record.

APPENDIX III
AIR MONITORING PLAN

See Section 11.0 of Appendix I - Health and Safety Plan.

APPENDIX IV
CONSTRUCTION QUALITY ASSURANCE PLAN

1.0 INTRODUCTION

This Construction Quality Assurance Plan (CQAP) has been prepared for the Remedial Action activities at the J & A Truck Repair. This CQAP has been prepared to describe the components of the quality assurance program that will be used to ensure, with a reasonable degree of certainty, that the completed project meets or exceeds all design criteria, plans, and specifications for the project. This includes excavation and off-haul of soils.

Included in the CQAP are the submittal, approvals, inspections, observations, testing, and documentation required during pre-construction, construction, and post-construction periods. The general scope of CQAP activities include the following:

1. Pre-construction CQAP Requirements:

    - Review scope of work, plans, specifications, and scheduling with the Performance Excavators Inc. (PerFex) project team.
    - Review the project's logistical approach to the construction activities such as excavation and off-haul of soils.
    - Review working drawings and other submittal made in accordance with the RDIP specifications.

2. Construction CQAP Requirements:

    - Observe conformance with requirements provided in this RDIP.
    - Review submittal and samples.
    - Perform required sampling, testing and analysis.
    - Daily inspection reports and photographs.
    - Post-Construction CQAP Requirements.
    - Final inspection.
    - Final documentation report.

3. Post Construction Requirements:

   - Preparation of a Preliminary Environmental Health Risk Assessment.
   - Preparation of Final Remedial Action Completion Report.

2.0 ROLES AND QUALIFICATIONS

While each person involved in the generation of data during the Remedial Action activities is implicitly a part of the overall QA program, certain individuals have specifically delegated QA responsibilities. Within PerFex and Jonas & Associates Inc. (J&A) these are, in the order of decreasing authority, the Construction Manager/QA officer, and the Field Operations Managers of PerFex and J&A.

Construction Manager (CM/QAO)

PerFex assigns a Construction Manager (CM) to every site remediation. The responsibilities of the CM include overseeing the day-to-day activities of all work being conducted at the site including that of subcontract personnel. The CM also oversees all scheduling and budgeting procedures and serves as the prime contact with Caltrans, state, local and Federal agencies. The CM also serves as a Quality Assurance Officer (QAO). The QAO has primary responsibility for all field QA activity. Mr. Mark Warner of PerFex will serve as the CM/QAO.

Field Operations Managers (FOM)

PerFex assigns Mr. Greg Rainey as the Field Operations Manager (FOM) for the excavation activities as well as off-haul of excavated soil and waste. Mr. Rainey will be present at the site during all field activities. In Mr. Mark Warner's absence, Mr. Rainey will also serve as the CM/QAO on this project.

J&A will assume the role of Field Operations Manager for the environmental field sampling. Confirmation soil sampling of the excavation will be performed by a geologist and a California Registered Environmental Assessor from J&A. J&A will determine soil sample locations and depth. However, Caltrans and PerFex CM will be consulted prior to sample collection. Ms. Romena Jonas will serve as the FOM for J&A.

Both FOMs will report directly to CM/QAO and are directly responsible for the day-to-day activities of field personnel. The FOMs will report daily to the project CM/QAO concerning the maintenance of the QA project management plan. Their responsibilities also include the initialing and verification for accuracy of field notebooks, logs, chain-of-custody records, tags, and labels, and all other field related documentation.

Quality Assurance Officer (QAO)

PerFex will also assume the role of Quality Assurance Officer (QAO) for the overall Remedial Action. The PerFex QA officer will assist Caltrans Site Manager and will verify that the work is performed in accordance with this RDIP and Caltrans' contract requirements. The QA officer will have sufficient practical, technical and managerial experience to successfully oversee and implement CQAP activities for the remediation of the site and will ensure all CQAP related matters are communicated to and acted upon by the affected organizations. The ultimate responsibility for assuring the quality of construction tasks and for certifying site remediation will remain with Caltrans.

3.0 LINES OF AUTHORITY

FOMs will report directly to PerFex CM/QAO. The PerFex CM/QAO will report on quality issues to Caltrans. Caltrans will report to DTSC and other Federal, state, and local regulatory personnel.

4.0 RESPONSIBILITIES

The QAO is responsible for all aspects of executing the CQAP Program. The QAO will train the project personnel in QA/QC activities and direct, oversee, and check all CQAP activities. The QAO or his representative will conduct the daily on-site observations and record keeping. The major areas of responsibilities of the QA Officer or representative include:

- Prior to start and during construction, QAO shall review all submittal required in specifications.
- Serve as liaison with the Caltrans in interpreting and clarifying drawings, plans, specifications and other project documents.
- Direct support of the J&A FOM in performing observations and tests.
- Direct support of the waste haulers in waste containment and transport.
- Complete daily observation reports which will provide a chronological framework of the project. These reports will include the following, as appropriate:
  - Date and project name;
  - Weather conditions;
  - Location of work;

- Equipment and personnel used;
- Description of work performed, particularly dimensions and volumes of soil excavation and stabilization treatment;
- Decisions made regarding acceptance of portions of work, and/or remedial action to be taken in instances of substandard quality;
- Project record photographs (may be less than daily, depending on job progress); and
- Signature of QAO or representative.

• Provide to Caltrans reports on observation and testing results including:

- Review and interpretations of observation records and test results;
- Identification of work that the QAO believes should be accepted, rejected, or that may require further testing or inspection for approval; and
- Reports that reject defective work and specify corrective measures.

• Confirm that the monitoring, field screening, and testing equipment, personnel, and procedures are properly trained/calibrating and do not change over time or that changes do not result in deterioration of the quality of the CQAP process.

• Confirm that the test verification data are accurately recorded and maintained (this may involve selecting reported results and backtracking them to the original handwritten log, manifests, and laboratory data sheets.

• Verify that the equipment used in site operations monitoring (Health and Safety and Air Particulate Monitoring) meets the test requirements and that the tests are conducted by qualified personnel according to the specified procedures.

• Monitor all tests conducted as required by this RDIP.

• Perform independent on-site inspections and/or tests of the work in progress to assess compliance with Caltrans design criteria, plans, and specifications.

• Accept or reject units of work.

5.0 PROJECT MEETING

Pre-Construction Meeting

In order to successfully complete this project, it will be necessary for the PerFex CM, QAO, and FOM, J&A FOM, Caltrans Project Manager, and representative at DTSC to communicate regularly. This communication will begin with a pre-construction meeting which will be held at the J & A Truck Repair site. Representatives of the DTSC will be invited to attend the meeting. The purpose of the pre-construction meeting is to:

- Review the responsibilities of each party;
- Discuss routes of travel, equipment mobilization, storage, staging areas and property and a discussion of areas to be avoided, particularly sensitive environmental areas;
- Review Health and Safety requirements;
- Discuss the established protocol for observations, monitoring and verification testing;
- Discuss the established protocol for handling construction deficiencies, repairs and retesting;
- Review methods of documenting and reporting inspection/verification data;
- Review methods for distributing and storing documents and reports;
- Establish notification or call out procedures for incident/emergency response;
- Discuss any modification of the CQAP to assure that all site-specific considerations are addressed;
- Discuss procedures for the prevention of damage from accidents or spills; and
- Conduct a site walk to verify that the plans and specifications are understood and to review material and equipment storage and mobilization locations.

The meeting will be documented by a designated person and minutes will be transmitted to all parties.

Progress Meetings

Progress meetings will be held on a weekly schedule. The first progress meeting will be scheduled about one week before mobilization. The purpose of these meetings is to:

- Review the previous week's activities and accomplishments;

- Review the work location and activities for the upcoming week;
- Review PerFex's personnel and equipment assignments; and
- Discuss any potential problems.

As appropriate, informal progress meetings may be held at any time to discuss work assignments, work accomplished, and other Quality Control and Health and Safety issues. Daily Health and Safety briefings are required in addition to this CQAP meeting.

Problem or Work Deficiency Meetings

Problem meetings cannot be predicted; however, the PerFex CM or Caltrans Project Manager will advise the DTSC of any such meetings and will make every effort to provide 48 hours notices of problem meetings. The purpose of these meetings is to define and resolve the problem or recurring work deficiency in the following manner:

- Define and discuss the problem or deficiency;
- Review alternative solutions; and
- Agree upon and implement a plan to resolve the problem or deficiency.

6.0 DOCUMENTATION

The results of all observations and tests will be documented and compiled by the QA Officer.

Daily log reports will be compiled by the CM, FOMs, and QAO and maintained at the site during the duration of the remedial activities.

A summary of QA/QC activities will be included as an element of the Final Remedial Action Completion Report.

APPENDIX V
QUALITY ASSURANCE AND QUALITY CONTROL PLAN

This Quality Assurance and Quality Control Plan (QA/QC Plan) outlines the QA/QC procedures to be used in collecting, assessing and documenting the validity of the chemical data derived from sampling and chemical analysis. The objectives of the QA/QC program are to produce chemical data that are sufficiently precise, accurate, complete, comparable and representative of site conditions so that appropriate conclusions and recommendations can be made.

1.0 PROCEDURES FOR FIELD QUALITY ASSURANCE/QUALITY CONTROL

All samples taken during remediation activities, including verification and waste disposal, and air monitoring samples will follow EPA protocol and the procedures outlined in the project Sampling Plan and Air Monitoring Plan presented as Appendix II and Appendix III of this document, respectively. Extensive field record keeping is required. Field blanks, duplicates, second laboratory splits, and spikes will be used to assure quality control of all samples. Samples will be labeled with a specific site location number, date, and time unique to that sample. Chain-of-Custody documentation will be maintained from the time of collection to analysis at the laboratory. A Chain-of-Custody form is attached as Figure APII-1 of this plan. Table APII-1 presents sample handling criteria for the various contaminants.

Field quality control will include the use of the following:

- Field duplicate samples (1 in 10);
- Field blanks (periodic);
- Matrix spike (one submittal);
- Equipment rinsate (one submittal per each day of sampling);

Data will be reviewed periodically during site remediation and will be evaluated prior to preparation of, and included in the Final Remedial Action Completion Report.

Complete documentation of all excavation and loading activities, manifesting, sampling and laboratory testing data will be maintained. Records and daily logs will be kept at the project site with duplicates provided upon request to the DTSC and Caltrans. Originals will be kept in the office of the Project Manager and Health and Safety Officer and will be archived by PerFex at the conclusion of the site remediation work. Daily verbal or written project progress reports will be made during actual field remediation activities to representative of Caltrans. All project information and data will be summarized in the Remedial Action Completion Report.

1.1 Decontamination and Post-Sampling Procedures

See Appendix II.

1.2 Sample Containers/Preservation

See Table APII-1.

1.3 Sample Documentation and Shipment

See Appendix II.

2.0 PROCEDURES FOR LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

QA/QC data analysis will be performed on the samples analyzed by the laboratory. This analysis will include review of analytical results and limited QC data summaries. These include surrogate recoveries for EPA 8240 and 8270 analyses and method blank results for all organic analyses. Internal laboratory QC samples are scheduled at a frequency based solely on the number of samples processed through the laboratory, independent of this project.

Analytical results undergo review and validation by the laboratory personnel assigned to the project. Data will be reviewed and validated for each of the criteria listed below and for the quality control criteria listed and described below.

- Analytical methodology - were analyses performed according to the analytical methods described in Appendix II?
- Detection limits - were the standard method detection limits achieved, and if not, were interferences and dilution factors documented?
- Blanks - were compounds detected in blank samples? If so, should these compounds be qualified in reporting values?
- Accuracy and precision - were results obtained in duplicate samples similar or equal to the results obtained for the sample?

2.1 Quality Assurance Objectives

The data quality assurance objectives are designed to develop and/or implement field, laboratory, and review procedures to provide data of known quality. Data quality is assessed by precision, accuracy, representativeness, completeness, compatibility, and detection limits. Each of these criteria, as they are related to this RDIP's quality control procedures, are described in the following sections.

The applicable quality control procedures, quantitative target limits, and levels of effort of establishing data quality are dictated by the intended use of the data. For this RDIP, limited data are collected for the purpose of estimating the nature, approximate extent, and significant sources of contaminants at the Site.

Target laboratory detection limits for this RDIP are set according to instrument/method limitations in the laboratory. Actual laboratory detection limits will depend on the sample matrix.

2.1.1 Precision

Data precision is a measure of the spread of the data when more than one measurement is taken on the same sample. For duplicate measurements, precision can be expressed as the relative difference (RPD). A quantitative definition of the RPD is given below:

$$RPD = \frac{x_2 - x_1 * 100}{(x_1 + x_2)/2}$$

where: x_1 = first duplicate point value
x_2 = second duplicate point value

2.1.3 Accuracy

Accuracy is an assessment of the closeness of the measured value to the true value. Accuracy of chemical test results is assessed by spiking samples with known standards and establishing the average recovery. For organic analyses, surrogate spike recoveries will be measured. For a surrogate spike, a known amount of a standard compound chemically similar, but not identical to the compounds in the fraction being analyzed, is added to the samples and measured. The purpose of the surrogate spike is to provide quality control on samples by monitoring for unusual matrix effects and gross sample processing (i.e., extraction) errors. A quantitative definition of average recovery is given below.

For surrogate spiked samples, the recovery (R) can be defined as a measure of accuracy:

- C_o = measured concentration analyzed in the sample without the addition of a spike (mg/kg);
- C_s = concentration of standard added to the sample (wt/vol);
- Vs = volume of standard added to the sample (mole);
- C_1 = measured concentration analyzed in the sample after adding the spike (mg/kg);
- $R = (C_1 - C_o)/(C_s \times V_s \times 10^{-3})$

or on a percentage basis.

$$\%R - (C_1 - C_o)^{100}(C_s \times V_s \times 10^{-3})$$

Percent recovery results will be reviewed by the laboratory to assess whether surrogate recoveries fall within specified laboratory limits. Typically, the laboratory will perform a new extraction and analysis on a sample that does not meet surrogate recovery limits for a given analysis.

2.1.3 Representativeness

Representativeness is a measure of how closely the measured analytical results reflect the actual concentration or distribution of the chemical compounds in the sample. Sampling methods and sample handling protocols affect the representativeness of analytical results. Field documentation will establish that sampling protocols were followed and that sample identification and integrity are known. Equipment blank results will provide additional data on representativeness of analytical results.

2.1.4 Completeness

Completeness is a measure of the amount of valid unqualified data obtained from a set of analytical results. The quantitative definition of completeness is given below.

$$c = \frac{\text{(Number of acceptable data per target QC limits)}}{\text{(total number of data points)}} \times 100$$

The target completeness objective for the overall analyses to be performed for this RDIP will be 100 percent; the actual completeness for this RDIP may vary depending on the nature of the samples.

2.1.5 Comparability

Data comparability will be maintained by using consistent methods and consistent units. Standard units to be used are:

- mg/kg for all analytical results for soil samples
- mg/l for all analytical results for liquid samples

Standard analytical methods to be used are listed in the RDIP.

2.1.6 Detection Limits

The detection limits for the laboratory analytical methods analyses will be established as the minimum concentrations that can be accurately and precisely measured by the laboratory. Consideration will be given for practical limitations such as sample size, matrix interferences,

dilutions, and published maximum contaminant (MCL) of regulated compounds. Detection limits will be reported with the analytical results.

2.1.7 Sample Custody

Sample custody procedures will be followed through sample collection, transfer, analysis, and ultimate disposal. The purposes of these procedures are to maintain the integrity of samples during their collection, transportation, and storage prior to analysis; and to properly account for the disposal of post-analysis sample material. Sample custody is detailed in Appendix II under sample documentation and shipment.

APPENDIX VI
TRANSPORTATION AND TRAFFIC CONTROL PLAN

1.0 PURPOSE AND SCOPE

This Hazardous Waste Transportation and Traffic Control Plan was prepared to comply with California Environmental Protection Agency Department of Toxic Substances Control Requirements.

The following items are addressed in this Transportation and Traffic Control Plan:

- A description of Site access, truck entry and Site exit areas with the City of Oakland;
- A detailed description of approved routes to be followed by trucks transporting hazardous waste from the Site to the disposal facilities;
- A description of methods employed to seal transport vessels prior to departure from the Site to minimize the release of dust and to prevent emissions or loss during transport;
- A list of emergency service organizations along the route that are to be notified, prior to commencement of transport, that hazardous waste will be transported through their area;
- A contingency plan for accidental off-site spillage of hazardous waste or airborne release of dust from transport vehicles, including a description of emergency response capabilities, evacuation, and monitoring procedures; and
- Contingency plans in the case of injury or exposure of personnel to contaminants.

Description of the Selected Remedial Action Alternative

Soil excavation is the selected remedial action alternative for J & A Truck Repair site and consists of the following tasks:

- Excavation of soil throughout the entire J & A Truck Repair down to a depth of 6 feet bgs and/or above the first water table.
- All soil will be considered a Class I waste-steam.
- Loading of soil into 18 yard rear-end dump trucks and long distance transport for disposal of excavated soil into an approved hazardous waste landfill Chemical Waste Management (Kettleman Hills, California), ECDC (Oakland, California), and ENCAPCO (Richmond, California).

- Final manifesting, verification and documentation of safe load arrival at designated landfill.

2.0 LOADING AND SEALING TRUCKS

A layer of clean aggregate base will be placed on Site access roads and to prevent truck tires from coming into contact with contaminated soils where necessary. However, the truck tires will also be brush cleaned water prior to departing the Site, as necessary. All soil will be loaded directly into transport trucks using a backhoe or front-end loader. The trucks will be equipped with tarps to prevent the release of dust once they are off-site.

In the event a tarp rips or comes loose, the truck will be stopped and the tarp repaired or replaced. If the tarp is not repairable, the truck will not be moved until a new tarp can be obtained and placed on the truck. Only then will the truck be permitted to continue on toward the landfill facilities. All trucks will exit the Site on either 8th or 7th Avenue.

3.0 STANDARDS FOR TRANSPORTATION OF HAZARDOUS WASTE

All work involved in the excavation, loading and transportation of hazardous waste at the Site will be performed in accordance with all applicable Federal, State and local laws, statutes, rules and regulations, in particular, the following:

- California Hazardous Waste Control Law (HWCL), Chapter 6.5, Division 20, Health and Safety Code.
- Title 22, Division 4, Chapter 30, Articles 5, 6, 6.5 and 7 of the California Code of Regulations (CCR).
- Environmental Protection Agency (EPA) 40 Code of Regulations (CFR) Parts 261 through 265 (Federal Register Volume 45 Number 98).
- Air Quality Management District Rules and Regulations.
- Department of California Highway Patrol (CHP), Hazardous Waste Licensing and Transport Route Regulations.
- 49 CFR Parts 100 to 179.
- 29 CFR Part 1910.
- California Vehicle Code, Hazardous Waste Transport.

4.0 TRANSPORTATION ROUTE

Routes are provided for the transportation of hazardous waste from the J & A Truck Repair to each of the following potential waste disposal facilities: Chemical Waste Management (Kettleman Hills, California), ECDC (West Carbon, Utah), and ENCAPCO (Richmond, California). These routes are the most direct and will provide the least risk of exposure to surrounding communities. None of the roadways selected are listed with the California Highway Patrol as prohibited for the hauling of California Highway Patrol Class III (i.e., non-explosive, non-reactive, non-flammable) hazardous waste. Routes are illustrated on Figure APV-1.

5.0 LOCAL STREETS AND ROAD USE

Loaded trucks will leave the Site via Seventh or Eighth Street. Loaded trucks will be inspected prior to leaving the Site, where tires would be cleaned and loads checked. Interstate 80 would be accessed approximately 3 miles northwest of the Site at the Cypress on-ramp. Interstate 880 would be accessed approximately 4 miles southeast of the Site at the Seventh Street on-ramp.

6.0 DESCRIPTION OF HIGHWAY ROUTES

- 1st • The route to Encapco in Richmond, California follows I-80 north to Richmond Exit Hilltop west to Blume Drive.
- 2nd • The route to ECDC in East Carbon, Utah follows I-80 east to Utah Route 6 South at Salt Lake City, Utah, to Utah Route 123 East.
- 3rd • The route to Chemical Waste Management in Kettleman Hills, California, follows I-80 west to I-580 east to I-980 west to I-880 south to State Route 937, which connects to I-580 east. Follow I-580 east to I-5 south and proceed to Kettleman Hills.

7.0 EMERGENCY SERVICE ORGANIZATIONS

The following is a list of emergency service organizations along the California portion of each route that will be notified of the transportation of hazardous waste through their area. These organizations will be contacted prior to commencement of any transportation activities:

1. Fresno County, CA (209) 445-3271
   Environmental Health
2. Sacramento County, CA (916) 386-6108
   Environmental Health

3. San Joaquin County, CA (209) 468-3411
   Environmental Health
4. Kings County, CA (209) 386-5351
   Environmental Health
5. Kern County, CA (805) 861-3636
   Environmental Health
6. Stanislaus County, CA (209) 525-7354
   Environmental Health
7. Merced County, CA (209) 385-7710
   Environmental Health
8. Contra Costa County, CA (510) 646-1112
9. Alameda County, CA (510) 567-6780
   Environmental Health
10. City of Oakland, CA (510) 238-3851
    Fire Department

8.0 SAFETY RULES

Off-Site Spillage

Prior to the start of transport operations, PerFex will identify the individuals assigned to serve on PerFex's Emergency Response (ER) team, in order to establish communication procedures and emergency/spill response measures regarding the project. The ER team will be provided with a copy of this Transportation Plan and the Site Health and Safety Plan (HSP), and the Contract Manager will work with the contractor to establish appropriate responses to any spills. The transportation company personnel will be briefed on means for contacting both the PC and the ER team in the vent of a mishap. All emergency spill response measures will be handled by the ER team, including the clean-up and disposal of any spilled material.

In the event of a spill, accident or breakdown, the driver will stay with the truck until law enforcement or other assistance arrives. If the ER team has not been summoned, the driver should do so. In the interim, the driver should place traffic cones around the spill and keep onlookers away from the area. The driver is not to attempt to clean up the spilled material; this is to be left to the ER team personnel.

Due to the number of variables that could impact any off-site spillage scenario, it does not appear to be appropriate to attempt to describe specific spill mitigation procedures in this plan. Rather use will be made of highly-trained emergency response personnel from a contractor trained and experienced in this area. Such personnel are skilled in assessing

the potential impact of a spill and bringing the appropriate resources to mitigate the spill and protect public health.

Airborne Release of Dusts

The most likely possibility for release of dust during transit is for a tarp to come loose. Should this occur, the driver will stop immediately and re-secure the tarp. If the tarp has ripped and cannot be used, the driver will call for a replacement tarp to be delivered and installed; the truck will not be moved until the new tarp is securely installed.

APPENDIX VII
CONTINGENCY PLAN

1.0 INTRODUCTION

This Contingency Plan describes measures to be undertaken to avoid unacceptable contaminant releases to the environment during the Remedial Action activities for the Site, contingency measures to mitigate any such releases, and contingencies for unforeseen circumstances. The two major elements of the plan are: (1) a Spill Prevention and Countermeasure Plan; and (2) a plan to deal with unforeseen problems. The Spill Prevention and Countermeasure Plan element includes methods to be used to prevent the release into the environment of potentially contaminated soils and waters handled during the Remedial Action activities.

If it is determined during the implementation of the Remedial Action that remediation cannot be completed as proposed herein (e.g., due to unforeseen, circumstances such as unusual weather conditions, scheduling conflicts, drastic changes in site conditions, permitting constraints, or unacceptable Remedial Action Contractor performance) DTSC will be promptly notified. If necessary, an alternate plan for completing the remainder of the Remedial Action will be submitted to the DTSC in a timely manner to avoid undue delays in the completion of the final Remedial Action.

2.0 ROLES AND RESPONSIBILITIES

PerFex will assign individuals who will perform management functions in the field. In general, the following roles and responsibilities will be assigned to those individuals who will be involved in the Remedial Action activities. Jonas & Associates Inc. (J&A) will serve as the environmental consultant on this project.

PerFex Contract Manager and J&A Field Operations Manager

The PerFex Contract Manager (CM) will work closely with the J&A's Field Operations Manager (FOM) to observe, supervise, and oversee all remedial action activities. In addition, the PerFex CM will be responsible for ensuring compliance with the Spill Prevention and Countermeasures Plan and the Construction Quality Assurance Plan (CQAP).

Quality Assurance Officer

The Quality Assurance Officer (QAO) will visit the Site periodically and observe the Remedial Action activities. He will review the construction work to confirm compliance with the RDIP and the CQAP (Appendix IV) and QA/QC Plan (Appendix V).

Remedial Action Contractor

PerFex, the prime contractor on this project will be responsible for the overall management of the project. In addition, PerFex will perform all the excavation activities, will handle waste containment and disposal, and will implement requirements specified in the project Health and Safety Plan which has been prepared by Rothwell Consulting Group.

J&A will be responsible for collection of soil samples, field documentation, and report preparation.

PerFex and J&A will be required to review and agree to the Health and Safety Plan, as a minimum requirement, and adhere to decisions by the Site Health and Safety Office responsible for compliance with the Health and Safety Plan. The Health and Safety Officer will also be responsible for emergency coordination as specified in the Spill Prevention and Countermeasures Plan.

PerFex is currently in the process of identifying transportation contractors for this project. However, selected contractors will have all the required health and safety and hazardous materials management trainings, licensing, and certifications.

The following landfills have been slated for possible waste disposal:

- Chemical Waste Management in Kettleman Hills, California - Waste will be transported to Chemical Waste Management's facility located in Kettleman Hills, California for disposal.

- ECDC in Oakland, California (Navy Lead at the Port of Oakland) - Trucks will deliver their load to ECDC located in Oakland. ECDC will reload and transport the waste to their facility in Utah for disposal.

- ENCAPCO in Richmond, California (Recycler) - ENCAPCo is a Caltrans approved recycler and is currently being managed by Caltrans. Trucks will transport waste to ENCAPCO facility located in Richmond, California for recycling. Recycled material will be placed into Caltrans' Embankments.

Waste profiling and manifesting will be completed by PerFex and approved and signed by Caltrans. Waste characterization via sampling and analysis will not be performed. All solid waste generated will be considered a Class I Non-RCRA Hazardous Waste.

3.0 SPILL PREVENTION AND COUNTERMEASURES PLAN

Spill prevention and control procedures include methods to minimize the release of potentially contaminated materials to the environment as a result of the Remedial Action activities. Routes to medical facilities and their telephone numbers are provided in the Health and Safety Plan.

Specialized equipment may be needed for cleaning, decontamination and site excavation work. PerFex will exercise care when using the equipment and in excavation activities in order to minimize the risk of possible chemical and contaminated water releases.

PerFex will handle all contaminated or potentially contaminated materials in a manner that will minimize the potential and consequence of any unauthorized or accidental discharges, including decontamination water. PerFex will be responsible for maintaining the decontamination area and ensuring that the wastewater generated during decontamination procedures is properly disposed of.

4.0 ON-SITE SPILLS OF SOIL AND CONTAMINATED WATER

Should any spill or unauthorized discharge of contaminated or potentially contaminated soil or water be observed at the project site by PerFex and/or J&A, PerFex shall:

- Notify Caltrans project manager. Caltrans shall notify DTSC, the City of Oakland Fire Department, Alameda County Department of Health Services, and Alameda County Hazardous Materials Response Unit; and

- Take immediate measures, under the direction of the Construction Manager, to contain the spill within as minimal an area as possible. These measures may include:

  - The use of sand or absorbent materials, the construction of detention berms, or the placement of booms to contain materials;

  - Pumping of free liquids into a drum(s) or tank(s);

  - Sweeping or shoveling absorbent materials into a pile;

  - Scraping up the pile and immediately loading into a transfer vehicle for disposal with hazardous waste materials; and

  - Sweeping or shoveling soils into trucks, loader buckets, or approved containers.

The PerFex and Caltrans Site Managers will inspect spill areas and verify that the spill has been adequately contained and cleaned-up. Materials maintained on site for spill response will include, at a minimum, shovels, absorbent material, booms, drums, silt fence material, straw bales, and plastic sheeting. All potentially contaminated materials will be appropriately characterized prior to off-site treatment or disposal.

5.0 OFF-SITE SPILLS

Once the waste disposal truck leaves the Site, it is the waste transportation contractor's responsibility to manage any off-site spill activities.

Due to the number of variables that could impact any off-site spillage scenario, it is not appropriate to attempt to describe specific spill mitigation procedures in this plan. Rather, use will be made of highly-trained emergency response personnel of PerFex.

Each driver will carry an information sheet or Material Safety Data Sheet (MSDS) that describes the nature and concentrations of the materials. This information will be placed with the manifest so that it will be immediately accessible to PerFex's emergency response personnel as necessary. Emergency services such as fire, medical or law enforcement will be requested by the driver either over the truck radio or by contacting 911 through a public phone or mobile phone.

6.0 EMERGENCY RESPONSE COMMUNICATION AND NOTIFICATION PROCEDURES

In the event of an emergency arising from conditions presented above or others that may arise, PerFex CM will notify all appropriate emergency contact units. In the event that immediate action should be taken, the PerFex CM shall notify Caltrans Project Manager. Caltrans Project Manager will notify all appropriate emergency response teams as needed to address the emergency. Immediately, but in no case longer than 24 hours from the onset of such an event, the Caltrans Project Manager will notify DTSC agency representative, the City of Oakland Fire Department, Alameda County Department of Health Services, and Alameda County Hazardous Materials Response Unit.

All emergency response contacts and their telephone numbers are listed below:

- PerFex, Contract Manager: Mark Warner (415) 257-4640
- Caltrans, Project Manager: Frank Cannizzaro (510) 286-0670
- Caltrans, Deputy Project Manager: Kathleen Leiga (510) 286-0709
- J&A, Field Operations Manager: Romena Jonas (510) 933-5360
- DTSC, Project Manager: Lynn Nakashima (510) 540-3839
- Alameda County Health Agency, Division of Environmental Health: Susan Hugo (510) 567-6780
- City of Oakland Fire Department: (510) 238-3851

APPENDIX VIII
STANDARD OPERATING PROCEDURES

The following pages describe J&A's standard operating procedures.

PART I

HAZARDOUS MATERIALS SAMPLING

I. INTRODUCTION

The intent of this manual is to describe a collection of methods and materials sufficient to address most sampling situations that arise during routine waste site and hazardous spill investigations. It will be updated periodically as new information and improved methods become available. It includes a compilation of methods, the purpose being to supply detailed, practical information directed at providing field investigators with a set of functional operating procedures.

Investigations at hazardous waste and environment-threatening spill sites place more restrictive demands on personnel, materials, and methodologies than those usually found in routine environmental surveys. As a result, traditional procedures and protocols used for the acquisition of environmental samples often fail to meet the rigors and demands required for many hazardous waste sampling applications. Thus, the collection of hazardous waste samples will frequently require specialized equipment and protocols either developed specifically for such uses or modified from preexisting materials and/or techniques. Some important considerations are:

- Methods and materials must be suitable to a wide range of situations and applications because of the unknown nature of many hazardous waste investigations and environmental spill responses.

- Hazardous wastes, by definition, are associated with both acute and chronic exposure to dangerous, toxic chemicals and this dictates that expeditious sample collection methods be used to minimize personnel exposure.

- Because of the nature of the materials being sampled, the option of using disposable sampling equipment must be considered because attempting decontamination in the field can be impractical.

- Hazardous waste site investigations and response actions at environment-threatening spills generally require some level of hazard protection that may be cumbersome, limit the field of vision, or fatigue the sampler. Sample collection procedures must therefore be relatively simple to follow to expedite sample procurement and to reduce the chance of fatigue. Collection and monitoring equipment should be simple to operate, direct reading, and should not be unwieldy.

These and other factors associated with the procurement of hazardous waste samples need to be addressed in a compilation of practical, cost effective, and reliable methods and procedures capable of yielding representative samples for a diverse number of potential parameters and chemical matrices. These methods must be consonant with a variety of analytical considerations running the gamut from gross compatibility analyses (pH, flammability, water reactivity, etc.) to highly sophisticated techniques capable of resolution in the part per billion (ppb) range.

II. METHOD SELECTION CRITERIA

Even a limited literature survey will disclose the existence of a great number of sampling methods, all of which have certain merits that warrant consideration. Therefore, selection criteria were chosen on which to base decisions for including the sampling methods found in this manual. The following is a listing, not necessarily in order of relative importance, of these criteria.

Practicality

The selected methods should stress the use of simple, pragmatic, proven procedures capable of being used or easily adapted to a variety of situations.

Representativeness

The essence of any sampling campaign is to collect samples that are representative of the material or medium under consideration. The selected methods, although strongly taking into consideration economics, simplicity, practicality, and portability, must also be capable of delivering a true representation of the situation under investigation.

Economics

The costs of equipment, manpower and operational maintenance need to be considered in relation to overall benefit. Instrument durability, disposable equipment, cost of decontamination, and degree of precision and accuracy actually required are also factors to be considered.

Simplicity or Ease of Operation

Because of the nature of the material to be sampled, the hazards encountered during sampling, and the cumbersome safety equipment sometimes required, the sampling procedures selected must be relatively easy to follow and equipment simple to operate. Equipment should be portable, lightweight, rugged and, if possible, direct reading.

Compatability with Analytical Considerations

The uncertainty of sample integrity as it relates to the analytical techniques to be used should be reduced whenever possible. Errors induced by poorly selected sampling techniques, especially those used in uncontrolled situations, can be the weakest link in the quality of the generated data. Special consideration must therefore be given to the selection of sampling methods in relation to any adverse effects that might surface during analysis. Proper materials of construction, sample or species loss, and chemical reactivity are some of the factors that must receive attention.

Versatility

The diversity and sheer numbers of potential parameters and scenarios often preclude the use of novel approaches that are designed or better suited for classifying a small number of compounds in a limited, defined environment. The methods in question must be adaptable to a variety of sampling situations and chemical matrices. This factor should not, however, jeopardize sample integrity.

Safety

The risk to sampling personnel, intrinsic safety of instrumentation, and safety equipment required for conducting the sampling all need to be evaluated in relation to the selection of proper methods and procedures.

The above criteria were consulted during the selection of each of the methods listed in the following sections. Obviously, tradeoffs were necessary, and therefore, some methods may prove excellent for some situations and less satisfactory for others. This factor must be considered by any field investigator before using the procedures outlined here.

III. PURPOSE AND OBJECTIVES OF SAMPLING

The basic objective of any sampling program is to produce a set of samples representative of the source under investigation and suitable for subsequent analysis. More specifically, the objective of sampling hazardous wastes is to acquire information that will assist investigators in identifying unknown compounds present and to assess the extent to which these compounds have become integrated into the surrounding environment. Subsequently, this acquired information may be used in future litigations as well as to assist investigators in the development of remedial actions.

The term "sample" can most simply be defined as a representative part of the object to be analyzed. This definition needs to be qualified further, however, by the consideration of several criteria.

Of utmost importance is representativeness. To meet the requirement of representativeness, the sample needs to be chosen so that it possesses the same qualities or properties as the material under consideration. However, the sample needs only resemble the material to the degree determined by the desired qualities under investigation and the analytical techniques used.

Sample size is also an important criterion to be considered. Sample size must be carefully chosen with respect to the physical properties of the entire object and the requirements and/or limitations of the analytical procedure. For example, although the entire contents of an intact 55-gallon drum can certainly be considered a representative sample of the drum material, it is an impractical sample because of its bulk. Alternatively, too small a sample size can be just as limiting, since representativeness and analytical volume requirements might be jeopardized.

A third criterion for consideration is maintenance of sample integrity. The sample must retain the properties of the parent object (at the time of sampling) through collection, transport, and delivery to the analyst. Degradation or alteration of the sample through exposure to air, excess heat or cold, microorganisms, or to contaminants from the container must be avoided.

Finally, the number and/or the frequency of subsamples (e.g., samples making up a composite) required and the distribution of these subsamples need to be considered. These criteria are often dictated by the nature of the material being sampled; that is, whether the material is homogeneous or heterogeneous. For example, if a material is known to be homogeneous, a

single sample may suffice to define its quality. However, if a sample is heterogeneous, a number of samples collected at specified time intervals or distances may be necessary to define the characteristics of the subject materials. In addition, the nature of the chemical parameters to be identified and the way the analytical results will be used are also important when the number and/or frequency of the samples to be collected are determined.

IV. TYPES OF SAMPLES

Before defining the general sample types, the nature of the object or materials under investigation must be discussed. Materials can be divided into three basic groups as outlined in Figure 1-1.

Of least concern to the sampler are homogeneous materials. These materials are generally defined as having uniform composition throughout. In this case, any sample increment can be considered representative of the material. On the other hand, heterogeneous samples present problems to the sampler because of changes in the quality of the material over distance.

When discussing types of samples, it is important to distinguish between the type of media to be sampled and the sampling technique that yields a specific type of sample. In relation to the media to be sampled, two basic types of samples can be considered: the environmental sample and the hazardous sample.

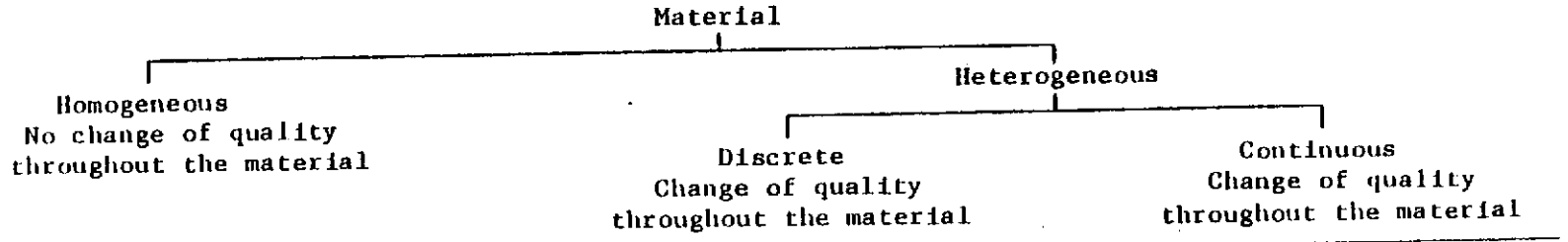
Environmental samples are generally dilute (in terms of pollutant concentration) samples taken in an area surrounding a spill or dump site i.e. off-site samples from soils, rivers, lakes, etc. They usually do not require the special handling procedures used for concentrated wastes. However, in certain instances, environmental samples can contain elevated concentrations of pollutants and in such cases would have to be handled as hazardous samples.

Hazardous or concentrated samples are those collected from drums, tanks, lagoons, pits, waste piles, fresh spills, etc., and require special handling procedures because of their potential toxicity or hazard. These samples can be further subdivided based on their degree of hazard; however, care should be taken when handling and shipping any wastes believed to be concentrated regardless of the degree.

The importance of making the distinction between environmental and hazardous samples is two-fold:

Personnel safety requirements: Any sample thought to contain enough hazardous materials to pose a safety threat should be designated as hazardous and handled in a manner which ensures the safety of both field and laboratory personnel.

Transportation requirements: Hazardous samples must be packaged, labeled, and shipped according to Department of Transportation (DOT) regulations.



Homogeneous	Discrete Changes	Continuous Changes
Well-mixed liquids Well-mixed gases Pure metals	Ore pellets Tablets Crystallized rocks Suspensions	Fluids or gases with gradients Mixture of reacting compounds Granulated materials with granules much smaller than sample size

Figure 1, Types of material.
Source: Kateman, G, and F, W. Pijpers. Quality Control in Analytical Chemistry. John Wiley and Sons, New York, 1981.

In general, two basic types of sampling techniques are recognized, both of which can be used for either environmental or concentrated samples.

Grab Samples

A grab sample is defined as a discrete aliquot representative of a specific location at a given point in time. The sample is collected all at once and at one particular point in the sample medium. The representativeness of such samples is defined by the nature of the materials being sampled. In general, as sources vary over time and distance, the representativeness of grab samples will decrease.

Composite Samples

Composites are nondiscrete samples composed of more than one specific aliquot collected at various sampling locations and/or different points in time. Analysis of this type of sample produces an average value and can in certain instances be used as an alternative to analyzing a number of individual grab samples and calculating an average value. It should be noted, however, that compositing can mask problems by diluting isolated concentrations of some hazardous compounds below detection limits.

For sampling situations involving hazardous wastes, grab sampling techniques are generally preferred because grab sampling minimizes the amount of time sampling personnel must be in contact with the wastes, reduces risks associated with compositing unknowns, and eliminates chemical changes that might occur due to compositing. Compositing is still often used for environmental samples and may be used for hazardous samples under certain conditions. For example, compositing of hazardous waste is often performed (after compatibility tests have been completed) to determine an average value over a number of different locations (group of drums). This procedure provides data that can be useful by providing an average concentration within a number of units, can serve to keep analytical costs down and can provide information useful to transporters and waste disposal operations.

V. SAMPLING PLAN

Before any sampling activities are begun, it is imperative that the purpose and goals of a program and the equipment, methodologies, and logistics to be used during the actual sampling be identified in the form of a work or sampling plan. This plan is developed when it becomes evident that a field investigation is necessary and should be initiated in conjunction with or immediately following the preliminary assessment. This plan should be clear and concise and should detail the following basic components:

- background information collected during the preliminary assessment;
- objectives and goals of the investigation;
- sampling methods to be used, including equipment needs, procedures, sample containment, and preservation;
- justification for selected methods and procedures;

- sample locations, as well as, number and types of samples to be collected at each;
- organization of the investigative team;
- safety plan (includes safety equipment and decontamination procedures, etc.);
- transportation and shipping information;
- training information; and
- additional site-specific information or requirements.

Note that this list of sampling plan components is by no means all inclusive and that additional elements may be added or altered depending on the specific requirements of the field investigation. It should also be recognized that although a detailed sampling plan is quite important, it may be an impractical undertaking in some instances. Emergency responses to accidental spills would be a prime example of such an instance where time might prohibit the development of a site-specific sampling plan. In such a case, the investigator would have to rely on general guidelines and personal judgment, and the sampling or response plan might be simply a strategy based on preliminary information and finalized on site. In any event, a plan of action needs to be developed, no matter how concise or informal, to aid investigators in maintaining a logical and consistent order to the implementation of their task.

PART 2

ANALYTICAL REQUIREMENTS

I. INTRODUCTION

The laboratory analyzing samples should be consulted before they are collected to ensure that the laboratory's analytical needs are met and that the appropriate types of samples are taken for a good quality assurance/quality control (QA/QC) program.

The analyses to be done may require specific sample handling and preservation procedures and also may require specific sample container types, volumes, and numbers. Samples collected, handled, and preserved incorrectly, or of insufficient volume or number are of little or no value. Prior consultation with the laboratory on these areas will minimize later analytical problems and maximize data validity.

II. QA/QC SAMPLE REQUIREMENTS

A. Multiple Samples

Multiple samples need to be collected at any time legal action is anticipated. It is recommended that multiple samples be collected whenever possible. These additional samples are essential to any quality control aspects of the project and may also assist in reducing costs associated with resampling brought about by container breakage, errors in the analytical procedure, and data confirmation. The following is a list of the types of multiple samples required.

- Duplicate samples: Duplicate or multiple samples are essentially identical. These samples must be collected at the same time, at exactly the same location, with the same apparatus, and into identical containers prepared in the same way, and filled to the same volume. All duplicate samples are preserved and handled identically. The analysis of duplicate samples using the same procedure and instrument provides an indication of analytical variability and error.

- Split samples: A split sample is a sample that is divided into equal portions and analyzed by another accepted analytical technique or another qualified laboratory in order to compare results. As required by RCRA, split samples must be offered to the owner, operator, or agent in charge of a site for their separate analysis. Obtaining accurate splits from non-homogeneous or multi-layered samples is often very difficult and must be done with great care to ensure splits of equal composition.

- Spiked samples: For this sample type, a known quantity of the contaminant of interest is added to a sample at concentrations where the analytical method is known to be accurate. Hazardous samples should only be spiked in the laboratory. Environmental samples may be spiked in the field: the quantity added must be coordinated with the laboratory to check the accuracy of the field sampling procedures. Field spiking could also be used as an indicator of sample quality changes during transport to the laboratory.

- Blank samples: A sample blank is a sample of distilled-deionized, contaminant-free water, rinsed collection devices, or sampling media that is collected, containerized, treated (if appropriate), and handled in the same manner as the samples. Blanks are used as an indicator of sample contamination throughout the entire process.

B. Container Types

The most important factors to consider when chosing containers for hazardous material samples are compatibility, resistance to breakage, and volume. Containers must not melt, leach, rupture, or leak as a result of chemical reactions with the constituents of a sample. Thus it is important to have some idea of the composition of the sample.

The containers must have walls thick enough to survive sample collection and transport to the laboratory. Containers with wide mouths make it easier to transfer samples from samplers. Also, the containers must be large enough to contain the required volume of the sample or the entire volume of a sampler.

Plastic and glass containers are generally used for collection and storage of hazardous material samples. Commonly available plastic containers are made of high-density polyethylene (HDPE) or linear polyethylene (LPE), conventional polyethylene, polypropylene, polycarbonate, Teflon FEP (fluorinated ethylene propylene), polyvinyl chloride (PVC), or polymethylpentene. Teflon FEP is the most inert, giving it the widest range of application. Plastic containers are used only when the constituents of the material are known not to react with the plastic.

Glass containers are relatively inert to most chemicals and can be used to collect and store almost all hazardous material samples (Table 2-1). Two exceptions are strong alkali solutions and hydrofluoric acid. Glass bottles are recommended for samples containing petroleum distillates, chlorinated hydrocarbons, pesticides, solvents, and other substances incompatible with plastic.

Several types of glass containers are available. Flint glass bottles are cheap and available in various shapes and sizes. Borosilicate glass is more inert, but the selection of containers is smaller. Also, it is more expensive.

Sample containers must have tight, screw-type lids. Plastic bottles are usually provided with screw caps made of the same material as the bottles. Cap liners usually are not required. Glass containers usually come with glass or rigid plastic screw caps. Caps often have paper liners coated with wax. Other liner materials are polyethylene, polypropylene, neoprene, and Teflon FEP.

Amber glass bottles and caps with Teflon liners are recommended for use with hydrocarbons, pesticides, and petroleum residues. Teflon liners may be purchased from plastic specialty supply houses.

The selection of containers, closures, and linings must be coordinated with the laboratory, which may require specific containers for certain analyses. In addition, containers (type and size) must comply with DOT regulations.

C. Number of Samples

The appropriate number of samples to be collected at a particular site or incident is dependent upon a variety of factors including the degree of accuracy desired, the spatial and temporal variability of the media to be sampled, and the cost of collecting and analyzing the samples.

Statistical methods and formulas are available to estimate the appropriate sample number. These take into account sample variance and the degree of accuracy desired to derive a statistically valid sample size. Basically, the smaller the sample variance, the fewer samples required for a given level of accuracy. Conversely, the larger the sample variance and/or the greater the accuracy desired, the greater the sample size required.

D. Preservation and Storage of Samples

For best results, samples should be analyzed immediately after collection. Hazardous wastes are such complex mixtures that it is difficult to predict exactly the physical, biological, and chemical changes that occur in the samples during the interval between collection and analysis. For example, the pH may change significantly in a matter of minutes, sulfides and cyanides may be oxidized or evolve as gases, and hexavalent chromium may slowly be reduced to the trivalent state. In addition, certain cations may be partly lost as they are adsorbed on the walls of the sample containers, microorganisms may grow in certain constituents, or volatile compounds may be rapidly lost.

When taking background or low level, environmental samples, such changes may be slowed down or prevented by refrigeration at 4 to 6°C (39 to 43°F), or by adding preservatives. However, these treatments may be only partially effective. Refrigeration may reduce loss of volatile components and acid gases such as hydrogen sulfide and hydrogen cyanide, but it also introduces the possibility that some salts may precipitate at lower temperatures. On warming to room temperature for analysis, the precipitates may not redissolve, thus giving inaccurate results. Preservatives may retard constituents to stable hydroxides, salts, or compounds, but they may also convert the initial constituents to other forms (such as the products of nitration, sulfonation, and oxidation of organic components). Thus, subsequent analyses may not identify the original components or concentrations.

The preservation of unknown hazardous waste samples is not recommended because of the possibility of an adverse chemical reaction between the preservative and the sample. The preservative may not only alter the physical and chemical composition of the sample, but also may be highly reactive with it. Because of the safety risks involved in adding

preservatives to unknown hazardous waste samples, most often no preservatives are used. When the identity or the chemical properties of a material are known, the laboratory performing the analyses can be consulted as to the appropriate preservation method.

The addition of a preservative may change the DOT packaging, labeling, and shipping requirements for a sample. Shipping hazardous samples packed in ice may not be permitted by DOT regulations (Refer to Part 5: Packaging, Marking, Labeling, and Shipping of Hazardous Material Samples.

PART 3

DOCUMENTATION AND CHAIN-OF-CUSTODY PROCEDURES

I. INTRODUCTION

All information pertinent to field activities including sampling must be recorded in various forms: logbooks, sample tags, photographs, etc. Proper documentation and document control are crucial to enforcement actions, since the government's case in a formal hearing or criminal prosecution often hinges on evidence gathered by others. Therefore, each field worker must keep detailed records of inspections, investigations, photographs taken, and thoroughly review all notes before leaving the site.

The purpose of document control is to assure that all documents for a specific project are accounted for when the project is completed. Accountable documents include items such as logbooks, field data records, correspondence, sample tags, graphs, chain-of-custody records, analytical records, and photos. Each document should bear a serial number and should be listed, with the number, in a project document inventory assembled at the project's completion. Waterproof ink must be used in recording all data in documents bearing serial numbers.

A documentation coordinator numbers all logbooks, sample tags, graphs, chain-of-custody records, etc. In a logbook, he/she records transfer of other logbooks to individuals who have been designated to perform specific tasks on the project. All project logbooks are to be turned over to the coordinator at the completion of each work period, and to a central file at the completion of the field activity.

II. FIELD LOGBOOK

All information pertinent to a field activity must be entered in a bound book with consecutively numbered pages. Entries in the logbook must include at least the following:

- Date and time of entry.
- Purpose of sampling.
- Name and address of field contact (Federal, State, local representative).
- Producer of waste and address (if known)

- Type of process producing waste (if known).

- Type of waste (sludge, wastewater, etc.).

- Description of sample.

- Waste components and concentrations (if known).

- Number and size of sample taken.

- Description of sampling point.

- Date and time of collection of sample.

- Collector's sample identification number(s) and/or name.

- References such as maps or photographs of the sampling site.

- Field observations.

- Any field measurements made such as pH, flammability, or explosiveness.

Because sampling situations vary widely, notes should be as descriptive and inclusive as possible. Someone reading the entries should be able to reconstruct the sampling situation from the recorded information. Language must be objective, factual, and free of personal feelings or any other inappropriate terminology. If anyone other than the person to whom the logbook was assigned makes an entry, he/she must date and sign it.

III. PHOTOGRAPHS

Photographs are the most accurate record of the field worker's observations. They can be significant during future inspections, informal meetings, and hearings. A photograph must be documented if it is to be valid a representation of an existing situation. Therefore, for each photograph taken, several items should be recorded in the field logbook:

- Date and time.

- Signature of photographer.

- Name and identification number of site.

- General direction faced and description of the subject.

- Location on site.

- Sequential number of the photograph and the roll number.

Comments are to be limited to the photograph's location because any remarks about its contents could jeopardize its value as legal evidence.

Photographs should be taken with a camera-lens system with a perspective similar to that afforded by the naked eye. Telephoto or wide-angle shots cannot be used in enforcement proceedings.

IV. SAMPLE LABELS

Each sample must be sealed immediately after it is collected and labeled using waterproof ink. Labels may be filled out prior to collection to minimize handling of the sample containers. **Figure 3-1 is an example of a Sample Label.**

Occasionally, sample containers are marked in the field using an etching tool rather than immediately applying a sample label or tag. This avoids possible label contamination problems and subsequent decontamination difficulties. In this case, the data intended for the sample label are written into a sampling logbook and transcribed onto the label after the sample containers have been decontaminated.

The DC records the assignment of serial sample tags to field personnel in his/her logbook. Sample tags must never be discarded. Lost, voided, or damaged tags are immediately noted in the logbook of the person to whom they were assigned.

Labels must be firmly affixed to the sample containers. Tags attached by string are acceptable when gummed labels are not available or applicable. Be sure that the container is dry enough for a gummed label to be securely attached.

The label must include at least the following information:

- Name of collector.
- Date and time of collection.
- Place of collection.
- Sample number.

V. CHAIN-OF-CUSTODY PROCEDURES

As in any other activity that may be used to support litigation, regulatory agencies must be able to provide the chain of possession and custody of any samples which are offered for evidence or which form the basis of analytical test results introduced as evidence. Written procedures must be available and followed whenever evidence samples are collected, transferred, stored, analyzed, or destroyed. The primary objective of these procedures is to create an accurate written record which can be used to trace the possession and handling of the sample from the moment of its collection through analysis and its introduction as evidence.

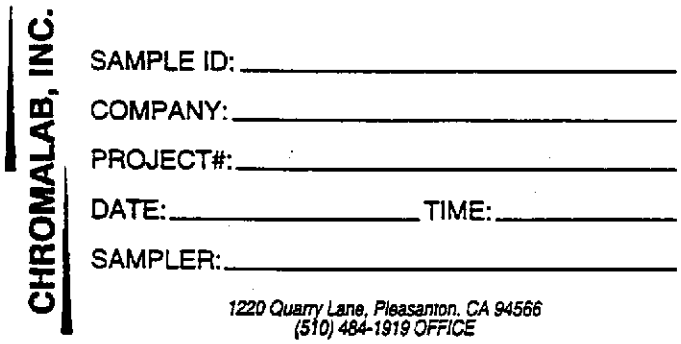


Figure 3-1
EXAMPLE OF SAMPLE LABEL

A sample is in someone's "custody" if:

- It is in one's actual possession, or
- It is in one's view, after being in one's physical possession, or
- It is in one's physical possession and then locked up so that no one can tamper with it, or
- It is kept in a secured area, restricted to authorized personnel only.

A. Sample Collection, Handling, and Identification

The number of persons involved in collecting and handling samples should be kept to a minimum. Guidelines established in this manual for sample collection, preservation, and handling should be used. Field records should be completed at the time the sample is collected and should be signed or initialed, including the date and time, by the sample collector(s). Field records should contain the following information:

- Unique sampling or log number.
- Date and time.
- Source of sample (including name, location, and sample type).
- Preservative used (if any).
- Analysis required.
- Name of collector(s).
- Pertinent field data (pH, DO, chlorine residual, etc.)
- Serial numbers on seals and transporation cases.

One member of the sampling team is to be appointed field custodian--the documentation coordinator is a good choice. Samples are turned over to the field custodian by the team members who collected the samples. The field custodian documents each transaction and the sample remains in his/her custody until it is shipped to the laboratory.

Each sample is identified by affixing a pressure-sensitive gummed label or standardized tag on the container(s). This label should contain the sample identification number, date and time of collection, source, preservative used, analysis required, and the collector's initials. If a label is not available, the same information should be recorded on the sample container legibly and with waterproof ink.

The sample container should then be placed in a transporation case, along with the chain-of-custody record, pertinent field records, and analysis request form as needed. The transportation case should be sealed or locked. A locked or sealed chest eliminates the need for close control of individual samples. However, on those occasions when the use of a chest is inconvenient, the collector should seal the cap of the individual sample container in a way that any tampering would be easy to detect.

When samples are composited over a time period, unsealed samples can be transferred from one crew to the next. The transferring crew lists the samples and a member of the receiving crew signs the list. The receiving crew either transfers the samples to another crew or delivers them to a laboratory person, who signs for the samples.

It is desirable to photograph (preferably with a polaroid camera) the sample location or any visible pollution to facilitate identification later. At the time the photo is taken, the photographer should record time, date, site location, and brief description of the subject on the back of the photo. Photographs and written records that may be used as evidence should be handled in a way that chain-of-custody can be established.

B. Transfer of Custody and Shipment

When transferring the samples, the transferee must sign and record the date and time on the chain-of-custody record (Figure 3-2). Custody transfers made to a sample custodian in the field should account for each sample, although samples may be transferred as a group. Every person who takes custody must fill in the appropriate section of the chain-of-custody record. To minimize custody records, the number of custodians in the chain-of- possession should be minimized.

The field custodian is responsible for properly packaging and dispatching samples to the appropriate laboratory. This responsibility includes filling out, dating, and signing the appropriate portion of the chain-of-custody record.

All packages sent to the laboratory should be accompanied by the chain-of-custody record and other pertinent forms. A copy of these forms should be retained by the originating office (either carbon or photocopy). Mailed packages can be registered with return receipt requested. For packages sent by common carrier, receipts should be retained as part of the permanent chain-of-custody documentation. Samples to be shipped must be packed so as not to break and the package sealed or locked so that any tampering can be readily detected.

CHROMALAB, INC.

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798

Chain of Custody

DATE _____ PAGE _____ OF _____

PROJ. MGR _____
COMPANY _____
ADDRESS _____
_____
SAMPLERS (SIGNATURE) (PHONE NO.)

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030, 8015)	TPH - Gasoline (5030, 8015) w/BTeX (EPA 602,8020)	TPH - Diesel (EPA 3510/3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240, 524.2)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525)	TOTAL OIL & GREASE (EPA 5520 B&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)		METALS: Cd, Cr, Pb, Zn, Ni	CAM METALS (17)	PRIORITY POLLUTANT METALS (13)	EXTRACTION (TCLP, STLC)					NUMBER OF CONTAINERS

PROJECT INFORMATION

PROJECT NAME:
PROJECT NUMBER:
SHIPPING ID NO
VIA:

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
RECD GOOD CONDITION/COLD	
CONFORMS TO RECORD	
LAB NO	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	(LAB)

Example of Chain-of-Custody Form

Date	Figure 3-2
9/5/95	

C. Evidentiary Considerations

Writing chain-of-custody procedures, as well as the various promulugated laboratory anaytical procedures. facilitates the admission of evidence under Rule 803(6) of the Federal Rules of Evidence (P.L. 93-575). Under this statute. written records of regularly conducted business activities may be introduced into evidence as an exception to the "hearsay rule" without the testimony of the person(s) who made the record. Although it is preferable, it is not always possible for the individuals who collected. kept, and analyzed samples to testify in court. In addition, if the opposing party does not intend to contest the integrity of the sample or testing evidence, admission under Rule 803(6) can save a great deal of trial time. For these reasons, it is important to standardize the procedures followed in collection and analysis of evidentiary samples and to describe them in an instruction manual. If need be, the manual can be offered as evidence of the "regularly conducted business activity" followed by the lab or office in generating any given record.

In criminal cases, however, records and reports of matters observed by police officers and other law enforcement personnel are not included under the business record exceptions to the "hearsay rule" according to Rule 803(8), P.L. 93-595. It is arguable that those portions of the compliance inspection report dealing with matters other than sampling and analysis results come within this exception. For this reason, in criminal cases, records and reports of response team members may not be admissible. The evidence may still have to be presented in the form of oral testimony by the person(s) who made the record or report, even though the materials come within the definition of business records. In a criminal case, the defense counsel may be able to obtain copies of reports prepared by a witness, even if the witness does not refer to the records while testifying. If obtained, the records may be used in cross examination.

Records are not automatically admitted in either of these actions. The business records section authorizes admission "unless the source of information or the method or circumstance of preparation indicates lack of trustworthiness." The caveat under the public records exception reads "unless the sources of information or other circumstances indicate lack of trustworthiness."

Thus, whether or not the team members anticipate that various reports will be introduced as evidence, they should make certain that all reports are as accurate and objective as possible.