DEPARTMENT OF TRANSPORTATION

Cypress Construction Office
1121 7th Street, 2nd Floor
Oakland, CA 94607
(510) 286-0682

Contract No. 04-192204
04-Ala-880-31.4/32.9
In Oakland from Broadway
to Chester Street
Federal Aid Project ER-1504(003)N

November 19, 1997

Ms. Barbara J. Cook, P.E., Chief
Northern California - Coastal Cleanup Operations Branch
Department of Toxic Substances Control, Region 2
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2737

Subject: **November 14, 1997 Amendment**
Remedial Design and Implementation Plan for Container Freight Site
Located at 1285 5th Street, Oakland, CA.

Dear Ms. Cook:

The California Department of Transportation (Caltrans) requests your consideration of the enclosed amendment to the Remedial Design Implementation Plan (RDIP) for the Container Freight Site.

The sections of the RDIP which have been changed or created have the amendment date shown in the header.

Please contact Peter Altherr at (510) 286-0680 if you have any questions regarding this addendum.

Sincerely,

Kendall Kitamura

KENDALL KITAMURA, P.E.
Resident Engineer

Enclosure
CC: See Page 2.

20420

ENVIRONMENTAL PROTECTION

97 DEC -4 PM 3:09

CC:

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REMEDIAL DESIGN AND IMPLEMENTATION PLAN
CONTAINER FREIGHT SITE
1285 FIFTH STREET, OAKLAND, CALIFORNIA

NOVEMBER 14, 1997 AMENDMENT

Prepared for: State of California
Department of Transportation - District 4
111 Grand Avenue
P.O. BOX 23660
Oakland, CA 94623-0660

Prepared by:

Peter M. Altherr, P.E.
Transportation Engineer
State of California
Department of Transportation - District 4
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State of California Business, Transportation and Housing Agency

Memorandum

To: MR. NINO CERRUTI
Cypress Project Manager

Date: November 14, 1997

File No.: 04-ALA 880-31.4/32.9
04-192204 *ER-1504(003)N
CYPRESS REPLACEMENT
CONTRACT "A"

From: **DEPARTMENT OF TRANSPORTATION - 4**
Cypress Construction Office -- 1121 7th St., Oakland, CA 94607

Subject: **Remedial Design and Implementation Plan Amendment Container Freight Site, 1285 5th St. Oakland, California.**

The attached Remedial Design and Implementation Plan, (RDIP), for the Container Freight Site has been amended as requested to include plans and specifications for handling the additional material to be excavated during construction of the Union Street Ramps. This amendment was necessary as the original RDIP only addressed the handling of the hazardous material from the freeway footings.

The Union Street on and off ramps are unique in that they utilize lightweight fill technology. This construction technique requires the removal of the upper 2.5 feet of the existing ground material which is then replaced with a lightweight cellular concrete. A significant portion of the material to be excavated for these ramps will be from the Container Freight Site.

The initial Container Freight Site investigation focused primarily on the structure excavation work, therefore much of the rest of this site is uncharacterized. The history of this site leads Construction to believe that much of this material will be below the Cypress Reconstruction Project Preliminary Remedial Goals (Cypress PRGs) and therefore available for reuse as fill material on the Container Freight Site. The characterization of this material is expected to result in a cost savings when compared with the cost for disposal of this material at an appropriate facility.

Harding Lawson and Associates (HLA) have prepared a soil sampling and testing plan for this site. (See Appendix E) This plan will characterize the soil for material handling purposes, enable HLA to prepare a health and safety plan for worker protection, and provide the necessary test information for disposal of any hazardous material. The health and safety plan will be forwarded to you upon its completion and should be placed into Appendix G. The Health, Safety and Work Plan prepared by Eric Rothwell has been deliberately omitted from Appendix A to avoid any potential confusion as to which plan applies to the activities for which this addendum was prepared.

This amendment includes procedures for handling material produced from roadway excavation, ditch excavation, and post hole excavation. This amendment does not provide details for the installation of monitoring wells, construction of a permanent cap or the Operation & Monitoring Plan. These items will need to be addressed at a later date.

The sections of the RDIP which have been amended or created will have the revision/creation date shown in the header. Sections which do not show a revision date remain untouched. The entire document has been re-paged to accommodate subsequent revisions.

This amended RDIP should be circulated to all concerned units, prior to delivery to the Department of Toxic Substances Control (DTSC), for their concurrence.

The DTSC requires that these documents and their subsequent amendments be reviewed by a registered engineer. Please enclose this memorandum with Caltrans' submittal to indicate my approval of the November 14, 1997 amendment.

Please contact me at (510)286-0682 if you would like to discuss these changes.

PETER M. ALTHERR, P.E.
Transportation Engineer

cc:

Cypress Construction Office Chief, Mike Forner
Construction Engineer, Ray Pang
Resident Engineer, Kendall Kitamura
Environmental Engineering, Chris Wilson

REMEDIAL DESIGN
AND
IMPLEMENTATION PLAN

CONTAINER FREIGHT SITE
OAKLAND, CALIFORNIA

Prepared By:
The California Department of Transportation
(Caltrans)
1545 Willow Street
Oakland, CA 94607

Dave G Pang

Dave G. Pang, P.E.
Associate Transportation Engineer-Environmental, Cypress

Jennifer Powers
Assistant Resident Engineer

February 1996

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"CONTAINER FREIGHT PROPERTY"
1285 FIFTH STREET, OAKLAND, CALIFORNIA

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INTRODUCTION

This Remedial Design and Implementation Plan (RDIP) has been prepared to provide guidelines and specifications for removal of contaminated soils and handling contaminated groundwater at the site known as Container Freight located at 1285 5th Street, Oakland, California, during construction of the Cypress Freeway Replacement Project.

This RDIP references the following documents previously presented for the site:

- Final Preliminary Endangerment Assessment, Container Freight, 1285 Fifth Street, Oakland, CA June 21, 1995 by Environmental Solutions, Inc.
- Final Remedial Action Plan, August 1995 by Caltrans
- State of California Department of Transportation, Project Plans for Construction on State Highway, in Alameda County, in Oakland, from Broadway to Chester Street, Contract 04-192204, June 6, 1994. Including Contract Addendums 1, 2, 3, and 4.
- Underground Storage Tank Closure Report, Cypress Freeway Re-Alignment, Former Container Freight, Oakland, California, November 27, 1995 by Jonas & Associates Inc.
- California Regional Water Quality Control Board, San Francisco Bay Region, Order No. 94-007.
- Health Safety and Workplan - Structure Excavation, Contract Number 04-192204, Cypress Freeway Re-Alignment, State of California Department of Transportation, Oakland, CA October 10, 1995 w/ Amendment No. 1 by Eric E. Rothwell, CIH

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 Prieta earthquake. MCM Construction, Inc., (MCM) has been contracted under Contract Number 04-192204 by the State of California (Caltrans) to perform site remediation via excavation and disposal of contaminated material from: bridge footing excavations, roadway excavations , ditch excavations, and fence post holes on the Container Freight Property. See Figures 1 to 9. Contaminated groundwater will also be remediated via dewatering of the excavations, treatment for petroleum hydrocarbons, reuse as dust control or discharge into the storm drain.

Contaminated soil that is not designated to be excavated due to the potential disturbance of the water table will be covered with a suitable layer of capping material. Capping eliminates future potential exposure to contaminated materials. Institutional controls such as a deed restriction will be implemented to identify this area and to restrict future land use. Onsite groundwater monitoring will be performed following the completion of the capping to assess the effectiveness of the encapsulated affected soils.

This RDIP will not address the future capping plans. These plans will be outlined in a separate report analyzing the effectiveness of the proposed capping material.

SECTION 1

SUMMARY OF BACKGROUND DATA

1.1 Location and Site Background

The Container Freight site is located at 1285 5th Street in Oakland, California. A location map is presented in Figure 1 and Figure 2.. The Container Freight site was formerly a freight company and approximately half the site was previously occupied by a warehouse building. Site activities consisted of unloading cargo from freight trains and transferring to trucks. Caltrans purchased the site in 1994 in connection with the reconstruction of the Cypress Freeway. The site is currently vacant because the former warehouse was demolished in May, 1995 to prepare for the construction of nine footings for an aerial structure of the main freeway alignment and an embankment for the 5th Street on and off ramps. See Figure 3 for proposed footing and embankment locations within the site. A 700 gallon diesel gasoline underground storage tank (UST), located in front of the former warehouse building, was removed from the site in late August 1995. Appendix F, "Underground Storage Tank Closure Report" by Jonas & Associates, Inc. summarizes the tank removal activities and soil/groundwater sampling and analysis.

1.2 Land Use

The Container Freight site topography is level and unpaved. Groundwater is approximately 3 to 4 feet below ground level. Hazardous fill material on the site exists at depths between 2 and 15 feet below ground level. The site itself is vacant and will remain so until completion of the freeway structure.

The Site and the surrounding businesses are located in an industrial area of West Oakland. To the north, the Site is bordered by 5th Street. Located north of 5th Street are the elevated Bay Area Rapid Transit (BART) tracks. To the south, the Site is bordered by 3rd Street. The land located south of 3rd Street is used for truck parking. East of the truck parking area is a paper recycling center. Currently, the area east of the Site is utilized by the Union Pacific Railroad and active railroad lines lie near the Site property line. East of the railroad lines is Union Street. The land east of Union Street is utilized as a storage yard for heavy equipment and for a business known as Burke Concrete Systems. West of the Site is a vacant lot and a storage yard for large wire spools. A map showing surrounding land use is presented in Figure 5.

1.3 Location and Distance to Nearby Populations

Residential areas are approximately one-half to three quarters mile to the northwest and one-mile to the north There are no residences to the south. Schools, daycare and healthcare facilities are located approximately one -quarter to three-quarter miles from the project site. See Figure 4, "Location of Residential Communities and Public Facilities" for more information on nearby populations.

1.4 Description of Contaminants at Project Site

A phase I site investigation was performed by Geo/Resource Consultants, Inc. in August 1992. Soil and ground water samples were collected near the UST area and analyzed for TPH-d. No TPH-d was detected in these soils or ground water samples.

A draft PEA report was prepared by Environmental Solutions, Inc. in May, 1995. Contamination discovered on the adjacent property prompted the site investigation. Eleven borings were drilled on the site. Because the testing was primarily to investigate the nature and extent of the contamination, only one test boring was located within the proposed footing excavation (boring B-10 at footing CR17L) Additional testing at two footing (CL17L and CL18R) are contained in the "Report of Findings, Contract A - Supplemental, Union Pacific Railroad Property" dated November 1994 by Environmental Solutions. Locations of test borings and footing are presented in Figure 4a.

Contaminants expected to be found within the nine footing excavations on the Container Freight site are shown on Table II. These tables are extracted from the nearest test borings to the footing locations.

Groundwater Contaminants
The groundwater at the Container Freight site has been impacted by Total Recoverable Petroleum Hydrocarbons (TRPH), Volatile Organic Compounds (VOC's), heavy metals, and Semi-Volatile Organic Compounds (SVOC's).

TRPH was detected in the groundwater samples collected from borings B4, B5, B8, B9. and B10 at concentrations ranging from 2 to 130 ppm. Acetone was detected only in groundwater samples (B8) taken from under the former warehouse site with a concentration of 78 ppb. Benzene, toluene, ethylbenzene and xylenes were detected in groundwater samples collected from borings B2, B6, B7, B9, and B10 at concentrations ranging from 39 to 2400 ppb. Styrene was detected in groundwater samples from borings B7(4 ppb) and at boring B9 61ppb). Arsenic (B9 at 0.2 ppm), chromium (B8,B9,B10 at 0.18 to 1.4 ppm), and nickel (B8,B9,B10 at 0.53 to 1.8 ppm) were detected at concentrations exceeding NPDES and EBMUD permit discharge limits.

Concentrations of SVOC's, VOC, and metals in the groundwater are listed below in the "Summary of Contaminants on the Container Freight Site "

Soil Contaminants
The soils within the Container Freight site have been impacted by petroleum hydrocarbons, heavy metals (copper and lead), VOCs and SVOCs. No PCBs were detected at or above reported detection limits. A coal tar odor was detected in borings B3, B6, and B7 at depths ranging from approximately 2 to 4 feet.

TRPH was detected at concentrations above 100 ppm in soil samples collected in borings B-1, B-2, B-5, B-7, B-8, B-9, and B-10. Soil samples collected from borings B-2, B-5, and B9 had TRPH values greater than 1,000 ppm. Although TPH as diesel could not be quantified, some soil samples showed petroleum hydrocarbons within the diesel range.

Lead concentrations exceeding 50 ppm were detected in all sample locations with a maximum concentration of 27,000 ppm at sample B1-3.5. A Waste Extraction Test (WET) for soluble lead was performed on several samples with lead values exceeding 50 ppm.

Copper concentrations at or exceeding 250 ppm were detected in soil samples B1,B6,B7, and B8. WET and Toxicity Characteristic Leaching Procedure (TCLP) results did not show copper concentrations at or above the STLC value of 25 ppm for copper.

Mercury was detected in soil sample B5 at a concentration of 2.6 ppm which exceeds the STLC value of 0.2 ppm for mercury. A WET performed on this sample did not detect soluble mercury at or above the detection limits. Chromium and zinc were detected in soil sample B1 at concentrations of 5,000 ppm and 17,000 ppm., respectfully. These values are above the TTLC values of 2,500 ppm for chromium and 5,000 ppm for zinc.

Arsenic was detected in twelve samples of thirty-five samples collected and analyzed for arsenic. The maximum reported concentration level of 22 ppm was conservatively assumed as the exposure point concentration in calculating potential excess cancer risk. The mean concentration of those detected was 7.6 ppm, which exceeds the maximum PRG of 4.6 ppm.

For volatile organic compounds , acetone was detected in six samples ranging in concentrations from 81 ppb to 310 ppb. , benzene was detected in 8 samples ranging in concentrations from 7.5 ppb to 360 ,000 ppb. Total xylenes were detected in 8 samples ranging in concentrations from 8 ppb to 8100 ppb, while ethylbenzene was detected in 7 samples at concentrations from 9 ppb to 3800 ppb. Toluene was detected in 8 samples with concentrations ranging between 5.4 ppb to 4200 ppb.

Several semivolatile organic compounds were detected in the soil samples analyzed by EPA test method 8270. The complete listing of the SVOC on the Container Freight site is listed as shown below.

Below is a complete listing of the contaminant maximums detected on the Container Freight site. The bold figures exceed PRGs.

SUMMARY OF CONTAMINANTS ON THE CONTAINER FREIGHT SITE

Constituent	Soil	Ground Water
TRPH	**ND - 5,900 ppm**	**ND - 130 ppm**
Arsenic	**ND - 22 ppm**	**ND - 0.054 ppm**
Barium	ND - 310 ppm	ND - 0.11 ppm
Beryllium	ND - 0.5 ppm	ND
Cadmium	0.11 - 3.7 ppm	ND - 0.006 ppm
Chromium (total)	0.9 - 5,000 ppm	**ND - 1.4 ppm**
Cobalt	ND - 6.8 ppm	ND - 0.02 ppm
Copper	ND - 920 ppm	**ND - 7.0 ppm**
Lead	**ND - 27,000 ppm**	**ND - 14.0 ppm**
Mercury	ND - 2.6 ppm	**ND - 0.008 ppm**
Nickel	ND - 72 ppm	**ND - 1.8 ppm**
Vanadium	4.7 - 38 ppm	ND - 0.01 ppm
Zinc	3.4 - 17,000 ppm	**ND - 28.0 ppm**
Copper - STLC	1.3 - 17 ppm	NT
Lead - STLC	0.7 - 54 ppm	NT
Copper - TCLP	0.07 ppm *	NT
Lead - TCLP	ND - 1.7 ppm	NT

* Only one sample analyzed

VOCs		
Acetone	ND - 310 ppb	ND
Benzene	ND - 13,000 ppb	**ND - 2,400 ppb**
Methyl Ethyl Ketone	ND - 23 ppb	ND
Ethylbenzene	ND - 490 ppb	**ND - 150 ppb**
Styrene	ND - 1,200 ppb	ND - 61 ppb
Toluene	ND - 4,200 ppb	**ND - 290 ppb**
Total Xylenes	ND - 8,100 ppb	**ND - 120 ppb**
SVOCs		
Phenol	ND - 17 ppm	ND - 240 ppb
2-Methylphenol	ND - 19 ppm	ND - 370 ppb
4-Methylphenol	ND - 43 ppm	ND - 760 ppb
2,4-Dimethylphenol	ND - 45 ppm	ND - 560 ppb
Naphthalene	**ND - 2,600 ppm**	ND - 23,000 ppb
2-Methylnaphthalene	ND - 200 ppm	ND - 210 ppb
Acenaphthylene	ND - 230 ppm	**ND - 3,600 ppb**
Acenaphthene	ND - 170 ppm	ND - 4,200 ppb
Dibenzofuran	ND - 83 ppm	ND - 0.002 ppb
Fluorene	ND - 160 ppm	**ND - 1,600 ppb**
Phenanthrene	ND - 1,800 ppm	**ND - 22,000 ppb**
Anthracene	ND - 180 ppm	**ND - 4,300 ppb**
Di-N-ButylPhthalate	ND - 0.30 ppm	ND
Fluoranthene	ND - 1,100 ppm	ND - 12,000 ppb
Pyrene	ND - 1,200 ppm	**ND - 14,000 ppb**
Benzo(A)Anthracene	**ND - 300 ppm**	**ND - 2,800 ppb**
Chrysene	**ND - 470 ppm**	**ND - 5,800 ppb**
Benzo(B)Fluoranthene	**ND - 240 ppm**	**ND - 2,500 ppb**
Benzo(K)Fluoranthene	**ND - 140 ppm**	**ND - 2,700 ppb**
Benzo(A)Pyrene	**ND - 520 ppm**	**ND - 5,000 ppb**
Indeno(1,2,3-C,D)Pyrene	**ND - 480 ppm**	**ND - 3,300 ppb**
Debenzo(A,H)Anthracene	ND - 67 ppm	ND - 470 ppb
Benzo(G,H)Perylene	ND - 700 ppm	ND - 5,100 ug/

Table 2 contains a listing on the contaminate maximums detected on the Container Freight Site. The borings in close proximity are included in this listing as this information is provided to the disposal facilities to indicate certainty in the characterization of the soil. Based upon the above described contaminants, the soil is classified as hazardous in the State of California.

1.5 Risk Assessment Summary

Cancer risk and non-cancer Hazard Index are calculated for each contaminant and for each pathway identified in Section 1.6 (Clean up Standards). These numbers are compared to 1.0 x 10E-6 and 1 to determine carcinogenic risks and health hazard risks, respectively. A baseline risk assessment (BRA) was performed for the Container Freight site based upon the PEA risk assessment guidelines. The adverse non-carcinogenic health effects, expressed in terms of Hazard Index due to exposure to site soils is 80.4 which exceeds the acceptable threshold of 1. Routes of exposure are ingestion, dermal contact and inhalation. Excess carcinogenic risk due to exposure to site soils is between 1.3 x 10E-5 and 1.1 x 10E-4 which exceed the commonly acceptable range of 1.0 x 10E-4 to 1.0 x 10E-6.

1.6 Clean up Standards

Section 5 of the Final Remedial Action Plan (RAP) for the Cypress Corridor list the Preliminary Remedial Goals (PRGs) that were determined as cleanup standards for the Cypress Corridor. Discharge requirements for the Cypress Corridor are determined from the National Pollutant Discharge Elimination System (NPDES) and East Bay Municipal Utility District (EBMUD) permits. NPDES discharge limits are contained in Appendix B. EBMUD discharge limits are contained in Appendix C.

The primary human receptors in the Cypress Corridor and in the immediate vicinity of the Cypress Corridor are:

(1) construction workers,
(2) future freeway users (motorists), and
(3) residents (including children) in the immediate surroundings of each site.

All of the human receptors are considered sensitive human populations.

Potential exposure routes include inhalation, ingestion, and dermal adsorption. Generally, exposure to the indicator chemicals could occur through one or more of the following potential pathways:

<u>For Soil</u>

- Inhalation of fugitive dust particles
- Ingestion of soil
- Dermal adsorption resulting from skin contact with soil laden with the indicator chemicals

<u>For Ground Water</u>

- Dermal adsorption of water containing the indicator chemicals during dust control activities
- Direct Contact with groundwater during construction activities (construction workers only)

See Table III for the Cypress Reconstruction Project's Preliminary Remedial Goals.

1.7 Alternatives for Soil Remediation and Selected Remedial Action

Six alternatives for soil were evaluated using criteria set forth in federal and state guidelines. These alternatives for soil remediation are described in detail in the approved Final Remedial Action plan prepared by Caltans, dated August 1995. A listing of these alternatives is presented below:

Alternative 1: No Action

No action would be taken to meet remedial action objectives. However, this alternative is not compatible with Cypress Freeway reconstruction where there are locations which require soil excavation and removal.

Alternative 2: Soil Excavation with Off-Site Disposal

Under this alternative, excavated soil containing VOCs, petroleum hydrocarbons, Semi-Volatile Organics, pesticides, PCBs and/or elevated metals concentrations would be transported off-site to an appropriate and permitted landfill; the excavation would be backfilled with suitable material and restored to original or appropriate freeway construction conditions. Treatment of excavated soils might be required prior to disposal at the landfill.

Alternative 3: Soil Excavation with On-Site Bioremediation

Under this alternative, soil will be removed and placed in a stockpile while waiting for laboratory analytical results. Soils containing only petroleum hydrocarbons would be spread uniformly and followed by the addition of nutrients on a regular basis to provide a favorable environment to enhance the proliferation of indigenous micro-organisms such as bacteria, actinomycetes and fungi. The spread soil pile will be turned on a regular basis to allow reduction of the organic compounds in the soil through metabolic action.

Alternative 4: Soil Excavation with Stabilization

Under this alternative, soil containing heavy metals will be removed and placed in a stockpile while waiting for laboratory analytical results. Soils would be stabilized by changing the constituents into immobile forms, binding them in an immobile, insoluble matrix, and/or binding them in a matrix which minimizes the material surface exposed to solvent leaching. Often the immobilized product has structural strength sufficient to help protect itself from future fracturing, thereby preventing increased leaching.

Alternative 5: Soil Excavation with Reuse On-Site for Roadbed, Embankment and Structural Backfill

This method involves excavation of the contaminated soil and placement of the material either under roadway subgrade or encapsulated into embankment or put back into same excavation providing the physical property of the contaminated qualifies for such task. Typically, a clay layer or an impermeable liner shall be constructed between the bottom of contaminated soil and the highest level of ground water. At a minimum, two feet of clean dirt or asphalt concrete or concrete pavement shall be placed on top of the contaminated material. Reuse of contaminated material on site is considered to be an interim remedial measure as future excavation may cause contaminants to be released. Hence, a deed restriction may be needed to limit future exposure of the contaminants.

1.7 Alternatives for Soil Remediation and Selected Remedial Action (Cont.)

Soil that cannot be used for these purposes due to unsuitable physical properties or contamination exceeding hazardous levels as defined by title 22 of CCR would be transported using, where appropriate, a licensed hazardous waste hauler, to a permitted treatment, storage and disposal (TSD) facility designed and approved to accept such wastes. See Alternative 2.

Alternative 6 : Capping

Contaminated soil that is not designated to be excavated from freeway construction activities would be covered with a minimum of two feet of suitable clay material, asphalt concrete or concrete. Capping eliminates potential exposure to contaminated and hazardous materials. Institutional controls such as a deed restriction would be implemented to identify these areas and to restrict future land use.

Selected Remedial Action for Soils

Remedial alternatives were evaluated based on meeting the Cypress remedial action objectives and on overall cost effectiveness. For soils, the selected remedial action for soil excavated from footing is Alternative 2, Soil Excavation with Off-Site Disposal. The selected remedial action for soils from the roadway excavations is alternative 5, Soil Excavation with Reuse On-Site for Roadbed, Embankment and Structural Backfill.

Alternative 6, Capping, will be used for contaminated and hazardous soil that is not designated to be excavated from the site due to potential disturbance of the water table. Capping plans will be outlined in a separate report analyzing the location, thickness, and overall effectiveness of the proposed capping material.

1.8 Alternatives for Ground Water Remediation and Selected Remedial Action

Seven alternatives for ground water were evaluated using criteria set forth in federal and state guidelines. These alternatives for ground water remediation are described in detail in the approved Final Remedial Action plan prepared by Caltans, dated August 1995. A listing of these alternatives is presented below:

Alternative 1: No Action

No action is not a viable alternative. Every excavation will require dewatering for construction of footings and columns to proceed.

Alternative 2: Direct and Continuous Discharge with Carbon Adsorption

During dewatering activities, ground water would be pumped directly and continuously into adjacent storm water and/or sewer drains until completion of the structure within the excavation. Carbon adsorption would be used to treat hydrocarbons and VOC's when detected, to comply with RWQCB requirements. If heavy metal concentrations exceed the RWQCB criteria, Alternative 6 (Off-Haul), would be implemented.

Alternative 3: Metal Precipitation with Carbon Adsorption to Reuse as Dust Control or Discharge

Under this alternative, ground water will be pumped from excavations into on-site transportable holding tanks of at least 20,000 gallon capacity for storage. Water samples will be composited at various depths and tested for contaminants of concern. If the test results indicate detectable levels of volatile organic compounds and/or petroleum hydrocarbons, the water will be pumped into a portable treatment unit which includes a carbon treatment unit for carbon adsorption and subsequently, into a separate tank for metal precipitation if metal contamination also exists. The effluent will be sampled to determine the final disposition of the water in accordance with RWQCB requirements. Depending on the test results, the disposal options in their order of preference are as follows:

Discharge Option 3a Reuse on Site as Dust Control
Discharge Option 3b Discharge to Storm Drain
Discharge Option 3c Discharge to EBMUD Sanitary Sewer

Reusing water on site for dust control or other construction activities requires RWQCB approval. Discharging into city storm drain requires a permit from the RWQCB and discharging into the sewer system for further treatment requires an EBMUD permit. If the effluent after treatment does not satisfy any of above disposal option standards or requirements, the effluent would be hauled off to permitted water recycler as described in Alternative 6.

Alternative 4: Extraction from Footing Excavations with Discharge into Adjacent Footings

This alternative can be implemented only at those footing excavations where metals are the only contaminants and absorption back into the soil occurs rapidly. Ground water that infiltrates into footing excavations will be pumped directly into adjacent footing excavations. The flow rate will be monitored to minimize turbidity and avoid overflow from the excavation. If the ground water does not enter the soil rapidly enough, another alternative must be used.

Alternative 5: Reuse as Dust Control with Carbon Adsorption

During dewatering activities, ground water would be pumped from the footing excavation and also through a carbon unit when hydrocarbons and VOCs are detected. This water would then be pumped to a water truck to be sprayed onto the site surface or stored for later use as dust control.

Alternative 6: Off Haul to Liquid Disposal/Recycle Facility

Ground water that infiltrates into excavations will be pumped into water transport vehicles by an appropriately permitted water disposal/recycling company and hauled to an off-site treatment facility.

Alternative 7: Non Attainment

Sites for this alternative would need to be approved by the RWQCB and concur with the Basin Plan's amended section "Non-Attainment of Ground Water Clean Up". This alternative is appropriate for sites which: 1 - have ground water pollution and residual soil pollution with limited water quality, environmental, and health risks and: 2 - which the approved cleanup program has not resulted in compliance with water quality objectives. The ground water would be monitored for contaminant containment at points located at the plume boundary and property boundary.

Selected Remedial Action for Groundwater

The recommended remedial action for contaminated groundwater generated from footing excavations are(in order of preference):

Alternative 5, Reuse as Dust Control with Carbon Adsorption;
Alternative 2, Direct and Continuous Discharge with Carbon Adsorption; and
Alternative 4, Extraction from Footings Excavations with Recharge into Adjacent Footing Excavation.

Any groundwater encountered during excavation work will be pumped into holding tanks (21,000 gallons each) and retained until test results have been received. All tests will be performed in accordance with the RWQCB provisions for the Cypress Corridor and will be given to Caltrans for discharge approval. Pending test results, it is anticipated that the water will require treatment for petroleum, semi-volatile and volatile substances prior to reuse for dust control or discharge directly to the storm drain. (See Appendix D).

SECTION 2

SITE PREPARATION

2.1 Site Organization

MCM Construction, Inc. has hired Performance Excavators, Inc. (Perfex) to perform the excavation, handling, and disposal of contaminated soils. The Site Supervision team will consists of the following personnel:

Team Member	Responsibility
Mark Warner or Greg Rainey (Perfex)	Certified Supervisor
Greg Rainey (Perfex)	Site Safety Officer
Chris Corpuz, CIH	Qualified Person

(The following excerpts from Section 3.1.1 of the Health, Safety and Work Plan describes the responsibilities and duties of the Certified Supervisor, Site Safety Officer and the Qualified Person).

The Certified Supervisor is responsible for the health and safety requirements of the project team, and has the authority to stop unsafe acts or correct unsafe conditions as noted.

The Site Safety Officer, through consultation with the CIH, will provide technical consultation and guidance regarding site health and safety issues. Additional duties include reviewing personal air sampling results and air monitoring instrument responses as necessary; modify the level or protection, arrange medical surveillance, investigate accidents/incidents and recommend preventative measures as needed. The Site Safety Officer also has the authority to stop unsafe acts or correct unsafe conditions on the site.

The Qualified Person is responsible for the implementation of the Health and Safety Program. This includes providing field supervision, maintaining restricted work areas, enforcing safe work and hygiene practices, requiring proper use of personal protective equipment, and communicating approved modified safety requirements to site personnel. Specific site duties include, but are not limited to: conducting daily health and safety field meetings and safety inspections, maintaining a first aid kit, providing first aid as necessary, notifying the proper response agency in the event of an emergency, conducting site specific employee training and information sessions, conducting general air monitoring as directing, and completing the necessary record keeping.

2.2 Site Security and Perimeter Establishment

The perimeter around the original warehouse building was surrounded by chain link fencing during demolition activities in May 1995. An access gate is located in the southeastern corner of the fenced in area. The former truck parking area of the site is not currently fenced.

A 10 foot perimeter around the boundaries of each excavation will be fenced off with a temporary chain link fence. This area will be defined as the Exclusion Zone. Unauthorized entry to the Exclusion Zone will not be permitted without acknowledgment of the Site Health and Safety Plan and the required training and personal protective equipment. (Exerpts from Section 3.2.2 of the Health and Safety Work Plan)

2.3 Decontamination Equipment and Facilities

Section 14 of the Health, Safety and Work Plan in Appendix A describes in detail the decontamination procedures that will be followed on site during excavation operations. Personnel decontamination consists of 1) a boot, suit and glove wash, 2) boot, suit and glove rinse, 3) disposal of gloves and suits and 4) respirator wash and rinse. A diagram of this decontamination area is included in Figure 6.

Equipment decontamination is also described in Section 14. When equipment exits the exclusion zone, it will be driven on the visqueen in a contaminant reduction zone and will be brushed and scraped until visible contamination (caked soil and mud) is removed. The hazardous material can then be disposed of properly and the equipment may be driven to another site.

SECTION 3

EXCAVATION AND WASTE DISPOSAL PLAN

3.1 Site Excavation

Site excavation consists of the following items; structure excavation for bridge footings, roadway excavation for the freeway ramps, drainage ditch excavation, and post hole excavation.

Structure Excavation:
The proposed viaduct structure of the I-880 freeway realignment requires the displacement of approximately 4000 cy of contaminated soil to construct the footings. The maximum depth at each footing excavation is 6.0 feet below ground surface. Based on test results on soil samples performed by Environmental solutions (Table 1) and the extrapolated data at the proposed footing locations (Table 2), the excavated material has been classified as California hazardous. ECDC of East Carbon, Utah can accept non -RCRA waste material and has accepted this material for disposal in their landfill. (This work has been completed in accordance with the original RDIP for the Container Freight property.)

Roadway Excavation:
The proposed roadway excavations for the Union Street on and off ramps would generate approximately 4,500 cy of material. The average depth of the roadway excavation is 2.5 feet below the existing ground surface. The roadway excavation material will be sampled prior to excavation and tested for characterization puposes. Once this material has been characterized it will be handled in accordance with Section 3.1A Material Disposal Plan.

Ditch Excavation:
The construction of the proposed trapezoidal drainage ditch would generate approximately 500 cy of material. This drainage ditch collects rainwater from the freeway and State right of way and deposits this water into the existing Third Street storm drain system. The depth of the ditch excavation varies from 2.5 to 4.5 feet below the existing ground surface. The ditch excavation material will be sampled prior to excavation and tested for characterization puposes. Once this material has been characterized it will be handled in accordance with Section 3.1A Material Disposal Plan. The drainage ditch will be lined with 0.25 foot of concrete thereby eliminating the previous potential route of exposure. The liner of this trapezoidal ditch will be completed before the rainwater is allowed to drain freely into the storm drains. Should water accumulate within this drainage ditch prior to its completion then this water will be treated as ground water.

Post Hole Excavation:
Post hole excavation consists of excavating material for the construction of the State's right of way fencing. The fence posts are placed a maximum of ten feet on center. Each hole is eight inches in diameter and three feet deep. The construction of this fence would generate approximately five cubic yards of material. The material from the post holes will be characterized based on available soil test data. The material from the post holes will be then be handled in accordance with Section 3.1A Material Disposal Plan.

3.1 Site Excavation (Continued)

The initial limits and boundaries of excavation for each site will be surveyed and identified in the field with wooden stakes and flagging. Since soil excavation will not exceed 6.0 feet below ground level, all excavation work can be accomplished by a rubber tired backhoe/dozer/loader/excavator and/or small scraper. Sheet piles (corrugated and interlocking) will be driven around the footing excavations. These sheets will prevent surrounding soil from collapsing into the excavation and will also reduce the infiltration of groundwater into the excavation. After completion of the excavation, the structure footing will be constructed and backfilled with soil that are less than the PRG values.

Confirmation testing of the excavations will not be conducted to determine if contaminant levels are below the established PRGs. Once construction is completed, the footing locations will essentially be capped thereby eliminating the previous potential routes of exposure.

The material underneath the ramps will be covered by the ramps themselves, which includes 2.5 feet of lightweight cellular concrete, thereby eliminating the previous potential routes of exposure.

The fence posts holes will be filled with concrete which will eliminate the previous potential routes of exposure.

Any groundwater encountered during this work will be pumped into holding tanks (21,000 gallons each) and retained until test results have been received. All tests will be performed in accordance with the RWQCB provisions for the Cypress Corridor and will be given to Caltrans for discharge approval. See Appendix D. Pending test results, it is anticipated that the water will require treatment for petroleum, semi-volatile and volatile substances prior to reuse for dust control or discharge directly to the storm drain.

3.1A Material Disposal Plan

The material to be excavated will be pre-characterized and handled as outlined in Appendix E.

Material determined to be hazardous will be transported directly to Union Pacific's railroad car loading area called the Navy Lead located within the Cypress Project Corridor in Oakland. (See Section 3.3 Transportation to Landfill.) The hazardous material will then be transported to an appropriately permitted disposal facility.

Non-Hazardous material which meets the Cypress Replacement Project's Preliminary Remediation Goals (Cypress PRGs) will be utilized on the Container Freight site as fill material. (See Table III for the Cypress PRGs) This fill material will be placed on top of the existing ground surface, graded and then compacted.

The non-hazardous material to be placed and compacted on the site will be left uncovered if the level of contamination is below the United States Environmental Protection Agency's Region IX (USEPA) Preliminary Remediation Goals (PRGs) for Residential Areas established by S. J. Smucker on August 1, 1996 or if the contamination is less than the established background levels. (See Table IV U. S. Environmental Protection Agency's Region IX's PRGs)

Material which contains levels of contaminants in excess of the USEPA Residential PRGs, but below the Cypress PRGs, will be covered with a temporary cover. This temporary cover would consist of a layer of 6 mil high density polyethylene plastic (HDPE) or 0.10 foot of asphalt. The permanent cap will then be constructed on top of this material after the freeway has been constructed.

The Container Freight Site may not be ready to receive soils at the time the material is excavated, due to freeway construction activities, therefore the re-usable material may be stockpiled in Staging Area A. (See Figure 9) Staging area A will be located within the State's right of way in Oakland between Magnolia Street and Kirkham Street. The staging area will be completely surrounded by 6 foot fencing and will be posted with signs stating " Caution, Contaminated Materials, Authorized Personnel Only" and "Contact : Kendall Kitamura, California Department of Transportation, (510) 286-0670.

The staging area will be graded and compacted prior to receiving soil. A licensed civil engineer will inspect the staging area for compliance with Section 3.1A and Section 3.2 of this remedial design implementation plan. The staging area will be also be inspected weekly and after storm events to ensure that the dust and erosion control measures are still functioning properly.

The staging area will be covered with 0.10' of asphalt after the site remediation work has been completed and the staging area is no longer needed.

3.2 Stockpiling

Material which has been characterized as non-hazardous shall be placed in Staging Area A if the Container Freight Site is not ready to receive this material.

The material to be staged will be stockpiled on top of 6 mil HDPE and covered with 6 mil HDPE. This plastic cover will be secured at the end of each work day using sand bags to prohibit accidental removal by strong winds. The soils to be placed within the staging areas will not contain any free liquids.

Material determined to be hazardous will be transported directly to Union Pacific's railroad car loading area called the Navy Lead located within the Cypress Project Corridor in Oakland.

3.3 Transportation to Landfill

Hazardous soil excavated from the site will be loaded directly into trucks and driven to the Navy Lead. The transportation route is shown in Figure 7. The material at the Navy Lead will then be loaded into rail cars and transported to the disposal facility. Figure 8 shows the rail route from the Navy Lead to the ECDC disposal facility in East Carbon, Utah.

If the train to be loaded is not at the Navy Lead when the soil is delivered, the soil will be placed on a layer of visqueen and will be covered with another layer of visqueen at the end of the working day. The cover of visqueen will be secured with sandbags and ropes to protect against wind and rain. The visqueen will be placed in the last railcar to clean up the site after all the soil has been loaded. Section 3.2.10 of the Health, Safety and Work Plan covers the staging of soils in stockpiles.

Loading of soil will be accomplished by the use of a front end loader. The trucks will be carefully loaded to minimize spillage onto the sides of the trailer. 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 be controlled.

All soil offhauled for disposal shall be manifested and transported by certified haulers. Trucks carrying soil off site for disposal shall be completely tarped.

3.4 Disposal

Analytical results of soil investigations were provided to the ECDC landfill and accepted for disposal. A front end loader will load the railcars and personnel wearing the specified PPE will tarp each car. Each railcar will have a manifest which will have pre-printed information approved by Caltrans. A Caltrans construction inspector responsible for disposal of hazardous materials will sign each manifest and retain the "Generator Retains" copy and the "Generator Sends to DTSC" copy. Section 3.8 of the Health, Safety and Work Plan covers manifesting.

3.5 Spill Contingency Plan

Should a loaded truck be involved in an accident and spill a portion of its load of California hazardous material, Section 15 of the Health, Safety and Work Plan describes the emergency response procedures. Section 16 describes spill containment procedures.

3.6 Dust Control

Dust control will be in use and enforced by Caltrans construction inspectors during excavation, stockpiling, and disposal of the hazardous soil. Air monitoring will be performed during each excavation of hazardous material. In addition, OVM and PID units will be in constant use on the site, both in the operation area and on the perimeter of the site. If elevated levels of lead (from filters in the air monitor pumps) or semi-volatiles are detected at the site perimeter, work shall cease on the site until engineering controls (such as more dust control) can be implemented. Air monitoring is discussed in Section 11 and dust control is discussed in Section 3.6 of the Health, Safety and Work Plan.

SECTION 4

HEALTH AND SAFETY COMPLIANCE

The activities performed at the Container Freight site will all be in accordance with the appropriate site Health and Safety Plan (HSP).

The footing excavation work utilized the Health, Safety and Work Plan Structure Excavation prepared by Eric Rothwell, CIH. The remaining work will utilize the HSP found in Appendix G.

The Health and Safety Officer of the project will oversee all on-site personnel, their activities and implementation of the site HSP.

SECTION 5

IMPLEMENTATION SCHEDULE

The implementation of this remediation will take place in conjunction with the construction of State Contract 04-192204, alternately known as Cypress Contract "A". Currently, the footings on the Container Freight site have been completed. The construction of the Union Street ramps is tentatively scheduled to begin in the fall of 1997. Should the weather not be favorable, the work will be pursued as soon as possible as the rain ceases and the site dries out sufficiently to safely operate construction equipment.

Activity	Date
Initial RDIP Approval	February 1996
Construction of Freeway Footings	Completed
Submittal of Amended RDIP	November 1997
Approval of Amended RDIP	November 1997
Continuation of Remedial Actions	2 Weeks after Approval.
Completion of Union Street Ramps	12 Weeks after Approval.
Submittal of Final RDIP and Operation & Monitoring Plan	16 Weeks after Approval.
Construction of Permanent Cap	24 Weeks after Approval.
Installation of Monitoring Wells	To be determined.
Submittal of Draft Remedial Action Completion Report	To be determined.
Submittal of Final Remedial Action Completion Report	To be determined.

SECTION 6

POST CONSTRUCTION ACTIVITIES, MAINTENANCE AND MONITORING PLAN

6.1 Post Construction Activities

Post construction activities will include on-going operation and maintenance requirements for the Site. Due to the presence of affected soils contained with Caltrans' easement (embankment area), the Site will have to be inspected and monitored to assess the integrity and effectiveness of the cap. Future site monitoring and maintenance activities include groundwater monitoring and maintenance of the embankment. These activities will be described in detail in the Operation and Monitoring (O&M) Plan.

6.2 Groundwater Monitoring

Groundwater monitoring will commence following completion of freeway structure construction. Groundwater samples will be collected from onsite monitoring wells on a quarterly basis the first year and on a semi-annual basis for the following four years. A statistical analysis will be performed to evaluate the existence of statistically significant evidence of a release from the containment area at the end of the second year. In the event of a release, DTSC will be notified by certified mail within 7 days of determining statistically significant evidence of a release for any monitoring parameter or constituent of concern at any monitoring point. A similar statistical analysis will be performed in the event the above specified sampling frequencies are decreased after the fifth year. Groundwater monitoring at the Site will be performed for a minimum of 15 years.

6.3 Cap Maintenance

The surfaces of the containment cap will be inspected yearly by a registered Civil Engineer, registered Geologist, and/or registered Surveyor. Maintenance activities will include repairing all visible cracks and ensuring that drainage is maintained at all times.

6.4 Deed Recordation

A deed restriction specifying the presence of encapsulated affected soils under the embankment will be entered on the deed via the final map recordation. The deed restriction will be recorded within 60 days after completion of the embankment. In addition, Caltrans will maintain internal records and notify all maintenance workers of the presence of the affected soils.

6.5 Duration of Post-Construction Activities

A 5-year review of the maintenance and inspection procedures and results will be conducted . The findings of the review will be documented and submitted to DTSC for review and approval. The evaluation and recommendations arising from the review will be documented in a comprehensive report and submitted to DTSC.

7.0 References

California Regional Water Quality Control Board, San Francisco Bay Region, Order No. 94-007.

Department of Toxic Substances Control, (DTSC), State of California Environmental Protection Agency, July 22, 1993 Memorandum: Cypress Freeway Re-alignment Preliminary Remedial Goals, (PRGs)

Department of Toxic Substances Control, (DTSC), State of California Environmental Protection Agency, May 5, 1995 Memorandum: Revised health based acceptable soil concentrations for Cypress Freeway Project.

Final Preliminary Endangerment Assessment, Container Freight, 1285 Fifth Street, Oakland, CA June 21, 1995 by Environmental Solutions, Inc.

Final Remedial Action Plan, August 1995 by Caltrans

Health Safety and Workplan - Structure Excavation, Contract Number 04-192204, Cypress Freeway Re-Alignment, State of California Department of Transportation, Oakland, CA October 10, 1995 w/ Amendment No. 1 by Eric E. Rothwell, CIH

Remedial Design and Implementation Plan, J & A Truck Repair, 500 Kirkham Street, Oakland,CA September 12, 1995 by Jonas & Associates Inc.

State of California Department of Transportation, Project Plans for Construction on State Highway, in Alameda County, in Oakland, from Broadway to Chester Street, Contract 04-192204, June 6, 1994. Including Contract Addendums 1, 2, 3, and 4.

Underground Storage Tank Closure Report, Cypress Freeway Re-Alignment, Former Container Freight, Oakland, California, November 27, 1995 by Jonas & Associates Inc.

United States Environmental Protection Agency, Region 9 PRGs August 1, 1996 by S.J. Smucker

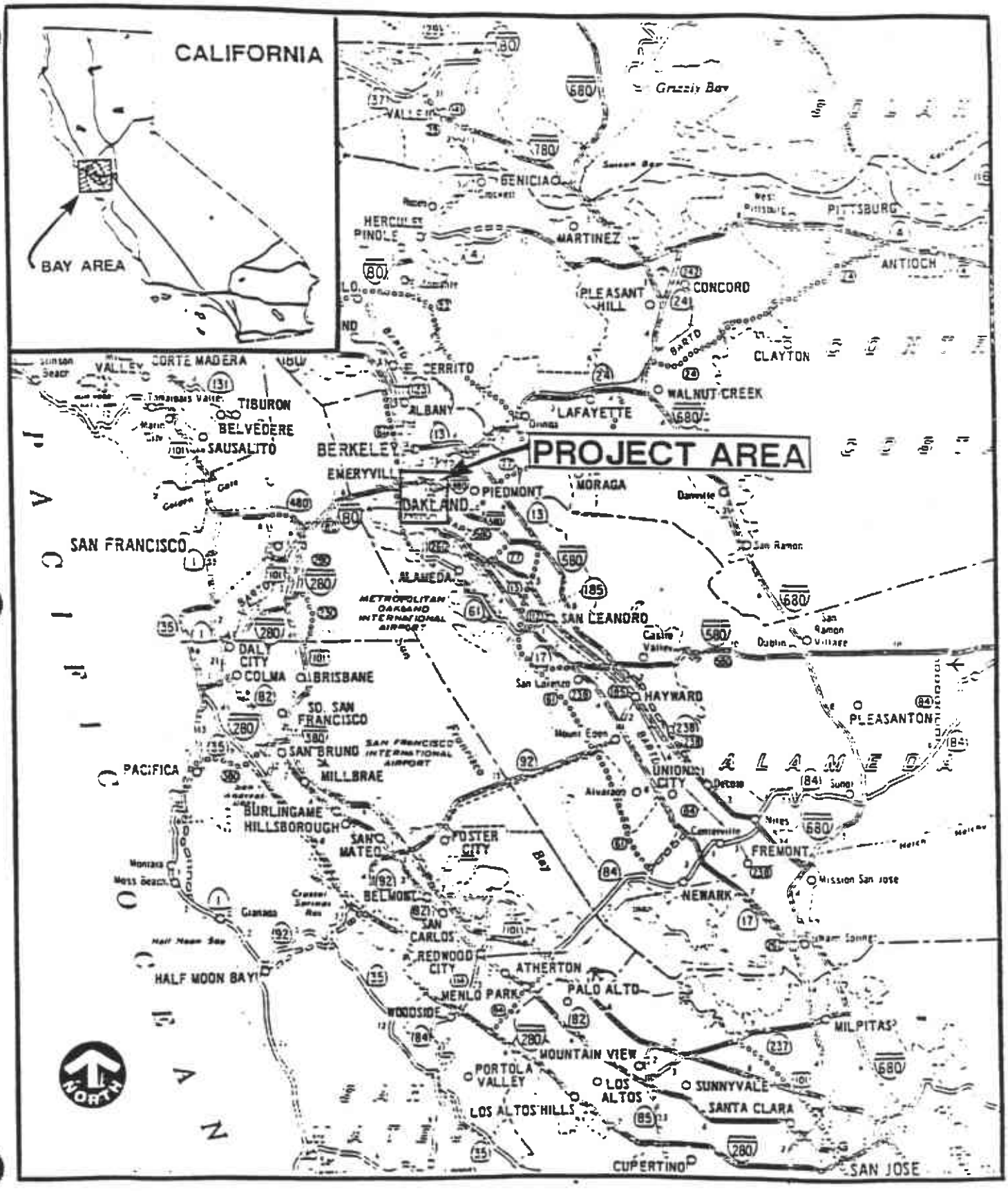


Figure 1 - Site Location Map

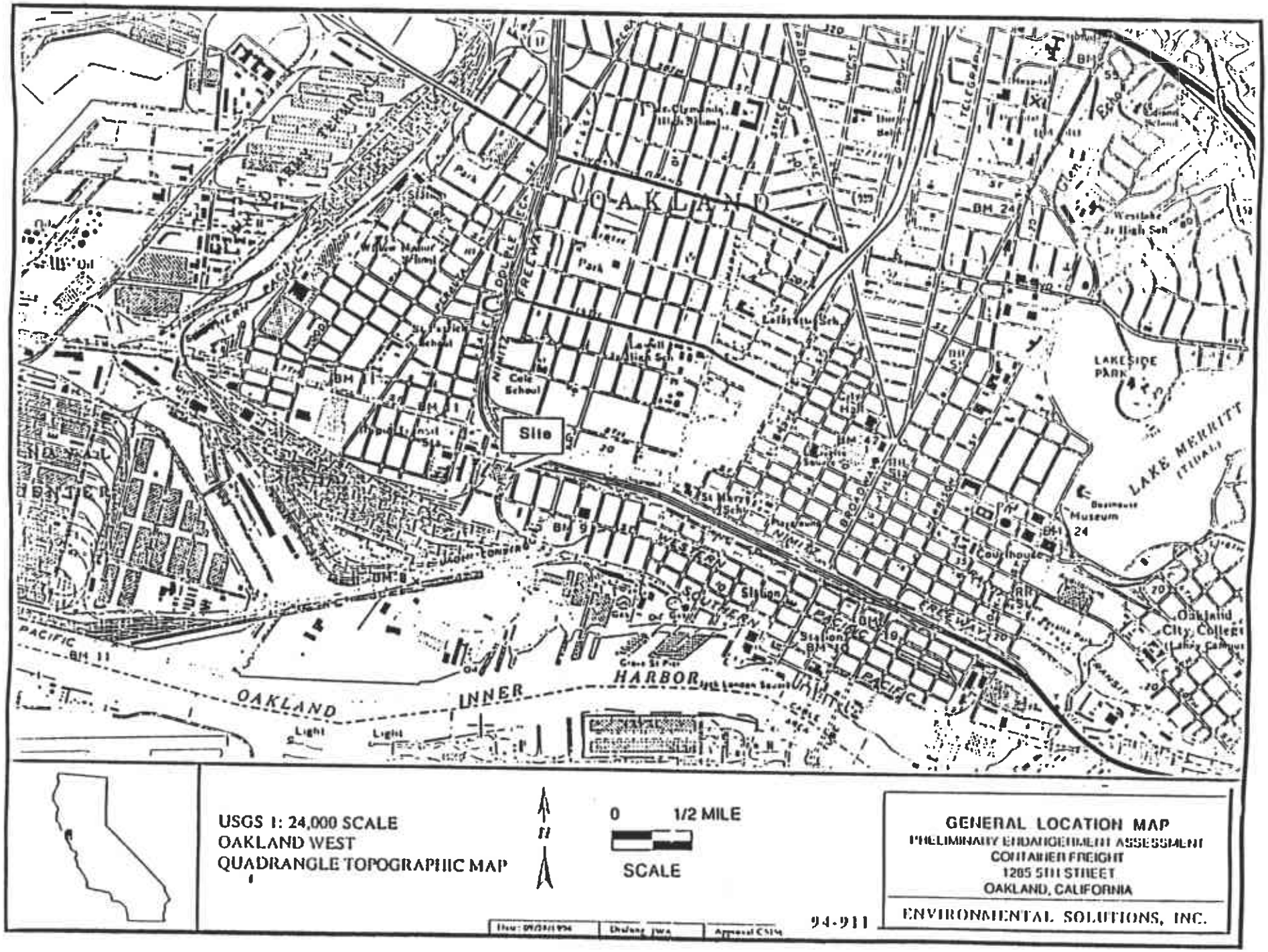


Figure 2 **General Location Map**

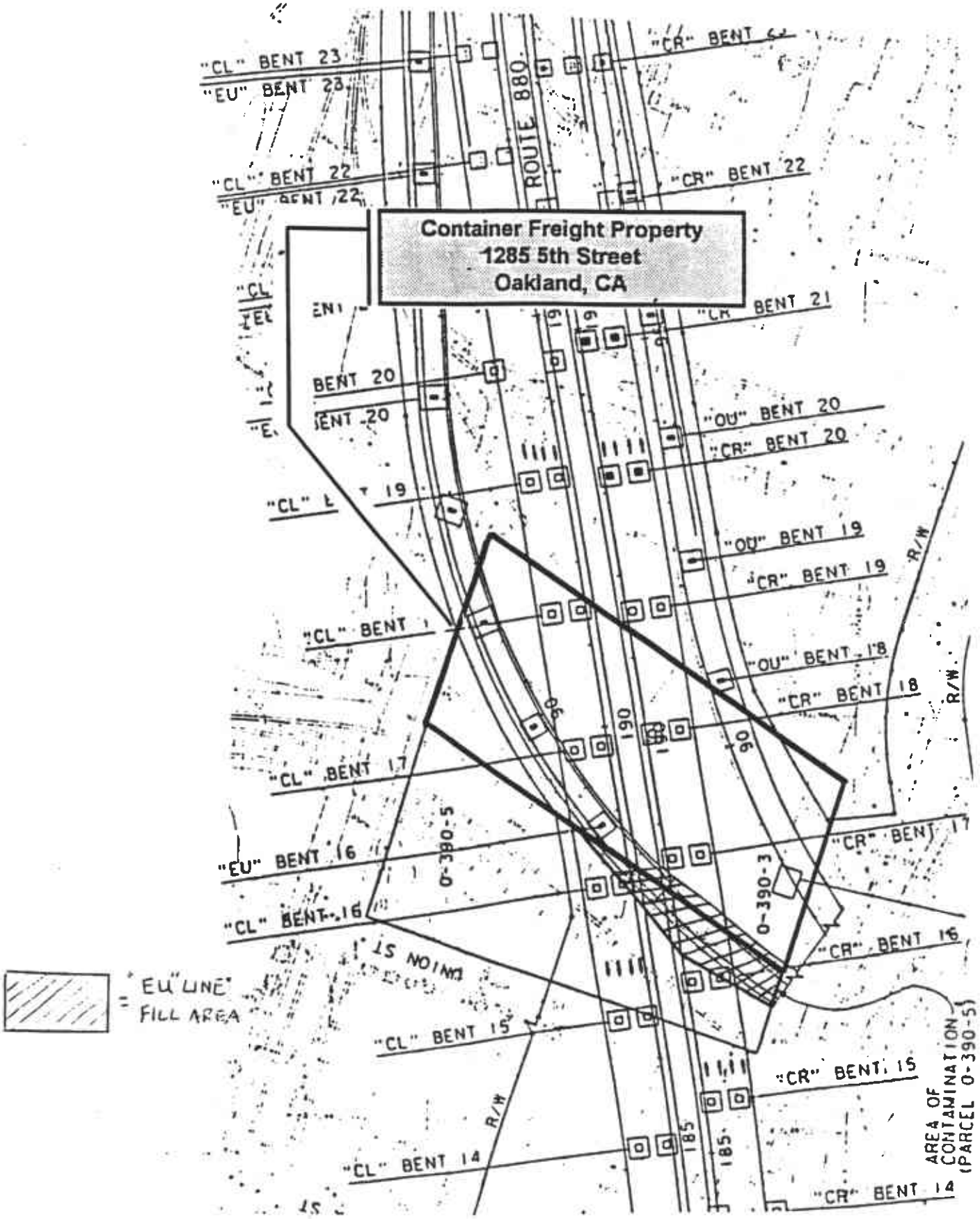


Figure 3 - Site Map

04-Ala-880-31.4/32.9 04-192204(552)
*ER-1504(003)N CONTRACT "A"
CYPRESS FREEWAY REPLACEMENT

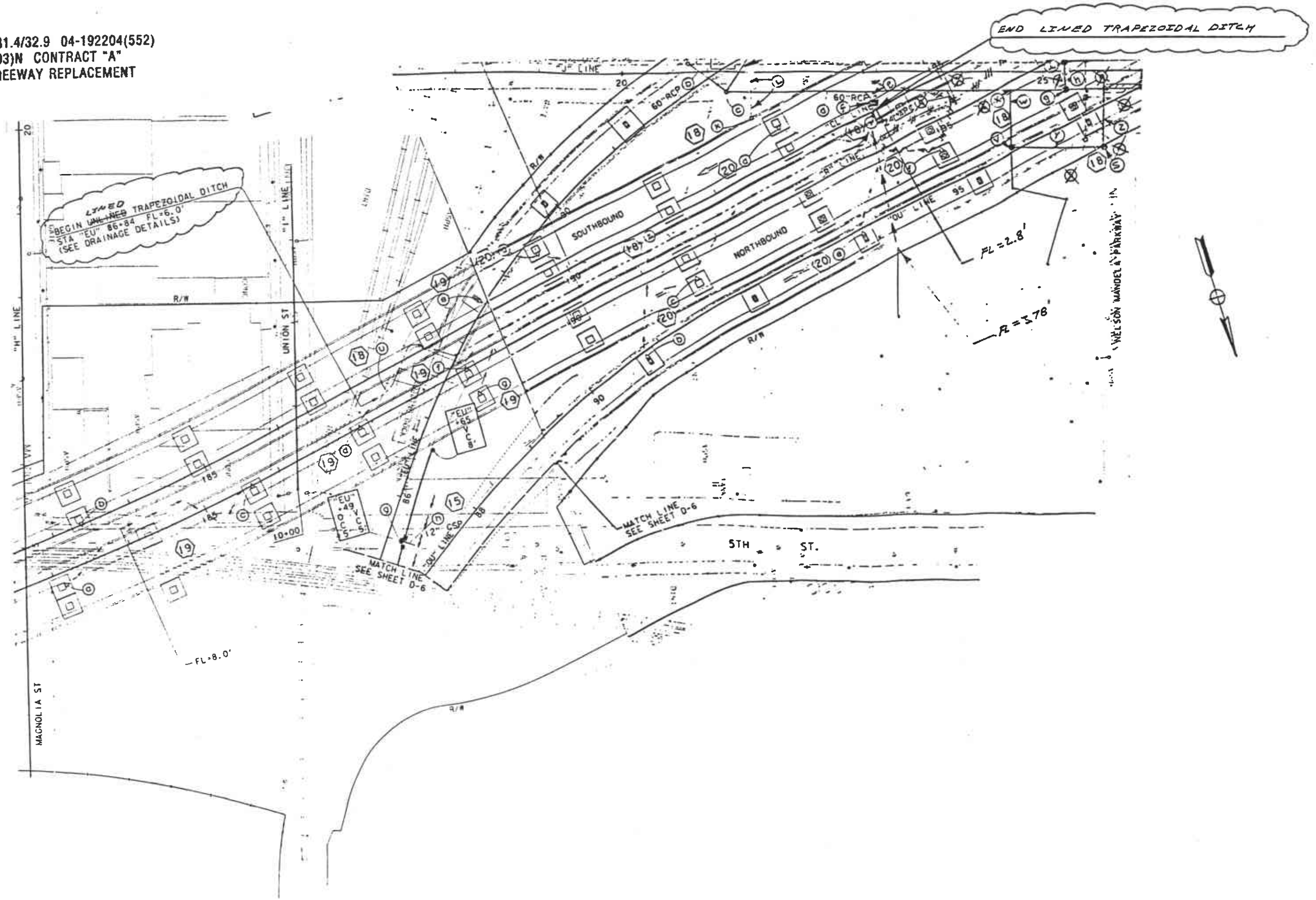


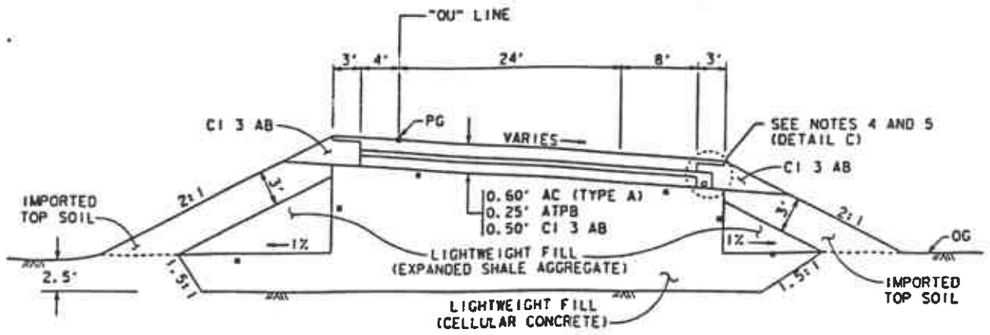
Figure 3a Drainage Plan

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Ala	880	31.4/32.9	3	587

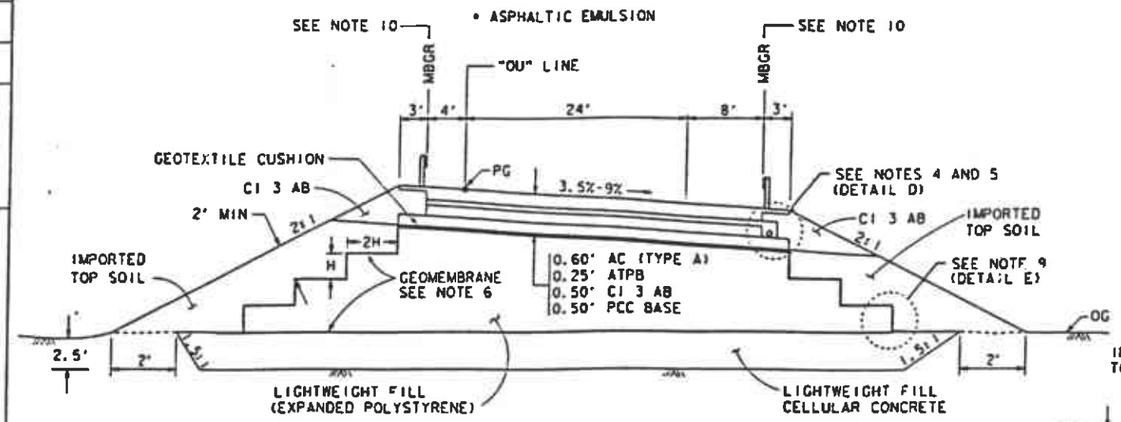
K. Barrett-Sutliff
REGISTERED CIVIL ENGINEER 7-14-93

6-6-94
PLANS APPROVAL DATE

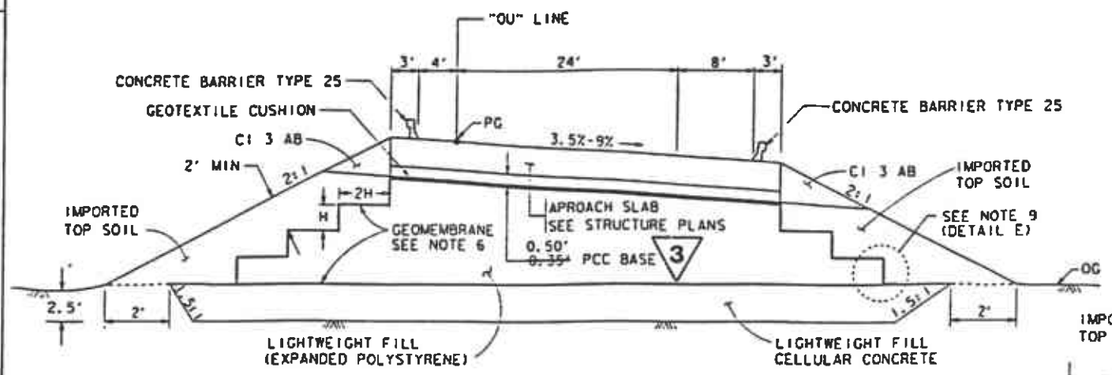
REGISTERED PROFESSIONAL ENGINEER K. B. SUTLIFF No. 45484 Exp. 12-31-94 CIVIL STATE OF CALIFORNIA



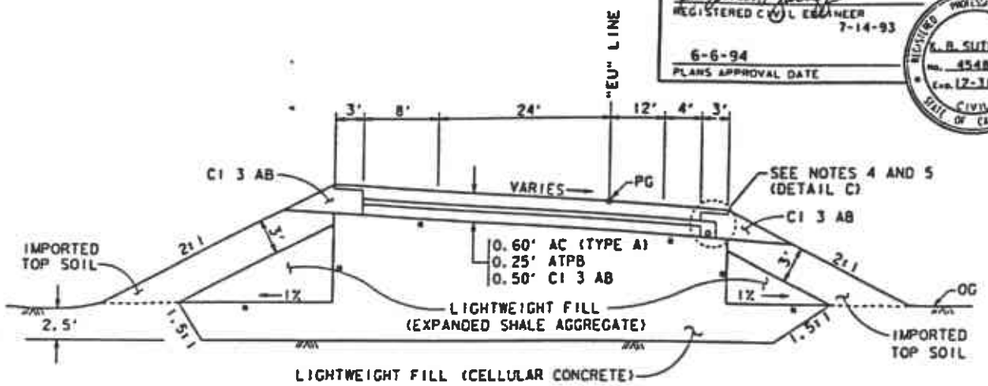
UNION STREET ON RAMP
"OU" LINE STA 86+55 TO 87+23



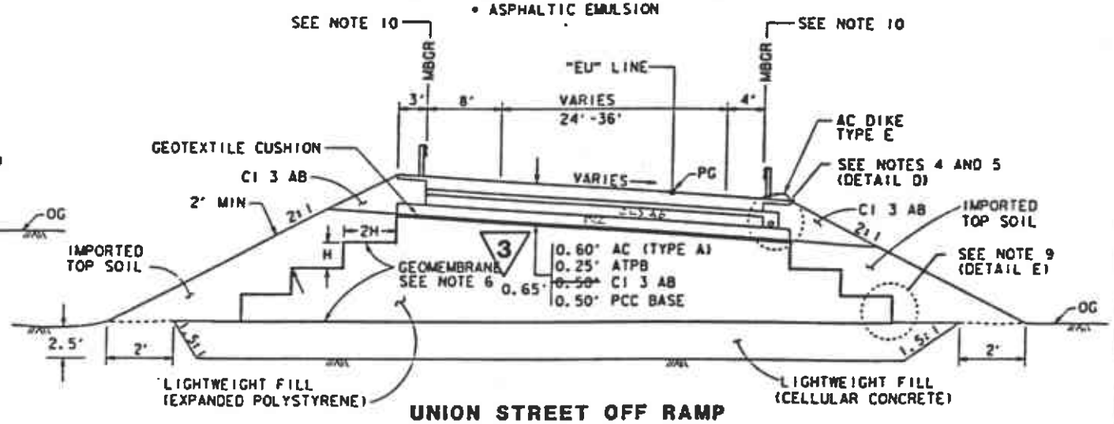
UNION STREET ON RAMP
"OU" LINE STA 87+23 TO 89+47



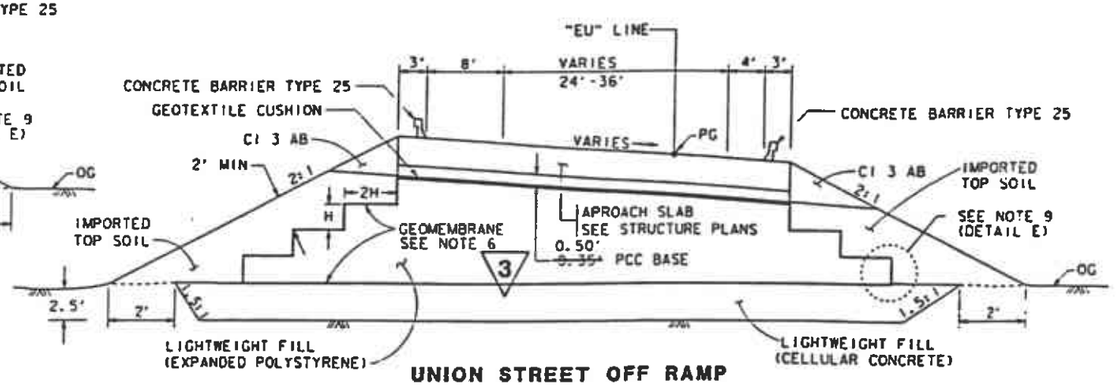
UNION STREET ON RAMP
"OU" LINE STA 89+47 TO 89+77



UNION STREET OFF RAMP
"EU" LINE STA 84+70 TO 85+00



UNION STREET OFF RAMP
"EU" LINE STA 85+00 TO 87+20



UNION STREET OFF RAMP
"EU" LINE STA 87+20 TO 87+50

3 REVISED PER ADDENDUM NO. 3 DATED NOVEMBER 21, 1994

TYPICAL CROSS SECTION
NO SCALE

X-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
SACRAMENTO DESIGN
PROJECT ENGINEER K. B. SUTLIFF
CALCULATED/DESIGNED BY
CHECKED BY
DATE REVISED BY
DATE

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3
USERNAME = tome
DGN FILE = /usr/tome/PO/419220-04.dgn
CU 04195 EA 419201
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Figure 3b Cross Section of Union Street Ramps

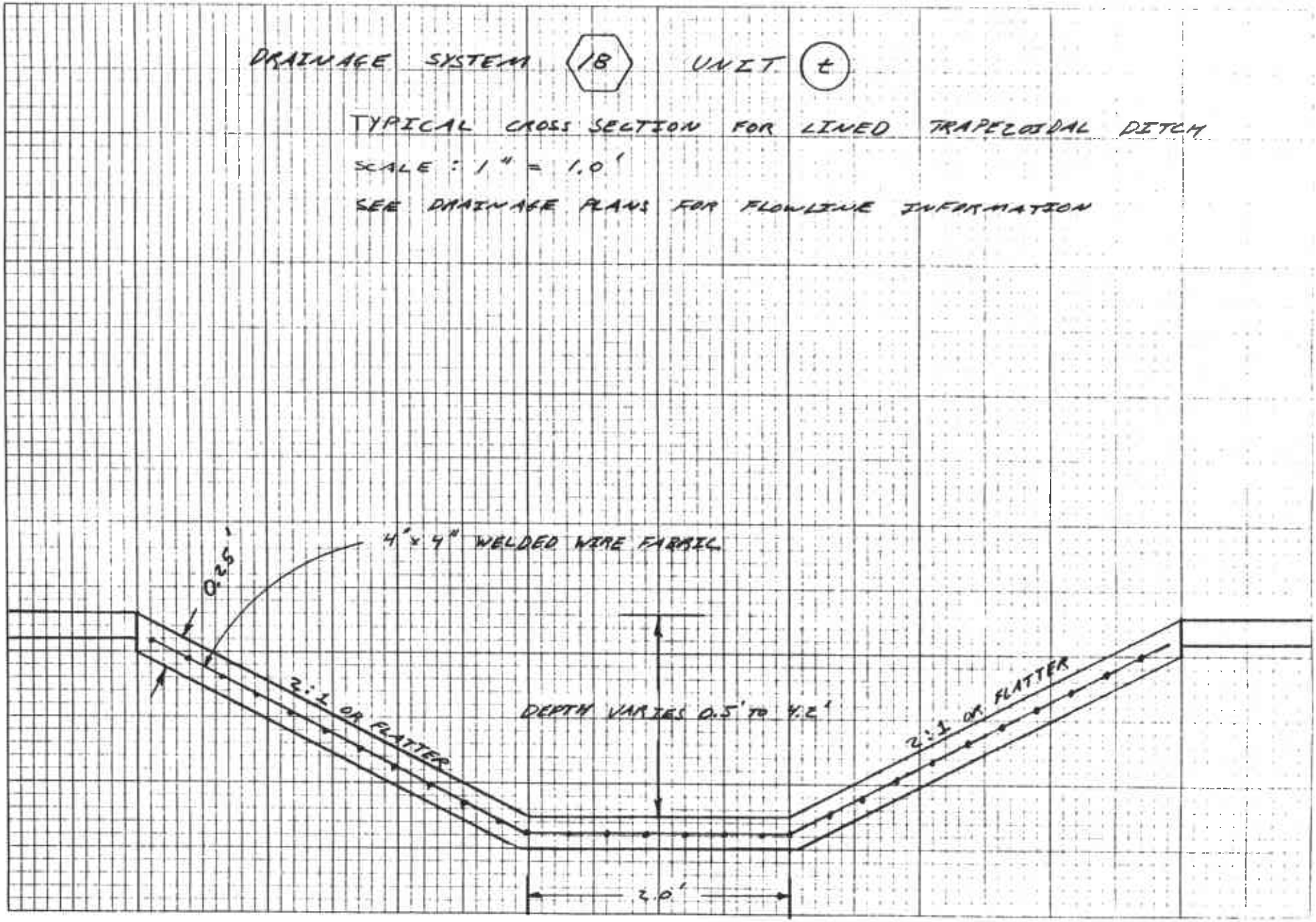


Figure 3c **Cross Section of Drainage Ditch**

IDENTIFICATION OF SCHOOLS, RESIDENTIAL COMMUNITIES, HEALTH CARE FACILITIES, AND CHILD DAY CARE FACILITIES WITHIN A ONE MILE RADIUS OF 1285 5TH STREET

CONTAINER FREIGHT
PRELIMINARY ENDANGERMENT ASSESSMENT

TYPE	NAME	DISTANCE AND DIRECTION FROM SITE
Elementary school	Martin Luther King Jr.	0.25 miles - Northeast
Elementary school	Cole	0.25 miles - Northeast
Middle school	Lowell	0.3 miles - Northeast
Elementary school	St. Patrick	0.4 miles - Northwest
Elementary school	Prescott	0.4 miles - Northwest
High school	Pentecostal way of truth	0.5 miles - Northwest
High school	Bunche center	0.7 miles - Northeast
Preschool	St. Marys	0.75 miles - Southeast
High school	Lafayette	0.8 miles - Northeast
Day care	Chester Street Tot Lot	0.2 miles - Southeast
Health care	West Oakland Health Center	0.3 miles - Northeast
Residential neighborhood	Peralta Villa	0.1 miles - Northeast
Residential neighborhood	Prescott	0.5 miles - Northwest
Residential neighborhood	Phoenix	0.75 miles - Northwest
Residential neighborhood	Ralph Bunche	0.75 miles - North
Residential neighborhood	McClymonds	0.95 miles - North

Figure 4 - Location of Residential Communities and Public Facilities

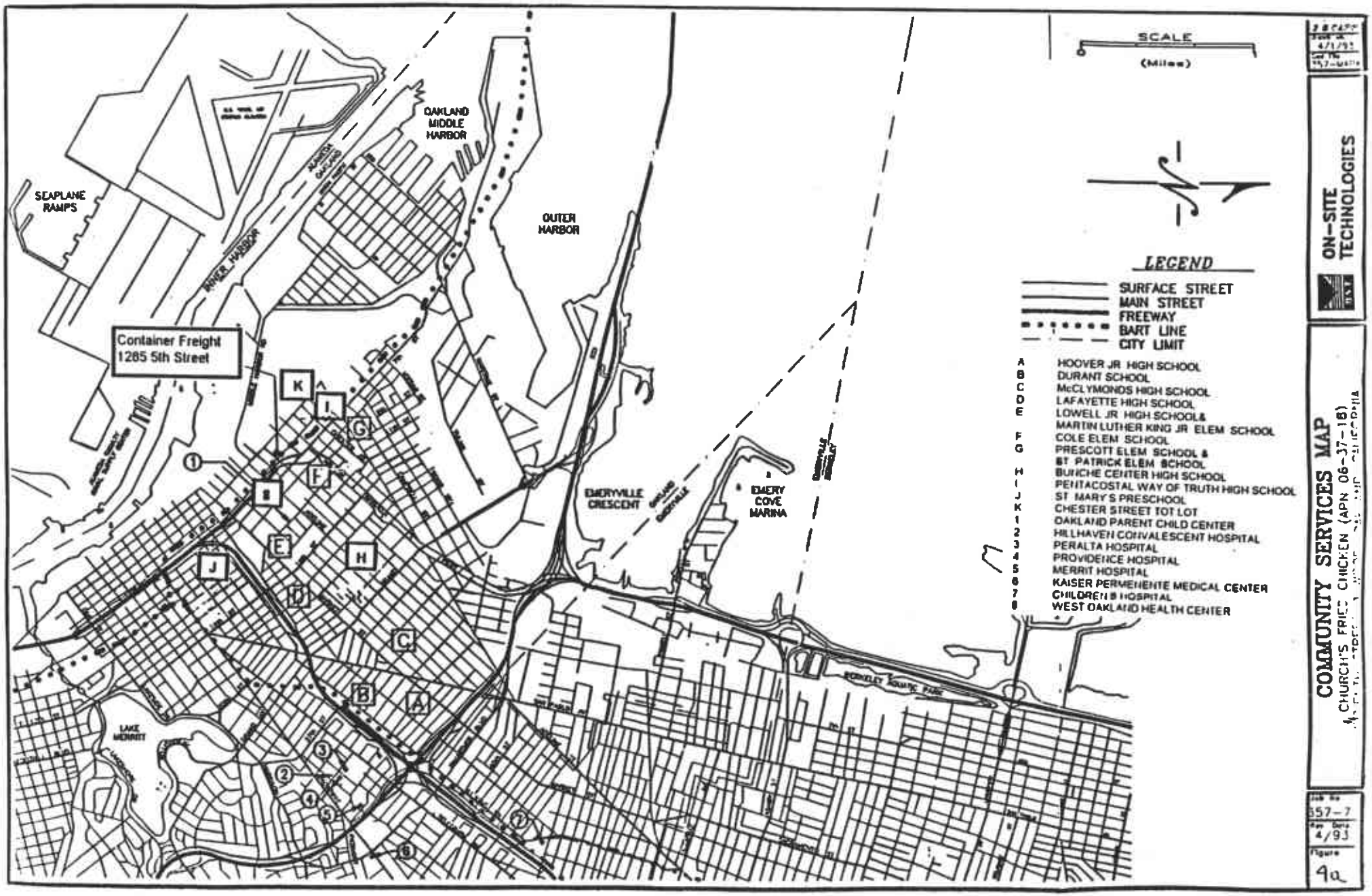


Figure 4a - Community Services Map

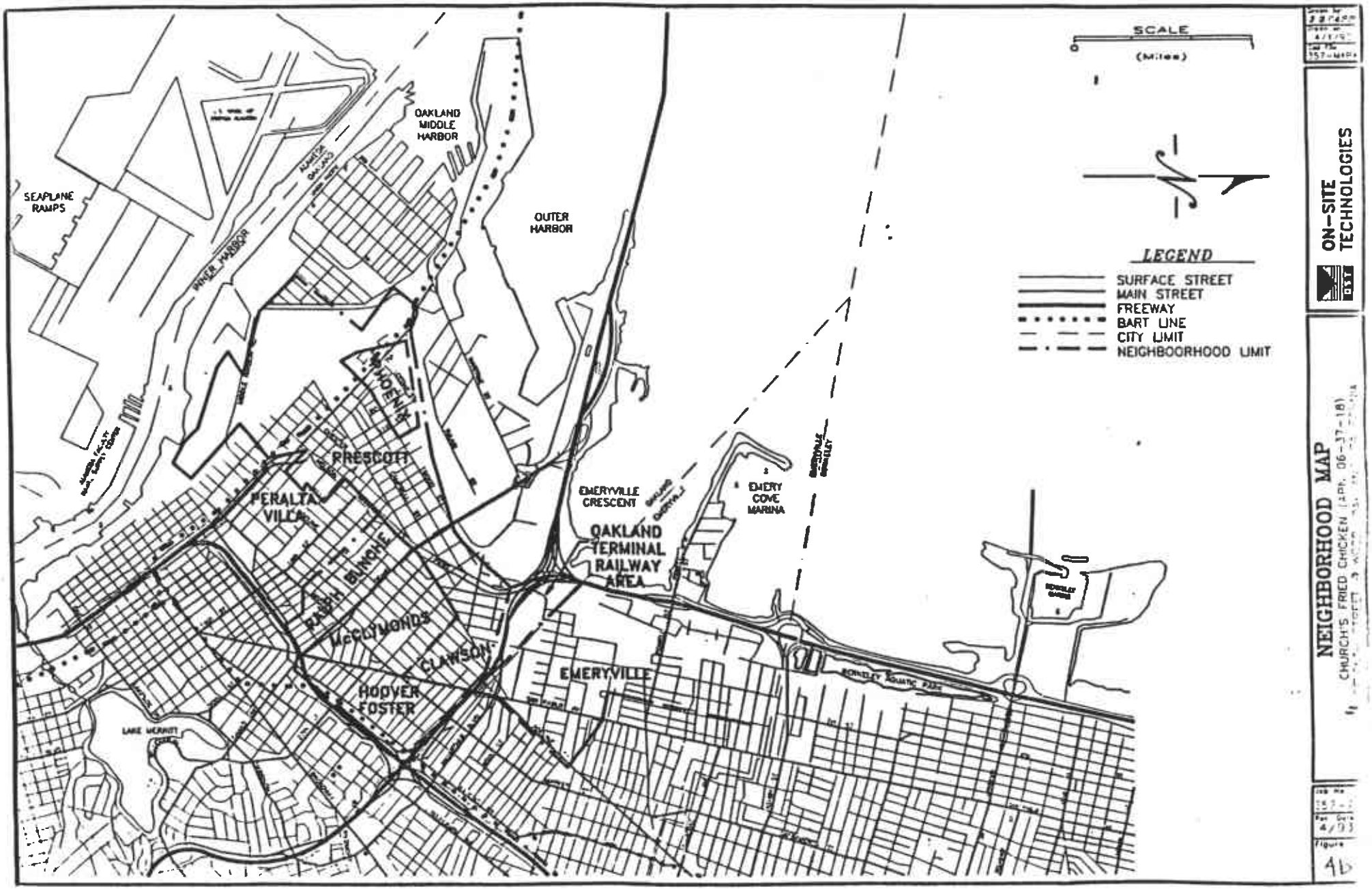


Figure 4b - Neighborhood Map

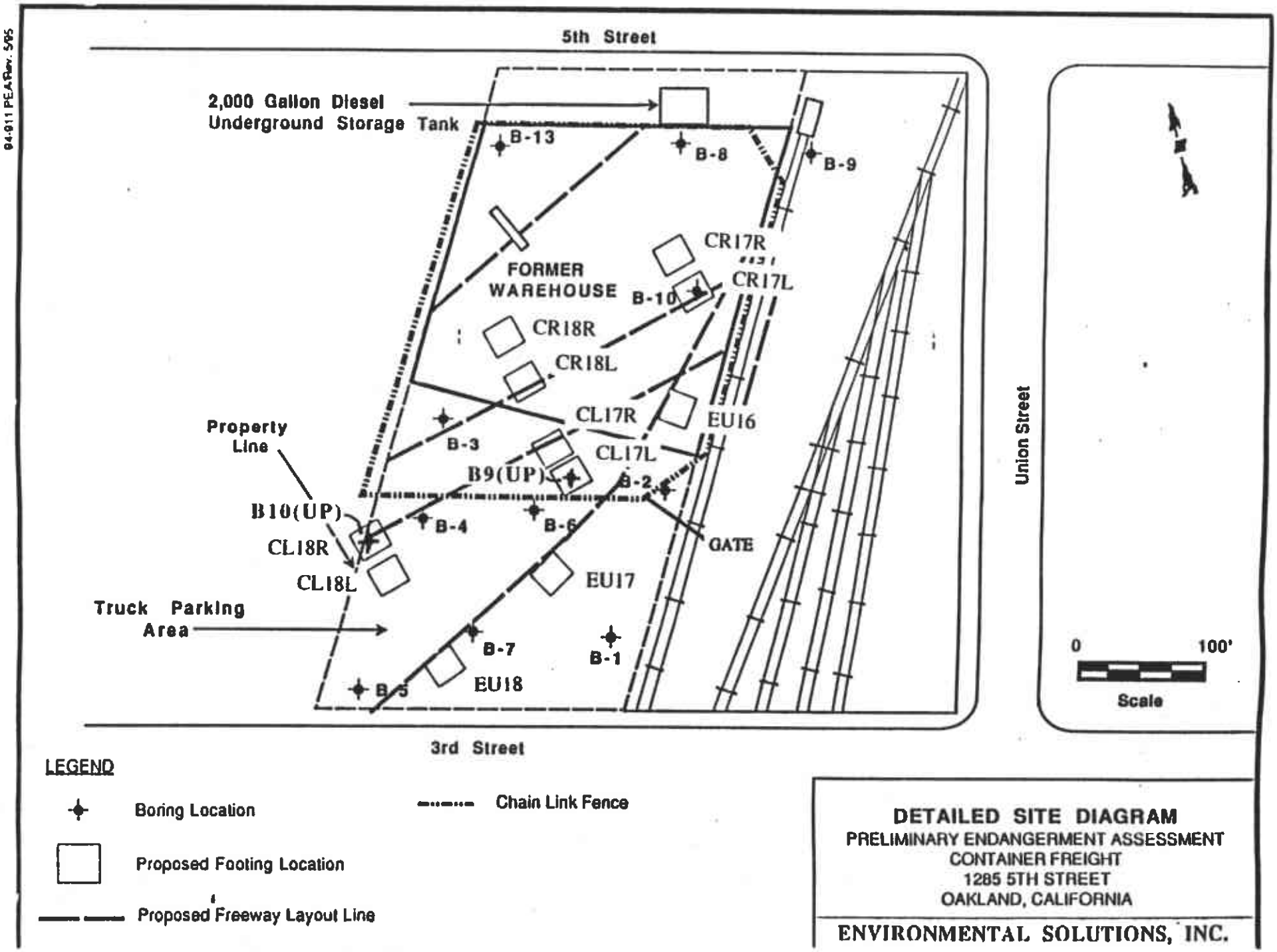


Figure 4c - Location of Borings and Footings

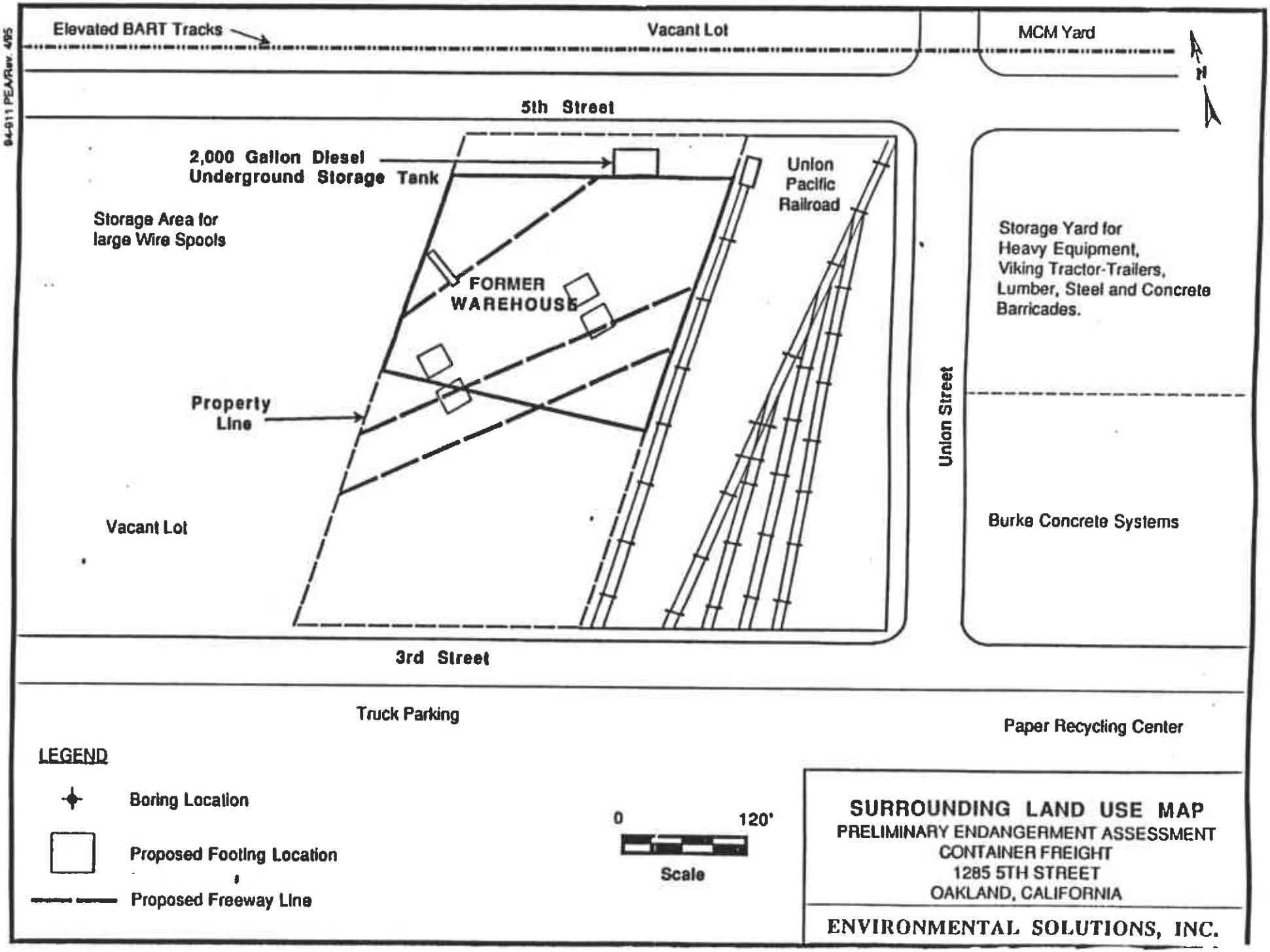


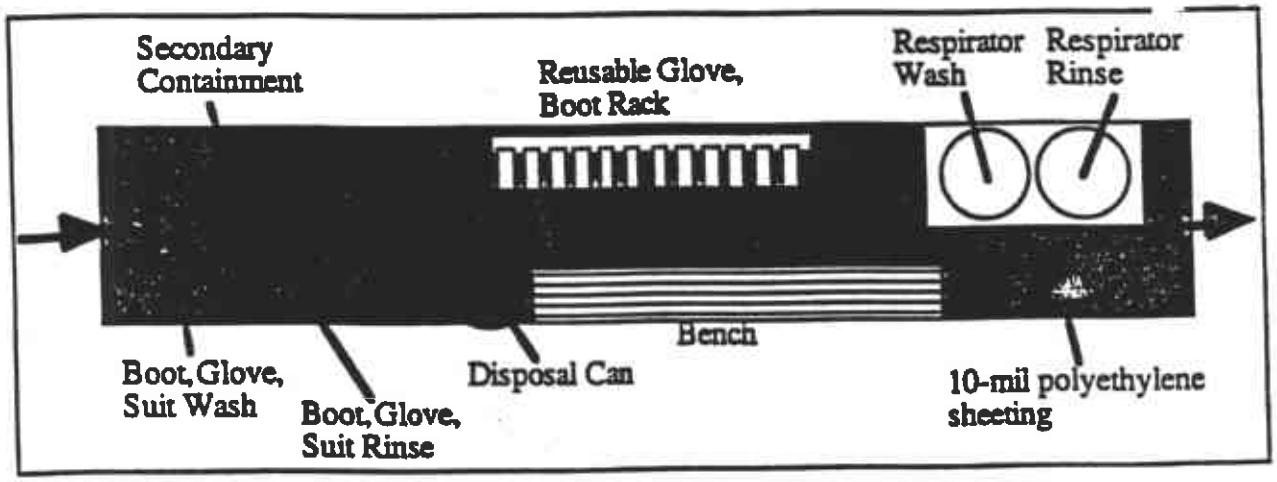
Figure 5 Surrounding Land Use Map

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.



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

Whenever equipment exits the Exclusion Zone, personnel shall drive the equipment onto 6-mil visqueen in the Contamination Reduction Zone and remove all visible con-

Figure 6 - Personnel Decontamination Layout

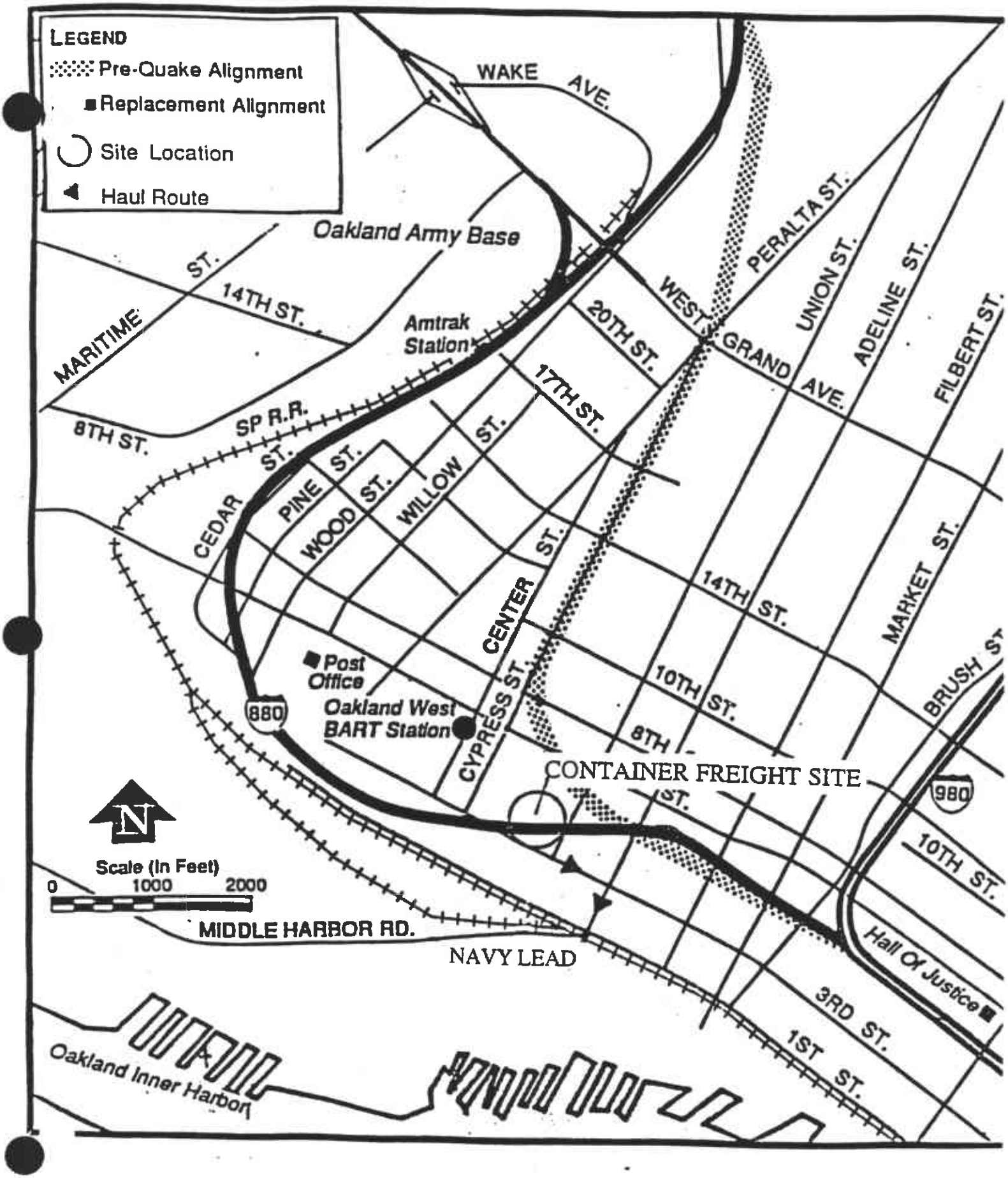


Figure 7 - Haul Route to Navy Lead

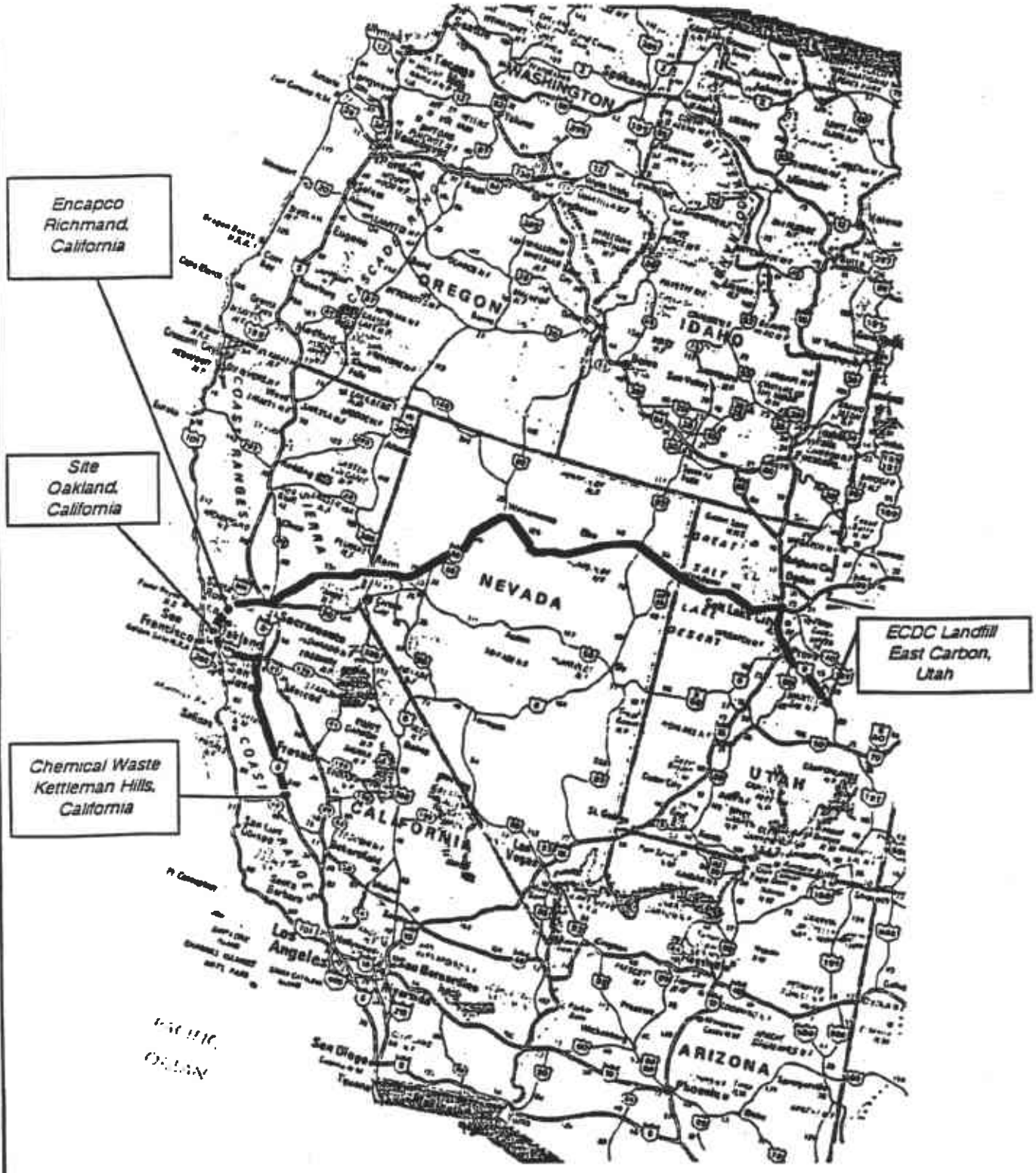


Figure 8 - Haul Route to ECDC Landfill

DIST	COUNTY	ROUTE	TOTAL PROJECT	NO. SHEETS
04	Ala	880	31.4/32.9	35 587

3

James William Ross
REGISTERED CIVIL ENGINEER

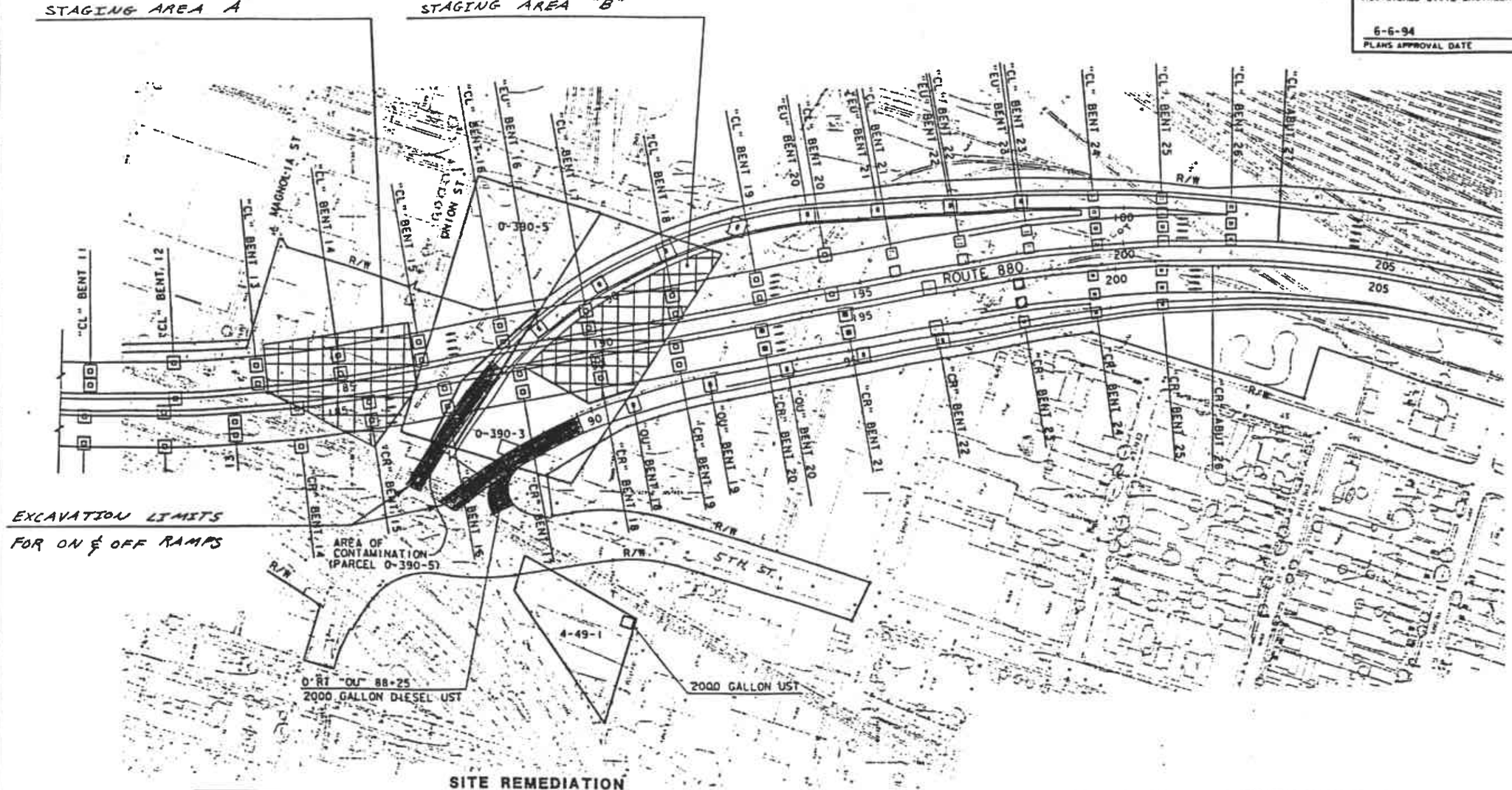
6-6-94
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
JAMES W. ROSS
No. 10697
Exp. 12-31-96
CIVIL
STATE OF CALIFORNIA

DATE	REVISED BY	DATE REVISED
	CALCULATED/DESIGNED BY	
	CHECKED BY	

PROJECT ENGINEER
K.B. SUTLIFF

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans CENTRAL DESIGN



SITE REMEDIATION

PARCEL NUMBER (APN)	BUSINESS NAME & ADDRESS	APPROXIMATE DEPTH OF EXCAVATION CONT. OR HAZ. (FT)	CONTAMINATED	HAZARDOUS	CY
0-390-5	UNION PACIFIC RAILROAD 5TH & UNION STREET	6'BGS	TPH-D (86000 MG/KG) ACE (1700 UG/KG) HC (6600 MG/KG)	NAPTH (57000 UG/KG) BENZ (85000 UG/KG) PB (4200 MG/KG, 91* MG/L)	2000
4-49-1	J & A TRUCK REPAIR 500 KIRKHAM STREET	6'BGS	HC	PB	4000
0-390-3	CONTAINER FREIGHT 1285 5TH STREET	6'BGS	HC (680 MG/KG)	BENZ (360.000 UG/KG) PB	4000

* TOXICITY LEACHING CHARACTERISTIC PROCEDURE - RCRA REGULATED WASTE

BGS : BELOW GROUND SURFACE
TPH-D : TOTAL PETROLEUM HYDROCARBONS AS DIESEL, ANALYZED USING EPA 8015 MODIFIED
HC : TOTAL PETROLEUM RECOVERABLE HYDROCARBONS, ANALYZED USING 418.1
ACE : ACETONE, ANALYZED USING EPA METHOD 8240 FOR VOLATILE ORGANIC COMPOUNDS
BENZ : BENZENE, ANALYZED USING EPA METHOD 8240 FOR VOLATILE ORGANIC COMPOUNDS
NAPTH : NAPTHALENE, ANALYZED USING EPA METHOD 8270 FOR SEMIVOLATILE ORGANIC COMPOUNDS
MG/KG : MILLIGRAMS PER KILOGRAM
UG/KG : MICROGRAMS PER KILOGRAM
MG/L : MILLIGRAMS PER LITER
PB : LEAD, ANALYZED BY EPA METHOD 6010 FOR METALS

REMOVE UNDERGROUND STORAGE TANK

PARCEL NUMBER (APN)	BUSINESS NAME & ADDRESS	TANK DIMENSION	DEPTH (Bottom of Tank)
0-390-3	CONTAINER FREIGHT 1285 5TH STREET	4' (Diam) x 9'	8' BGS
4-49-1	J&A TRUCK REPAIR 500 KIRKHAM STREET	4' (Diam) x 9'	8' BGS

3 REVISED PER ADDENDUM NO. 3 DATED NOVEMBER 21, 1994

CONSTRUCTION DETAILS
LOCATION OF CONTAMINATED MATERIALS

SCALE: 1" = 100'

C-9

TIME PLOTTED = 20-NOV-1994 15:23

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3	USERNAME = DGILF DGN FILE = /usr/dgilf/P3/419220g09.dgn	CU 04195	EA 192201

Figure 9 Staging Area Location Map

TABLE I

Analytical Results for the Container Freight Site

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	Hydrocarbons	8015m-Diesel (mg/kg)	8015m-Gasoline (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
			Hydrocarbons			6010 Metals (mg/kg)	TTLC	500	500	10000	75	100	2500	8000	2500	1000	20	3500	2000	100
							10XSTLC	150	50	1000	8	10	5600	800	250	50	2	3500	200	10
B1-S	0		ND[a,b]	--	840.0			--	2.9	--	--	--	11.0	--	25.0	42.0	--	--	12.0	--
B1-1	1		ND[c,b]	ND	29.0			--	17.0	--	--	--	41.0	--	170.0	500.0	--	--	12.0	--
B1-3.5	3.5		ND[d]	ND	ND			--	2.7	--	--	--	5000.0	--	920.0	27000.0	--	--	4.4	--
B1-W	W		ND[q]	ND	ND			ND	0.054	0.015	ND	0.001	ND	0.02	0.010	ND	ND	ND	0.08	ND
B2-S	0		ND[e,b]	--	730.0			ND	2.7	310.0	0.23	1.3	14.0	2.2	190.0	140.0	0.15	ND	17.0	ND
B2-1	1		ND[f,g]	ND	58.0			7.6	ND	99.0	0.50	0.81	9.1	4.3	54.0	340.0	0.33	ND	49.0	ND
B2-3.5	3.5		ND[h,i]	ND	5900.0			ND	ND	21.0	0.08	0.11	3.5	ND	11.0	17.0	0.12	ND	2.8	ND
B2-W	W		ND[r]	ND	ND			ND	0.016	0.052	ND	ND	ND	ND	0.020	ND	ND	0.008	0.04	ND
B3-S	0		--	--	--			--	ND	--	--	--	16.0	--	78.0	120	--	--	8.2	--
B3-1	1		--	ND	--			--	ND	--	--	--	5.8	--	13.0	23	--	--	5.5	--
B3-3.5	3.5		--	ND	--			--	22.0	--	--	--	11.0	--	16.0	42	--	--	6.3	--
B3-W	W		ND[s]	ND	ND			ND	0.020	0.11	ND	ND	ND	ND	ND	ND	ND	0.007	ND	ND
B4-S	0		--	--	--			--	ND	--	--	--	6.6	--	8.7	9	--	--	8.6	--
B4-1	1		--	ND	--			--	ND	--	--	--	20.0	--	14.0	15	--	--	17.0	--
B4-3.5	3.5		--	ND	--			--	ND	--	--	--	9.5	--	12.0	2	--	--	22.0	--
B4-W	W		ND[t]	ND	3.0			ND	0.006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5-S	0		ND[b,j]	--	4600.0			ND	ND	20.0	0.08	0.45	8.4	1.9	12.0	73.0	ND	ND	11.0	ND
B5-1	1		ND[j]	ND	ND			ND	ND	12.0	0.23	1.6	17.0	6.8	20.0	ND	ND	ND	13.0	ND
B5-3.5	3.5		ND[b,g,k]	ND	15.0			ND	2.8	120.0	0.25	3.7	16.0	2.5	240.0	970.0	2.6	ND	19.0	ND
B5-W	W		ND	ND	2.0			ND	0.010	0.031	ND	0.006	ND	ND	0.020	ND	ND	ND	ND	ND

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in mg/L or ug/L
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ENVIRONMENTAL SOLUTIONS

TABLE 4: Analytical Results - Container Freight

		6010 Metals (mg/kg)					Soluble Metals (mg/L)						8240 VOCs (ug/kg)													
		500	700	2400	5000																					
		50	70	240	2500																					
Sample No.	Depth (ft., bgs)	Silver	Thallium	Vanadium	Zinc	7196 CHROM VI	Soluble Metals (mg/L)	7470 WET - Mercury	6010 WET - Copper	7420 WET - Lead	1311 TCLP - Lead	1311 TCLP - Copper	8240 VOCs (ug/kg)	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Methyl Ethyl Ketone	Carbon Tetrachloride	Chlorobenzene	Chloroethane	2-Chloroethyvinyl ether	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane
B1-S	0	--	--	--	22.0	--		--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-1	1	--	--	--	130.0	--		--	--	--	0.4	--		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B1-3.5	3.5	--	--	--	17000.0	--		--	--	--	--	0.07		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B1-W	W	ND	ND	ND	2.0	--		--	--	--	--	--		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2-S	0	ND	ND	21.0	120.0	--		--	--	3.1	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND	ND	38.0	110.0	ND		--	--	31.0	--	--		170.0	7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2-3.5	3.5	ND	ND	8.0	20.0	ND		--	--	--	--	--		ND	3800.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2-W	W	ND	ND	0.01	0.05	--		--	--	--	--	--		ND	8.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3-S	0	--	--	--	130.0	--		--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-1	1	--	--	--	28.0	--		--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-3.5	3.5	--	--	--	77.0	--		--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-W	W	ND	ND	ND	ND	--		--	--	--	--	--		ND	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B4-S	0	--	--	--	13.0	--		--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-1	1	--	--	--	28.0	--		--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-3.5	3.5	--	--	--	190.0	--		--	--	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-W	W	ND	ND	ND	ND	--		--	--	--	--	--		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5-S	0	ND	ND	4.7	32.0	--		--	--	5.2	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B5-1	1	ND	ND	22.0	30.0	ND		--	--	--	--	--		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5-3.5	3.5	ND	ND	20.0	370.0	ND		ND	--	--	ND	--		310	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5-W	W	ND	ND	ND	0.03	--		--	--	--	--	--		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in mg/L or ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8240 VOCs (ug/kg)																				8270 Semi VOCs (ug/kg)					
		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	Methyl Isobutyl Ketone	Styrene	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Total Xylenes	8270 Semi VOCs (ug/kg)	Phenol	Bis(2-Chloroethyl)Ether	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene
B1-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.4	ND	ND	ND	ND	ND	ND	ND		--	--	--	--	--	--
B1-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		--	--	--	--	--	--
B1-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND
B2-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B2-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.6	ND	ND	ND	ND	ND	ND	6.6		ND	ND	ND	ND	ND	ND
B2-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	490.0	ND	ND	ND	1200.0	ND	ND	1200.0	ND	ND	ND	ND	ND	ND	1300.0		ND	ND	ND	ND	ND	ND
B2-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.0	ND	ND	ND	ND	ND	ND	3.0		ND	ND	ND	ND	ND	ND
B3-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B3-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B3-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B3-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND
B4-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B4-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B4-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B4-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND
B5-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--
B5-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND
B5-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND
B5-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND

ND = Not Detected
-- = Not Analyzed
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S = Surface Sample

Ground Water Samples (W) reported in ~~mg/L~~ ug/L

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ENVIRONMENTAL SOLUTIONS

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (mg/kg) 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)Methan	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	Acenaphthylene	3-Nitroanaline
B1-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	19.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	34.0	ND
B2-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	610.0	ND	ND	ND	29.0	ND	ND	ND	ND	ND	ND	140.0	ND
B2-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.039	ND	ND	ND	ND	ND	ND	0.053	ND
B3-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B4-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7	ND	ND	ND	0.039	ND	ND	ND	ND	ND	ND	0.053	ND
B5-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B5-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.9	ND
B5-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ug/L

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ENVIRONMENTAL SOLUTIONS

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (mg/kg)																						
		Acenaphthene	2,4-Dinitrophenol	4-Nitrophenol	Dibenzofuran	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Diethyl Phthalate	4-Chlorophenyl-Phenyl Eth	Fluorene	4-Nitroaniline	2-Methyl-4,6-Dinitrophenol	N-Nitrosodiphenylamine	4-Bromophenyl-Phenyl Eth	Hexachlorobenzene	Pentachlorophenol	Phenanthrene	Anthracene	Di-N-Butyl Phthalate	Fluoranthene	Pyrene	Butyl Benzyl Phthalate	3,3'-Dichlorobenzidine	Benzo(A)Anthracene	Bis(2-Ethylhexyl)Phthalate
B1-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	0.02	ND	ND	ND	ND
B2-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	ND	ND	ND	ND	ND	ND	ND	ND	7.0	ND	ND	ND	ND	ND	ND	160.0	19.0	ND	240.0	300.0	ND	ND	70.0	ND
B2-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	43.0	ND	ND	ND	ND	ND	ND	380.0	ND	ND	320.0	370.0	ND	ND	71.0	ND
B2-W	W	0.004	ND	ND	0.002	ND	ND	ND	ND	0.016	ND	ND	ND	ND	ND	ND	0.033	0.004	ND	0.016	0.019	ND	ND	0.003	ND
B3-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B4-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-W	W	0.004	ND	ND	0.002	ND	ND	ND	ND	0.016	ND	ND	ND	ND	ND	ND	0.033	0.004	ND	0.016	0.019	ND	ND	0.003	ND
B5-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B5-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	0.7	ND	ND	ND	ND	ND	ND	14.0	1.3	ND	17.0	19.0	ND	ND	4.4	ND
B5-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ~~ug/Liter~~ ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (mg/kg)								8080 PCBs (mg/kg)							8020 BTEX (ug/kg)				
		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	8080 PCBs (mg/kg)	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	8020 BTEX (ug/kg)	Benzene	Toluene	Ethyl Benzene	Total Xylenes
B1-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B1-W	W	0.01	ND	ND	ND	0.02	0.01	ND	0.02	--	--	--	--	--	--	--	--	--	--	--	--
B2-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-1	1	99.0	ND	47.0	30.0	130.0	110.0	19.0	170.0	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
B2-3.5	3.5	97.0	ND	35.0	29.0	120.0	76.0	15.0	110.0	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
B2-W	W	0.006	ND	ND	ND	0.005	0.004	ND	0.007	--	--	--	--	--	--	--	--	--	--	--	--
B3-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-W	W	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--
B4-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-W	W	0.006	ND	ND	ND	0.005	0.004	ND	0.007	--	--	--	--	--	--	--	--	--	--	--	--
B5-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B5-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
B5-3.5	3.5	6.5	ND	3.5	1.4	8.0	5.6	1.0	8.7	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
B5-W	W	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ~~mg/L~~ ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	Hydrocarbons	8015m-Diesel (mg/kg)	8015m-Gasoline (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	20	3500	2000	100
						10XSTLC	150	50	1000	8	10	5600	800	250	50	2	3500	200	10
B6-S	0		--	--	--		ND	0.76	68.0	0.16	1.6	14.0	6.2	250.0	400.0	0.70	2.0	72.0	ND
B6-1	1		--	ND	--		ND	ND	48.0	0.15	2.3	13.0	1.9	51.0	41.0	0.19	ND	8.3	ND
B6-3.5	3.5		--	ND	--		ND	11.0	14.0	ND	2.7	7.3	ND	64.0	130.0	0.16	ND	3.9	ND
B6-W	W		ND[u]	ND	ND		ND	0.016	0.019	ND	ND	ND	ND	0.010	ND	ND	ND	ND	ND
B7-S	0		ND[b,l]	--	120.0		--	4.1	--	--	--	8.9	--	180.0	150.0	--	--	51.0	--
B7-1	1		ND[m]	ND	ND		--	1.7	--	--	--	0.9	--	6.5	4.9	--	--	ND	--
B7-3.5	3.5		ND[n,o]	ND	130.0		--	21.0	--	--	--	6.0	--	250.0	25.0	--	--	15.0	--
B7-W	W		ND[v,w]	ND	ND		ND	0.025	0.019	ND	0.001	ND	0.02	0.010	ND	ND	ND	ND	ND
B8-S	0		ND[g,z]	--	54.0		--	ND	--	--	--	3.2	--	290.0	44.0	--	--	9.1	--
B8-4	4		ND	--	50.0		--	ND	--	--	--	8.3	--	14.0	52.0	--	--	8.2	--
B8-8.5	8.5		ND	--	270.0		--	ND	--	--	--	ND	--	13.0	81.0	--	--	6.9	--
B8-W	W		ND	--	26[cc]		--	ND	--	--	--	1.4	--	3.8	14.0	--	--	1.8	--
B9-1	1		ND[g]	--	1400.0		--	ND	--	--	--	3.4	--	6.2	33.0	--	--	5.6	--
B9-4.5	4.5		ND[bb]	--	87.0		--	ND	--	--	--	6.1	--	19.0	200.0	--	--	12.0	--
B9-8	8		ND	--	280.0		--	ND	--	--	--	3.1	--	47.0	480.0	--	--	12.0	--
B9-12	12			--	23.0		--	ND	--	--	--	4.5	--	ND	7.1	--	--	9.6	--
B9-W	W		ND[g,dd]	--	130[cc]		--	0.20	--	--	--	0.84	--	7.0	4.7	--	--	1.5	--
B10-S	0		--	--	13.0		--	ND	--	--	--	4.9	--	16.0	5.3	--	--	24.0	--
B10-4.5	4.5		ND	--	44.0		--	ND	--	--	--	50.0	--	23.0	140.0	--	--	45.0	--
B10-8.5	8.5		ND[ee]	--	29.0		--	ND	--	--	--	5.6	--	46.0	270.0	--	--	24.0	--
B10-13	13		--	--	120.0		--	ND	--	--	--	5.9	--	41.0	270.0	--	--	21.0	--
B10-15	15		--	--	120.0		--	2.3	--	--	--	9.2	--	7.0	80.0	--	--	19.0	--
B10-W	W		ND[ee]	--	9.8[cc]		--	0.04	--	--	--	0.18	--	1.7	7.3	--	--	0.53	--

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in mg/L or ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	6010 Metals (mg/kg)					Soluble Metals (mg/L)						8240 VOCs (ug/kg)													
		500 / 50	700 / 70	2400 / 240	5000 / 2500																					
		Silver	Thallium	Vanadium	Zinc	7196 CHROM VI	Soluble Metals (mg/L)	7470 WET - Mercury	6010 WET - Copper	7420 WET - Lead	1311 TCLP - Lead	1311 TCLP - Copper	8240 VOCs (ug/kg)	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Methyl Ethyl Ketone	Carbon Tetrachloride	Chlorobenzene	Chloroethane	2-Chloroethylvinyl ether	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane
B6-S	0	ND	ND	10.0	380.0	--	--	17.0	--	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-1	1	ND	ND	12.0	47.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-3.5	3.5	ND	ND	5.4	260.0	ND	--	--	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-W	W	ND	ND	0.01	ND	--	--	--	--	--	--	--	ND	200.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B7-S	0	--	--	--	250.0	--	--	--	54.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-1	1	--	--	--	3.4	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B7-3.5	3.5	--	--	--	440.0	--	--	1.3	--	--	--	--	ND	410.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B7-W	W	ND	ND	ND	ND	--	--	--	--	--	--	--	ND	61.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B8-S	0	--	--	--	78.0	--	--	4.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-4	4	--	--	--	66.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-8.5	8.5	--	--	--	100.0	--	--	--	4.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-W	W	--	--	--	19.0	--	--	--	--	--	--	--	78.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9-1	1	--	--	--	55.0	--	--	--		--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-4.5	4.5	--	--	--	110.0	--	--	--	7.0	--	--		81.0	ND	ND	ND	ND	19.0	ND	ND	ND	ND	ND	ND	ND	ND
B9-8	8	--	--	--	180.0	--	--	--	--	1.7	--		88.0	13000.0	ND	ND	ND	15.0	ND	ND	ND	ND	ND	ND	ND	ND
B9-12	12	--	--	--	11.0	--	--	--	--	--	--		180.0	940.0	ND	ND	ND	23.0	ND	ND	ND	ND	ND	ND	ND	ND
B9-W	W	--	--	--	28.0	--	--	--	--	--	--		ND	2400.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B10-S	0	--	--	--	26.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-4.5	4.5	--	--	--	150.0	ND	--	--	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-8.5	8.5	--	--	--	310.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-13	13	--	--	--	290.0	ND	--	--	7.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-15	15	--	--	--	110.0	--	--	--	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-W	W	--	--	--	7.9	--	--	--	--	--	--	--	ND	370.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in mg/L or ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8240 VOCs (ug/kg)																					8270 Semi VOCs (ug/kg)					
		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	Methyl Isobutyl Ketone	Styrene	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Total Xylenes	8270 Semi VOCs (ug/kg)	Phenol	Bis(2-Chloroethyl)Ether	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene
B6-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-W	W	ND	ND	ND	ND	ND	ND	ND	9.0	ND	ND	ND	ND	ND	ND	8.0	ND	ND	ND	ND	ND	ND	5.0	--	--	--	--	--	--
B7-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B7-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	350.0	ND	ND	ND	ND	ND	ND	120.0	ND	ND	ND	ND	ND	ND	210.0	ND	ND	ND	ND	ND	ND
B7-W	W	ND	ND	ND	ND	ND	ND	ND	8.0	ND	ND	ND	4.0	ND	ND	6.0	ND	ND	ND	ND	ND	ND	5.0	ND	ND	ND	ND	ND	ND
B8-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-4	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND
B8-8.5	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND
B8-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9-8	8	ND	ND	ND	ND	ND	ND	ND	3800.0	ND	ND	ND	390.0	ND	ND	4200.0	ND	ND	ND	ND	ND	ND	8100.0	17.0	ND	ND	ND	ND	ND
B9-12	12	ND	ND	ND	ND	ND	ND	ND	69.0	ND	ND	ND	ND	ND	ND	130.0	ND	ND	ND	ND	ND	ND	39.0	ND	ND	ND	ND	ND	ND
B9-W	W	ND	ND	ND	ND	ND	ND	ND	150.0	ND	ND	ND	61.0	ND	ND	290.0	ND	ND	ND	ND	ND	ND	110.0	240.0	ND	ND	ND	ND	ND
B10-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-4.5	4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND
B10-8.5	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND
B10-13	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND
B10-15	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND
B10-W	W	ND	ND	ND	ND	ND	ND	ND	39.0	ND	ND	ND	ND	ND	ND	120.0	ND	ND	ND	ND	ND	ND	120.0	ND	ND	ND	ND	ND	ND

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ug/L

94-911cf.xls
Rev. 5/24/95

ENVIRONMENTAL SOLUTIONS

TABLE 4: Analytical Results - Container Freight

8270 Semi VOCs (mg/kg)

Sample No.	Depth (ft., bgs)	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)Methan	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	Acenaphthylene	3-Nitroaniline
B6-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-W	W	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.08	ND
B7-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	660.0	ND	ND	ND	110.0	ND	ND	ND	ND	ND	ND	58.0	ND
B7-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B8-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-4	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B8-8.5	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B8-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	190.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9-8	8	ND	ND	19.0	ND	43.0	ND	ND	ND	ND	ND	45.0	ND	ND	ND	ND	2600.0	ND	ND	ND	200.0	ND	ND	ND	ND	ND	ND	230.0	ND
B9-12	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	250.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	15.0	ND
B9-W	W	ND	ND	370.0	ND	760.0	ND	ND	ND	ND	ND	560.0	ND	ND	ND	ND	18000.0	ND	ND	ND	210.0	ND	ND	ND	ND	ND	ND	510.0	ND
B10-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B10-8.5	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	190.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	52.0	ND
B10-13	13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	910.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200.0	ND
B10-15	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	720.0	ND	ND	ND	23.0	ND	ND	ND	ND	ND	ND	97.0	ND
B10-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23000.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3600.0	ND

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ~~mg/L~~ ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (ug/kg) mg/Kg																						
		Acenaphthene	2,4-Dinitrophenol	4-Nitrophenol	Dibenzofuran	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Diethyl Phthalate	4-Chlorophenyl-Phenyl Eth	Fluorene	4-Nitroaniline	2-Methyl-4,6-Dinitrophenol	N-Nitrosodiphenylamine	4-Bromophenyl-Phenyl Eth	Hexachlorobenzene	Pentachlorophenol	Phenanthrene	Anthracene	Di-N-Butyl Phthalate	Fluoranthene	Pyrene	Butyl Benzyl Phthalate	3,3'-Dichlorobenzidine	Benzo(A)Anthracene	Bis(2-Ethylhexyl)Phthalate
B6-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-3.5	3.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-W	W	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.60	0.08	0.30[P]	1.5	1.7	ND	ND	0.41	ND
B7-3.5	3.5	ND	ND	ND	ND	ND	ND	ND	ND	68.0	ND	ND	ND	ND	ND	ND	1800.0	150.0	ND	1100.0	1200.0	ND	ND	300.0	ND
B7-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	0.02	ND	ND	ND	ND
B8-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-4	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	1.5	1.9	ND	ND	ND	ND
B8-8.5	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B8-W	W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	240.0	44.0	ND	170.0	190.0	ND	ND	46.0	ND
B9-8	8	170.0	ND	ND	83.0	ND	ND	ND	ND	160.0	ND	ND	ND	ND	ND	ND	900.0	180.0	ND	600.0	620.0	ND	ND	190.0	ND
B9-12	12	10.0	ND	ND	ND	ND	ND	ND	ND	6.0	ND	ND	ND	ND	ND	ND	45.0	8.0	ND	10.0	34.0	ND	ND	7.0	ND
B9-W	W	370.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	680.0	ND	ND	310.0	350.0	ND	ND	ND	ND
B10-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18.0	ND	ND	70.0	86.0	ND	ND	22.0	ND
B10-8.5	8.5	50.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	270.0	40.0	ND	200.0	220.0	ND	ND	44.0	ND
B10-13	13	110.0	ND	ND	ND	ND	ND	ND	ND	72.0	ND	ND	ND	ND	ND	ND	870.0	120.0	ND	570.0	630.0	ND	ND	120.0	ND
B10-15	15	49.0	ND	ND	ND	ND	ND	ND	ND	40.0	ND	ND	ND	ND	ND	ND	430.0	67.0	ND	280.0	310.0	ND	ND	73.0	ND
B10-W	W	4200.0	ND	ND	ND	ND	ND	ND	ND	1600.0	ND	ND	ND	ND	ND	ND	22000.0	4300.0	ND	12000.0	14000.0	ND	ND	2800.0	ND

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ~~ng/l~~ ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (ug/kg)								8080 PCBs (mg/kg)								8020 BTEX (ug/kg)				
		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	8080 PCBs (mg/kg)	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	8020 BTEX (ug/kg)	Benzene	Toluene	Ethyl Benzene	Total Xylenes
B6-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-1	1	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
B6-3.5	3.5	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--
B6-W	W	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-1	1	0.60	ND	0.26	0.15	0.67	0.47	0.07	0.72	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-3.5	3.5	470.0	ND	240.0	140.0	520.0	480.0	67.0	700.0	--	--	--	--	--	--	--	--	--	--	--	--	--
B7-W	W	0.01	ND	ND	ND	0.02	0.01	ND	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B8-4	4	0.7	ND	0.5	0.7	0.9	0.6	ND	1.1	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
B8-8.5	8.5	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	16.0	ND	9.0	8.0	
B8-W	W	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-4.5	4.5	68.0	ND	28.0	37.0	77.0	40.0	ND	49.0	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-8	8	190.0	ND	120.0	130.0	230.0	140.0	19.0	170.0	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-12	12	11.0	ND	6.0	7.0	12.0	6.0	ND	12.0	--	--	--	--	--	--	--	--	--	--	--	--	--
B9-W	W	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B10-4.5	4.5	29.0	ND	21.0	26.0	45.0	30.0	ND	48.0	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND
B10-8.5	8.5	64.0	ND	29.0	52.0	77.0	38.0	ND	63.0	--	--	--	--	--	--	--	--	ND[x]	ND[x]	ND[x]	ND[x]	
B10-13	13	160.0	ND	86.0	140.0	190.0	120.0	ND	180.0	--	--	--	--	--	--	--	--	2700[y]	2400[y]	1600[y]	4300[y]	
B10-15	15	93.0	ND	52.0	71.0	120.0	74.0	13.0	110.0	--	--	--	--	--	--	--	--	640[x]	730[x]	260[x]	1200[x]	
B10-W	W	5800.0	ND	2500.0	2700.0	5000.0	3300.0	470.0	5100.0	--	--	--	--	--	--	--	--	--	--	--	--	--

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ug/L

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TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	Hydrocarbons			
		Hydrocarbons	8015m-Diesel (mg/kg)	8015m-Gasoline (mg/kg)	418.1 TRPH (mg/kg)
B13-S	0		--	--	10.0
B13-4.5	4.5		ND	--	12.0
TRIP BLANK A			--	ND	--
TRIP BLANK B			--	ND	--

		6010 Metals (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	20	3500	2000	100
	10XSTLC	150	50	1000	8	10	5600	800	250	50	2	3500	200	10
B13-S	0	--	ND	--	--	--	6.5	--	1.2	110.0	--	--	3.6	--
B13-4.5	4.5	--	ND	--	--	--	2.1	--	70.0	1600.0	--	--	6.8	--
TRIP BLANK A		--	--	--	--	--	--	--	--	--	--	--	--	--
TRIP BLANK B		--	--	--	--	--	--	--	--	--	--	--	--	--

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in mg/L or ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	6010 Metals (mg/kg)					Soluble Metals (mg/L)						8240 VOCs (ug/kg)														
		500 / 50	700 / 70	2400 / 240	5000 / 2500																						
		Silver	Thallium	Vanadium	Zinc	7196 CHROM VI	Soluble Metals (mg/L)	7470 WET - Mercury	6010 WET - Copper	7420 WET - Lead	1311 TCLP - Lead	1311 TCLP - Copper	8240 VOCs (ug/kg)	Acetone	Benzene	Bromodichloromethane	Bromoform	Bromomethane	Methyl Ethyl Ketone	Carbon Tetrachloride	Chlorobenzene	Chloroethane	2-Chloroethylvinyl ether	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane
B13-S	0	--	--	--	38.0	--		--	--	5.0	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--	--
B13-4.5	4.5	--	--	--	200.0	--		--	--	--	ND	--		230.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK A		--	--	--	--	--		--	--	--	--	--		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK B		--	--	--	--	--		--	--	--	--	--		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in mg/L or ug/L
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TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8240 VOCs (ug/kg)																					8270 Semi VOCs (ug/kg)					
		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	Methyl Isobutyl Ketone	Styrene	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Total Xylenes	8270 Semi VOCs (mg/kg)	Phenol	Bis(2-Chloroethyl)Ether	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene
B13-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B13-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND
TRIP BLANK A		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		--	--	--	--	--
TRIP BLANK B		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		--	--	--	--	--

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (ug/kg) 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)Methan	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	Acenaphthylene	3-Nitroanaline
B13-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B13-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK A		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TRIP BLANK B		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ug/L

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TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (mg/kg) Acenaphthene	2,4-Dinitrophenol	4-Nitrophenol	Dibenzofuran	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Diethyl Phthalate	4-Chlorophenyl-Phenyl Eth	Fluorene	4-Nitroaniline	2-Methyl-4,6-Dinitrophenol	N-Nitrosodiphenylamine	4-Bromophenyl-Phenyl Eth	Hexachlorobenzene	Pentachlorophenol	Phenanthrene	Anthracene	Di-N-Butyl Phthalate	Fluoranthene	Pyrene	Butyl Benzyl Phthalate	3,3'-Dichlorobenzidine	Benzo(A)Anthracene	Bis(2-Ethylhexyl)Phthalate
B13-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B13-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIP BLANK A		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TRIP BLANK B		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND = Not Detected
-- = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ~~ug/Liter~~ ug/L

TABLE 4: Analytical Results - Container Freight

Sample No.	Depth (ft., bgs)	8270 Semi VOCs (ug/kg)								8080 PCBs (mg/kg)								8020 BTEX (ug/kg)				
		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	8080 PCBs (mg/kg)	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	8020 BTEX (ug/kg)	Benzene	Toluene	Ethyl Benzene	Total Xylenes
B13-S	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B13-4.5	4.5	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--
TRIP BLANK A		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TRIP BLANK B		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ND = Not Detected
- - = Not Analyzed
W = Water Sample
S = Surface Sample

Ground Water Samples (W) reported in ~~ug/L~~ ug/L

FOOTNOTE KEY TO TABLE 4

a = Reporting limit raised to 20 mg/kg due to dilution.

b = Motor Oil was observed in the sample.

c = Unknown compounds were found in the Diesel range in the estimated amount of 11 mg/kg compared with the Diesel Standard.

d = Unknown compounds were found in the Diesel range in the estimated amount of 2.8 mg/kg compared with the Diesel Standard.

e = Unknown compounds were found in the Diesel range in the estimated amount of 41 mg/kg compared with the Diesel Standard.

f = Unknown compounds were found in the Diesel range in the estimated amount of 110 mg/kg compared with the Diesel Standard.

g = Reporting limit raised to 5 mg/kg due to dilution.

h = Unknown compounds were found in the Diesel range in the estimated amount of 1600 mg/kg compared with the Diesel Standard.

i = Reporting limit raised to 100 mg/kg due to dilution.

j = Unknown compounds were found in the Diesel range in the estimated amount of 4.2 mg/kg compared with the Diesel Standard.

k = Unknown compounds were found in the Diesel range in the estimated amount of 7.8 mg/kg compared with the Diesel Standard.

l = Unknown compounds were found in the Diesel range in the estimated amount of 7.6 mg/kg compared with the Diesel Standard.

m = Unknown compounds were found in the Diesel range in the estimated amount of 4.6 mg/kg compared with the Diesel Standard.

n = Unknown compounds were found in the Diesel range in the estimated amount of 2300 mg/kg compared with the Diesel Standard.

o = Reporting limit raised to 40 mg/kg due to dilution.

p = This analyte was present in the method blank at 0.11 mg/kg.

q = Unknown compounds were found in the Diesel range in the estimated amount of 400 ug/L compared with the Diesel Standard.

r = Unknown compounds were found in the Diesel range in the estimated amount of 450 ug/L compared with the Diesel Standard.

FOOTNOTE KEY TO TABLE 4

s = Unknown compounds were found in the Diesel range in the estimated amount of 1200 ug/L compared with the Diesel Standard.

t = Unknown compounds were found in the Diesel range in the estimated amount of 120 ug/L compared with the Diesel Standard.

u = Unknown compounds were found in the Diesel range in the estimated amount of 2200 ug/L compared with the Diesel Standard.

v = Unknown compounds were found in the Diesel range in the estimated amount of 39000 ug/L compared with the Diesel Standard.

w = Reporting limit raised to 2000 ug/L due to dilution.

x = BTEX detection limit equals 50 ug/kg.

y = BTEX detection limit equals 1,000 ug/kg.

z = Unknown compounds were found in the Diesel range in the estimated amount of 230 mg/kg compared with the Diesel Standard.

aa = Unknown compounds were found in the Diesel range in the estimated amount of 30 mg/kg compared with the Diesel Standard.

bb = Unknown compounds were found in the Diesel range in the estimated amount of 3.1 mg/kg compared with the Diesel Standard.

cc = Reporting limit increased due to sample size.

dd = Unknown compounds were found in the Diesel range in the estimated amount of 52,000 ug/L compared with the Diesel Standard.

ee = Unknown compounds were found in the Diesel range in the estimated amount of 68,000 ug/L compared with the Diesel Standard.

TABLE II

List of Contaminants on Container Freight Footing Excavations

LINE	BENT	FOOTING	TEST NO.	DOCUMENT	CONTAMINANT	LEVEL	DEPTH	TONS
CONTAINER FREIGHT								
CR	17	L	B10	PEA-ENV. SO	ACENAPHTHYLENE	52,000 PPB	8.5	
TESTED AT 0.4.5.8.5.13.15 FEET					ACENAPHTHYLENE	200,000 PPB	13	
					ACENAPHTHYLENE	97,000 PPB	15	
					ANTHRACENE	120,000 PPB	13	
					BENZENE	2,700 PPB	13	
					BENZO(A)ANTHRACENE	120,000 PPB	13	
					BENZO(A)PYRENE	190,000 PPB	13	
					BENZO(B)FLUORANTHENE	86,000 PPB	13	
					BENZO(G,H,I)PERYLENE	180,000 PPB	13	
					BENZO(K)FLUORANTHENE	140,000 PPB	13	
					CHRYSENE	160,000 PPB	13	
					ETHYL BENZENE	1,600 PPB	13	
					FLUORANTHENE	200,000 PPB	8.5	
					FLUORANTHENE	570,000 PPB	13	
					FLUORANTHENE	280,000 PPB	15	
					INDENO(1,2,3-C,D)PYRENE	120,000 PPB	13	
					NAPTHALENE	190,000 PPB	8.5	
					NAPTHALENE	910,000 PPB	13	
					NAPTHALENE	720,000 PPB	15	
					Pb	140 PPM	4.5	
					Pb	270 PPM	8.5	
					Pb	270 PPM	13	
					Pb	80 PPM	15	
					PHENANTHRENE	18,000 PPB	4.5	
					PHENANTHRENE	270,000 PPB	8.5	
					PHENANTHRENE	870,000 PPB	13	
					PHENANTHRENE	430,000 PPB	15	
					PYRENE	86,000 PPB	4.5	
					PYRENE	220,000 PPB	8.5	
					PYRENE	630,000 PPB	13	
					PYRENE	310,000 PPB	15	
					TOLUENE	2,400 PPB	13	
					TOTAL XYLENES	4,300 PPB	13	
					TRPH	120 PPM	13	
								268
CR	17	R	B10	ENV. SOLUTI	SAME AS CR 17 L. NO BORING IN FOOTING			
								429
CR	18	L	B3	ENV. SOLUTI	Pb	120 PPM	0	
								381
THIS BORING WAS NEAR FOOTING								
SOIL WAS ONLY TESTED FOR METALS, WATER WAS TESTED FOR EVERYTHING								
ONLY BENZENE WAS FOUND AT 2.0 PPB IN WATER, NOTHING ELSE								

TABLE 2
CONTAMINANTS ON CONTAINER FREIGHT FOOTING EXCAVATIONS

LINE	BENT	FOOTING	TEST NO.	DOCUMENT	CONTAMINANT	LEVEL	DEPTH	TONS
CR	18	R	B3	ENV. SOL.	SAME AS CR 18 L			381
CL	17	L	B9 (UP)	ENV. SOL.	ANTHRACENE	14,000 PPB	2	
					ANTHRACENE	55,000 PPB	5	
TESTED AT 0, 2, 5 FEET					BENZENE	360,000 PPB	2	
					BENZO(A)ANTHRACENE	26,000 PPB	2	
					BENZO(A)ANTHRACENE	170,000 PPB	5	
					BENZO(A)PYRENE	210,000 PPB	5	
					BENZO(B)FLUORANTHENE	76,000 PPB	5	
					BENZO(G,H,I)PERYLENE	220,000 PPB	5	
					BENZO(K)FLUORANTHENE	43,000 PPB	5	
					CHRYSENE	38,000 PPB	2	
					CHRYSENE	220,000 PPB	5	
					DI-N-BUTYLPHTHALATE	1,300 PPB	0	
					ETHYLBENZENE	1000 PPB	2	
					FLUORANTHENE	64,000 PPB	2	
					FLUORANTHENE	520,000 PPB	5	
					INDENO(1,2,3-C,D)PYRENE	160,000 PPB	5	
					NAPHTHALENE	23,000 PPB	2	
					Pb	130 PPM	0	
					Pb	54 PPM	5	
					PHENANTHRENE	54,000 PPB	2	
					PHENANTHRENE	20,000 PPB	5	
					PYRENE	80,000 PPB	2	
					PYRENE	570,000 PPB	5	
					STYRENE	18,000 PPB	2	
					TOLUENE	18,000 PPB	2	
					TPH-D	86,000 PPM	2	
					TRPH	680 PPM	2	
					XYLENES	3400 PPB	2	
								494
CL	17	R	SAME AS CL 17 L, NO BORING IN FOOTING					494
CL	18	R	B10 (UP)	ENV. SOL.	ACETONE	170 PPB	10	
					ANTHRACENE	1,000 PPB	5	
					FLUORANTHENE	14,000 PPB	5	
					NAPTHALENE	110 PPB	7	
					Pb	170 PPM	0	
					Pb	73 PPM	5	-
					PHENANTHRENE	5,900 PPB	5	
					PYRENE	16,000 PPB	5	
								291
CL	18	L	SAME AS CL 18 R, NO BORING IN FOOTING					291

TABLE 2
CONTAMINANTS ON CONTAINER FREIGHT FOOTING EXCAVATIONS

LINE	BENT	FOOTING	TEST NO.	DOCUMENT	CONTAMINANT	LEVEL	DEPTH	TONS
EU	16		B2	ENV. SOLUTI	ACENAPHTHYLENE	140,000 PPB	3.5	
					ACETONE	170 PPB	1	
TESTS TAKEN AT 0, 1, 3.5 FEET					BENZENE	3,800 PPB	3.5	
NO BORING IN FOOTING					ETHYLBENZENE	490 PPB	3.5	
					FLUORANTHENE	240,000 PPB	1	
					FLUORANTHENE	320,000 PPB	3.5	
					NAPTHALENE	610,000 PPB	3.5	
					Pb	140 PPM	0	
					Pb	340 PPM	1	
					Pb	17 PPM	3.5	
					Pb STLC	31 PPM	1	
					PHENANTHRENE	160,000 PPB	1	
					PHENANTHRENE	380,000 PPB	3.5	
					PYRENE	300,000 PPB	1	
					PYRENE	370,000 PPB	3.5	
					STYRENE	1,200 PPB	3.5	
					TOTAL XYLENES	1,300 PPB	3.5	
					TRPH	730 PPM	0	
					TRPH	58 PPM	1	
					TRPH	5,900 PPM	3.5	
								421
EU	17		B6	ENV. SOL.	Pb	400 PPM	0	
					Pb	41 PPM	1	
TESTED AT 0,1,3.5 FEET, ONLY TESTED SOIL					Pb	130 PPM	3.5	
FOR METALS								461
NO BORING IN FOOTING								
EU	18		B7	ENV. SOL.	BENZENE	410 PPB	3.5	
					ETHYLBENZENE	350 PPM	3.5	
NO BORING IN FOOTING					FLUORANTHENE	1,100,000 PPB	3.5	
					NAPTHALENE	660,000 PPB	3.5	
					Pb	150 PPM	0	
					Pb - STLC	54 PPM	0	
					PHENANTHRENE	1,800,000 PPB	3.5	
					PYRENE	1,200,000 PPB	3.5	
					TOLUENE	120 PPB	3.5	
					TRPH	120 PPM	0	
					TRPH	130 PPM	3.5	
					XYLENE	210 PPB	3.5	
								400
						TOTAL ESTIMATED TONS:		4,311
						TOTAL ESTIMATED CU. YARDS:		2695

TABLE 2
CONTAMINANTS ON CONTAINER FREIGHT FOOTING EXCAVATIONS

TABLE III

Cypress Reconstruction Project Preliminary Remedial Goals
(Cypress PRGs)

Cypress Replacement Project Preliminary Remedial Goals

Compound		PRG (mg/kg soil)
Carcinogens:	benzo(a)anthracene *	0.3 - 30
	benzo(b)fluoranthene *	0.3 - 30
	benzo(k)fluoranthene *	0.3 - 30
	benzo(a)pyrene *	0.03 - 3
	chrysene *	3 - 300
	dibenzo(ah)anthracene *	0.03 - 3
	indeno(1,2,3-cd) pyrene *	0.3 - 30
	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
	ethylbenzene	74
	toluene	280
	xylene	99
	1,1-dichloroethane	380
	1,1,1-trichloroethane	470
	chlorobenzene	160
	1,2-dichlorobenzene	360
	naphthalene	82
Metals:	Antimony	67
	Arsenic **	19
	Barium	12,000
	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	840
	Mercury	45
	Molybdenum	830
	Nickel	400 - 44
	Selenium	830
	Silver	830
	Thallium **	27
	Vanadium	1,200
	Zinc	50,000
Petrolium Hydrocarbons:	TRPH	4,000
	Diesel	4,000

* The range for these compounds are recalculations of the original Cypress PRGs.

** The Arsenic PRG is 4.6 ppm while the background level is 19 ppm.
The Thalium PRG is 14 ppm while the background level is 27 ppm.
(When there is no known human contamination at the site, the background levels are used. When there is known human contamination at the site the PRG levels are used.)

State of California — Department of Toxic Substances Cont

Memorandum

To: Barbara Cook
Site Mitigation Branch Region 2
700 Heinz Avenue, Suite 200
Berkeley, California 94710

Date: July 22, 1993

From: Office of Scientific Affairs
400 P Street, Fourth Floor
P. O. Box 806
Sacramento, California 95812-0806
(916) 255-2007

Subject: Cypress Freeway Re-alignment, Oakland, California
PCA Code: 11020, Site Code: 200308-00

NOTE: These Preliminary Remedial Goals (PRG's) are meant to be applied to the Cypress Freeway Re-alignment Project only, and may not be adequately health protective if used outside of this context.

Also, the PRG's presented are not generic cleanup numbers. They were computed assuming exposure scenarios in which only three of thirteen potential exposure pathways are operable.

BACKGROUND

Per your Technical Request form dated April 21, 1993, Anina Antonio's PROFS note of April 20, 1993 and several conversations, we previously calculated preliminary remedial goals (PRG's) for soil for 18 metals which the PROFS note indicated are contaminants of concern at the Cypress site. PRGs for the remainder of the compounds, mostly volatile or semivolatile organic compounds, you requested are provided in this memo.

In calculating the PRGs, the only soil exposure pathways evaluated were: direct dermal contact, incidental ingestion, and fugitive dust inhalation in the cases of semivolatile compounds or vapor inhalation for the volatile compounds. Other potential exposure pathways (e.g., food chain pathways or surface water runoff) were not evaluated because you indicated that these pathways were presently incomplete and were likely to remain so in the future. Migration to ground or surface waters was not evaluated per your request and our discussions, nor were threats to the ecosystem considered.

Additionally, per your direction, the only exposure scenarios evaluated were for construction workers employed in rebuilding the freeway and motorists who would use the re-aligned freeway. Preliminary calculations indicated both daily and lifetime exposures would be much greater for construction workers. Consequently PRG's calculated for these receptors are also protective for motorists.

GENERAL COMMENTS

1. Since we have not reviewed the site characterization data, our memo is limited to calculation of PRGs for the chemicals identified by Region 2 to be contaminants of concern. We assume that acceptable analytical and sampling procedures were used and that regional staff have determined that their selection of chemicals of

concern were based on data that appropriately reflect the extent and magnitude of contamination at the site.

2. Based on our discussions, we have calculated PRGs for a construction scenario and have used the default exposure parameters recommended by U. S. Environmental Protection Agency (EPA) for such exposure scenarios. These exposure factors are also consistent with the screening level procedures the DTSC is considering for preliminary endangerment assessments.

CALCULATION OF PRELIMINARY REMEDIAL GOALS

Based on our telephone conferences and the "PROFS" note of April 20, PRGs were calculated for 18 of the 20 "CAM 17" metals. The other chemicals for which PRGs were requested are total recoverable petroleum hydrocarbons (TPH), Total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, and eight volatile chlorinated solvents.

Toxicity criteria are not available for total petroleum products. The chemical composition of these products vary from product to product and to some extent batch to batch as they are composed of a large number of individual components. Additionally, once these products are released to the environment, they undergo differential weathering. The more volatile and mobile components volatilize to the atmosphere and/or migrate through the soil to groundwater. Additionally, the individual components are subject to differential chemical and biological degradation in the environment. It has been our policy to evaluate the risk from petroleum products by considering the most toxic individual components namely benzene, toluene, ethyl benzene, and xylene (BTEX) among the volatile products and polycyclic aromatic hydrocarbons (PAH's) among the semivolatile components. PRGs for BTEX, chlorinated solvents of concern, and PAH's are provided in this memo. We did not locate health criteria for 1,1-dichloroethene or 2-chloroethylvinlyether. Please contact us if you need further work on these compounds.

PRGs for benz[a]anthracene, benzo[b]fluoranthene, chloroform, 1,4-chlorobenzene, 1,1-dichloroethylene, 1,1-dichloroethane, benzo[k]fluoranthene, benzo[a]pyrene, chrysene, dibenz[ah]anthracene, indeno[1,2,3-cd]pyrenebenzene, tetrachloroethylene, trichloroethylene, and vinyl chloride are based on carcinogenicity. The carcinogenicity-based PRGs are calculated for cancer risk levels of 1×10^{-6} excess individual cancer risk for each individual chemical. Additivity of individual chemical carcinogenic risks should be considered when setting final remedial goals.

The PRGs for the remaining (noncarcinogenic) compounds are based on a hazard index of one for each individual chemical. Additivity of noncancer hazards with similar toxic endpoints should be considered when setting final remediation goals.

Details of the calculation of the PRGs are in Appendix A. The toxicity criteria required for the PRG calculations are listed in Appendix B. The calculated PRGs are in units of mg chemical per kg soil (ppm) and are listed below in Table I. Also note, the PRGs for carcinogens are given over a nine-fold range to account for uncertainty for less than lifetime

exposure as estimated by Kodel et. al., 1987. This is explained further in Appendix A. Please contact me at Calnet 494-2049 to discuss this or any other questions or concerns.

TABLE 1
Preliminary Remedial Goals for Organic Chemicals; Cypress Freeway Reconstruction

Compound	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
ethylbenzene	74[1]
toluene	280[1]
xylene	99[1]
1,1-dichloroethane	380[1]
1,1,1-trichloroethane	470[1]
chlorobenzene	160[1]
1,2-dichlorobenzene	360[1]
naphthalene	82[1]

[1] Based on saturation concentration

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REFERENCES

Baker, L. W. and K. P. MacKay. 1985. Screening models for estimating toxic air pollution near a hazardous waste landfill. J. Air. Pollut. Control Assoc., 35:1190-1195.

California Environmental Protection Agency, Standards and Criteria Work Group, June 1992. California Cancer Potency Values.

DTSC, Office of Scientific Affairs, Preliminary Endangerment Assessment Guidance Manual, Draft May 19,1993.

Kodel, R. L., D. W. Gaylor and J. J. Chen, 1987. Using Average Lifetime Dose Rates for Intermittent Exposures to Carcinogens, Risk Analysis 7: 339-345.

U. S. Environmental Protection Agency, 1992. Dermal Exposure Assessment: Principles and Applications, Interim Report, Office of Health and Environmental Assessment. EPA 600/8-91-011B.

U. S. Environmental Protection Agency. 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors". March 25, 1991, OSWER Directive 9285.6-03.

U. S. Environmental Protection Agency. 1992. Air/Superfund National Technical Guidance Study Series. Guideline for Predictive Baseline Emissions Estimation Procedures for Superfund Sites. Prepared for Environmental Protection Agency, Research Triangle Park, North Carolina. PB92-171909.

U. S. Environmental Protection Agency. 1989a. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). U. S. Environmental Protection Agency, Office of Emergency and Remedial Response. Washington, D.C. December 1989. EPA-540/1-89/043.

U. S. Environmental Protection Agency. 1989b. Exposure Factors Handbook. Office of Health and Environmental Assessment. Washington, D.C. July 1989. EPA/600/8-89/043.

U. S. Environmental Protection Agency. 1989c. U. S. EPA Region IX Recommendations, Risk Assessment Guidance for Superfund Human Health Risk Assessments. Interim Final, 15 December 1989.

U. S. Environmental Protection Agency. 1988. Superfund Exposure Assessment Manual. Office of Remedial Response, Washington, D.C. EPA/540/1-88/001.

APPENDIX A CALCULATION OF PRELIMINARY REMEDIAL GOALS

A. Derivation of PRG equations. (Does not include exposure from ingestion of homegrown fruits and vegetables, or animal products that feed on vegetation grown on contaminated soil).

1. Risk = Oral cancer slope x [Incidental soil ingestion exposure for construction worker (CW) + Dermal cancer slope* x [Dermal exposure for CW] + Inhalation cancer slope x [Inhalation exposure for CW]

$$\text{Risk} = SF_o \times C_s \times \frac{IGR_{cw} \times EF \times ED_{cw} \times 10^{-6}\ kg/mg}{BW_{cw} \times AT \times 365\ days/yr} +$$

$$SF_o^* \times C_s \times \frac{SA_{cw} \times AF \times ABS \times EF_{cw} \times ED_{cw} \times 10^{-6}\ kg/mg}{BW_{cw} \times AT \times 365\ days/yr} +$$

$$SF_i \times C_s \times \frac{INR_{cw} \times EF \times ED_{cw} \times 10^{-6}\ kg/mg}{BW_{cw} \times AT \times 365\ days/yr} +$$

where: SF_o = oral cancer slope factor, $(mg/kg\text{-}day)^{-1}$
SF_i = inhalation cancer slope factor, $(mg/kg\text{-}day)^{-1}$
C_s = concentration in soil, mg/kg
AT = averaging time, 70 years for carcinogens
EF = exposure frequency, 250 days/year for construction workers (EPA, 1991)
ED = exposure duration, one year for construction worker
IGR = incidental soil ingestion rate, mg/day = 480 mg/day (construction worker)
INR = inhalation rate (m^3/work day), construction worker = 20 m^3/day
BW = body weight, construction worker = 70 kg
SA = skin surface area exposed (cm^2), = 3,160 cm^2 (head, hands, and forearms exposed; upper-bound, EPA 1992).
AF = soil to skin adherence factor, mg/cm^2 = 2.77 mg/cm^2 (EPA, 1992)
ABS = absorption factor, dimensionless.
$C_s = E_i / L_s \times V \times H$

and:

L_s = length of side = $(4.84 \times 10^6\ cm^2)^{0.5}$
V = wind velocity = 2.25 m/sec
H = mixing height = 2 m
E_i = average emission rate of contaminant i over the residential lot during the exposure interval, mg/sec, calculated as follows:

$$E = \frac{A\ 2\ D_{ei}\ P_e\ K_{ai}\ C_i \times 10^3\ mg/g}{\sqrt{\pi\ \alpha\ T}}$$

where: A = area of contamination, cm^2; default = 4.84×10^6 cm^2,
D_{ei} = effective diffusivity of compound, cm^2/sec
$= D_i (P_e^{3.33}/P_t^2)$
D_i = diffusivity in air (cm^2/s) (EPA, 1992b).

P_t = total soil porosity, unitless = $1-(\beta/\rho)$
ρ = particle density, g/cm^3, default = 2.65 g/cm^3
β = soil bulk density, g/cm^3, default = 1.5 g/cm^3
P_a = air filled soil porosity, unitless = $P_t - \theta_m \beta$
θ_m = soil moisture content, cm^3/g, default = 0.1 cm^3/g
β = soil bulk density, g/cm^3, default = 1.5 g/cm^3
K_{as} = soil/air partition coefficient, g/cm^3 = $(H_c/K_d) \times 41$
H_c = Henry's Law constant, atm-m^3/mole
K_d = soil-water partition coefficient, cm^3/g or ml/g
41 = conversion factor to change H_c to dimensionless form
T = exposure interval, secs; default = 9.5×10^8 seconds (30 years)

*Oral slope factor used as surrogate for dermal slope factor.

After a PRG has been determined by the above equation, it is divided by 9 and the final PRG is given as a range between the upper bound PRG to one ninth that value. As mentioned above in the main body of the memo, this is done 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. This is based on the theoretical work of Kodell et. al., (1987) in applying the multistage model of carcinogenesis to estimation of carcinogenic risk from less than life time exposure. The PRGs which were based on cancer risk as an end point were calculated based on 10^{-6} as an acceptable risk level. When making risk management decisions, cancer risks should be summed over all compounds.

$$\text{2. Hazard} = \frac{1}{RfD_o} \times C_s \times \frac{IGR \times EF \times ED \times 10^{-6}\ kg/mg}{BW \times AT \times 365\ days/yr} +$$

$$\frac{1}{RfD_i} \times C_s \times \frac{INR \times EF \times ED \times 10^{-6}\ kg/mg}{W \times AT \times 365\ days/yr} +$$

$$\frac{1}{RfD_o^*} \times C_s \times \frac{SA \times AF \times ABS \times EF \times ED \times 10^{-6}\ kg/mg}{BW \times AT \times 365\ days/yr}$$

* Oral RfD is used as a surrogate for dermal RfD.

The default exposure factors for hazard from noncarcinogenic effects are the same as for carcinogenic risk, except "AT", the averaging time, is equal to the exposure duration (one year). RfD_o is the oral reference dose, in units of mg/kg-day. RfD_i is the inhalation reference dose (mg/kg-day).

APPENDIX B TOXICITY CRITERIA USED IN CALCULATING PRGs

TABLE B-1: Cancer Potency Slopes, Source, Weight of Evidence

Compound	CPF (mg/kg-day)$^{-1}$	Source	Weight of Evidence
benz[a]anthracene	12	CA	B2
benzo[b]fluoranthene	12	CA	B2
benzo[k]fluoranthene	12	CA	B2
benzo[a]pyrene	12	CA	B2
chrysene	12	CA	B2
dibenz[ah]anthracene	12	CA	B2
indeno[1,2,3-cd]pyrene	12	CA	B2
benzene	0.1	CA	A
chloroform	0.019[i]; 0.031[o]	CA	B2
1,4-dichlorobenzene	0.04	CA	C
1,1-dichloroethane	0.0057	CA	C
1,1-dichloroethylene	0.18[i]; 0.6[o]	IRIS	C

---

[i] Inhalation cancer potency slope
[o] Oral cancer potency slope

If more than one superscript appears beside a compound's slope factor, it signifies the same cancer slope is used for each indicated route of exposure. If only one superscript appears beside a slope, it indicates the corresponding cancer slope applies to that route of exposure only. Cadmium and nickel are considered to be carcinogenic by the inhalation route of exposure only. Chromium (VI) is not considered to be carcinogenic by the dermal route of exposure and has different slopes for the inhalation and oral routes of exposure. Arsenic and beryllium are considered to be carcinogenic by all three routes of exposure.

[CA] California Environmental Protection Agency, Standards and Criteria Work Group. June 1992. California Cancer Potencies.

[2]U.S. EPA, Integrated Risk Information System (IRIS) database, June, 1993.

TABLE B-2: Toxicity Values for Chronic Exposure Oral/Inhalation RfD/RfC

Compound	Oral RfD[a] (mg/kg-day)	Inhalation RfD[b] (mg/kg-day
fluoranthene	0.04[a]	[b]
pyrene	0.03	
ethylbenzene	0.1	0.29
toluene	0.2	0.11
xylene	2	
1,1,1-trichloroethane	0.09[c]	
chlorobenzene	0.02	
1,2-chlorobenzene	0.09	
naphthalene	0.004	

[a]All RfD's with exception of 1,1,1-trichloroethane were obtained from U.S. EPA's IRIS (Integrated Risk Information System) database (June 1993).

[b] If no inhalation RfD is listed, the inhalation RfD was assumed to be the same as the oral RfD.

[c]The RfD for this substance was obtained from the U.S. EPA's HEAST Manual.

Carcinogenic Polycyclic Aromatic Hydrocarbons

There are a number of carcinogenic PAH's which occur frequently at hazardous waste sites, including benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and chrysene. The PRGs for the current assessment are based on the Office of Environmental Health Hazard Assessment (OEHHA) published cancer potency slope which is greater than the USEPA integratedetcetc IRIS value. There is considerable scientific evidence suggesting that the relative cancer potencies of these compounds may span as much as three orders of magnitude with benzo(a)pyrene considered one of the most potent and chrysene the least potent. Both the USEPA and CalEPA are considering adopting a set of toxicity equivalence factors for PAHs to be used in a manner similar to that for dioxins. Currently no official federal or state policy exists regarding such an approach. Until a policy is released, OSA will continue to use a surrogate chemical approach, wherein all carcinogenic PAHs are considered equipotent to benzo(a)pyrene.

Noncarcinogenic PAHs

PAHs detected at the site which are currently considered to be noncarcinogenic include naphthalene, anthracene, pyrene, and phenanthrene. PRGs for these chemicals are also based on a surrogate chemical approach using naphthalene as the most potent chemical. A provisional RfD for naphthalene used by USEPA Region IX is used to calculate

the PRGs. Naphthalene is currently under review by a USEPA IRIS workgroup. Although it seems likely that the IRIS workgroup will adopt the value used in our calculation (the value has recently been used in EPA Region IX), the value is still considered provisional. In addition to the uncertainty in the naphthalene RfD, the proposed PRG considers only inhalation of fugitive dust associated with naphthalene, as a surrogate for all other noncarcinogenic PAHs bound to soil particles. The physico-chemical behavior of PAHs in vapor phase vs. particulate phase is extremely complex. It is not feasible to separate out the contribution to exposure from the two phases from data currently available for the site. Naphthalene, for example, because of its greater vapor pressure than the other PAHs detected at the site, will exist mostly in the vapor phase. However, since it is a surrogate for PAHs with much lower vapor pressures, we assume that it will all be bound to soil particles and available for soil ingestion and dermal contact.

TABLE 1

Preliminary Remedial Goals (PRG's) for Metals
Cypress Freeway Reconstruction

Compound	PRG's (mg/kg soil)
Antimony	67
[c]Arsenic	4.6- 0.51
Barium	12,000
[c]Beryllium	1.8- 0.2
[c]Cadmium	24- 2.7
Chromium (III)	170,000
[c]Chromium (VI)	0.68- 0.076
Copper	5,000
Fluorine	10,000
Lead	340
Mercury	45
Molybdenum	830
[c]Nickel	400- 44
Selenium	830
Silver	830
Thallium	14
Vanadium	1200
Zinc	50,000

[c]PRG based on carcinogenic endpoint

	AY	AZ	BE	BK
12		BASED ON ALL PATHWAYS FOR CARCINOGENS	Subchronic	BASED ON ALL PATHWAYS FOR CHRONIC EXPOSURE
18	Benzene	3.13E+01	2.58E+02	
32	Chlorobenzene		1.57E+02	1.15E+03
36	Chloroform	1.10E+02	6.01E+02	3.97E+02
43	1,2-Dichlorobenzene		3.60E+02	6.22E+03
45	1,4-Dichlorobenzene	1.20E+02	2.05E+02	1.37E+04
48	1,1-Dichloroethane	4.45E+02	3.77E+02	4.25E+03
49	1,2-Dichloroethane (EDC)	4.61E+01	3.30E+02	
50	1,1-Dichloroethylene	3.81E+00	1.04E+02	1.24E+02
61	Ethylbenzene		7.35E+01	6.56E+03
78	Naphthalene		8.20E+01	2.21E+02
81	Styrene		2.27E+02	1.33E+04
83	1,1,2,2-Tetrachloroethane	1.78E+01	1.33E+03	
84	Tetrachloroethylene (PCE)	9.15E+01	2.02E+02	5.72E+02
85	Tetrahydrofuran			
86	Toluene		2.83E+02	9.49E+03
88	1,1,1-Trichloroethane		4.73E+02	4.47E+03
89	1,1,2-Trichloroethane	6.98E+01	5.45E+02	2.27E+02
90	Trichloroethylene (TCE)	2.45E+02	2.97E+02	3.36E+02
96	Triethylamine		1.45E+04	9.69E+01
97	Vinyl chloride	9.42E-01	7.34E+02	
98	m-Xylene		9.91E+01	1.08E+05
99	o-Xylene		9.88E+01	1.13E+05
100	p-Xylene		9.91E+01	4.63E+03
101	Xylene (mixed)		9.88E+01	
102	1,2-Dibromo-3-chloropropan	1.11E+00	3.57E+02	6.34E+00

	AY	AZ	BK
12		BASED ON ALL PATHWAYS FOR CARCINOGENS	BASED ON ALL PATHWAYS FOR CHRONIC EXPOSURE
13			
14			
20	Bis(2-ethylhexyl)phthalat	6.28E+02	1.51E+03
25	Di-n-butyl phthalate		7.54E+03
40	n-Hexane		4.52E+03
43	Methyl isobutyl ketone		3.77E+03
55	Polychlorinated biphenyls	4.16E-01	
56	Polynuclear aromatic hydr		
57	Benz[a]anthracene	3.32E-01	
58	Benzo[b]fluoranthene	3.32E-01	
59	Benzo[k]fluoranthene	3.32E-01	
60	Benzo[a]pyrene	3.32E-01	
61	Chrysene	3.32E-01	
62	Dibenz[ah]anthracene	3.32E-01	
63	Fluoranthene		2.28E+03
64	Indeno[1,2,3-cd]pyrene	3.32E-01	
65	Pyrene		1.71E+03
69	2,3,7,8-TCDD (dioxin)	7.40E-05	1.37E-04

FIGURE 2.5: CALCULATION OF SATURATION CONCENTRATION FOR VOCs

$$C_{sat} = \frac{S \times (0.15K_d + 0.015 + 1.16\ H_c)}{1.5}$$

If the concentration of the contaminant in the soil is greater than C_{sat}, then the equation given in Figure 2.6 is not valid, and the calculation of volatile emissions is beyond the scope of this screening evaluation

Where:

C_{sat} = Saturation concentration, mg/kg

K_d = soil/water partition coefficient, cm^3/g (=L-water/kg-soil)
= $K_{oc} \times f_{oc}$

Where:

K_{oc} = organic carbon partition coefficient, L/kg or cm^3/g (refer to Table 3, Appendix A[a])

f_{oc} = fraction of organic carbon (default = 0.02)

S = solubility of contaminant in water, mg/L-water (refer to Table 3, Appendix A)

H_c = Henry's Law Constant, atm-m^3/mole (refer to Table 3, Appendix A)

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a. If the K_{oc} is not available in Table 3 of Appendix A, refer to Appendix B, Step 1 for the appropriate equation.

Note: The above equation incorporates the default parameters and unit conversion factors. Refer to Appendix B for the complete equation and derivation of this simplified equation.

$$E_i = \frac{1.6 \times 10^{-5} \times D_i \times \frac{H_c}{K_d} \times C_i}{\sqrt{D_i \times \frac{0.023}{\left(0.284 + 0.046\right) \times \frac{K_d}{H_c}}}}$$

Where:

E_i = average emission rate of contaminant i over the residential lot during the exposure interval, mg/sec

D_i = diffusivity in air for compound i, cm^2/sec (refer to Table 3, Appendix A)

H_c = Henry's Law constant, $atm\text{-}m^3/mole$ (refer to Table 3, Appendix A)

K_d = soil-water partition coefficient, cm^3/g; calculated in Figure 2.5

C_i = bulk soil concentration of contaminant i; (chemical concentration in soil, mg/kg, x (10^{-6} kg/mg))

Note: The above equation includes unit conversion factors for the various parameters. Refer to Appendix B, Step 2 of the Volatile Emission Model for the complete equation and derivation of the condensed equation.

STATE OF CALIFORNIA - ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
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MEMORANDUM

TO: Lynn Nakashima
Department of Toxic Substances Control
Site Mitigation Branch
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Berkeley, California 94710

FROM: Stephen M. DiZio, Ph.D.
Department of Toxic Substances Control
Office of Scientific Affairs
400 P Street, 4th Floor
P.O. Box 806
Sacramento, California 95812-0806

DATE: May 5, 1995

SUBJECT: REVISED HEALTH-BASED ACCEPTABLE SOIL CONCENTRATIONS FOR CYPRESS FREEWAY PROJECT
PCA: 11050, SITE-WP: 200486-00, OUTCOME CODE: 02

INTRODUCTION

The Department of Toxic Substances Control (DTSC) Office of Scientific Affairs has been requested by the Region 2 Site Mitigation Branch to provide a recalculation of the health-based acceptable soil concentrations of carcinogenic polycyclic aromatic hydrocarbons PAHs in the light of (1) The recently revised inhalation cancer slope factor for benzo(a)pyrene by the inhalation route which was published by the Cal/EPA Standards and Criteria Work Group, and (2) the toxic equivalency factors (TEFs) for carcinogenic PAHs also adopted by the Standards and Criteria Work Group. No other new cancer slope factors or noncancer reference doses (RfDs) have been adopted or changed which would be associated with the contaminants found along the proposed route of the Cypress. Therefore, using the default residential scenario as well as default methodologies presented in the DTSC *Preliminary Endangerment Assessment Guidance Manual, January 1994*, the following health-based acceptable soil concentrations were calculated for residential soils for the carcinogenic PAH species most commonly found in petroleum-derived contamination.

Cypress Freeway-Specific[b] Default Health-Based Soil Concentrations (Residential Exposure Scenario) of Carcinogenic Polycyclic Aromatic Hydrocarbons Using CAL/EPA Toxic Equivalency Factors

Chemical	CAL/EPA TEFs for Carcinogenic PAHs	Soil Concentration Associated with Excess Cancer Risk (mg/kg)		
		1×10^{-6}	1×10^{-5}	1×10^{-4}
Benzo(a)anthracene	0.1	0.30	3.0	30.00
Chrysene	0.01	3.00	30.0	300.00
Benzo(b)fluoranthene	0.1	0.30	3.0	30.00
Benzo(k)fluoranthene	0.1	0.30	3.0	30.00
Benzo(a)pyrene[a]	1.0	0.03	0.3	3.00
Dibenzo(ah)anthracene	1.0	0.03	0.3	3.00
Indeno(1,2,3-cd)pyrene	0.1	0.30	3.0	30.00

a
The Cal/EPA Cancer slope factors (CSFs) for benzo(a)pyrene are as follows: CSF(oral): 12 (mg/kg-day)-1; CSF(inhalation): 3.9 (mg/kg-day)-1.

b
These soil concentrations are site-specific and applicable to the Cypress Freeway only.

Reviewed by:

Judith A. Parker, Ph.D., DABT
Senior Toxicologist

cc: Deborah J. Oudiz, Ph.D.

TABLE IV

U.S. Environmental Protection Agency Region 9's PRGs

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION							CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
SFo g/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
8.7E-03 i	4.0E-03 i	8.7E-03 r	4.0E-03 r	0	0.10	30560-19-1	Acephate	5.1E+01	ca**	2.2E+02	ca*	7.7E-01	ca*	7.7E+00	ca*		
7.7E-03 r	2.6E-03 r	7.7E-03 i	2.6E-03 i	1	0.10	75-07-0	**Acetaldehyde**	9.2E+00	ca**	2.1E+01	ca**	8.7E-01	ca*	1.5E+00	ca*		
	2.0E-02 i		2.0E-02 r	0	0.10	34256-82-1	Acetochlor	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	1.0E-01 i		1.0E-01 r	1	0.10	67-64-1	Acetone	2.1E+03	nc	6.8E+03	nc	3.7E+02	nc	6.1E+02	nc	1.6E+01	8.0E-01
	8.0E-04 h		2.9E-03 x	0	0.10	75-86-5	Acetone cyanohydrin	5.2E+01	nc	5.5E+02	nc	1.0E+01	nc	2.9E+01	nc		
	6.0E-03 i		1.4E-02 h	1	0.10	75-05-8	**Acetonitrile**	2.2E+02	nc	1.2E+03	nc	5.2E+01	nc	7.1E+01	nc		
	1.0E-01 i		5.7E-06 x	1	0.10	98-86-2	**Acetophenone**	4.9E-01	nc	1.6E+00	nc	2.1E-02	nc	4.2E-02	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	50594-66-6	Acifluorfen	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
	2.0E-02 h		5.7E-06 i	1	0.10	107-02-8	**Acrolein**	1.0E-01	nc	3.4E-01	nc	2.1E-02	nc	4.2E-02	nc		
4.6E+00 i	2.0E-04 i	4.6E+00 i	2.0E-04 r	0	0.10	79-06-1	Acrylamide	9.8E-02	ca*	4.2E-01	ca	1.5E-03	ca	1.5E-02	ca		
	5.0E-01 i		2.9E-04 i	0	0.10	79-10-7	**Acrylic acid**	3.1E+04	nc	2.9E+05	nc	1.0E+00	nc	1.8E+04	nc		
5.4E-01 i	1.0E-03 h	2.4E-01 i	5.7E-04 i	1	0.10	107-13-1	Acrylonitrile	1.9E-01	ca*	4.7E-01	ca*	2.8E-02	ca*	3.7E+00	ca*		
8.1E-02 h	1.0E-02 i	8.0E-02 r	1.0E-02 r	0	0.10	15972-60-8	Alachlor	5.5E+00	ca*	2.4E+01	ca	8.4E-02	ca	8.4E-01	ca		
	1.5E-01 i		1.5E-01 r	0	0.10	1596-84-5	Alar	9.8E+03	nc	1.0E+05	nc	5.5E+02	nc	5.5E+03	nc		
	1.0E-03 i		1.0E-03 r	0	0.10	116-06-3	Aldicarb	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
	1.0E-03 i		1.0E-03 r	0	0.10	1646-88-4	Aldicarb sulfone	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
1.7E+01 i	3.0E-05 i	1.7E+01 i	3.0E-05 r	0	0.10	309-00-2	Aldrin	2.6E-02	ca*	1.1E-01	ca	3.9E-04	ca	4.0E-03	ca	1.2E+04	5.9E+02
	2.5E-01 i		2.5E-01 r	0	0.10	5585-64-8	Ally	1.6E+04	nc	1.0E+05	max	9.1E+02	nc	9.1E+03	nc		
	5.0E-03 x		5.0E-03 r	0	0.10	107-18-6	Allyl alcohol	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	5.0E-02 h		2.9E-04 i	0	0.10	107-05-1	Allyl chloride	3.2E+03	nc	3.3E+04	nc	1.0E+00	nc	1.8E+03	nc		
	1.0E+00 n			0	0.01	7429-90-5	Aluminum	7.7E+04	nc	1.0E+05	max			3.7E+04	nc		
	4.0E-04 i			0	0.01	20859-73-8	Aluminum phosphide	3.1E+01	nc	6.8E+02	nc			1.5E+01	nc		
	3.0E-04 i		3.0E-04 r	0	0.10	67485-29-4	Amdro	2.0E+01	nc	2.0E+02	nc	1.1E+00	nc	1.1E+01	nc		
	9.0E-03 i		9.0E-03 r	0	0.10	834-12-8	Ametryn	5.9E+02	nc	6.1E+03	nc	3.3E+01	nc	3.3E+02	nc		
	7.0E-02 h		7.0E-02 r	0	0.10	591-27-5	m-Aminophenol	4.6E+03	nc	4.8E+04	nc	2.6E+02	nc	2.6E+03	nc		
	2.0E-05 h		2.0E-05 r	0	0.10	504-24-5	4-Aminopyridine	1.3E+00	nc	1.4E+01	nc	7.3E-02	nc	7.3E-01	nc		
	2.5E-03 i		2.5E-03 r	0	0.10	33089-61-1	Amitraz	1.6E+02	nc	1.7E+03	nc	9.1E+00	nc	9.1E+01	nc		
			2.6E-02 i	n/a	n/a	7664-41-7	Ammonia					1.0E+02	nc				
	2.0E-01 i			0	0.10	7773-06-0	Ammonium sulfamate	1.3E+04	nc	1.0E+05	max			7.3E+03	nc		
5.7E-03 i	2.9E-04 r	5.7E-03 r	2.9E-04 i	0	0.10	62-53-3	Aniline	1.9E+01	nc	2.0E+02	nc	1.0E+00	nc	1.1E+01	nc		
	4.0E-04 i			0	0.01	7440-36-0	Antimony and compounds	3.1E+01	nc	6.8E+02	nc			1.5E+01	nc	5.0E+00	3.0E-01
	5.0E-04 h			0	0.01	1314-60-9	Antimony pentoxide	3.8E+01	nc	8.5E+02	nc			1.8E+01	nc		
	9.0E-04 h			0	0.01	28300-74-5	Antimony potassium tartrate	6.9E+01	nc	1.5E+03	nc			3.3E+01	nc		
	4.0E-04 h			0	0.01	1332-81-6	Antimony tetroxide	3.1E+01	nc	6.8E+02	nc			1.5E+01	nc		
	4.0E-04 h			0	0.01	1309-64-4	Antimony trioxide	3.1E+01	nc	6.8E+02	nc			1.5E+01	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	74115-24-5	Apollo	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
2.5E-02 i	5.0E-02 h	2.5E-02 i	5.0E-02 r	0	0.10	140-57-8	Aramite	1.8E+01	ca*	7.6E+01	ca	2.7E-01	ca	2.7E+00	ca		
	3.0E-04 i			0	0.03	7440-38-2	Arsenic (noncancer endpoint)	2.2E+01	nc								
1.5E+00 i	3.0E-04 i	1.5E+01 i		0	0.03	7440-38-2	Arsenic (cancer endpoint)	3.8E-01	ca*	2.4E+00	ca	4.5E-04	ca	4.5E-02	ca	2.9E+01	1.0E+00
			1.4E-05 i	n/a	n/a	7784-42-1	Arsine					5.2E-02	nc				
	9.0E-03 i		9.0E-03 r	0	0.10	76578-12-6	Assure	5.9E+02	nc	6.1E+03	nc	3.3E+01	nc	3.3E+02	nc		
	5.0E-02 i		5.0E-02 r	0	0.10	3337-71-1	Asulam	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
2.2E-01 h	3.5E-02 h	2.2E-01 r	3.5E-02 h	0	0.10	1912-24-9	Atrazine	2.0E+00	ca	8.6E+00	ca	3.1E-02	ca	3.0E-01	ca		
	4.0E-04 i		4.0E-04 r	0	0.10	71751-41-2	Avermectin B1	2.6E+01	nc	2.7E+02	nc	1.5E+00	nc	1.5E+01	nc		
1.1E-01 i		1.1E-01 i		0	0.10	103-33-3	Azobenzene	4.0E+00	ca	1.7E+01	ca	6.2E-02	ca	6.1E-01	ca		
	7.0E-02 i		1.4E-04 h	0	0.01	7440-39-3	Barium and compounds	5.3E+03	nc	1.0E+05	max	5.2E-01	nc	2.6E+03	nc	1.6E+03	8.2E+01
	4.0E-03 i		4.0E-03 r	0	0.10	114-26-1	Baygon	2.6E+02	nc	2.7E+03	nc	1.5E+01	nc	1.5E+02	nc		
	3.0E-02 i		3.0E-02 r	0	0.10	43121-43-3	Bayleton	2.0E+03	nc	2.0E+04	nc	1.1E+02	nc	1.1E+03	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	68359-37-5	Baythroid	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
	3.0E-01 i		3.0E-01 r	0	0.10	1861-40-1	Benefin	2.0E+04	nc	1.0E+05	max	1.1E+03	nc	1.1E+04	nc		
	5.0E-02 i		5.0E-02 r	0	0.10	17804-35-2	Benomyl	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	2.5E-03 i		2.5E-03 r	0	0.10	25057-89-0	Bentazon	1.6E+02	nc	1.7E+03	nc	9.1E+00	nc	9.1E+01	nc		
	1.0E-01 i		1.0E-01 r	0	0.10	100-52-7	Benzaldehyde	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
2.9E-02 i	1.7E-03 r	2.9E-02 i	1.7E-03 n	1	0.10	71-43-2	Benzene	6.3E-01	ca*	1.4E+00	ca*	2.3E-01	ca*	3.9E-01	ca*	3.0E-02	2.0E-03
2.3E+02 i	3.0E-03 i	2.3E+02 i	3.0E-03 r	0	0.10	92-87-5	Benzidine	1.9E-03	ca	8.3E-03	ca	2.9E-05	ca	2.9E-04	ca		
	4.0E+00 i		4.0E+00 i	0	0.10	65-85-0	Benzoic acid	1.0E+05	max	1.0E+05	max	1.5E+04	nc	1.5E+05	nc	4.0E+02	2.0E+01
1.3E+01 i		1.3E+01 r		0	0.10	98-07-7	Benzotrichloride	3.4E-02	ca	1.5E-01	ca	5.2E-04	ca	5.2E-03	ca		
	3.0E-01 h		3.0E-01 r	0	0.10	100-51-6	Benzyl alcohol	2.0E+04	nc	1.0E+05	max	1.1E+03	nc	1.1E+04	nc		
1.7E-01 i		1.7E-01 r		1	0.10	100-44-7	Benzyl chloride	8.1E-01	ca	2.0E+00	ca	4.0E-02	ca	6.6E-02	ca		
4.3E+00 i	5.0E-03 i	8.4E+00 i		0	0.01	7440-41-7	Beryllium and compounds	1.4E-01	ca	1.1E+00	ca	8.0E-04	ca	1.6E-02	ca	6.3E+01	3.0E+00
	1.0E-04 i		1.0E-04 r	0	0.10	141-66-2	Bidrin	6.5E+00	nc	6.8E+01	nc	3.7E-01	nc	3.7E+00	nc		
	1.5E-02 i		1.5E-02 r	0	0.10	82657-04-3	Biphenthrin (Talstar)	9.8E+02	nc	1.0E+04	nc	5.5E+01	nc	5.5E+02	nc		
	5.0E-02 i		5.0E-02 r	1	0.10	92-52-4	**1,1-Biphenyl**	3.5E+02	sat	3.5E+02	sat	1.8E+02	nc	3.0E+02	nc		

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION							CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
				V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
SFo g/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)														
1.1E+00 i		1.2E+00 i		1	0.10	111-44-4	Bis(2-chloroethyl)ether	4.3E-02	ca	9.7E-02	ca	5.8E-03	ca	9.6E-03	ca	4.0E-04	2.0E-05
7.0E-02 h	4.0E-02 i	3.5E-02 h	4.0E-02 r	1	0.10	39638-32-9	Bis(2-chloroisopropyl)ether	2.5E+00	ca	6.7E+00	ca	1.9E-01	ca	2.7E-01	ca		
2.2E+02 i		2.2E+02 i		1	0.10	542-88-1	Bis(chloromethyl)ether	1.9E-04	ca	4.2E-04	ca	3.1E-05	ca	5.2E-05	ca		
7.0E-02 x		7.0E-02 x		0	0.10	108-60-1	Bis(2-chloro-1-methylethyl)ether	6.3E+00	ca	2.7E+01	ca	9.6E-02	ca	9.6E-01	ca		
1.4E-02 i	2.0E-02 i	1.4E-02 r	2.2E-02 r	0	0.10	117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)	3.2E+01	ca*	1.4E+02	ca	4.8E-01	ca	4.8E+00	ca		
	5.0E-02 i		5.0E-02 r	0	0.10	80-05-7	Bisphenol A	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	9.0E-02 i		5.7E-03 h	0	0.10	7440-42-8	Boron	5.9E+03	nc	6.1E+04	nc	2.1E+01	nc	3.3E+03	nc		
			2.0E-04 h	0	0.10	7637-07-2	Boron trifluoride					7.3E-01	nc				
6.2E-02 i	2.0E-02 i	6.2E-02 r	2.0E-02 r	1	0.10	75-27-4	Bromodichloromethane	6.3E-01	ca	1.4E+00	ca	1.1E-01	ca	1.8E-01	ca	6.0E-01	3.0E-02
7.9E-03 i	2.0E-02 i	3.9E-03 i	2.0E-02 r	0	0.10	75-25-2	Bromoform (tribromomethane)	5.6E+01	ca**	2.4E+02	ca*	1.7E+00	ca*	8.5E+00	ca*	8.0E-01	4.0E-02
	1.4E-03 i		1.4E-03 i	1	0.10	74-83-9	Bromomethane	6.8E+00	nc	2.3E+01	nc	5.2E+00	nc	8.7E+00	nc	2.0E-01	1.0E-02
				0	0.10	101-55-3	4-Bromophenyl phenyl ether										
	5.0E-03 h		5.0E-03 r	0	0.10	2104-96-3	Bromophos	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	1689-84-5	Bromoxynil	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	1.8E+02	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	1689-99-2	Bromoxynil octanoate	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
9.8E-01 r		9.8E-01 i		1	0.10	106-99-0	1,3-Butadiene	6.5E-03	ca	1.4E-02	ca	6.9E-03	ca	1.1E-02	ca		
	1.0E-01 i		1.0E-01 r	0	0.10	71-36-3	1-Butanol	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc	1.7E+01	9.0E-01
	5.0E-02 i		5.0E-02 r	0	0.10	2008-41-5	Butylate	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	2.0E-01 i		2.0E-01 r	0	0.10	85-68-7	Butyl benzyl phthalate	9.3E+02	sat	9.3E+02	sat	7.3E+02	nc	7.3E+03	nc	9.3E+02	8.1E+02
	1.0E+00 i		1.0E+00 r	0	0.10	85-70-1	Butylphthalyl butylglycolate	6.5E+04	nc	1.0E+05	max	3.7E+03	nc	3.7E+04	nc		
	3.0E-03 h		3.0E-03 r	0	0.10	75-60-5	Cacodylic acid	2.0E+02	nc	2.0E+03	nc	1.1E+01	nc	1.1E+02	nc		
	5.0E-04 i	6.3E+00 i	5.7E-05 x	0	0.01	7440-43-9	Cadmium and compounds	3.8E+01	nc	8.5E+02	nc	1.1E-03	ca	1.8E+01	nc	8.0E+00	4.0E-01
							"CAL-Modified PRG" (PEA, 1994)	**9.0E+00**									
	5.0E-01 i		5.0E-01 r	0	0.10	105-60-2	Caprolactam	3.3E+04	nc	1.0E+05	max	1.8E+03	nc	1.8E+04	nc		
6.6E-03 h	2.0E-03 i	6.6E-03 r	2.0E-03 r	0	0.10	2425-06-1	Captafol	5.2E+01	ca**	2.2E+02	ca*	7.8E-01	ca*	7.8E+00	ca*		
3.5E-03 h	1.3E-01 i	3.5E-03 r	1.3E-01 r	0	0.10	133-06-2	Captan	1.3E+02	ca*	5.5E+02	ca	1.9E+00	ca	1.9E+01	ca		
	1.0E-01 i		1.1E-01 r	0	0.10	63-25-2	Carbaryl	6.5E+03	nc	6.8E+04	nc	4.0E+02	nc	3.7E+03	nc		
2.0E-02 h		2.0E-02 r		0	0.10	86-74-8	Carbazole	2.2E+01	ca	9.5E+01	ca	3.4E-01	ca	3.4E+00	ca	6.0E-01	3.0E-02
	5.0E-03 i		5.0E-03 r	0	0.10	1563-66-2	Carbofuran	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	1.0E-01 i		2.9E-03 h	1	0.10	75-15-0	Carbon disulfide	7.5E+00	nc	2.4E+01	nc	1.0E+01	nc	2.1E+01	nc	3.2E+01	2.0E+00
1.3E-01 i	7.0E-04 i	5.3E-02 i	5.7E-04 n	1	0.10	56-23-5	Carbon tetrachloride	2.3E-01	ca*	5.0E-01	ca*	1.3E-01	ca*	1.7E-01	ca*	7.0E-02	3.0E-03
	1.0E-02 i		1.0E-02 r	0	0.10	55285-14-8	Carbosulfan	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	1.0E-01 i		1.0E-01 r	0	0.10	5234-68-4	Carboxin	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
	2.0E-03 i		2.0E-03 r	0	0.10	302-17-0	Chloral	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	1.5E-02 i		1.5E-02 r	0	0.10	133-90-4	Chloramben	9.8E+02	nc	1.0E+04	nc	5.5E+01	nc	5.5E+02	nc		
4.0E-01 h		4.0E-01 r		0	0.10	118-75-2	Chloranil	1.1E+00	ca	4.7E+00	ca	1.7E-02	ca	1.7E-01	ca		
1.3E+00 i	6.0E-05 i	1.3E+00 i	6.0E-05 r	0	0.10	57-74-9	Chlordane	3.4E-01	ca**	1.5E+00	ca*	5.2E-03	ca*	5.2E-02	ca*	1.0E+01	5.0E-01
	2.0E-02 i		2.0E-02 r	0	0.10	90982-32-4	Chlorimuron-ethyl	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	1.0E-01 i			0	0.01	7782-50-5	Chlorine	7.7E+03	nc	1.7E+05	nc			3.7E+03	nc		
			5.7E-05 i	n/a	n/a	10049-04-4	Chlorine dioxide					2.1E-01	nc				
				1	0.10	107-20-0	Chloroacetaldehyde										
	2.0E-03 h		2.0E-03 r	0	0.10	79-11-8	Chloroacetic acid	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	8.6E-06 r		8.6E-06 i	1	0.10	532-27-4	2-Chloroacetophenone	3.2E-02	nc	1.1E-01	nc	3.1E-02	nc	5.2E-02	nc		
	4.0E-03 i		4.0E-03 r	0	0.10	106-47-8	4-Chloroaniline	2.6E+02	nc	2.7E+03	nc	1.5E+01	nc	1.5E+02	nc	7.0E-01	3.0E-02
	2.0E-02 i		5.7E-03 h	1	0.10	108-90-7	Chlorobenzene	6.5E+01	nc	2.2E+02	nc	2.1E+01	nc	3.9E+01	nc	1.0E+00	7.0E-02
2.7E-01 h	2.0E-02 i	2.7E-01 h	2.0E-02 r	0	0.10	510-15-6	Chlorobenzilate	1.6E+00	ca	7.1E+00	ca	2.5E-02	ca	2.5E-01	ca		
	2.0E-01 h		2.0E-01 r	0	0.10	74-11-3	p-Chlorobenzoic acid	1.3E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc		
	2.0E-02 h		2.0E-02 r	0	0.10	98-56-6	4-Chlorobenzotrifluoride	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	2.0E-02 h		2.0E-03 h	1	0.10	126-99-8	2-Chloro-1,3-butadiene	3.6E+00	nc	1.2E+01	nc	7.3E+00	nc	1.4E+01	nc		
	4.0E-01 h		4.0E-01 r	1	0.10	109-69-3	1-Chlorobutane	4.8E+02	sat	4.8E+02	sat	1.5E+03	nc	2.4E+03	nc		
	1.4E+01 r		1.4E+01 i	1	0.10	75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	3.4E+02	sat	3.4E+02	sat	5.2E+04	nc	8.7E+04	nc		
				1	0.10	110-75-8	2-Chloroethyl vinyl ether										
	1.4E+01 r		1.4E+01 i	1	0.10	75-45-6	Chlorodifluoromethane	3.4E+02	sat	3.4E+02	sat	5.1E+04	nc	8.5E+04	nc		
6.1E-03 i	1.0E-02 i	8.1E-02 i	1.0E-02 r	1	0.10	67-66-3	Chloroform	2.5E-01	ca	5.3E-01	ca	8.4E-02	ca	1.6E-01	ca	6.0E-01	3.0E-02
1.3E-02 h		6.3E-03 h		1	0.10	74-87-3	Chloromethane	1.2E+00	ca	2.6E+00	ca	1.1E+00	ca	1.5E+00	ca		
5.8E-01 h		5.8E-01 r		0	0.10	95-69-2	4-Chloro-2-methylaniline	7.7E-01	ca	3.3E+00	ca	1.2E-02	ca	1.2E-01	ca		
4.6E-01 h		4.6E-01 r		0	0.10	3165-93-3	4-Chloro-2-methylaniline hydrochloride	9.7E-01	ca	4.1E+00	ca	1.5E-02	ca	1.5E-01	ca		
	8.0E-02 i		8.0E-02 r	1	0.10	91-58-7	**beta-Chloronaphthalene**	1.1E+02	sat	1.1E+02	sat	2.9E+02	nc	4.9E+02	nc		
2.5E-02 h		2.5E-02 r	r	0	0.10	88-73-3	o-Chloronitrobenzene	1.8E+01	ca	7.6E+01	ca	2.7E-01	ca	2.7E+00	ca		
1.8E-02 h		1.8E-02 r	r	0	0.10	100-00-5	p-Chloronitrobenzene	2.5E+01	ca	1.1E+02	ca	3.7E-01	ca	3.7E+00	ca		
	5.0E-03 i		5.0E-03 r	1	0.10	95-57-8	**2-Chlorophenol**	9.1E+01	nc	3.7E+02	nc	1.8E+01	nc	3.8E+01	nc	4.0E+00	2.0E-01
	2.9E-02 r		2.9E-02 h	1	0.10	75-29-6	2-Chloropropane	1.7E+02	nc	5.8E+02	nc	1.0E+02	nc	1.7E+02	nc		
1.1E-02 h	1.5E-02 i	1.1E-02 r	1.5E-02 r	0	0.10	1897-45-6	Chlorothalonil	4.0E+01	ca**	1.7E+02	ca*	6.1E-01	ca*	6.1E+00	ca*		

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION							CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
SFo (g/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
	2.0E-02 i		2.0E-02 r	1	0.10	95-49-8	o-Chlorotoluene	1.6E+02	nc	5.5E+02	nc	7.3E+01	nc	1.2E+02	nc		
	2.0E-01 i		2.0E-01 r	0	0.10	101-21-3	Chlorpropham	1.3E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc		
	3.0E-03 i		3.0E-03 r	0	0.10	2921-88-2	Chlorpyrifos	2.0E+02	nc	2.0E+03	nc	1.1E+01	nc	1.1E+02	nc		
	1.0E-02 h		1.0E-02 r	0	0.10	5598-13-0	Chlorpyrifos-methyl	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	5.0E-02 i		5.0E-02 r	0	0.10	64902-72-3	Chlorsulfuron	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	8.0E-04 h		8.0E-04 r	0	0.10	602-38-56-4	Chlorthiophos	5.2E+01	nc	5.5E+02	nc	2.9E+00	nc	2.9E+01	nc		
		4.2E+01 i		0	0.01	n/a	Total Chromium (1/6 ratio Cr VI/Cr III)	2.1E+02	ca	4.5E+02	ca	1.6E-04	ca			3.8E+01	2.0E+00
	5.0E-03 i	2.9E+02 i		0	0.01	7440-47-3	Chromium VI	3.0E+01	ca	6.4E+01	ca	2.3E-05	ca	1.8E+02	nc	3.8E+01	2.0E+00
							"CAL-Modified PRG" (PEA, 1994)	**2.0E-01**						**1.6E-01**			
	6.0E-02 n		2.9E-04 n	0	0.01	7440-48-4	Cobalt	4.6E+03	nc	9.7E+04	nc	1.0E+00	nc	2.2E+03	nc		
		2.2E+00 i		0	0.01	8007-45-2	Coke Oven Emissions					3.1E-03	ca				
	3.7E-02 h			0	0.01	7440-50-8	Copper and compounds	2.8E+03	nc	6.3E+04	nc			1.4E+03	nc		
1.9E+00 h	1.0E-02 x	1.9E+00 x	1.0E-02 r	1	0.10	123-73-9	Crotonaldehyde	5.3E-03	ca	1.1E-02	ca	3.5E-03	ca	5.9E-03	ca		
	4.0E-02 i		2.6E-03 h	1	0.10	98-82-8	Cumene	1.9E+01	nc	6.2E+01	nc	9.4E+00	nc	1.9E+01	nc		
8.4E-01 h	2.0E-03 h	8.4E-01 r	2.0E-03 r	0	0.10	21725-46-2	Cyanazine	5.3E-01	ca*	2.3E+00	ca	8.0E-03	ca	8.0E-02	ca		
					0.01	n/a	Cyanides										
	1.0E-01 h			0	0.01	542-62-1	Barium cyanide	7.7E+03	nc	1.0E+05	max			3.7E+03	nc		
	4.0E-02 i			0	0.01	592-01-8	Calcium cyanide	3.1E+03	nc	6.8E+04	nc			1.5E+03	nc		
	5.0E-02 i			0	0.01	506-77-4	**Chlorine cyanide**	3.8E+03	nc	8.5E+04	nc			1.8E+03	nc		
	5.0E-03 i			0	0.01	544-92-3	Copper cyanide	3.8E+02	nc	8.5E+03	nc			1.8E+02	nc		
	4.0E-02 i			0	0.10	460-19-5	Cyanogen	2.6E+03	nc	2.7E+04	nc			1.5E+03	nc		
	9.0E-02 i			0	0.10	506-68-3	Cyanogen bromide	5.9E+03	nc	1.0E+05	max			3.3E+03	nc		
	5.0E-02 i			0	0.10	506-77-4	Cyanogen chloride	3.3E+03	nc	3.4E+04	nc			1.8E+03	nc		
	2.0E-02 i			0	0.10	57-12-5	Free cyanide	1.3E+03	nc	1.4E+04	nc			7.3E+02	nc	4.0E+01	2.0E+00
	2.0E-02 i		8.6E-04 i	1	0.10	74-90-8	**Hydrogen cyanide**	1.1E+01	nc	3.5E+01	nc	3.1E+00	nc	6.2E+00	nc		
	5.0E-02 i			0	0.10	151-50-8	Potassium cyanide	3.3E+03	nc	3.4E+04	nc			1.8E+03	nc		
	2.0E-01 i			0	0.10	506-61-6	Potassium silver cyanide	1.3E+04	nc	1.0E+05	max			7.3E+03	nc		
	1.0E-01 i			0	0.10	506-64-9	Silver cyanide	6.5E+03	nc	1.0E+05	max			3.7E+03	nc		
	4.0E-02 i			0	0.10	143-33-9	Sodium cyanide	2.6E+03	nc	2.7E+04	nc			1.5E+03	nc		
	5.0E-02 i			0	0.10	557-21-1	Zinc cyanide	3.3E+03	nc	3.4E+04	nc			1.8E+03	nc		
	5.0E+00 i		5.0E+00 r	0	0.10	108-94-1	Cyclohexanone	1.0E+05	max	1.0E+05	max	1.8E+04	nc	1.8E+05	nc		
	2.0E-01 i		2.0E-01 r	0	0.10	108-91-8	Cyclohexylamine	1.3E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc		
	5.0E-03 i		5.0E-03 r	0	0.10	68085-85-8	Cyhalothrin/Karate	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	52315-07-8	Cypermethrin	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	7.5E-03 i		7.5E-03 r	0	0.10	66215-27-8	Cyromazine	4.9E+02	nc	5.1E+03	nc	2.7E+01	nc	2.7E+02	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	1861-32-1	Dacthal	6.5E+02	nc	1.0E+05	max	3.7E+01	nc	3.7E+02	nc		
	3.0E-02 i		3.0E-02 r	0	0.10	75-99-0	Dalapon	2.0E+03	nc	2.0E+04	nc	1.1E+02	nc	1.1E+03	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	39515-41-8	Danitol	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
2.4E-01 i		2.4E-01 r		0	0.10	72-54-8	DDD	1.9E+00	ca	7.9E+00	ca	2.8E-02	ca	2.8E-01	ca	1.6E+01	8.0E-01
3.4E-01 i		3.4E-01 r		0	0.10	72-55-9	DDE	1.3E+00	ca	5.6E+00	ca	2.0E-02	ca	2.0E-01	ca	5.4E+01	3.0E+00
3.4E-01 i	5.0E-04 i	3.4E-01 i	5.0E-04 r	0	0.10	50-29-3	DDT	1.3E+00	ca*	5.6E+00	ca*	2.0E-02	ca*	2.0E-01	ca*	3.2E+01	2.0E+00
	1.0E-02 i		1.0E-02 r	0	0.10	1163-19-5	Decabromodiphenyl ether	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	4.0E-05 i		4.0E-05 r	0	0.10	8065-48-3	Demeton	2.6E+00	nc	2.7E+01	nc	1.5E-01	nc	1.5E+00	nc		
6.1E-02 h		6.1E-02 r		0	0.10	2303-16-4	Diallate	7.3E+00	ca	3.1E+01	ca	1.1E-01	ca	1.1E+00	ca		
	9.0E-04 h		9.0E-04 r	0	0.10	333-41-5	Diazinon	5.9E+01	nc	6.1E+02	nc	3.3E+00	nc	3.3E+01	nc		
	4.0E-03 n		4.0E-03 r	1	0.10	132-64-9	**Dibenzofuran**	1.4E+02	sat	1.4E+02	sat	1.5E+01	nc	2.4E+01	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	106-37-6	1,4-Dibromobenzene	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
8.4E-02 i	2.0E-02 i	8.4E-02 r	2.0E-02 r	0	0.10	124-48-1	Dibromochloromethane	5.3E+00	ca*	2.3E+01	ca	8.0E-02	ca	1.0E+00	ca	4.0E-01	2.0E-02
1.4E+00 h	5.7E-05 r	2.4E-03 h	5.7E-05 i	0	0.10	96-12-8	1,2-Dibromo-3-chloropropane	3.2E-01	ca**	1.4E+00	ca*	2.1E-01	nc	4.8E-02	ca*		
							"CAL-Modified PRG" (PEA, 1994)	**6.0E-02**				**9.6E-04**		**4.7E-03**			
8.5E+01 i	5.7E-05 r	7.7E-01 i	5.7E-05 h	1	0.10	106-93-4	1,2-Dibromoethane	4.9E-03	ca	2.0E-02	ca	8.7E-03	ca*	7.6E-04	ca		
	1.0E-01 i		1.0E-01 r	0	0.10	84-74-2	Dibutyl phthalate	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc	2.3E+03	2.7E+02
	3.0E-02 i		3.0E-02 r	0	0.10	1918-00-9	Dicamba	2.0E+03	nc	2.0E+04	nc	1.1E+02	nc	1.1E+03	nc		
	9.0E-02 i		5.7E-02 h	1	0.10	95-50-1	1,2-Dichlorobenzene	7.0E+02	sat	7.0E+02	sat	2.1E+02	nc	3.7E+02	nc	1.7E+01	9.0E-01
	3.0E-02 e		3.0E-02 r	1	0.10	541-73-1	**1,3-Dichlorobenzene**	5.0E+02	nc	8.6E+02	sat	1.1E+02	nc	1.8E+02	nc		
2.4E-02 h	2.3E-01 r	2.4E-02 r	2.3E-01 i	1	0.10	106-46-7	1,4-Dichlorobenzene	3.6E+00	ca	8.5E+00	ca	2.8E-01	ca	4.7E-01	ca	2.0E+00	1.0E-01
4.5E-01 i		4.5E-01 r		0	0.10	91-94-1	3,3-Dichlorobenzidine	9.9E-01	ca	4.2E+00	ca	1.5E-02	ca	1.5E-01	ca	7.0E-03	3.0E-04
9.3E+00 r		9.3E+00 h		1	0.10	764-41-0	1,4-Dichloro-2-butene	7.5E-03	ca	1.7E-02	ca	7.2E-04	ca	1.2E-03	ca		
	2.0E-01 i		5.7E-02 h	1	0.10	75-71-8	Dichlorodifluoromethane	9.4E+01	nc	3.1E+02	nc	2.1E+02	nc	3.9E+02	nc		
	1.0E-01 h		1.4E-01 h	1	0.10	75-34-3	1,1-Dichloroethane	5.0E+02	nc	1.7E+03	nc	5.2E+02	nc	8.1E+02	nc	2.3E+01	1.0E+00
9.1E-02 i	2.9E-03 r	9.1E-02 i	2.9E-03 n	1	0.10	107-06-2	**1,2-Dichloroethane (EDC)**	2.5E-01	ca*	5.5E-01	ca*	7.4E-02	ca	1.2E-01	ca	2.0E-02	1.0E-03
6.0E-01 i	9.0E-03 i	1.8E-01 i	9.0E-03 r	1	0.10	75-35-4	1,1-Dichloroethylene	3.7E-02	ca	8.0E-02	ca	3.8E-02	ca	4.6E-02	ca	6.0E-02	3.0E-03
	1.0E-02 h		1.0E-02 r	1	0.10	156-59-2	1,2-Dichloroethylene (cis)	3.1E+01	nc	1.0E+02	nc	3.7E+01	nc	6.1E+01	nc	4.0E-01	2.0E-02

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION						CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
							Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
SFo (mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	VOC	skin abs. soils	CAS No.										
	2.0E-02 i		2.0E-02 r	1	0.10	156-60-5	7.8E+01	nc	2.7E+02	nc	7.3E+01	nc	1.2E+02	nc	7.0E-01	3.0E-02
	9.0E-03 h		9.0E-03 r	1	0.10	540-59-0	3.5E+01	nc	1.2E+02	nc	3.3E+01	nc	5.5E+01	nc		
	3.0E-03 i		3.0E-03 r	0	0.10	120-83-2	2.0E+02	nc	2.0E+03	nc	1.1E+01	nc	1.1E+02	nc	1.0E+00	5.0E-02
	8.0E-03 i		8.0E-03 r	0	0.10	94-82-6	5.2E+02	nc	5.5E+03	nc	2.9E+01	nc	2.9E+02	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	94-75-7	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
6.8E-02 h	1.1E-03 r	6.8E-02 r	1.1E-03 i	1	0.10	78-87-5	3.1E-01	ca*	6.8E-01	ca*	9.9E-02	ca*	1.6E-01	ca*	3.0E-02	1.0E-03
1.8E-01 h	3.0E-04 i	1.3E-01 h	5.7E-03 i	1	0.10	542-75-6	2.5E-01	ca*	5.5E-01	ca	5.2E-02	ca	8.1E-02	ca	4.0E-03	2.0E-04
	3.0E-03 i		3.0E-03 r	0	0.10	616-23-9	2.0E+02	nc	2.0E+03	nc	1.1E+01	nc	1.1E+02	nc		
2.9E-01 i	5.0E-04 i	2.9E-01 r	1.4E-04 i	0	0.10	62-73-7	1.5E+00	ca**	6.6E+00	ca*	2.3E-02	ca*	2.3E-01	ca*		
4.4E-01 x		4.4E-01 r		0	0.10	115-32-2	1.0E+00	ca	4.3E+00	ca	1.5E-02	ca	1.5E-01	ca		
	3.0E-02 h		5.7E-05 h	1	0.10	77-73-6					2.1E-01	nc	4.2E-01	nc		
1.6E+01 i	5.0E-05 i	1.6E+01 i	5.0E-05 r	0	0.10	60-57-1										
	5.7E-03 h		5.7E-03 x	0	0.10	112-34-5	2.8E-02	ca*	1.2E-01	ca	4.2E-04	ca	4.2E-03	ca	4.0E-03	2.0E-04
	2.0E+00 h		2.0E+00 r	0	0.10	111-90-0	3.7E+02	nc	3.9E+03	nc	2.1E+01	nc	2.1E+02	nc		
	1.1E-02 h		1.1E-02 r	0	0.10	617-84-5	1.0E+05	max	1.0E+05	max	7.3E+03	nc	7.3E+04	nc		
1.2E-03 i	8.0E-01 i	1.2E-03 r	6.0E-01 r	0	0.10	103-23-1	7.2E+02	nc	7.5E+03	nc	4.0E+01	nc	4.0E+02	nc		
	8.0E-01 i		8.0E-01 r	0	0.10	84-66-2	3.7E+02	nc	1.6E+03	nc	5.6E+00	nc	5.6E+01	nc		
4.7E+03 h		4.7E+03 r		0	0.10	56-53-1	5.2E+04	nc	1.0E+05	max	2.9E+03	nc	2.9E+04	nc		
	8.0E-02 i		8.0E-02 r	0	0.10	43222-48-6	9.5E-05	ca	4.1E-04	ca	1.4E-06	ca	1.4E-05	ca		
	2.0E-02 i		2.0E-02 r	0	0.10	35367-38-5	5.2E+03	nc	5.5E+04	nc	2.9E+02	nc	2.9E+03	nc		
	1.1E+01 r		1.1E+01 i	1	0.10	75-37-6	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	8.0E-02 i		8.0E-02 r	0	0.10	1445-75-6					4.2E+04	nc	6.9E+04	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	55290-64-7	5.2E+03	nc	5.5E+04	nc	2.9E+02	nc	2.9E+03	nc		
	2.0E-04 i		2.0E-04 r	0	0.10	60-51-5	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
1.4E-02 h		1.4E-02 r		0	0.10	119-90-4	1.3E+01	nc	1.4E+02	nc	7.3E-01	nc	7.3E+00	nc		
	5.7E-06 r		5.7E-06 x	1	0.10	124-40-3	3.2E+01	ca	1.4E+02	ca	4.8E-01	ca	4.8E+00	ca		
	2.0E-03 i		2.0E-03 r	0	0.10	121-69-7	6.5E-02	nc	2.4E-01	nc	2.1E-02	nc	3.5E-02	nc		
7.5E-01 h		7.5E-01 r		0	0.10	95-68-1	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
5.8E-01 h		5.8E-01 r		0	0.10	21436-96-4	5.9E-01	ca	2.5E+00	ca	9.0E-03	ca	9.0E-02	ca		
9.2E+00 h		9.2E+00 r		0	0.10	119-93-7	7.7E-01	ca	3.3E+00	ca	1.2E-02	ca	1.2E-01	ca		
2.6E+00 x		3.5E+00 x		0	0.10	57-14-7	4.8E-02	ca	2.1E-01	ca	7.3E-04	ca	7.3E-03	ca		
3.7E+01 x		3.7E+01 x		0	0.10	540-73-8	1.7E-01	ca	7.3E-01	ca	1.9E-03	ca	2.6E-02	ca		
	1.0E-01 h		6.6E-03 i	0	0.10	68-12-2	1.2E-02	ca	5.2E-02	ca	1.8E-04	ca	1.8E-03	ca		
	2.0E-02 i		2.0E-02 r	0	0.10	105-67-9	6.5E+03	nc	6.8E+04	nc	3.1E+01	nc	3.7E+03	nc		
	6.0E-04 i		6.0E-04 r	0	0.10	576-26-1	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc	9.0E+00	4.0E-01
	1.0E-03 i		1.0E-03 r	0	0.10	95-65-8	3.9E+01	nc	4.1E+02	nc	2.2E+00	nc	2.2E+01	nc		
	1.0E+01 h		1.0E+01 r	0	0.10	131-11-3	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
	1.0E-01 i		1.0E-01 r	0	0.10	120-61-6	1.0E+05	max	1.0E+05	max	3.7E+04	nc	3.7E+05	nc		
	2.0E-03 i		2.0E-03 r	0	0.10	131-89-5	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
	1.0E-04 i		1.0E-04 r	0	0.10	99-65-0	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	4.0E-04 h		4.0E-04 r	0	0.10	528-29-0	6.5E+00	nc	6.8E+01	nc	3.7E-01	nc	3.7E+00	nc		
	4.0E-04 h		4.0E-04 r	0	0.10	100-25-4	2.6E+01	nc	2.7E+02	nc	1.5E+00	nc	1.5E+01	nc		
	2.0E-03 i		2.0E-03 r	0	0.10	51-28-5	2.6E+01	nc	2.7E+02	nc	1.5E+00	nc	1.5E+01	nc		
6.8E-01 i		6.8E-01 r		0	0.10	25321-14-6	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc	3.0E-01	1.0E-02
	2.0E-03 i		2.0E-03 r	0	0.10	121-14-2	6.5E-01	ca	2.8E+00	ca	9.9E-03	ca	9.9E-02	ca	8.0E-04	4.0E-05
	1.0E-03 h		1.0E-03 r	0	0.10	606-20-2	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc	8.0E-04	4.0E-05
	1.0E-03 i		1.0E-03 r	0	0.10	88-85-7	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc	7.0E-04	3.0E-05
	2.0E-02 h		2.0E-02 r	0	0.10	117-84-0	1.3E+03	nc	1.0E+04	sat	7.3E+01	nc	7.3E+02	nc	1.0E+04	1.0E+04
1.1E-02 i		1.1E-02 r		0	0.10	123-91-1	4.0E+01	ca	1.7E+02	ca	6.1E-01	ca	6.1E+00	ca		
	3.0E-02 i		3.0E-02 r	0	0.10	957-51-7	2.0E+03	nc	2.0E+04	nc	1.1E+02	nc	1.1E+03	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	122-39-4	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
8.0E-01 i		7.7E-01 i		0	0.10	122-66-7	5.6E-01	ca	2.4E+00	ca	8.7E-03	ca	8.4E-02	ca		
	2.2E-03 i		2.2E-03 r	0	0.10	85-00-7	1.4E+02	nc	1.5E+03	nc	8.0E+00	nc	8.0E+01	nc		
8.6E+00 h		8.6E+00 r		0	0.10	1937-37-7	5.2E-02	ca	2.2E-01	ca	7.8E-04	ca	7.8E-03	ca		
8.1E+00 h		8.1E+00 r		0	0.10	2602-46-2	5.5E-02	ca	2.4E-01	ca	8.3E-04	ca	8.3E-03	ca		
9.3E+00 h		9.3E+00 r		0	0.10	16071-86-6	4.8E-02	ca	2.1E-01	ca	7.2E-04	ca	7.2E-03	ca		
	4.0E-05 i		4.0E-05 r	0	0.10	298-04-4	2.6E+00	nc	2.7E+01	nc	1.5E-01	nc	1.5E+00	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	505-29-3	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	2.0E-03 i		2.0E-03 r	0	0.10	330-54-1	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	4.0E-03 i		4.0E-03 r	0	0.10	2439-10-3	2.6E+02	nc	2.7E+03	nc	1.5E+01	nc	1.5E+02	nc		
	6.0E-03 i		6.0E-03 r	0	0.10	115-29-7	3.9E+02	nc	4.1E+03	nc	2.2E+01	nc	2.2E+02	nc	1.8E+01	9.0E-01
	2.0E-02 i		2.0E-02 r	0	0.10	145-73-3	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	3.0E-04 i		3.0E-04 r	0	0.10	72-20-8	2.0E+01	nc	2.0E+02	nc	1.1E+00	nc	1.1E+01	nc	1.0E+00	5.0E-02

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION						CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
SFo (mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
9.9E-03 i	2.0E-03 h	4.2E-03 i	2.9E-04 i	1	0.10	106-89-8	Epichlorohydrin	7.5E+00	nc	2.5E+01	nc	1.0E+00	nc	2.0E+00	nc		
	5.7E-03 r		5.7E-03 i	0	0.10	106-88-7	1,2-Epoxybutane	3.7E+02	nc	3.9E+03	nc	2.1E+01	nc	2.1E+02	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	759-94-4	EPTC (S-Ethyl dipropylthiocarbamate)	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
	5.0E-03 i		5.0E-03 r	0	0.10	16672-87-0	Ethephon (2-chloroethyl phosphonic acid)	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	5.0E-04 i		5.0E-04 r	0	0.10	563-12-2	Ethion	3.3E+01	nc	3.4E+02	nc	1.8E+00	nc	1.8E+01	nc		
	4.0E-01 h		5.7E-02 i	0	0.10	110-80-5	2-Ethoxyethanol	2.6E+04	nc	1.0E+05	max	2.1E+02	nc	1.5E+04	nc		
	3.0E-01 h		3.0E-01 r	0	0.10	111-15-9	2-Ethoxyethanol acetate	2.0E+04	nc	1.0E+05	max	1.1E+03	nc	1.1E+04	nc		
	9.0E-01 i		9.0E-01 r	1	0.10	141-78-6	**Ethyl acetate**	1.8E+04	nc	1.0E+05	max	3.3E+03	nc	5.5E+03	nc		
4.8E-02 h		4.8E-02 r		1	0.10	140-88-5	Ethyl acrylate	2.1E-01	ca	4.5E-01	ca	1.4E-01	ca	2.3E-01	ca		
	1.0E-01 i		2.9E-01 i	1	0.10	100-41-4	Ethylbenzene	2.3E+02	sat	2.3E+02	sat	1.1E+03	nc	1.3E+03	nc	1.3E+01	7.0E-01
	3.0E-01 h		3.0E-01 r	0	0.10	109-78-4	Ethylene cyanohydrin	2.0E+04	nc	1.0E+05	max	1.1E+03	nc	1.1E+04	nc		
	2.0E-02 h		2.0E-02 r	0	0.10	107-15-3	Ethylene diamine	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	2.0E+00 i		2.0E+00 r	0	0.10	107-21-1	Ethylene glycol	1.3E+05	nc	1.0E+05	max	7.3E+03	nc	7.3E+04	nc		
	5.7E-03 r		5.7E-03 h	0	0.10	111-76-2	Ethylene glycol, monobutyl ether	3.7E+02	nc	3.9E+03	nc	2.1E+01	nc	2.1E+02	nc		
1.0E+00 h		3.5E-01 h		1	0.10	75-21-8	Ethylene oxide	1.3E-01	ca	3.2E-01	ca	1.9E-02	ca	2.4E-02	ca		
1.1E-01 h	8.0E-05 i	1.1E-01 r	8.0E-05 r	0	0.10	96-45-7	**Ethylene thiourea (ETU)**	4.0E+00	ca**	1.7E+01	ca*	6.1E-02	ca*	6.1E-01	ca*		
	2.0E-02 n		2.9E+00 i	1	0.10	75-00-3	Ethyl chloride	1.1E+03	nc	1.6E+03	sat	1.0E+04	nc	7.1E+02	nc		
	2.0E-01 i		2.0E-01 r	1	0.10	60-29-7	Ethyl ether	1.8E+03	sat	1.8E+03	sat	7.3E+02	nc	1.2E+03	nc		
	9.0E-02 h		9.0E-02 r	1	0.10	97-63-2	Ethyl methacrylate	1.4E+02	sat	1.4E+02	sat	3.3E+02	nc	5.5E+02	nc		
	1.0E-05 i		1.0E-05 r	0	0.10	2104-64-5	Ethyl p-nitrophenyl phenylphosphorothioa	6.5E-01	nc	6.8E+00	nc	3.7E-02	nc	3.7E-01	nc		
	3.0E+00 i		3.0E+00 r	0	0.10	84-72-0	Ethylphthalyl ethyl glycolate	1.0E+05	max	1.0E+05	max	1.1E+04	nc	1.1E+05	nc		
	8.0E-03 i		8.0E-03 r	0	0.10	101200-48-0	Express	5.2E+02	nc	5.5E+03	nc	2.9E+01	nc	2.9E+02	nc		
	2.5E-04 i		2.5E-04 r	0	0.10	22224-92-6	Fenamiphos	1.6E+01	nc	1.7E+02	nc	9.1E-01	nc	9.1E+00	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	2164-17-2	Fluometuron	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
	6.0E-02 i		6.0E-02 r	0	0.10	7782-41-4	Fluorine (soluble fluoride)	3.9E+03	nc	4.1E+04	nc	2.2E+02	nc	2.2E+03	nc		
	8.0E-02 i		8.0E-02 r	0	0.10	59756-60-4	Fluridone	5.2E+03	nc	5.5E+04	nc	2.9E+02	nc	2.9E+03	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	56425-91-3	Flurprimidol	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	6.0E-02 i		6.0E-02 r	0	0.10	66332-96-5	Flutolanil	3.9E+03	nc	4.1E+04	nc	2.2E+02	nc	2.2E+03	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	69409-94-5	Fluvalinate	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
3.5E-03 i	1.0E-01 i	3.5E-03 r	1.0E-01 r	0	0.10	133-07-3	Folpet	1.3E+02	ca*	5.5E+02	ca	1.9E+00	ca	1.9E+01	ca		
1.9E-01 i		1.9E-01 r		0	0.10	72178-02-0	Fomesafen	2.3E+00	ca	1.0E+01	ca	3.5E-02	ca	3.5E-01	ca		
	2.0E-03 i		2.0E-03 r	0	0.10	944-22-9	Fonofos	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	1.5E-01 i	4.6E-02 i		0	0.10	50-00-0	Formaldehyde	9.8E+03	nc	1.0E+05	nc	1.5E-01	ca	5.5E+03	nc		
	2.0E+00 h		2.0E+00 r	0	0.10	64-18-6	Formic Acid	1.0E+05	max	1.0E+05	max	7.3E+03	nc	7.3E+04	nc		
	3.0E+00 i		3.0E+00 r	0	0.10	39148-24-8	Fosetyl-al	1.0E+05	max	1.0E+05	max	1.1E+04	nc	1.1E+05	nc		
	1.0E-03 i		1.0E-03 r	1	0.10	110-00-9	**Furan**	2.5E+00	nc	8.5E+00	nc	3.7E+00	nc	6.1E+00	nc		
3.8E+00 h		3.8E+00 r		0	0.10	67-45-8	Furazolidone	1.2E-01	ca	5.0E-01	ca	1.8E-03	ca	1.8E-02	ca		
	3.0E-03 i		1.4E-02 h	0	0.10	98-01-1	Furfural	2.0E+02	nc	2.0E+03	nc	5.2E+01	nc	1.1E+02	nc		
5.0E+01 h		5.0E+01 r		0	0.10	531-82-8	Furium	8.9E-03	ca	3.8E-02	ca	1.3E-04	ca	1.3E-03	ca		
3.0E-02 i		3.0E-02 r		0	0.10	60568-05-0	Furmecyclox	1.5E+01	ca	6.4E+01	ca	2.2E-01	ca	2.2E+00	ca		
	4.0E-04 i		4.0E-04 r	0	0.10	77182-82-2	Glufosinate-ammonium	2.6E+01	nc	2.7E+02	nc	1.5E+00	nc	1.5E+01	nc		
	4.0E-04 i		2.9E-04 h	0	0.10	765-34-4	Glycidaldehyde	2.6E+01	nc	2.7E+02	nc	1.0E+00	nc	1.5E+01	nc		
	1.0E-01 i		1.0E-01 r	0	0.10	1071-83-6	Glyphosate	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
	5.0E-05 i		5.0E-05 r	0	0.10	69806-40-2	Haloxyfop-methyl	3.3E+00	nc	3.4E+01	nc	1.8E-01	nc	1.8E+00	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	79277-27-3	Harmony	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
4.5E+00 i	5.0E-04 i	4.6E+00 i	5.0E-04 r	0	0.10	76-44-8	Heptachlor	9.9E-02	ca	4.2E-01	ca	1.5E-03	ca	1.5E-02	ca	2.3E+01	1.0E+00
9.1E+00 i	1.3E-05 i	9.1E+00 i	1.3E-05 r	0	0.10	1024-57-3	Heptachlor epoxide	4.9E-02	ca**	2.1E-01	ca*	7.4E-04	ca*	7.4E-03	ca*	7.0E-01	3.0E-02
	2.0E-03 i		2.0E-03 r	0	0.10	87-82-1	Hexabromobenzene	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
1.6E+00 i	8.0E-04 i	1.6E+00 i	8.0E-04 r	0	0.10	118-74-1	Hexachlorobenzene	2.8E-01	ca*	1.2E+00	ca	4.2E-03	ca	4.2E-02	ca	2.0E+00	1.0E-01
7.8E-02 i	2.0E-04 h	7.7E-02 i	2.0E-04 r	0	0.10	87-68-3	Hexachlorobutadiene	5.7E+00	ca**	2.4E+01	ca*	8.7E-02	ca*	8.6E-01	ca*	2.0E+00	1.0E-01
6.3E+00 i		6.3E+00 i		0	0.10	319-84-6	HCH (alpha)	7.1E-02	ca	3.0E-01	ca	1.1E-03	ca	1.1E-02	ca	5.0E-04	3.0E-05
1.8E+00 i		1.8E+00 i		0	0.10	319-85-7	HCH (beta)	2.5E-01	ca	1.1E+00	ca	3.7E-03	ca	3.7E-02	ca	3.0E-03	1.0E-04
1.3E+00 h	3.0E-04 i	1.3E+00 r	3.0E-04 r	0	0.10	58-89-9	HCH (gamma) Lindane	3.4E-01	ca*	1.5E+00	ca	5.2E-03	ca	5.2E-02	ca	9.0E-03	5.0E-04
1.8E+00 i		1.8E+00 i		0	0.10	58-89-9	HCH-technical	2.5E-01	ca	1.1E+00	ca	3.8E-03	ca	3.7E-02	ca	3.0E-03	1.0E-04
	7.0E-03 i		2.0E-05 h	0	0.10	77-47-4	Hexachlorocyclopentadiene	4.5E+02	nc	4.6E+03	nc	7.3E-02	nc	2.6E+02	nc	4.0E+02	2.0E+01
6.2E+03 i		4.6E+03 i		0	0.10	19408-74-3	Hexachlorodibenzo-p-dioxin mixture (HxCDD)	7.2E-05	ca	3.1E-04	ca	1.5E-06	ca	1.1E-05	ca		
1.4E-02 i	1.0E-03 i	1.4E-02 i	1.0E-03 r	0	0.10	67-72-1	Hexachloroethane	3.2E+01	ca**	1.4E+02	ca**	4.8E-01	ca**	4.8E+00	ca**	5.0E-01	2.0E-02
	3.0E-04 i		3.0E-04 r	0	0.10	70-30-4	Hexachlorophene	2.0E+01	nc	2.0E+02	nc	1.1E+00	nc	1.1E+01	nc		
1.1E-01 i	3.0E-03 i	1.1E-01 r	3.0E-03 r	0	0.10	121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine	4.0E+00	ca*	1.7E+01	ca	6.1E-02	ca	6.1E-01	ca		
	2.9E-06 r		2.9E-06 i	0	0.10	822-06-0	1,6-Hexamethylene diisocyanate					1.0E-02	nc	1.0E-01	nc		
	6.0E-02 h		5.7E-02 i	1	0.10	110-54-3	n-Hexane	1.1E+02	sat	1.1E+02	sat	2.1E+02	nc	3.5E+02	nc		
	3.3E-02 i		3.3E-02 r	0	0.10	51235-04-2	Hexazinone	2.2E+03	nc	2.2E+04	nc	1.2E+02	nc	1.2E+03	nc		
3.0E+00 i		1.7E+01 i		0	0.10	302-01-2	Hydrazine, hydrazine sulfate	1.5E-01	ca	6.4E-01	ca	3.9E-04	ca	2.2E-02	ca		

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION							CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
				V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
SFo g/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)														
			5.7E-03 i	0	0.10	7647-01-0	Hydrogen chloride					2.1E+01	nc				
	3.0E-03 i		2.9E-04 i	1	0.10	7783-06-4	Hydrogen sulfide					1.0E+00	nc	2.0E+00	nc		
	4.0E-02 h		4.0E-02 r	0	0.10	123-31-9	p-Hydroquinone	2.6E+03	nc	2.7E+04	nc	1.5E+02	nc	1.5E+03	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	35554-44-0	Imazalil	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
	2.5E-01 i		2.5E-01 r	0	0.10	81335-37-7	Imazaquin	1.6E+04	nc	1.0E+05	max	9.1E+02	nc	9.1E+03	nc		
	4.0E-02 i		4.0E-02 r	0	0.10	36734-19-7	Iprodione	2.6E+03	nc	2.7E+04	nc	1.5E+02	nc	1.5E+03	nc		
	3.0E-01 i		3.0E-01 r	1	0.10	78-83-1	**Isobutanol**	1.1E+04	nc	1.0E+05	max	1.1E+03	nc	1.8E+03	nc		
9.5E-04 i	2.0E-01 i	9.5E-04 r	2.0E-01 r	0	0.10	78-59-1	Isophorone	4.7E+02	ca*	2.0E+03	ca*	7.1E+00	ca	7.1E+01	ca	5.0E-01	3.0E-02
	1.5E-02 i		1.5E-02 r	0	0.10	33820-53-0	Isopropalin	9.8E+02	nc	1.0E+04	nc	5.5E+01	nc	5.5E+02	nc		
	1.0E-01 i		1.1E-01 r	0	0.10	1832-54-8	Isopropyl methyl phosphonic acid	6.5E+03	nc	6.8E+04	nc	4.0E+02	nc	3.7E+03	nc		
	5.0E-02 i		5.0E-02 r	0	0.10	82558-50-7	Isoxaben	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
1.8E+01 n		1.8E+01 r		0	0.10	143-50-0	Kepone	2.5E-02	ca	1.1E-01	ca	3.7E-04	ca	3.7E-03	ca		
	2.0E-03 i		2.0E-03 r	0	0.10	77501-63-4	Lactofen	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
Residential PRG Based on Uptake Biokinetic Model				0	n/a	7439-92-1	Lead	4.0E+02	nc	1.0E+03	nc			**4.0E+00**	nc		
							"CAL-Modified PRG" (PEA, 1994)	**1.3E+02**									
	1.0E-07 i			0	0.10	78-00-2	Lead (tetraethyl)	6.5E-03	nc	6.8E-02	nc			3.7E-03	nc		
	2.0E-03 i		2.0E-03 r	0	0.10	330-55-2	Linuron	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	2.0E-02 n			0	0.01	7439-93-2	Lithium	1.5E+03	nc	3.4E+04	nc			7.3E+02	nc		
	2.0E-01 i		2.0E-01 r	0	0.10	83055-99-6	Londax	1.3E+04	nc	1.0E+05	max	7.3E+02	nc	7.3E+03	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	121-75-5	Malathion	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	1.0E-01 i		1.0E-01 r	0	0.10	108-31-6	Maleic anhydride	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
	5.0E-01 i		5.0E-01 r	1	0.10	123-33-1	**Maleic hydrazide**	1.7E+03	nc	2.4E+03	sat	1.8E+03	nc	3.0E+03	nc		
	2.0E-05 h		2.0E-05 r	0	0.10	109-77-3	Malononitrile	1.3E+00	nc	1.4E+01	nc	7.3E-02	nc	7.3E-01	nc		
	3.0E-02 h		3.0E-02 r	0	0.10	8018-01-7	Mancozeb	2.0E+03	nc	2.0E+04	nc	1.1E+02	nc	1.1E+03	nc		
	5.0E-03 i		6.0E-03 r	0	0.10	12427-38-2	Maneb	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	4.7E-02 i		1.4E-05 i	0	0.01	7439-96-5	**Manganese and compounds**	3.2E+03	nc	4.3E+04	nc	5.1E-02	nc	1.7E+03	nc		
	9.0E-05 h		9.0E-05 r	0	0.10	950-10-7	Mephosfolan	5.9E+00	nc	6.1E+01	nc	3.3E-01	nc	3.3E+00	nc		
	3.0E-02 i		3.0E-02 r	0	0.10	24307-26-4	Mepiquat	2.0E+03	nc	2.0E+04	nc	1.1E+02	nc	1.1E+03	nc		
	3.0E-04 i			0	0.01	7439-97-6	Mercuric chloride	2.3E+01	nc	5.1E+02	nc			1.1E+01	nc		
			8.6E-05 i	n/a	n/a	7439-97-6	Mercury (elemental)					3.1E-01	nc				
	1.0E-04 i			0	0.10	22967-92-6	Mercury (methyl)	6.5E+00	nc	6.8E+01	nc			3.7E+00	nc		
	3.0E-05 i		3.0E-05 r	0	0.10	150-50-5	Merphos	2.0E+00	nc	2.0E+01	nc	1.1E-01	nc	1.1E+00	nc		
	3.0E-05 i		3.0E-05 r	0	0.10	78-48-8	Merphos oxide	2.0E+00	nc	2.0E+01	nc	1.1E-01	nc	1.1E+00	nc		
	6.0E-02 i		6.0E-02 r	0	0.10	57837-19-1	Metalaxyl	3.9E+03	nc	4.1E+04	nc	2.2E+02	nc	2.2E+03	nc		
	1.0E-04 i		2.0E-04 h	1	0.10	126-98-7	Methacrylonitrile	2.0E+00	nc	8.1E+00	nc	7.3E-01	nc	1.0E+00	nc		
	5.0E-05 i		5.0E-05 r	0	0.10	10265-92-6	Methamidophos	3.3E+00	nc	3.4E+01	nc	1.8E-01	nc	1.8E+00	nc		
	5.0E-01 i		5.0E-01 r	0	0.10	67-56-1	Methanol	3.3E+04	nc	1.0E+05	max	1.8E+03	nc	1.8E+04	nc		
	1.0E-03 i		1.0E-03 r	0	0.10	950-37-8	Methidathion	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
	2.5E-02 i		2.5E-02 r	1	0.10	16752-77-5	**Methomyl**	4.4E+01	nc	1.5E+02	nc	9.1E+01	nc	1.5E+02	nc		
	5.0E-03 i		5.0E-03 r	0	0.10	72-43-5	Methoxychlor	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc	1.6E+02	8.0E+00
	1.0E-03 h		5.7E-03 i	0	0.10	109-86-4	2-Methoxyethanol	6.5E+01	nc	6.8E+02	nc	2.1E+01	nc	3.7E+01	nc		
	2.0E-03 h		2.0E-03 r	0	0.10	110-49-6	2-Methoxyethanol acetate	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
4.6E-02 h		4.6E-02 r		0	0.10	99-59-2	2-Methoxy-5-nitroaniline	9.7E+00	ca	4.1E+01	ca	1.5E-01	ca	1.5E+00	ca		
	1.0E+00 h		1.0E+00 r	1	0.10	79-20-9	Methyl acetate	2.1E+04	nc	8.8E+04	nc	3.7E+03	nc	6.1E+03	nc		
	3.0E-02 h		3.0E-02 r	1	0.10	96-33-3	Methyl acrylate	6.9E+01	nc	2.3E+02	nc	1.1E+02	nc	1.8E+02	nc		
2.4E-01 h		2.4E-01 r		0	0.10	100-61-8	2-Methylaniline (o-toluidine)	1.9E+00	ca	7.9E+00	ca	2.8E-02	ca	2.8E-01	ca		
1.8E-01 h		1.8E-01 r		0	0.10	636-21-5	2-Methylaniline hydrochloride	2.5E+00	ca	1.1E+01	ca	3.7E-02	ca	3.7E-01	ca		
	1.0E+00 x		1.0E+00 r	0	0.10	79-22-1	Methyl chlorocarbonate	6.5E+04	nc	1.0E+05	max	3.7E+03	nc	3.7E+04	nc		
	5.0E-04 i		5.0E-04 r	0	0.10	94-74-6	2-Methyl-4-chlorophenoxyacetic acid	3.3E+01	nc	3.4E+02	nc	1.8E+00	nc	1.8E+01	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	94-81-5	4-(2-Methyl-4-chlorophenoxy) butyric acid	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	1.0E-03 i		1.0E-03 r	0	0.10	93-65-2	2-(2-Methyl-4-chlorophenoxy) propionic acid	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
	1.0E-03 i		1.0E-03 r	0	0.10	16484-77-8	2-(2-Methyl-1,4-chlorophenoxy) propionic acid	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
	8.6E-01 r		8.6E-01 h	0	0.10	108-87-2	Methylcyclohexane	5.6E+04	nc	1.0E+05	max	3.1E+03	nc	3.1E+04	nc		
2.5E-01 h		2.5E-01 r		0	0.10	101-77-9	4,4'-Methylenebisbenzeneamine	1.8E+00	ca	7.6E+00	ca	2.7E-02	ca	2.7E-01	ca		
1.3E-01 h	7.0E-04 h	1.3E-01 h	7.0E-04 r	0	0.10	101-14-4	4,4'-Methylene bis(2-chloroaniline)	3.4E+00	ca*	1.5E+01	ca*	5.2E-02	ca*	5.2E-01	ca*		
4.6E-02 i		4.6E-02 r		0	0.10	101-61-1	4,4'-Methylene bis(N,N'-dimethyl)aniline	9.7E+00	ca	4.1E+01	ca	1.5E-01	ca	1.5E+00	ca		
	1.0E-02 h		1.0E-02 r	0	0.10	74-95-3	Methylene bromide	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
7.5E-03 i	6.0E-02 i	1.6E-03 i	8.6E-01 h	1	0.10	75-09-2	Methylene chloride	7.8E+00	ca	1.8E+01	ca	4.1E+00	ca	4.3E+00	ca	2.0E-02	1.0E-03
			5.7E-06 i	0	n/a	101-68-8	4,4'-Methylenediphenyl isocyanate					2.1E-02	nc				
	6.0E-01 i		2.9E-01 i	1	0.10	78-93-3	Methyl ethyl ketone	7.1E+03	nc	2.7E+04	nc	1.0E+03	nc	1.9E+03	nc		
1.1E+00 h		1.1E+00 r		0	0.10	60-34-4	Methyl hydrazine	4.0E-01	ca	1.7E+00	ca	6.1E-03	ca	6.1E-02	ca		
	8.0E-02 h		2.3E-02 h	1	0.10	108-10-1	**Methyl isobutyl ketone**	7.7E+02	nc	2.8E+03	nc	8.3E+01	nc	1.6E+02	nc		

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION						CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
SFo (g/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
	8.0E-02 n		8.0E-02 r	1	0.10	80-62-6	**Methyl methacrylate**	7.6E+02	nc	2.8E+03	nc	2.9E+02	nc	4.9E+02	nc		
3.3E-02 h		3.3E-02 r		0	0.10	99-55-8	2-Methyl-5-nitroaniline	1.3E+01	ca	5.8E+01	ca	2.0E-01	ca	2.0E+00	ca		
	2.5E-04 i		2.5E-04 r	0	0.10	298-00-0	Methyl parathion	1.6E+01	nc	1.7E+02	nc	9.1E-01	nc	9.1E+00	nc		
	5.0E-02 x		5.0E-02 r	0	0.10	95-48-7	2-Methylphenol	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc	1.5E+01	8.0E-01
	5.0E-02 x		5.0E-02 r	0	0.10	108-39-4	3-Methylphenol	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	5.0E-03 h		5.0E-03 r	0	0.10	106-44-5	4-Methylphenol	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	6.0E-03 h		1.1E-02 h	1	0.10	25013-15-4	Methyl styrene (mixture)	1.2E+02	nc	5.2E+02	nc	4.2E+01	nc	6.0E+01	nc		
	7.0E-02 h		7.0E-02 r	1	0.10	98-83-9	Methyl styrene (alpha)	6.8E+02	sat	6.8E+02	sat	2.6E+02	nc	4.3E+02	nc		
	5.0E-03 n		8.6E-01 i	1	0.10	1634-04-4	**Methyl tertbutyl ether (MTBE)**					3.1E+03	nc	1.8E+02	nc		
	1.5E-01 i		1.5E-01 r	0	0.10	51218-45-2	Metolaclor (Dual)	9.8E+03	nc	1.0E+05	max	5.5E+02	nc	5.5E+03	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	21087-64-9	Metribuzin	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
1.8E+00 h	2.0E-04 i	1.8E+00 r	2.0E-04 r	0	0.10	2385-85-5	Mirex	2.5E-01	ca*	1.1E+00	ca	3.7E-03	ca	3.7E-02	ca		
	2.0E-03 i		2.0E-03 r	0	0.10	2212-67-1	Molinate	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	5.0E-03 h			0	0.01	7439-98-7	Molybdenum	3.8E+02	nc	8.5E+03	nc			1.8E+02	nc		
	1.0E-01 h		1.0E-01 h	0	0.10	10599-90-3	Monochloramine	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
	2.0E-03 i		2.0E-03 r	0	0.10	300-76-5	Naled	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	1.0E-01 i		1.0E-01 r	0	0.10	15299-99-7	Napropamide	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
	2.0E-02 i			0	0.01	7440-02-0	Nickel (soluble salts)	1.5E+03	nc	3.4E+04	nc			7.3E+02	nc	1.3E+02	7.0E+00
							"CAL-Modified PRG" (PEA, 1994)	**1.5E+02**									
		8.4E-01 i		0	0.01	n/a	Nickel refinery dust					8.0E-03	ca				
		1.7E+00 i		0	0.01	12035-72-2	Nickel subsulfide			1.1E+04	ca	4.0E-03	ca				
	1.5E-03 x		1.5E-03 r	0	0.10	1929-82-4	Nitrapyrin	9.8E+01	nc	1.0E+03	nc	5.5E+00	nc	5.5E+01	nc		
	1.6E+00 i			0	0.10	14797-55-8	Nitrate							5.8E+04	nc		
	1.0E-01 x			0	0.10	10102-43-9	Nitric Oxide	6.5E+03	nc	1.0E+05	max			3.7E+03	nc		
	1.0E-01 i			0	0.10	14797-65-0	Nitrite	6.5E+03	nc	1.0E+05	max			3.7E+03	nc		
	6.0E-05 r		5.7E-05 h	0	0.10	88-74-4	2-Nitroaniline	3.9E+00	nc	4.1E+01	nc	2.1E-01	nc	2.2E+00	nc		
				0	0.10	99-09-2	3-Nitroaniline										
				0	0.10	100-01-6	4-Nitroaniline										
	5.0E-04 i		5.7E-04 h	1	0.10	98-95-3	**Nitrobenzene**	1.8E+01	nc	9.4E+01	nc	2.1E+00	nc	3.4E+00	nc	1.0E-01	7.0E-03
	7.0E-02 h		7.0E-02 r	0	0.10	67-20-9	Nitrofurantoin	4.6E+03	nc	4.8E+04	nc	2.6E+02	nc	2.6E+03	nc		
1.5E+00 h		9.4E+00 h		0	0.10	59-87-0	Nitrofurazone	3.0E-01	ca	1.3E+00	ca	7.2E-04	ca	4.5E-02	ca		
	1.0E+00 x			0	0.10	101102-44-0	Nitrogen dioxide										
	1.0E-01 i		1.0E-01 r	0	0.10	556-88-7	Nitroguanidine	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc		
				0	0.10	100-02-7	4-Nitrophenol										
9.4E+00 r	5.7E-03 r	9.4E+00 h	5.7E-03 i	1	0.10	79-46-9	2-Nitropropane					7.2E-04	ca	3.5E+01	ca		
5.4E+00 i		5.6E+00 i		1	0.10	924-16-3	**N-Nitrosodi-n-butylamine**	2.2E-02	ca	5.5E-02	ca	1.2E-03	ca	2.0E-03	ca		
2.8E+00 i		2.8E+00 r		0	0.10	1116-54-7	N-Nitrosodiethanolamine	1.6E-01	ca	6.8E-01	ca	2.4E-03	ca	2.4E-02	ca		
1.5E+02 i		1.5E+02 i		0	0.10	55-18-5	N-Nitrosodiethylamine	3.0E-03	ca	1.3E-02	ca	4.5E-05	ca	4.5E-04	ca		
5.1E+01 i		4.9E+01 i		0	0.10	62-75-9	N-Nitrosodimethylamine	8.7E-03	ca	3.7E-02	ca	1.4E-04	ca	1.3E-03	ca		
4.9E-03 i		4.9E-03 r		0	0.10	86-30-6	N-Nitrosodiphenylamine	9.1E+01	ca	3.9E+02	ca	1.4E+00	ca	1.4E+01	ca	1.0E+00	6.0E-02
7.0E+00 i		7.0E+00 r		0	0.10	621-64-7	N-Nitroso di-n-propylamine	6.3E-02	ca	2.7E-01	ca	9.6E-04	ca	9.6E-03	ca	5.0E-05	2.0E-06
2.2E+01 i		2.2E+01 r		0	0.10	10595-95-6	N-Nitroso-N-methylethylamine	2.0E-02	ca	8.7E-02	ca	3.1E-04	ca	3.1E-03	ca		
2.1E+00 i		2.1E+00 i		0	0.10	930-55-2	N-Nitrosopyrrolidine	2.1E-01	ca	9.1E-01	ca	3.1E-03	ca	3.2E-02	ca		
	1.0E-02 h		1.0E-02 r	0	0.10	99-08-1	m-Nitrotoluene	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	1.0E-02 h		1.0E-02 r	0	0.10	99-99-0	p-Nitrotoluene	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	4.0E-02 i		4.0E-02 r	0	0.10	27314-13-2	Norflurazon										
	7.0E-04 i		7.0E-04 r	0	0.10	85509-19-9	NuStar	4.6E+01	nc	4.8E+02	nc	2.6E+00	nc	2.6E+01	nc		
	3.0E-03 i		3.0E-03 r	0	0.10	32536-52-0	Octabromodiphenyl ether	2.0E+02	nc	2.0E+03	nc	1.1E+01	nc	1.1E+02	nc		
	5.0E-02 i		5.0E-02 r	0	0.10	2691-41-0	Octahydro-1357-tetranitro-1357- tetrazocine (HMX)	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	2.0E-03 h		2.0E-03 r	0	0.10	152-16-9	Octamethylpyrophosphoramide	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	5.0E-02 i		5.0E-02 r	0	0.10	19044-88-3	Oryzalin	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	5.0E-03 i		5.0E-03 r	0	0.10	19666-30-9	Oxadiazon	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	23135-22-0	Oxamyl	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
	3.0E-03 i		3.0E-03 r	0	0.10	42874-03-3	Oxyfluorfen	2.0E+02	nc	2.0E+03	nc	1.1E+01	nc	1.1E+02	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	76738-62-0	Paclobutrazol	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
	4.5E-03 i		4.5E-03 r	0	0.10	4685-14-7	Paraquat	2.9E+02	nc	3.1E+03	nc	1.6E+01	nc	1.6E+02	nc		
	6.0E-03 h		6.0E-03 r	0	0.10	56-38-2	Parathion	3.9E+02	nc	4.1E+03	nc	2.2E+01	nc	2.2E+02	nc		
	5.0E-02 h		5.0E-02 r	0	0.10	1114-71-2	Pebulate	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	4.0E-02 i		4.0E-02 r	0	0.10	40487-42-1	Pendimethalin	2.6E+03	nc	2.7E+04	nc	1.5E+02	nc	1.5E+03	nc		
2.3E-02 h		2.3E-02 r		0	0.10	87-84-3	Pentabromo-6-chloro cyclohexane	1.9E+01	ca	8.3E+01	ca	2.9E-01	ca	2.9E+00	ca		
	2.0E-03 i		2.0E-03 r	0	0.10	32534-81-9	Pentabromodiphenyl ether	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	8.0E-04 i		8.0E-04 r	0	0.10	608-93-5	Pentachlorobenzene	5.2E+01	nc	5.5E+02	nc	2.9E+00	nc	2.9E+01	nc		
2.6E-01 h	3.0E-03 i	2.6E-01 r	3.0E-03 r	0	0.10	82-68-8	Pentachloronitrobenzene	1.7E+00	ca*	7.3E+00	ca	2.6E-02	ca	2.6E-01	ca		

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION							CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
																Migration to Ground Water	
SFo (mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		DAF 20 (mg/kg)	DAF 1 (mg/kg)
1.2E-01 i	3.0E-02 i	1.2E-01 r	3.0E-02 r	0	0.25	87-86-5	Pentachlorophenol	2.5E+00	ca	7.9E+00	ca	5.6E-02	ca	5.6E-01	ca	3.0E-02	1.0E-03
	5.0E-02 i		5.0E-02 r	0	0.10	52645-53-1	Permethrin	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		
	2.5E-01 i		2.5E-01 r	0	0.10	13684-63-4	Phenmedipham	1.6E+04	nc	1.0E+05	max	9.1E+02	nc	9.1E+03	nc		
	6.0E-01 i		6.0E-01 r	0	0.10	108-95-2	Phenol	3.9E+04	nc	1.0E+05	max	2.2E+03	nc	2.2E+04	nc	1.0E+02	5.0E+00
	6.0E-03 i		6.0E-03 r	0	0.10	108-45-2	m-Phenylenediamine	3.9E+02	nc	4.1E+03	nc	2.2E+01	nc	2.2E+02	nc		
	1.9E-01 h		1.9E-01 r	0	0.10	106-50-3	p-Phenylenediamine	1.2E+04	nc	1.0E+05	max	6.9E+02	nc	6.9E+03	nc		
	8.0E-05 i		8.0E-05 r	0	0.10	62-38-4	Phenylmercuric acetate	5.2E+00	nc	5.5E+01	nc	2.9E-01	nc	2.9E+00	nc		
1.9E-03 h		1.9E-03 r		0	0.10	90-43-7	2-Phenylphenol	2.3E+02	ca	9.8E+02	ca	3.5E+00	ca	3.5E+01	ca		
	2.0E-04 h		2.0E-04 r	0	0.10	298-02-2	Phorate	1.3E+01	nc	1.4E+02	nc	7.3E-01	nc	7.3E+00	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	732-11-6	Phosmet	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	3.0E-04 h		8.6E-05 i	0	0.10	7803-51-2	Phosphine	2.0E+01	nc	2.0E+02	nc	3.1E-01	nc	1.1E+01	nc		
			2.9E-03 i	n/a	n/a	7664-38-2	**Phosphoric acid**					1.0E+01	nc				
	2.0E-05 i		2.0E-05 r	0	0.10	7723-14-0	Phosphorus (white)					7.3E-02	nc				
	1.0E+00 h		1.0E+00 r	0	0.10	100-21-0	p-Phthalic acid					3.7E+03	nc				
	2.0E+00 i		3.4E-02 h	0	0.10	85-44-9	Phthalic anhydride					1.2E+02	nc				
	7.0E-02 i		7.0E-02 r	0	0.10	1918-02-1	Picloram	4.6E+03	nc	4.8E+04	nc	2.6E+02	nc	2.6E+03	nc		
	1.0E-02 i		1.0E-02 r	0	0.10	23505-41-1	Pirimiphos-methyl	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
8.9E+00 h	7.0E-06 h	8.9E+00 r	7.0E-06 r	0	0.10		Polybrominated biphenyls	5.0E-02	ca**	2.1E-01	ca*	7.6E-04	ca*	7.6E-03	ca*		
7.7E+00 i		7.7E+00 r		0	0.06	1336-36-3	Polychlorinated biphenyls (PCBs)	6.6E-02	ca*	3.4E-01	ca*	8.7E-04	ca*	8.7E-03	ca*		
	7.0E-05 i		7.0E-05 r	0	0.06	12674-11-2	Aroclor 1016 (see PCBs for cancer endpoint)	4.9E+00	nc	6.5E+01	nc	2.6E-01	nc	2.6E+00	nc		
	2.0E-05 i		2.0E-05 r	0	0.06	11097-69-1	Aroclor 1254 (see PCBs for cancer endpoint)	1.4E+00	nc	1.9E+01	nc	7.3E-02	nc	7.3E-01	nc		
					0.10		Polynuclear aromatic hydrocarbons (PAHs)										
	6.0E-02 i		6.0E-02 r	1	0.10	83-32-9	Acenaphthene	1.1E+02	sat	1.1E+02	sat	2.2E+02	nc	3.7E+02	nc	5.7E+02	2.9E+01
	3.0E-01 i		3.0E-01 r	1	0.10	120-12-7	Anthracene	5.7E+00	sat	5.7E+00	sat	1.1E+03	nc	1.8E+03	nc	1.2E+04	5.9E+02
7.3E-01 n		7.3E-01 r		0	0.10	56-55-3	Benz[a]anthracene	6.1E-01	ca	2.6E+00	ca	9.2E-03	ca	9.2E-02	ca	2.0E+00	8.0E-02
7.3E-01 n		7.3E-01 r		0	0.10	205-99-2	Benzo[b]fluoranthene	6.1E-01	ca	2.6E+00	ca	9.2E-03	ca	9.2E-02	ca	5.0E+00	2.0E-01
7.3E-02 n		7.3E-02 r		0	0.10	207-08-9	Benzo[k]fluoranthene	6.1E+00	ca	2.6E+01	ca	9.2E-02	ca	9.2E-01	ca	4.9E+01	2.0E+00
							"CAL-Modified PRG" (PEA, 1994)	**6.1E-01**									
							PAHs continued										
7.3E+00 i		7.3E+00 r		0	0.10	50-32-8	Benzo[a]pyrene	6.1E-02	ca	2.6E-01	ca	9.2E-04	ca	9.2E-03	ca	8.0E+00	4.0E-01
							"CAL-Modified PRG" (PEA, 1994)							**1.5E-03**			
7.3E-03 n		7.3E-03 r		0	0.10	218-01-9	Chrysene	7.2E+00	sat	7.2E+00	sat	9.2E-01	ca	9.2E+00	ca	1.6E+02	8.0E+00
							"CAL-Modified PRG" (PEA, 1994)	**6.1E+00**									
7.3E+00 n		7.3E+00 r		0	0.10	53-70-3	Dibenz[ah]anthracene	6.1E-02	ca	2.6E-01	ca	9.2E-04	ca	9.2E-03	ca	2.0E+00	8.0E-02
	4.0E-02 i		4.0E-02 r	0	0.10	206-44-0	Fluoranthene	2.6E+03	nc	2.7E+04	nc	1.5E+02	nc	1.5E+03	nc	4.3E+03	2.1E+02
	4.0E-02 i		4.0E-02 r	1	0.10	86-73-7	Fluorene	9.0E+01	sat	9.0E+01	sat	1.5E+02	nc	2.4E+02	nc	5.6E+02	2.8E+01
7.3E-01 n		7.3E-01 r		0	0.10	193-39-5	Indeno[1,2,3-cd]pyrene	6.1E-01	ca	2.6E+00	ca	9.2E-03	ca	9.2E-02	ca	1.4E+01	7.0E-01
	4.0E-02 n		4.0E-02 r	1	0.10	91-20-3	Naphthalene	2.4E+02	sat	2.4E+02	sat	1.5E+02	nc	2.4E+02	nc	8.4E+01	4.0E+00
	3.0E-02 i		3.0E-02 r	1	0.10	129-00-0	Pyrene	1.0E+02	sat	1.0E+02	sat	1.1E+02	nc	1.8E+02	nc	4.2E+03	2.1E+02
1.5E-01 i	9.0E-03 i	1.5E-01 r	9.0E-03 r	0	0.10	67747-09-5	Prochloraz	3.0E+00	ca	1.3E+01	ca	4.5E-02	ca	3.3E+02	ca		
	6.0E-03 h		6.0E-03 r	0	0.10	26399-36-0	Profluralin	3.9E+02	nc	4.1E+03	nc	2.2E+01	nc	2.2E+02	nc		
	1.5E-02 i		1.5E-02 r	0	0.10	1610-18-0	Prometon	9.8E+02	nc	1.0E+04	nc	5.5E+01	nc	5.5E+02	nc		
	4.0E-03 i		4.0E-03 r	0	0.10	7287-19-6	Prometryn	2.6E+02	nc	2.7E+03	nc	1.5E+01	nc	1.5E+02	nc		
	7.5E-02 i		7.5E-02 r	0	0.10	23950-58-5	Pronamide	4.9E+03	nc	5.1E+04	nc	2.7E+02	nc	2.7E+03	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	1918-16-7	Propachlor	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
	5.0E-03 i		5.0E-03 r	0	0.10	709-98-8	Propanil	3.3E+02	nc	3.4E+03	nc	1.8E+01	nc	1.8E+02	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	2312-35-8	Propargite	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	2.0E-03 i		2.0E-03 r	0	0.10	107-19-7	Propargyl alcohol	1.3E+02	nc	1.4E+03	nc	7.3E+00	nc	7.3E+01	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	139-40-2	Propazine	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	2.0E-02 i		2.0E-02 r	0	0.10	122-42-9	Propham	1.3E+03	nc	1.4E+04	nc	7.3E+01	nc	7.3E+02	nc		
	1.3E-02 i		1.3E-02 r	0	0.10	60207-90-1	Propiconazole	8.5E+02	nc	8.9E+03	nc	4.7E+01	nc	4.7E+02	nc		
	2.0E+01 h		2.0E+01 r	0	0.10	57-55-6	Propylene glycol	1.0E+05	max	1.0E+05	max	7.3E+04	nc	7.3E+05	nc		
	7.0E-01 h		7.0E-01 r	0	0.10	111-35-3	Propylene glycol, monoethyl ether	4.6E+04	nc	1.0E+05	max	2.6E+03	nc	2.6E+04	nc		
	7.0E-01 h		5.7E-01 i	0	0.10	107-98-2	Propylene glycol, monomethyl ether	4.6E+04	nc	1.0E+05	max	2.1E+03	nc	2.6E+04	nc		
2.4E-01 i	8.6E-03 r	1.3E-02 i	8.6E-03 i	1	0.10	75-56-9	Propylene oxide					5.2E-01	ca	2.2E-01	ca		
	2.5E-01 i		2.5E-01 r	0	0.10	81335-77-5	Pursuit	1.6E+04	nc	1.0E+05	max	9.1E+02	nc	9.1E+03	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	51630-58-1	Pydrin	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
	1.0E-03 i		1.0E-03 r	0	0.10	110-86-1	Pyridine	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
	5.0E-04 i		5.0E-04 r	0	0.10	13593-03-8	Quinalphos	3.3E+01	nc	3.4E+02	nc	1.8E+00	nc	1.8E+01	nc		
1.2E+01 h		1.2E+01 r		0	0.10	91-22-5	Quinoline	3.7E-02	ca	1.6E-01	ca	5.6E-04	ca	5.6E-03	ca		
1.1E-01 i	3.0E-03 i	1.1E-01 r	3.0E-03 r	0	0.10	121-82-4	RDX (Cyclonite)	4.0E+00	ca*	1.7E+01	ca	6.1E-02	ca	6.1E-01	ca		
	3.0E-02 i		3.0E-02 r	0	0.10	10453-86-8	Resmethrin	2.0E+03	nc	2.0E+04	nc	1.1E+02	nc	1.1E+03	nc		

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION							CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
																Migration to Ground Water	
SFo g/kg-d)	RfDo (mg/kg-d)	1/(mg/kg-d)	SFi	RfDi (mg/kg-d)	V O C	skin abs. soils	CAS No.	Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		DAF 20 (mg/kg)	DAF 1 (mg/kg)
	5.0E-02 h			5.0E-02 r	0	0.10	299-84-3	Ronnel	3.3E+03 nc		3.4E+04 nc		1.8E+02 nc		1.8E+03 nc		
	4.0E-03 i			4.0E-03 r	0	0.10	83-79-4	Rotenone	2.6E+02 nc		2.7E+03 nc		1.5E+01 nc		1.5E+02 nc		
	2.5E-02 i			2.5E-02 r	0	0.10	78578-05-0	Savey	1.6E+03 nc		1.7E+04 nc		9.1E+01 nc		9.1E+02 nc		
	5.0E-03 i				0	0.10	7783-00-8	Selenious Acid	3.3E+02 nc		3.4E+03 nc				1.8E+02 nc		
	5.0E-03 i				0	0.01	7782-49-2	Selenium	3.8E+02 nc		8.5E+03 nc				1.8E+02 nc	5.0E+00	3.0E-01
	5.0E-03 h				0	0.10	630-10-4	Selenourea	3.3E+02 nc		3.4E+03 nc				1.8E+02 nc		
	9.0E-02 i			9.0E-02 r	0	0.10	74051-80-2	Sethoxydim	5.9E+03 nc		6.1E+04 nc		3.3E+02 nc		3.3E+03 nc		
	5.0E-03 i				0	0.01	7440-22-4	Silver and compounds	3.8E+02 nc		8.5E+03 nc				1.8E+02 nc	3.4E+01	2.0E+00
1.2E-01 h	5.0E-03 i		1.2E-01 r	2.0E-03 r	0	0.10	122-34-9	Simazine	3.7E+00 ca*		1.6E+01 ca*		5.6E-02 ca		5.6E-01 ca		
	4.0E-03 i			4.0E-03 r	0	0.10	26628-22-8	Sodium azide	2.6E+02 nc		2.7E+03 nc		1.5E+01 nc		1.5E+02 nc		
2.7E-01 h	3.0E-02 i		2.7E-01 r	3.0E-02 r	0	0.10	148-18-5	Sodium diethyldithiocarbamate	1.6E+00 ca		7.1E+00 ca		2.5E-02 ca		2.5E-01 ca		
	2.0E-05 i			2.0E-05 r	0	0.10	62-74-8	Sodium fluoroacetate	1.3E+00 nc		1.4E+01 nc		7.3E-02 nc		7.3E-01 nc		
	1.0E-03 h			1.0E-03 r	0	0.10	13718-26-8	Sodium metavanadate	6.5E+01 nc		6.8E+02 nc		3.7E+00 nc		3.7E+01 nc		
	6.0E-01 i				0	0.01	7440-24-6	Strontium, stable	4.6E+04 nc		1.0E+05 max				2.2E+04 nc		
	3.0E-04 i			3.0E-04 r	0	0.10	57-24-9	Strychnine	2.0E+01 nc		2.0E+02 nc		1.1E+00 nc		1.1E+01 nc		
	2.0E-01 i			2.9E-01 i	1	0.10	100-42-5	Styrene	6.8E+02 sat		6.8E+02 sat		1.1E+03 nc		1.6E+03 nc	4.0E+00	2.0E-01
	2.5E-02 i			2.5E-02 r	0	0.10	88671-89-0	Systhane	1.6E+03 nc		1.7E+04 nc		9.1E+01 nc		9.1E+02 nc		
1.5E+05 h			1.5E+05 h		0	0.03	1746-01-6	2,3,7,8-TCDD (dioxin)	3.8E-06 ca		2.4E-05 ca		4.5E-08 ca		4.5E-07 ca		
	7.0E-02 i			7.0E-02 r	0	0.10	34014-18-1	Tebuthiuron	4.6E+03 nc		4.8E+04 nc		2.6E+02 nc		2.6E+03 nc		
	2.0E-02 h			2.0E-02 r	0	0.10	3383-96-8	Temephos	1.3E+03 nc		1.4E+04 nc		7.3E+01 nc		7.3E+02 nc		
	1.3E-02 i			1.3E-02 r	0	0.10	5902-51-2	Terbacil	8.5E+02 nc		8.9E+03 nc		4.7E+01 nc		4.7E+02 nc		
	2.5E-05 h			2.5E-05 r	0	0.10	13071-79-9	Terbufos	1.6E+00 nc		1.7E+01 nc		9.1E-02 nc		9.1E-01 nc		
	1.0E-03 i			1.0E-03 r	0	0.10	886-50-0	Terbutryn	6.5E+01 nc		6.8E+02 nc		3.7E+00 nc		3.7E+01 nc		
	3.0E-04 i			3.0E-04 r	0	0.10	95-94-3	1,2,4,5-Tetrachlorobenzene	2.0E+01 nc		2.0E+02 nc		1.1E+00 nc		1.1E+01 nc		
2.6E-02 i	3.0E-02 i		2.6E-02 i	3.0E-02 r	1	0.10	630-20-6	1,1,1,2-Tetrachloroethane	2.4E+00 ca		5.4E+00 ca		2.6E-01 ca		4.3E-01 ca		
2.0E-01 i			2.0E-01 i		1	0.10	79-34-5	1,1,2,2-Tetrachloroethane	4.5E-01 ca		1.1E+00 ca		3.3E-02 ca		5.5E-02 ca	3.0E-03	2.0E-04
5.2E-02 n	1.0E-02 i		2.0E-03 n	1.0E-02 r	1	0.10	127-18-4	Tetrachloroethylene (PCE)	5.4E+00 ca		1.7E+01 ca		3.3E+00 ca		1.1E+00 ca	6.0E-02	3.0E-03
								"CAL-Modified PRG" (PEA, 1994)					**3.2E-01**				
	3.0E-02 i			3.0E-02 r	0	0.10	58-90-2	2,3,4,6-Tetrachlorophenol	2.0E+03 nc		2.0E+04 nc		1.1E+02 nc		1.1E+03 nc		
2.0E+01 h			2.0E+01 r		0	0.10	5216-25-1	p,a,a,a-Tetrachlorotoluene	2.2E-02 ca		9.5E-02 ca		3.4E-04 ca		3.4E-03 ca		
2.4E-02 h	3.0E-02 i		2.4E-02 r	3.0E-02 r	0	0.10	961-11-5	Tetrachlorovinphos	1.9E+01 ca		7.9E+01 ca		2.8E-01 ca		2.8E+00 ca		
	5.0E-04 i			5.0E-04 r	0	0.10	3689-24-5	Tetraethyldithiopyrophosphate	3.3E+01 nc		3.4E+02 nc		1.8E+00 nc		1.8E+01 nc		
	7.0E-05 h				0	0.01	1314-32-5	Thallic oxide	5.4E+00 nc		1.2E+02 nc				2.6E+00 nc		
	9.0E-05 i				0	0.01	563-68-8	Thallium acetate	6.9E+00 nc		1.5E+02 nc				3.3E+00 nc	7.0E-01	4.0E-01
	8.0E-05 i				0	0.01	6533-73-9	Thallium carbonate	6.1E+00 nc		1.4E+02 nc				2.9E+00 nc	7.0E-01	4.0E-01
	8.0E-05 i				0	0.01	7791-12-0	Thallium chloride	6.1E+00 nc		1.4E+02 nc				2.9E+00 nc	7.0E-01	4.0E-01
	9.0E-05 i				0	0.01	10102-45-1	Thallium nitrate	6.9E+00 nc		1.5E+02 nc				3.3E+00 nc	7.0E-01	4.0E-01
	9.0E-05 x				0	0.01	12039-52-0	Thallium selenite	6.9E+00 nc		1.5E+02 nc				3.3E+00 nc	7.0E-01	4.0E-01
	8.0E-05 i				0	0.01	7446-18-6	Thallium sulfate	6.1E+00 nc		1.4E+02 nc				2.9E+00 nc	7.0E-01	4.0E-01
	1.0E-02 i			1.0E-02 r	0	0.10	28249-77-6	Thiobencarb	6.5E+02 nc		6.8E+03 nc		3.7E+01 nc		3.7E+02 nc		
	3.0E-02 x			3.0E-02 r	0	0.10	3689-24-5	2-(Thiocyanomethylthio)- benzothiazole (TCMTB)	2.0E+03 nc		2.0E+04 nc		1.1E+02 nc		1.1E+03 nc		
	3.0E-04 h			3.0E-04 r	0	0.10	39196-18-4	Thiofanox	2.0E+01 nc		2.0E+02 nc		1.1E+00 nc		1.1E+01 nc		
	8.0E-02 i			8.0E-02 r	0	0.10	23564-05-8	Thiophanate-methyl	5.2E+03 nc		5.5E+04 nc		2.9E+02 nc		2.9E+03 nc		
	5.0E-03 i			5.0E-03 r	0	0.10	137-26-8	Thiram	3.3E+02 nc		3.4E+03 nc		1.8E+01 nc		1.8E+02 nc		
	6.0E-01 h				0	0.01	n/a	Tin (inorganic, see tributyltin oxide for organic tin)	4.6E+04 nc		1.0E+05 max				2.2E+04 nc		
	2.0E-01 i			1.1E-01 h	1	0.10	108-88-3	Toluene	7.9E+02 nc		8.8E+02 sat		4.0E+02 nc		7.2E+02 nc	1.2E+01	6.0E-01
3.2E+00 h			3.2E+00 r		0	0.10	95-80-7	Toluene-2,4-diamine	1.4E-01 ca		6.0E-01 ca		2.1E-03 ca		2.1E-02 ca		
	6.0E-01 h			6.0E-01 r	0	0.10	95-70-5	Toluene-2,5-diamine	3.9E+04 nc		1.0E+05 max		2.2E+03 nc		2.2E+04 nc		
	2.0E-01 h			2.0E-01 r	0	0.10	823-40-5	Toluene-2,6-diamine	1.3E+04 nc		1.0E+05 max		7.3E+02 nc		7.3E+03 nc		
1.9E-01 i			1.9E-01 r		0	0.10	106-49-0	p-Toluidine	2.3E+00 ca		1.0E+01 ca		3.5E-02 ca		3.5E-01 ca		
1.1E+00 i			1.1E+00 i		0	0.10	8001-35-2	Toxaphene	4.0E-01 ca		1.7E+00 ca		6.0E-03 ca		6.1E-02 ca	3.1E+01	2.0E+00
	7.5E-03 i			7.5E-03 r	0	0.10	66841-25-6	Tralomethrin	4.9E+02 nc		5.1E+03 nc		2.7E+01 nc		2.7E+02 nc		
	1.3E-02 i			1.3E-02 r	0	0.10	2303-17-5	Triallate	8.5E+02 nc		8.9E+03 nc		4.7E+01 nc		4.7E+02 nc		
	1.0E-02 i			1.0E-02 r	0	0.10	82097-50-5	Triasulfuron	6.5E+02 nc		6.8E+03 nc		3.7E+01 nc		3.7E+02 nc		
	5.0E-03 i			5.0E-03 r	0	0.10	615-54-3	1,2,4-Tribromobenzene	3.3E+02 nc		3.4E+03 nc		1.8E+01 nc		1.8E+02 nc		
	3.0E-05 i			3.0E-05 r	0	0.10	56-35-9	Tributyltin oxide (TBTO)	2.0E+00 nc		2.0E+01 nc		1.1E-01 nc		1.1E+00 nc		
3.4E-02 h			3.4E-02 r		0	0.10	634-93-5	2,4,6-Trichloroaniline	1.3E+01 ca		5.6E+01 ca		2.0E-01 ca		2.0E+00 ca		
2.9E-02 h			2.9E-02 r		0	0.10	33663-50-2	2,4,6-Trichloroaniline hydrochloride	1.5E+01 ca		6.6E+01 ca		2.3E-01 ca		2.3E+00 ca		
	1.0E-02 i			5.7E-02 h	1	0.10	120-82-1	1,2,4-Trichlorobenzene	5.7E+02 nc		5.5E+03 sat		2.1E+02 nc		1.9E+02 nc	5.0E+00	3.0E-01
	3.5E-02 n			2.8E-01 x	1	0.10	71-55-6	**1,1,1-Trichloroethane**	1.2E+03 nc		3.0E+03 sat		1.0E+03 nc		7.9E+02 nc	2.0E+00	1.0E-01
5.7E-02 i	4.0E-03 i		5.6E-02 i	4.0E-03 r	1	0.10	79-00-5	1,1,2-Trichloroethane	6.5E-01 ca		1.5E+00 ca		1.2E-01 ca		2.0E-01 ca	2.0E-02	9.0E-04
1.1E-02 n	8.0E-03 n		8.0E-03 n	8.0E-03 r	1	0.10	79-01-6	Trichloroethylene (TCE)	3.2E+00 ca*		7.0E+00 ca*		1.1E+00 ca*		1.6E+00 ca*	6.0E-02	3.0E-03
	3.0E-01 i			2.0E-01 h	1	0.10	75-69-4	Trichlorofluoromethane	3.8E+02 nc		1.3E+03 nc		7.3E+02 nc		1.3E+03 nc		

Key : i=IRIS h=HEAST n=NCEA x=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

FOR PLANNING PURPOSES

TOXICITY INFORMATION							CONTAMINANT	PRELIMINARY REMEDIAL GOALS (PRGs)								SOIL SCREENING LEVEL	
SFo (mg/kg-d)	RfDo (mg/kg-d)	SFi 1/(mg/kg-d)	RfDi (mg/kg-d)	V O C	skin abs. soils	CAS No.		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ambient Air (ug/m^3)		Tap Water (ug/l)		Migration to Ground Water DAF 20 (mg/kg)	DAF 1 (mg/kg)
	1.0E-01 i		1.0E-01 r	0	0.10	95-95-4	2,4,5-Trichlorophenol	6.5E+03	nc	6.8E+04	nc	3.7E+02	nc	3.7E+03	nc	2.7E+02	1.4E+01
1.1E-02 i		1.1E-02 i		0	0.10	88-06-2	2,4,6-Trichlorophenol	4.0E+01	ca	1.7E+02	ca	6.2E-01	ca	6.1E+00	ca	2.0E-01	8.0E-03
	1.0E-02 i		1.0E-02 r	0	0.10	93-76-5	2,4,5-Trichlorophenoxyacetic Acid	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
	8.0E-03 i		8.0E-03 r	0	0.10	93-72-1	2-(2,4,5-Trichlorophenoxy) propionic acid	5.2E+02	nc	5.5E+03	nc	2.9E+01	nc	2.9E+02	nc		
	5.0E-03 i		5.0E-03 r	1	0.10	598-77-6	1,1,2-Trichloropropane	1.5E+01	nc	5.0E+01	nc	1.8E+01	nc	3.0E+01	nc		
7.0E+00 h	6.0E-03 i	7.0E+00 r	5.0E-03 r	1	0.10	96-18-4	1,2,3-Trichloropropane	1.4E-03	ca	3.1E-03	ca	9.6E-04	ca	1.6E-03	ca		
	5.0E-03 h		5.0E-03 r	1	0.10	96-19-5	1,2,3-Trichloropropene	1.1E+01	nc	3.8E+01	nc	1.8E+01	nc	3.0E+01	nc		
	3.0E+01 i		8.6E+00 h	1	0.10	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.6E+03	sat	5.6E+03	sat	3.1E+04	nc	5.9E+04	nc		
	3.0E-03 i		3.0E-03 r	0	0.10	58138-08-2	Tridiphane	2.0E+02	nc	2.0E+03	nc	1.1E+01	nc	1.1E+02	nc		
	2.0E-03 r		2.0E-03 i	1	0.10	121-44-8	Triethylamine	2.3E+01	nc	8.4E+01	nc	7.3E+00	nc	1.2E+01	nc		
7.7E-03 i	7.5E-03 i	7.7E-03 r	7.5E-03 r	0	0.10	1582-09-8	Trifluralin	5.8E+01	ca**	2.5E+02	ca*	8.7E-01	ca*	8.7E+00	ca*		
3.7E-02 h		3.7E-02 r		0	0.10	512-56-1	Trimethyl phosphate	1.2E+01	ca	5.2E+01	ca	1.8E-01	ca	1.8E+00	ca		
	5.0E-05 i		5.0E-05 r	0	0.10	99-35-4	1,3,5-Trinitrobenzene	3.3E+00	nc	3.4E+01	nc	1.8E-01	nc	1.8E+00	nc		
	1.0E-02 h		1.0E-02 r	0	0.10	479-45-8	Trinitrophenylmethylnitramine	6.5E+02	nc	6.8E+03	nc	3.7E+01	nc	3.7E+02	nc		
3.0E-02 i	5.0E-04 i	3.0E-02 r	5.0E-04 r	0	0.10	118-96-7	2,4,6-Trinitrotoluene	1.5E+01	ca**	6.4E+01	ca**	2.2E-01	ca**	2.2E+00	ca**		
	3.0E-03 i			0	0.01	7440-61-1	Uranium (soluble salts)										
	7.0E-03 h			0	0.01	7440-62-2	Vanadium	5.4E+02	nc	1.2E+04	nc			2.6E+02	nc	6.0E+03	3.0E+02
	9.0E-03 i			0	0.01	1314-62-1	Vanadium pentoxide	6.9E+02	nc	1.5E+04	nc			3.3E+02	nc	6.0E+03	3.0E+02
	2.0E-02 h			0	0.01	13701-70-7	Vanadium sulfate	1.5E+03	nc	3.4E+04	nc			7.3E+02	nc	6.0E+03	3.0E+02
	1.0E-03 i		1.0E-03 r	0	0.10	1929-77-7	Vernam	6.5E+01	nc	6.8E+02	nc	3.7E+00	nc	3.7E+01	nc		
	2.5E-02 i		2.5E-02 r	0	0.10	50471-44-8	Vinclozolin	1.6E+03	nc	1.7E+04	nc	9.1E+01	nc	9.1E+02	nc		
	1.0E+00 h		5.7E-02 i	1	0.10	108-05-4	**Vinyl acetate**	7.8E+02	nc	2.6E+03	nc	2.1E+02	nc	4.1E+02	nc	1.7E+02	8.0E+00
1.1E-01 r	8.6E-04 r	1.1E-01 h	**8.6E-04 i**	1	0.10	593-60-2	**Vinyl bromide (bromoethene)**	1.9E-01	ca*	4.1E-01	ca*	6.1E-02	ca*	1.0E-01	ca*		
1.9E+00 h		3.0E-01 h		1	0.10	75-01-4	Vinyl chloride	1.6E-02	ca	3.5E-02	ca	2.2E-02	ca	2.0E-02	ca	1.0E-02	7.0E-04
	3.0E-04 i		3.0E-04 r	0	0.10	81-81-2	Warfarin	2.0E+01	nc	2.0E+02	nc	1.1E+00	nc	1.1E+01	nc		
	2.0E+00 i		2.0E-01 x	1	0.10	108-38-3	m-Xylene	3.2E+02	sat	3.2E+02	sat	7.3E+02	nc	1.4E+03	nc	2.1E+02	1.0E+01
	2.0E+00 i		2.0E-01 x	1	0.10	95-47-6	o-Xylene	3.2E+02	sat	3.2E+02	sat	7.3E+02	nc	1.4E+03	nc	1.9E+02	9.0E+00
				1	0.10	106-42-3	p-Xylene	3.2E+02	sat	3.2E+02	sat					2.0E+02	1.0E+01
	2.0E+00 i		2.0E-01 x	1	0.10	1330-20-7	Xylene (mixed)	3.2E+02	sat	3.2E+02	sat	7.3E+02	nc	1.4E+03	nc	2.0E+02	1.0E+01
	3.0E-01 i			0	0.01	7440-66-6	Zinc	2.3E+04	nc	1.0E+05	max			1.1E+04	nc	1.2E+04	6.2E+02
	3.0E-04 i			0	0.01	1314-84-7	Zinc phosphide	2.3E+01	nc	5.1E+02	nc			1.1E+01	nc		
	5.0E-02 i		5.0E-02 r	0	0.10	12122-67-7	Zineb	3.3E+03	nc	3.4E+04	nc	1.8E+02	nc	1.8E+03	nc		

APPENDIX A

Health, Safety and Work Plan by Eric Rothwell
December 10, 1995

APPENDIX B

NPDES Discharge Limits

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 94-007
NPDES NO. CA0029980

WASTE DISCHARGE REQUIREMENTS FOR:

CALTRANS - CYPRESS RECONSTRUCTION
ALAMEDA COUNTY

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

1. The California Department of Transportation (CALTRANS) hereinafter called the discharger, by application dated October 1, 1993, has applied for issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES).

2. The primary purpose of the proposed I-880/Cypress project is to restore continuity and capacity to the interstate and regional network that was lost when the I-880 link between 18th and 34th streets in Oakland was destroyed by the Loma Prieta earthquake. The eight lane Cypress Freeway structure was a connecting link in the local, regional and interstate transportation network. The project would alleviate severe congestion at the I-580/980 and I-80/I-580/I-880 interchanges, as well as ease local circulation on city streets.

3. The project corridor limits lie within the area bounded by Route I-80 at Powell street in Emeryvillle and by Route I-80 at Powell Street in Emeryville in the south. Most of the corridor passes through Southern Pacific's West Oakland Yard, requiring extensive relocation of their rail lines. Several hazardous waste investigations have been conducted by the discharger and by property owners during the Right-of-Way acquisition process for the freeway. The discharger has acquired and is in the process of acquiring a total of 27 potentially and known polluted sites either partially or fully for the freeway reconstruction. Very limited data were obtained at the sites investigated.

4. Cursory subsurface investigations initiated in 1992 and 1993 of the soil and groundwater at these sites along the freeway corridor indicate pollution in both soil and groundwater throughout the proposed project area. The complete distribution and extent of pollutants reported are beyond the scope of these investigations. However, based on limited information the pollutants detected in soil and groundwater include: Petroleum Hydrocarbons as gasoline and diesel, non-speciated hydrocarbons, aromatic volatile organics, chlorinated volatile organics, semi-volatile organics, polynuclear aromatic hydrocarbons, pesticides and heavy metals.

5. This Order applies to several anticipated discharge points for extracted groundwater to be implemented by the discharger. Approximately three hundred footings will be excavated for the freeway structure in the cities of Oakland and Emeryville. Most of the excavations for the construction of the freeway will need to be dewatered for the work to proceed due to shallow groundwater conditions along the freeway corridor. This will necessitate an estimated discharge volume of approximately 100,000 gallons of water per day based on estimated average soil permeabilities and groundwater elevations. The groundwater from these excavations will be pumped into holding tanks. The water in the holding tanks will be stored to allow for settling of suspended solids. No other treatment method for dissolved pollutants, or pollutants that will not be effected by settling, is currently proposed.

6. The following description outlines seven potential discharge points for the project designated contracts A to G. Actual discharge points will be determined during construction but will be limited to the following locations. Extracted groundwater for contract A will be directed to the storm sewer drain at third and Magnolia Streets, at storm sewer juncture at Third street between Chestnut and Filbert Streets, at the juncture of Market Street and Fifth Street, or at the intersection at First and Market Streets. From these discharge points the water will flow south-west where it will discharge to the Oakland Inner Harbor in Central San Francisco Bay.

   For Contract B, the entire storm sewer system will be utilized as defined by the area bounded to the northwest by Cedar Street the northeast as Shorey Street, the southwest as Seventh Street and the southeast as Wood Street. Groundwater discharged into the storm sewers contained in this area will flow northwest into the Oakland Outer harbor in Central San Francisco Bay.

   For Contracts C, D, and F the groundwater will be discharged to the storm sewer system junctures along West Grand Avenue beginning at the at the intersection of West Grand Avenue and the Oakland Army Base and terminating at the intersection of West Grand Avenue, Maritime and Wake Streets. Discharged groundwater will flow northwest to the Oakland Outer Harbor.

   For Contract E the groundwater will be discharged into the aforementioned storm sewer system for C, D, and F or into the storm system along Burma Road between the East Bay Municipal Utilities District Building to the northeast and the Oakland Army Base property to the south, discharging into the Oakland Outer Harbor.

   For Contract G the groundwater will be discharged to the storm sewer system between the Distributuion Stucture and Powell Street discharging into the Emeryville Crescent Marsh.

7. Based upon the criteria in Board Resolution No. 88-160 and on information submitted by the discharger, the Board finds that extracted groundwater reclamation, re-use, or discharge to POTW are feasible, contingent upon pollutant levels set forth by the Board, and county or state health services agencies (See: Provision C).

8. The Basin Plan contains water quality objectives for Central San Francisco Bay and the Emeryville Crescent Marsh.

9. The existing and potential beneficial uses of Central San Francisco Bay and the Emeryville Crescent Marsh include:

   - Fresh water recharge
   - Warm fresh water habitat
   - Contact and non-contact water recreation
   - Wildlife habitat
   - Preservation of rare and endangered species
   - Estuarine habitat
   - Industrial process supply
   - Fish spawning and migration
   - Industrial service supply
   - Shellfishing
   - Navigation
   - Ocean commercial and sport fishing

10. The Basin Plan prohibits discharge of "all conservative toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, to waters of the Basin." The discharger's ground water extraction and treatment systems and associated operation, maintenance, and monitoring plans constitute an acceptable control program for minimizing the discharge of toxicants to waters of the State.

11. Effluent limitations of this Order are based on the Clean Water Act, Basin Plan, State and U.S. Environmental Protection Agency (EPA) plans and policies, and best engineering and geologic judgement. EPA Region IX draft guidance "NPDES Permit Limitations for Discharge of Contaminated Groundwater: Guidance Document" was also considered in the determination of effluent limits.

12. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

13. The Board has notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

IT IS HEREBY ORDERED that the discharger, its agents, successors, and assigns in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. EFFLUENT LIMITATIONS

1. The effluent, at the discharge point to the storm drain, shall not contain constituents in excess of the limits contained in Table 1:

Table 1

Constituent	Instantaneous Maximum (µg/l)
a. Purgeable Halocarbons	
trichloroethylene (TCE)	5.0
tetrachloroethylene (PCE)	5.0
1,1,1-trichloroethane (TCA)	5.0
1,1-dichloroethane (1,1,-DCA)	5.0
1,1-dichloroethylene (1,1-DCE)	5.0
cis + trans-1,2-dichloroethylene	5.0
1,2-dichloroethane (1,2-DCA)	5.0
Trichloroflouromethane (Freon-11)	5.0
1,1,2-trichloro-1,2,2-triflouroethane (Freon 113)	5.0
chloroethene (vinyl chloride)	5.0
Any other chlorinated volatile organic compound (as identified by EPA method 601 or 624)	5.0
b. Purgeable Aromatics	
Benzene	5.0
Toluene	5.0
Ethylbenzene	5.0
Total Xylenes	5.0
Volatile Organic compounds (per	5.0

constituent, as identified by EPA method 624 or EPA methods 601 and 602)

c. Total Petroleum Hydrocarbons (as identified by modified EPA method 8015) — 50.0

d. Polynuclear Aromatic Hydrocarbons (defined as the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzoflouranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, flourene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene) — 15.0

e. Ethylene Dibromide (as identified by method 504) — 5.0

f. Base/neutral, Acid and Pesticide Compounds (per constituent, as identified by method 625) — 5.0

g. Inorganics

arsenic	20.0
cadmium	10.0
chromium (VI)	11.0
copper	20.0
cyanide	20.0
lead	5.6
mercury	1.0
nickel	7.1
selenium	5.0
silver	2.3
zinc	58.0

2. The flow of the discharge shall be limited to the treated groundwaters removed from the uppermost shallow water bearing zone.

3. The pH of the discharge shall not exceed 8.5 nor be less than 6.5.

4. In any representative set of samples, the discharges shall meet the following limit of quality:

Toxicity: The survival of test fishes in 96-hour static bioassays of the undiluted effluent as discharged shall be a three sample moving median of 90% survival, and a 90 percentile value of not less than 70% survival in a single sample. The bioassays shall be performed according to protocols approved by the U.S. EPA or the State Water Resources Control Board or published by the American Society for Testing and Materials or American Public Health Association. Two fish species will be tested concurrently. These shall be the most sensitive two species determined from a single concurrent screening of three using two of the following three test fish species in parallel tests. The test fish shall be rainbow trout, fathead minnow, or three-spine stickleback.

The compliance monitoring may be carried out with one, most sensitive fish species if both of the following conditions are met:

- the discharger can document that the acute toxicity limitation, as described above, has not been exceeded during the previous three years, or that acute toxicity has been observed in only one of two fish species, and

- a single screening using all three fish species confirms the documented pattern.

B. RECEIVING WATER LIMITATIONS

1. The discharge of wastes shall not cause the following conditions to exist in waters of the State at any place:

a. floating, suspended, or deposited macroscopic particulate matter or foam;

b. bottom deposits or aquatic growths;

c. alteration of temperature or apparent color beyond present natural background levels;

d. visible, floating, suspended, or deposited oil or other products of petroleum origin;

e. toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of

these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

   a. pH: The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units.

   b. Dissolved oxygen: 5.0 mg/l minimum. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause lesser concentration(s) than specified above, the discharge shall not cause further reduction in the concentration of dissolved oxygen.

   c. Un-ionized ammonia (as N):

      0.025 mg/l annual mean
      0.4 mg/l maximum

3. This discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

C. WATER RE-USE LIMITATIONS

1. A water re-use plan must be approved by the Executive Officer.

2. All water shall meet all effluent limitations in effect.

3. A report must be sent on a quarterly basis indicating the number of gallons used and locations used.

D. PROVISIONS

1. The discharger shall comply with all sections of this order immediately upon adoption by the Board and upon starting any discharge.

2. The discharger shall comply with the self-monitoring program as adopted by the Board and as may be amended by the Executive Officer.

3. The discharger shall notify the Board if any activity has occurred or will occur which would result in the discharge, on a frequent or routine basis, of any toxic pollutant which is not limited by this Order.

4. Any discharge to a location other than the discharge point(s) specified in this Order will require a modification to this Order.

5. The discharger shall send as-built drawings of the remediation system(s).

6. The discharger shall comply with all items of the attached "Standard Provisions, Reporting Requirements and Definitions" dated December 1986 and modified January 1987, except items A.10, B.2, B.3, C.8 and C.11.

7. This Order expires January 19, 1999. The discharger must file a report of waste discharge in accordance with Title 23, Division 3, Chapter 9 of the California Code of Regulations no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

8. This Order shall serve as a National Pollutant Discharge Elimination System Permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective 10 days after date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on January 18, 1994.

Lawrence P. Kolb
for
STEVEN R. RITCHIE
Executive Officer

Attachments: Self-Monitoring Program
Discharge Location Map

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR:

CALTRANS
CYPRESS RECONSTRUCTION PROJECT
OAKLAND/EMERYVILLE, ALAMEDA COUNTY

NPDES NO. CA0029980

ORDER NO. 94-007

CONSISTS OF:

PART A Dated December 1986 and modified January 1987

PART B ADOPTED JANUARY 19, 1994

PART B

CALTRANS
CYPRESS RECONSTRUCTION PROJECT
OAKLAND/EMERYVILLE, ALAMEDA COUNTY

I. DESCRIPTION OF SAMPLING STATIONS

A map with locations of treatment and discharge shall be included in each Self Monitoring Plan report. Following twenty days of settlement in the influent tank, and after decanting into the effluent tank, a representative groundwater sample shall be collected to determine compliance with discharge limits.

A. EFFLUENT TANK (T)

Station	Description
T-1...T-n	A composite sample will be taken from each tank . This sample will consist of four grab samples collected from the surface, 3 feet below the water surface, 6 feet below the water surface, and 9 feet below the water surface. These samples shall be taken to a state certified laboratory for compositing (four into one) and analysis.

II. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis is provided in the attached Table A.

III. MODIFICATIONS TO PART A, DATED DECEMBER 1986 AND MODIFIED JANUARY 1987

All items of Self-Monitoring Program Part A, dated December 1986 and as modified January 1987 shall be complied with except for the following:

A. Additions to Part A: Section G.4.d.5: "Results from each required analysis and observation shall be submitted as laboratory originated data summary sheets in the quarterly self-monitoring reports. All chromatographic peaks for purgeable halocarbons and/or volatile organics shall be identified and quantified for all effluent samples. If previously unquantified peaks are identified in any effluent sample, then these peaks shall be confirmed based on analyses using chemical standards necessary to achieve proper identification and quantification. Results shall also be submitted for any additional analyses performed by the

discharger at the specific request of the Board for parameters for which effluent limits have been established and provided to the discharger by the Board."

B. Deletions from Part A: Sections D.2.b., D.2.g., D.3.b., E.1.e.1, E.1.f., E.2.b., E.3., E.4., E.5., F.2.b., G.2., G.4.b., and G.4.f.

C. Modifications to Part A: For the following, the discharger shall comply with the Sections as changed and reported herein:

1. Section D.1. is changed to read:

"Samples of influent shall be collected according to the schedule in Part B and shall not include any plant recirculation or other sidestream wastes. Deviation from this must be approved by the Executive Officer."

2. Section D.2.a. is changed to read:

"Samples of effluent and receiving waters shall be collected at times coincident with influent sampling unless otherwise stipulated. The Regional Board or Executive Officer may approve an alternative sampling plan if it is demonstrated that expected operating conditions warrant a deviation from the standard sampling plan."

3. Section D.2.d. is changed to read:

"If two consecutive samples of any one constituent or parameter monitored on a weekly or monthly basis in a 30-day period exceed the effluent limit or are otherwise out of compliance, or if the required sampling frequency is once per month or less (quarterly, annually or other) and the sample or parameter exceeds the limit or is otherwise out of compliance, the discharger shall implement procedure(s) acceptable to or approved by the Board's Executive Officer, on a case by case basis."

4. Section D.2.e. is changed to read:

"If any instantaneous maximum limit is exceeded, within 24 hours of receiving the analytical results indicating the violation, a confirmation sample shall be taken and analyzed with 24 hour turn-around time. If the instantaneous maximum is violated in the second sample, the discharge shall notify Regional Board staff

immediately. The Executive Officer may order the discharge to be terminated, on a case-by-case basis."

5. In Section F.1., the phrase "(at the waste treatment plant)" is changed to read, "(to Regional Board or U.S. Environmental Protection Agency staff for inspection)."

6. Section F.2.a. is changed to read:

   "Record flows from totalizing meters every two weeks and calculate average daily flow for each month."

7. Section F.2.b. is changed to read:

   "Establish flows per minute and estimate flow in gallons per day."

8. Quarterly written reports required in Section G.4 shall be filed quarterly by the thirtieth day of the following month.

9. Section G.4.e is changed to read:

   "Summary tabulations of the data shall include, for each constituent, total number of analyses, maximum, minimum, and average values for each period. Total flow data shall also be included. This information shall be prepared in a format similar to EPA Form 3320-1. This information shall be submitted only to the Board:

   Executive Officer
   California Regional Water Quality Control Board
   2101 Webster Street, Suite 500
   Oakland, CA 94612

10. The Annual Report required in Section G.5. shall be submitted by January 30 of each year in place of the quarterly report due on the same day.

IV. MISCELLANEOUS REPORTING

If any chemicals or additives are proposed to be used in the operation and/or maintenance of the ground water extraction/treatment system, the discharger shall obtain the Executive Officer's concurrence prior to use. The details

concerning such approved use shall be reported in the next periodic report submitted to the Board.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 92-135.

2. Was adopted by the Board on January 19, 1994.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer or the Board.

Lawrence P. Kolb
for
STEVEN R. RITCHIE
Executive Officer

Attachments: Table A

TABLE A
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	T-1...T-n
Type of Sample	G,C,DI
Flow Rate (mgd)	-
Bioassay 96-hr % survival (flow-through or static)	V
Ammonia Nitrogen (mg/l & kg/day)	B
Turbidity (NTU's)	
pH (units)	B
Dissolved Oxygen (mg/l and % saturation)	B
Temperature (°C)	B
Standard Observations	-
Arsenic (mg/l)	B
Cadmium (mg/l)	B
Chromium (hexavalent) (mg/l)	B
Copper (mg/l)	B
Cyanide (mg/l)	B
Lead (mg/l)	B
Mercury (mg/l)	B
Nickel (mg/l)	B
Selenium (mg/l)	B
Silver (mg/l)	B
Zinc (mg/l)	B
TPH w/ EPA Modified Method 8015	B
PNAs w/EPA Method 610	B
EDB w/EPA Method 504	B
Semi-Volatile w/EPA Method 625 Base/Neutral, Acid and Pesticide	B
Volatile Organics w/ EPA 601 and 602 or 624*	B

APPENDIX C

EBMUD Discharge Limits

WASTEWATER DISCHARGE PERMIT
Terms and Conditions

GENERAL CONDITIONS

I. The State of California Department of Transportation, District 4, shall comply with all items of the attached *Standard Provisions and Reporting Requirements (SPARR), rev. 11/92.*

II. This permit is issued to the State of California Department of Transportation, District 4, for the batch discharge of groundwater collected during the dewatering of footing excavations from Contract sites A-G, of the Cypress Freeway Reconstruction Project, listed in *Appendix 1* of this permit.

III. *The State of California Department of Transportation, District 4, shall review all available self-monitoring results for each Baker tank tested prior to initiating batch discharges.* ***The State of California Department of Transportation, District 4, may initiate the batch discharge of groundwater collected in Baker tanks only when self-monitoring results indicate that no pollutants tested exceed the groundwater discharge limits listed in Wastewater Discharge Limitations.*** *Benzene, ethylbenzene, toluene and xylene values shall be obtained from the VOC, EPA 624 analyses results.*

IV. *Batch discharges of groundwater to the sanitary sewer may occur only at EBMUD approved discharge points listed in Appendix 2 of this permit.*

V. The State of California Department of Transportation, District 4, shall take all measures necessary to prevent the transfer of settleable solids from Baker tanks when pumping treated groundwater from Baker tanks to tanker trucks.

REPORTING REQUIREMENTS

I. State of California Department of Transportation, District 4 shall monitor batch discharges of groundwater per the schedule found in the *Self Monitoring Reporting Requirements* and submit quarterly reports per the schedule listed below:

Date Due	Reporting Period
July 15, 1994	June 24, 1994 to June 30, 1994
October 15, 1994	July 1, 1994 to September 30, 1994
January 15, 1995	October 1, 1994 to December 31, 1994
April 15, 1995	January 1, 1995 to March 31, 1995

II. Quarterly reports shall contain the following information:

1. A summary of *each batch discharge from each Contract site listed in Appendix 1* which occurred during the reporting period. The summary shall include the following information:

   a. Contract site, as listed in *Appendix 1*, from which the groundwater was collected.
   b. Baker tank I.D. number.
   c. Date sampled.
   d. Date discharged.

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e. Volume discharged in gallons.
f. Discharge point where the batch discharge occurred as listed in *Appendix 2*.
g. A description of any additional treatment used other than settling in Baker tanks.

2. Total volume in gallons of treated groundwater discharged at *each discharge point* during the quarter.

3. A summary of all groundwater disposal methods used during the quarter that includes the following information:

   a. Total volume of groundwater discharged to the sanitary sewer system.
   b. Total volume of groundwater discharged to the storm sewer system.
   c. Total volume reclaimed (dust control) per NPDES Permit CA0029980..
   d. Total volume of groundwater off-hauled.

4. A laboratory originated data summary of self-monitoring results for *each batch discharge* to the sanitary sewer as outlined in *Self-monitoring Reporting Requirements, Part V.* including results from the resampling of tanks after additional treatment or extended settling time.

WASTEWATER DISCHARGE LIMITATIONS

State of California Department of Transportation, District 4 shall not discharge groundwater from a side sewer into a community sewer if the pollutant concentrations exceed the following limits:

REGULATED PARAMETER	DAILY MAXIMUM	
Arsenic	0.0012	mg/L
Cadmium	0.0022	mg/L
Chromium	0.021	mg/L
Copper	0.079	mg/L
Cyanide	0.0081	mg/L
Iron	2.296	mg/L
Lead	0.014	mg/L
Mercury	0.0004	mg/L
Nickel	0.034	mg/L
Oil and Grease	100	mg/L
Phenolic compounds	0.108	mg/L
Silver	0.012	mg/L
Zinc	0.288	mg/L
pH (not less than)	5.5	S.U.
Temperature	150	°F
Benzene	0.005	mg/L
Toluene	0.005	mg/L
Ethylbenzene	0.005	mg/L
Xylenes	0.005	mg/L

SELF MONITORING REPORTING REQUIREMENTS

I. State of California Department of Transportation, District 4 shall obtain a representative sample of each batch discharge and perform sampling according to the frequency and methods outlined below and the methods and requirements found in *SPARR, rev. 11/92*.

II. A batch discharge shall be defined as the contents of one Baker tank which is discharged to the sanitary sewer.

III. A representative sample shall be a composite sample consisting of four grab samples collected from the surface, 3 feet below the water surface, 6 feet below the water surface, and 9 feet below the water surface of groundwater collected in a Baker tank. These samples shall be taken to a certified laboratory for compositing (four into one) and analysis.

IV. Groundwater collected in Baker tanks shall be monitored for the parameters listed below using the listed analytical methods:

PARAMETER	EPA METHOD [1]	STD. METHODS
Arsenic (Total)	7061 or 200 series	
Cadmium (Total)	6010 or 200 series	
Chromium (Total)	6010	
Copper (Total)	6010	
Iron (Total)	6010	
Lead (Total)	7421	
Mercury (Total)	7470	
Nickel (Total)	6010	
Silver (Total)	6010	
Zinc (Total)	6010	
Volatile Organic Compounds (VOC)	624	
pH [2]	150.1	

[1] Test methods found in SW-846.
[2] To be performed on 10% of all Baker tanks tested per Contract site listed in *Appendix 1* during each reporting quarter.

V. A laboratory originated data summary of self-monitoring results for *each batch discharge* to the sanitary sewer, including data from resampling after additional treatment or extended settling time, shall be submitted as required in *Reporting Requirements, Part II.4*. The summary shall include the following information for *each sample:*

1. Sample information:

   a. Contract site from which the groundwater was collected as listed in *Appendix 1*.
   b. Baker tank I.D. number from which the sample was collected.
   c. Date sampled.
   d. Date received (by laboratory).
   e. Date analyzed (by laboratory).
   f. Date reported (by laboratory).
   g. Analytes tested.
   h. Test methods used for each analyte.

i. Results for each analyte with appropriate units.
j. Detection limits for each analyte.

2. Chain of custody documentation which includes the following information:

a. Contract site from which the groundwater was collected as listed in *Appendix 1*.
b. Baker tank I.D. number from which the sample was collected.
c. All information required by *SPARR, rev. 11/92, Section C.II.*.

VI. Groundwater in Baker tanks that are retested after undergoing treatment or extended settling time need only be retested for pollutants that exceeded discharge limits listed in *Wastewater Discharge Limitations*.

VII. All samples must be obtained using containers, collection methods, preservation techniques, holding times and analytical methods set forth in 40 CFR Part 136 or Standard Methods for the Examination of Water and Wastewater, 18th Edition.

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

MONITORING and TESTING CHARGES

Total EBMUD Inspections Per Year: 12 @ $510.00 each = $6,120.00 /year

Total Analyses Per Year:

Parameter	Tests per year	Charge per test	Total Charge per year
EPA 624	12	$156.00	$1,872.00
Metals	12	$111.00	$1,332.00
pH	12	$23.00	$276.00
Oil and Grease (Total)	12	$47.00	$564.00
		Monitoring and Testing Charge =	$10,164.00 /year
			$847.00 /month

WASTEWATER DISPOSAL CHARGE

All wastewater discharged will be charged for treatment and disposal service at a unit rate calculated using average values of 50 mg/l for CODF and 10 mg/l for TSS as reported in Caltrans' Test Pile Project permit (Account No. 502-87681) Monthly Reports for January through May 1994.
Current unit rate: $0.35 /Ccf

Volume discharged in Ccf/month = 1243.5 or $435.23 /month

WASTEWATER CAPACITY FEE

The capacity fee is calculated by multiplying the monthly wastewater discharge volume by the capapcity fee rate at start-up. The capacity fee rate has been calculated using average values of 50 mg/l for CODF and 10 mg/l for TSS and capacity fees of $46.62/Ccf/month for flow, $8.46/lb/month for CODF and $18.86/lb/month for TSS. Each month, 1/36 of the capacity fee will be charged, until the entire fee has been paid in 3 years.

Discharge volume = 930,150 gallons per month
Capacity fee rate = $50.44 /Ccf-month
Capacity fee = $62,722.95 or $1,742.30 /month

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WASTEWATER DISCHARGE PERMIT

Terms and Conditions

FEES AND WASTEWATER CHARGES

The following fees and charges are due when billed by the District:

Permit Fee (Unpaid)	$2,260.00 *
Monthly Monitoring Charges	$847.00
Monthly Wastewater Disposal Charge	$435.23
Monthly Wastewater Capacity Fee	$1,742.30
Total Monthly Charges =	$3,024.53

* To be paid on first bi-monthly EBMUD water bill.

This Permit may be amended to include changes to rates and charges which may be established by the District during the term of this Permit.

AVERAGE WASTEWATER DISCHARGE *

LAST 12 MONTHS	PRECEDING 12 - 24 MONTHS
-0-	-0-

* Gallons per calendar day.

AUTHORIZATION

The above named Applicant is hereby authorized to discharge wastewater to the community sewer, subject to said Applicant's compliance with EBMUD Wastewater Control Ordinance, compliance conditions, reporting requirements and billing conditions.

Effective Date: June 24, 1994

Expiration Date: June 23, 1995

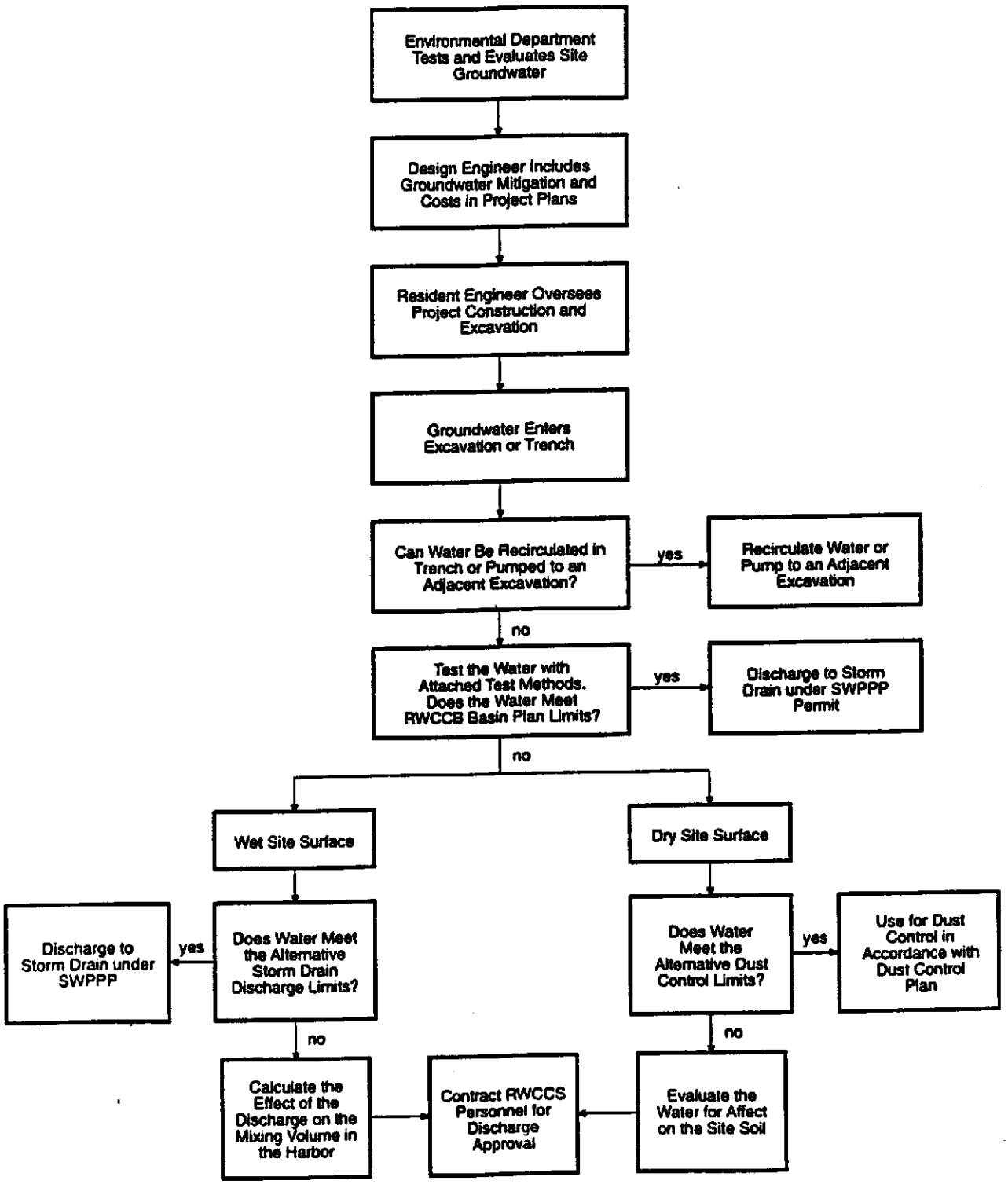
Michael J. Wallace 6/24/94

DIRECTOR, WASTEWATER DEPARTMENT DATE

SD-30

APPENDIX D

Ground Water Characterization/Testing Guide


Environmental Department Tests and Evaluates Site Groundwater
Design Engineer Includes Groundwater Mitigation and Costs in Project Plans
Resident Engineer Oversees Project Construction and Excavation
Groundwater Enters Excavation or Trench
Can Water Be Recirculated in Trench or Pumped to an Adjacent Excavation?
yes
Recirculate Water or Pump to an Adjacent Excavation
no
Test the Water with Attached Test Methods. Does the Water Meet RWCCB Basin Plan Limits?
yes
Discharge to Storm Drain under SWPPP Permit
no
Wet Site Surface
Dry Site Surface
Discharge to Storm Drain under SWPPP
yes
Does Water Meet the Alternative Storm Drain Discharge Limits?
Does Water Meet the Alternative Dust Control Limits?
yes
Use for Dust Control in Accordance with Dust Control Plan
no
no
Calculate the Effect of the Discharge on the Mixing Volume in the Harbor
Contract RWCCS Personnel for Discharge Approval
Evaluate the Water for Affect on the Site Soil

Caltrans' I-880 Cypress Reconstruction Project
Ground Water Testing Guide

Alternative Storm Drain Discharge (ppb)	Basin Plan Storm Drain Discharge (ppb)	EPA Test Method (Basin Plan)	Constituent of Concern	EPA Test Method (MCL's)	Drinking Water (MCL's) (ppb)	Alternative Dust Control Discharge (ppb)
N/A	N/A	N/A	Aluminum	N.S.	1,000	3,000
N/A	N/A	N/A	Barium	N.S.	1,000	3,000
N/A	N/A	N/A	Iron	236.2	1,000	3,000
50	5	206	Arsenic	206	50	150
30	10	213.2	Cadmium	213.2	10	30
110	11	218.2	Chromium (Total)	218.2	50	150
50	5	220.2	Copper	220.2	1,000	3,000
50	5	335	Cyanide (Total)	335	20	60
56	5.6	239.2	Lead	239.2	50	150
6	1	245	Mercury	245	2	6
71	7.1	249.2	Nickel	249.2	100	300
30	5	270.3	Selenium	270.3	10	30
23	2.3	272.2	Silver	272.2	50	150
580	58	289.2	Zinc	289.2	58	174
400	400	350.3	Un-ionized Ammonia	350.3	400	400
6.5 to 8.5	6.5 to 8.5	150.1	pH	150.1	6.5 to 8.5	6.5 to 8.5
5,000	5,000	360	Dissolved Oxygen	N/A	N/A	N/A
FIO	FIO	120.1	Conductivity/Salinity	N/A	N/A	N/A
FIO	FIO	130	Hardness	N/A	N/A	N/A
70% Survival	N/A	N.S.	96 Hour Bioassay*	N/A	N/A	N/A
5	5	601 or 602	Purgeable Halocarbons*	601 or 624	5	5
5	5	(601& 602) or 624	Purgeable Aromatic/Volatile Organics*	(601& 602) or 624	5	5
50	50	8015	Total Petroleum Hydrocarbons	8015	50	50
15	15	610	Polynuclear Aromatic Hydrocarbons*	610	15	15
5	5	504	Ethyl Dibromide	504	5	5
5	5	625	Base Neutral, Acid & Pesticides/Semi-volatile Organics	625	5	5

KEY

N/A = Not Applicable

FIO = For Information Only

N.S. = Not Stated

Note: Minimum Detection limit for these tests shall be 10% of the discharge limit.

* See RWQCB Order No. 94-007 and NPDES Permit No. CA 0029980 for additional information.

APPENDIX E

Soil Characterization/Testing Guide

November 18, 1997

39013 5

Mr. Mark Warner
Performance Excavators, Inc.
3060 Kerner Boulevard, Suite A
San Rafael, California 94901

Revised Soil Sampling Plan
Cypress Freeway Re-alignment
Contract No. 04-192204
Oakland, California

Dear Mr. Warner:

This letter outlines a revised work plan to conduct soil sampling to support excavation activities for the Union Street on- and offramps and drainage ditch associated with the Cypress Freeway Re-alignment in Oakland, California. The investigation will involve sampling and testing soil for several potential contaminants to assess the safety measures needed for worker protection. In addition, the results of this investigation may be used to characterize the soil for final disposition.

This work plan has been revised based on conversations with Mr. Peter Altherr of Caltrans and Ms. Lynn Nakashima of the Department of Toxic Substances Control.

SAMPLING

Excavation of soils in the ramp areas and drainage ditches will involve excavation of soil at approximately 14 locations, assuming the dimensions of the excavation areas as follows:

- Union Street onramp 200 feet x 50 to 150 feet
- Union Street offramp 200 feet x 50 to 100 feet
- Drainage ditch 1,100 feet x 25 to 50 feet

The samples will be collected as follows:

Union Street onramp and offramp excavation areas - Samples will be collected from borings drilled on a 50-foot grid. The approximate sample locations are shown on Plate 1. The borings will be advanced to a depth of 3.0 feet at each of the sample locations using a direct push drill rig. Discrete samples will be collected at depths of 0.5 foot and 2.0 feet in the ramp areas. Commonly, coarse gravel material is present within the first 6 inches below ground surface (bgs) at most excavation locations. If this material is encountered during sampling, the first discrete soil sample will be collected immediately below the coarse material.

Drainage ditch - Samples will be collected from borings drilled at 150-foot intervals, as shown on Plate 1. Samples will be collected at 0.5 and 2.0 feet bgs. As in the ramp areas, if coarse gravel is encountered, the first sample will be collected beneath it.

It is anticipated that if any chemicals are encountered, they will be encountered in the first 0.5 to 1.5 feet of soil. The soil will be characterized at two different depths so that the excavation could be conducted in two phases with two different safety protocols, if necessary.

Based on estimated lengths of each of the excavation areas and the sample intervals discussed above, the following number of samples are proposed for each site:

Site Designation	Estimated Length (feet)	Sampling Interval (feet)	Number of Sampling Locations	Samples per Location	Samples per Site
Union Street onramp	200	50	11	2 discrete	22
Union Street offramp	200	50	10	2 discrete	20
Drainage ditch	1,100	150	8	2 discrete	16
				TOTAL	**58**

HLA understands that the samples will be collected in native soil or fill, that no asphalt or concrete is present on the surface of these areas, and that all utilities in the areas have already been located. Once the samples have been collected, the cuttings from each boring will be used to fill that boring; additional soil from around the borings will be added to create a level surface.

All employees performing field work will be trained in safety procedures in accordance with *the Health, Safety and Work Plan, Structure Excavation* dated September 11, 1997 (*HLA, 1997*). During intrusive activities, the soil will be kept wet to control dust, and a photoionizing detector (PID) will be air monitoring and sample screening. All workers will use Level C personal protective equipment, including half-face respirators equipped with HEPA/organic vapor combination cartridges.

QUALITY ASSURANCE PLAN

Field activities and sample collection will be documented using field notes, sample labels, chain of custody forms, and field logs of boring. Each field sample will be labeled and sealed immediately after collection. Sample identification documents will be carefully prepared to maintain control of sample disposition. All boring logs will be signed by the field geologist or engineer and the registered supervising geologist.

Undisturbed soil samples will be collected for lithologic description by direct push drill rig using a 2.5-inch core sampler with acetate liner. As the sampler is opened, the PID probe will be inserted into the spaces between the bottom two sample segments and the reading recorded. Only tubes or liners that are completely filled with soil will be submitted for laboratory analysis. The samples selected for chemical analysis will be capped on both ends with plastic caps lined with Teflon sheets, appropriately labeled, and stored in an insulated container with ice. The soil samples will be examined and classified according to ASTM D 2488-93, which is based on the Unified Soil Classification System, and standard geologic technique.

Sampling equipment will be decontaminated prior to arrival at the field site by steam cleaning all downhole equipment on the drill rigs (i.e., drill rods). The sample tubes or acetate liners will be sent directly from the manufacturer and will be certified clean. Between sampling events, all soil sampling equipment will be decontaminated by washing in a nonphosphate detergent solution with a de-ionized water rinse, making sure that all visible soil has been removed.

The PID will be calibrated and utilized by field personnel at the beginning of the day, according to manufacturer's instructions.

Analyses will be conducted by Superior Analytical Laboratory, San Francisco, California. The samples will be transported to the laboratory under chain of custody. The laboratory will perform quality assurance measures according to their standard operating procedures.

CHEMICAL ANALYSES

Samples will be analyzed for the following chemical compounds:

- Title 22 CAM 17 metals for total concentrations (EPA Test Method 6010A and 7000 series)
- Volatile organic compounds (EPA Test Method 8260) - deep samples only, except where there is evidence of chemical release at the surface
- Semivolatile organic compounds - Polynuclear Aromatic Hydrocarbons (PNAs) (EPA Test Method 8310)
- Oil and grease (EPA Test Method 5520 or 413.1)
- Petroleum hydrocarbons as diesel (EPA Test Method 8015 modified).
- Samples with total concentrations of one or more metals that exceed the total threshold limit concentrations (TTLCs), or 20 times the toxic characteristic leachate procedure (TCLP) limits, will be analyzed for soluble levels of those metals that exceed, using the TCLP.

REPORTING

HLA will prepare a report summarizing the results of the investigation. The report will present laboratory analytical results, comparisons of the analytical results with levels established for industrial workers by the EPA and Department of Toxic Substances Control (DTSC), and conclusions and recommendations concerning the site conditions.

If you have any questions, please contact either of the undersigned at (415) 883-0112.

Yours very truly,

HARDING LAWSON ASSOCIATES

Susan K. Panttaja
Senior Geologist

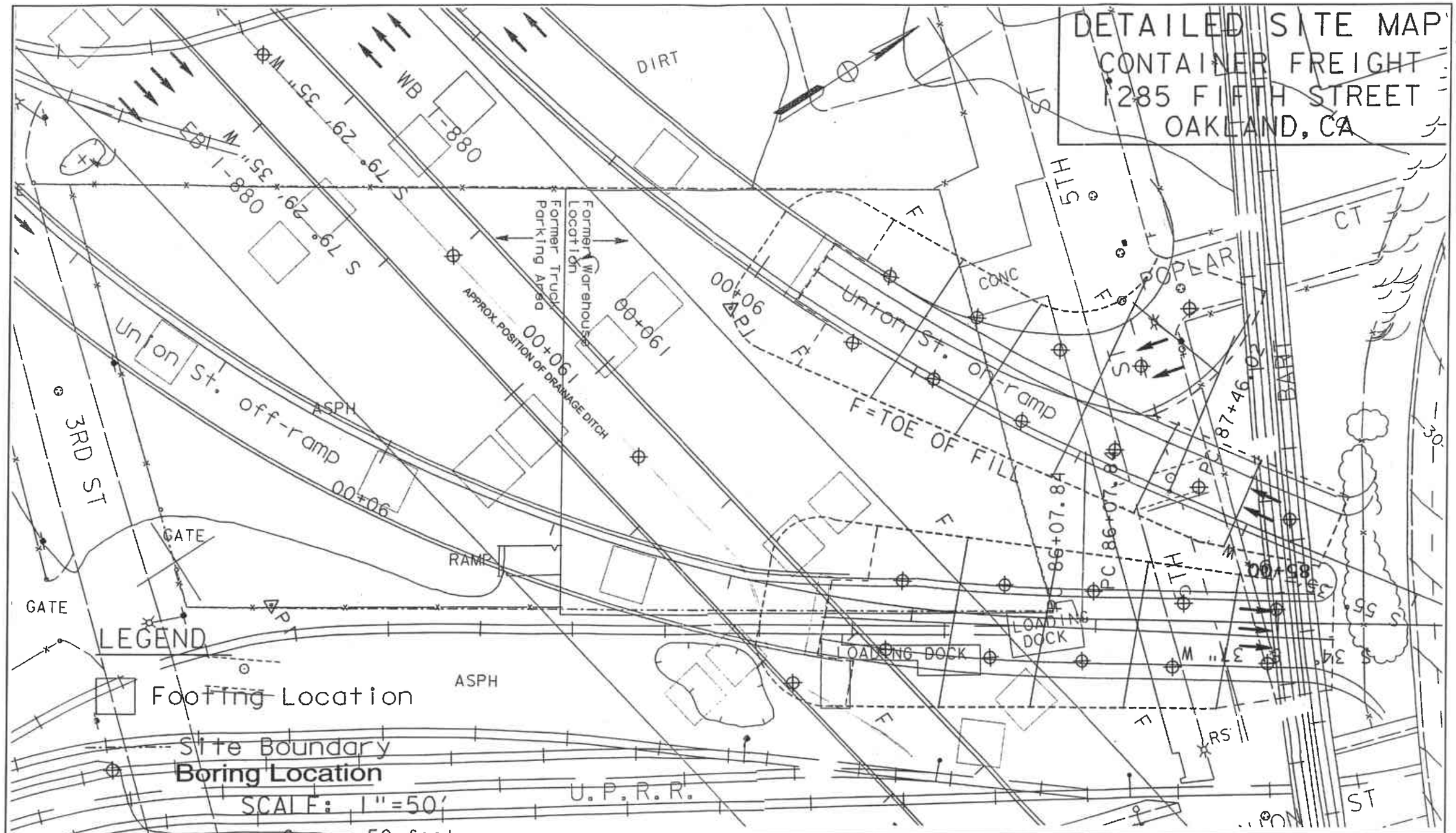
Chris Corpuz, CIH
Associate Industrial Hygiene and Safety Specialist

SKP/CC:gj/GJ50576R.DOC-IH/PerfEx

Attachment: Plate 1 Boring Locations

cc: Peter Altherr, Caltrans
Lynn Nakashima, DTSC

DETAILED SITE MAP
CONTAINER FREIGHT
1285 FIFTH STREET
OAKLAND, CA



Harding Lawson Associates Engineering and Environmental Services	**Boring Locations** Revised Soil Sampling Plan Cypress Freeway Re-alignment Oakland, California			PLATE **1**
DRAWN DJP	JOB NUMBER 39013 5	APPROVED SLP	DATE 11/97	REVISED DATE

APPENDIX F

Summary of Container Freight Underground Tank Removal Activities

UNDERGROUND STORAGE TANK CLOSURE REPORT
CYPRESS FREEWAY RE-ALIGNMENT
FORMER CONTAINER FREIGHT
1285 5th Street
Oakland, California

Prepared for:

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

Jonas & Associates Inc., Job No. CLT-212

Prepared by

Romena Jonas, RG, REA
Jonas & Associates Inc.
2815 Mitchell Drive, Suite 209
Walnut Creek, California 94598
(510) 933-5360

Technical Review by:

Dr. Vida G. Wright, P.E.
Professional Engineer #C042147

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CYPRESS FREEWAY RE-ALIGNMENT
FORMER CONTAINER FREIGHT
OAKLAND, CALIFORNIA

UNDERGROUND STORAGE TANK CLOSURE REPORT
CYPRESS FREEWAY RE-ALIGNMENT
FORMER CONTAINER FREIGHT
OAKLAND, CALIFORNIA

INTRODUCTION

This report presents the results of an underground storage tank (UST) removal performed at a site known as Container Freight (Site) located at 1285 5th Street, Oakland, California. Figure 1-1, regional site location map identifies the Site. Figure 1-2 presents the assessor's parcel map for the Site. Figure 1-3 presents a detailed Site diagram.

The work was performed for the California Department of Transportation (Caltrans). 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 pre-existing structure (Environmental Solutions, 1995).

Caltrans purchased the Site in 1994 in connection with reconstruction of the Cypress freeway. Currently, the Site is vacant because the former warehouse building was demolished by Caltrans in early 1995 in preparation for construction of the Cypress freeway realignment. From 1977 to 1994, the Site was owned by Mr. Howard Chastin. From 1967 to 1977 the property was owned by Mr. Donald Boucher. Prior to 1967, the Site belonged to the Commissary Department of Southern Pacific Railroad (Environmental Solutions, 1995). From 1963 to 1995, the Site contained a warehouse building with truck parking at the rear of the building.

The California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) has required Preliminary Endangerment Assessments for properties located along the Cypress reconstruction, which have been purchased by Caltrans. A Preliminary Endangerment Assessment was performed by Environmental Solutions in June 1995. Environmental studies on this Site is on-going under DTSC's oversight.

SECTION 1.0
SUMMARY OF BACKGROUND DATA

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

1.1 LOCATION

Container Freight is located at 1285 5th Street, Oakland, Alameda County, California 94607. Its Latitude and Longitude are 37/48/8 and 122/17/32, respectively, and it is located in Section 34 of Township T1S and Range R4W.

1.1.1 Surface Slope

According to ESI's 1995 PEA report, the site is generally flat, sloping toward the south/southwest at a grade of approximately one 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.

1.1.2 Site Access

Since the warehouse building was demolished in early 1995, part of the Site is surrounded by chain link fencing. Part of the area once used for truck parking is not fenced. An access gate is located in the southern corner of the fenced-in area.

1.1.3 Surrounding Land Use

Surrounding land use is presented in Figure 1-4. To the north, the Site is bordered by 5th Street. Located north of 5th Street are the elevated Bay Area Rapid Transit (BART) tracks. The land underlying the BART tracks is vacant. To the south, the Site is bordered by 3rd Street. The land located south of 3rd Street is used for truck parking. East of the truck parking area is a paper recycling center. Currently, the area east of the Site is utilized by the Union Pacific Railroad and active railroad lines lie near the Site property line. East of the railroad lines is Union Street. The land east of Union Street is utilized as a storage yard for heavy equipment and for a business known as Burke Concrete Systems. West of the Site is a vacant lot and an area used as storage for large wire spools.

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 one percent (ESI, 1995).

1.2.2 Geology of Site and Vicinity

On the basis of borings drilled and logged at the Site, 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.

- 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 the Bay. Based on engineering data, the known thickness of the Bay mud is from several inches to 85 feet.

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

- 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.

- 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.

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

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 at the Site vicinity (based on engineering studies, USGS, 1957) (ESI, 1995).

1.2.3 Site Hydrogeology

According to ESI's 1995 PEA report, groundwater was observed in the artificial fill in some of the borings, which may be in communication with the deeper Merritt Sand aquifer. Depth to groundwater at the Site ranged from approximately 0.5 feet to 10.5 feet. The borings drilled in March 1995 may reflect a rise in the groundwater table because of the unusually heavy winter rains. The Merritt Sand is the first encountered subsurface aquifer, and is usually unconfined. The Merritt Sand is believed to be continuous across much of west Oakland south to Alameda Island. The Merritt 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 no drinking water wells or production wells in the west Oakland area which utilize groundwater from the Merritt Sand aquifer (CH2M Hill, 1990).

The next aquifer below the Merritt San aquifer is the Alameda Formation which ranges from 120 to 160 feet bgs. In general, this aquifer is confined, and is believed to be continuous across much of west Oakland, with a thickness of over two hundred feet. Several industrial production wells in the area are completed in this formation. Groundwater 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 (Groundwater Hydrology, 1980).

1.2.4 Contaminated Aquifers

On the basis of the soil and groundwater investigation performed by ESI, in 1994 and 1995, the groundwater beneath the Site has been impacted by Total Recoverable Petroleum Hydrocarbons (TRPH), Volatile Organic Compounds (VOCs), metals, and Semi-Volatile Organic Compounds (SVOCs). Therefore, it appears that the Merritt Sand aquifer has been affected by these compounds.

SECTION 2.0
UST REMOVAL ACTIVITIES

2.1 WORK PERFORMED PRIOR TO EXCAVATION ACTIVITIES

Prior to excavation activities a site visit was conducted by the Contractors and Caltrans. The area to be excavated was flagged. Underground utility lines were identified and marked by Caltrans. An Underground Tank Closure Plan/Permit was obtained from Alameda County Health Care Services Agency (the County) on August 17, 1995. Underground Storage Tank Permit Applications - Form A and B were completed and submitted to the County. On August 21 1995, excavation Permit No. 9948 was also obtained from the City of Oakland Fire Department. An Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report was prepared and submitted to DTSC by Caltrans. A Regulation 8, Rule 40, Notification Form was also prepared and submitted to Bay Area Air Quality Management District on August 21, 1995. Copies of all the permits and notifications are included as Appendix I.

2.2 TANK REMOVAL ACTIVITIES

On August 28, 1995, a 700-gallon steel UST was exposed by Performance Excavators (PERFEX) by removing soil and a concrete pad located above the UST. Soil around the tank was excavated down to an approximate depth of 7.5 feet bgs. The excavated area was fenced-in and prepared for tank removal activities scheduled to be conducted on August 30, 1995.

From August 28 through 30, 1995, approximately five feet of groundwater had accumulated in the excavation pit. On August 30, 1995, the purge water and the liquid contained in the UST were pumped by First Environmental Group (FEG). FEG is located at 3501 Collins Avenue, Richmond, California 94806. The UST was rinsed three times. Approximately 2,500 gallons of liquid waste was transported by FEG, under manifest number 000742, as a "*Mixture of Petroleum Hydrocarbons and Groundwater*," to Seaport Petroleum facility (Seaport) located in Redwood City, California. Copies of the manifests are included as Appendix II.

The tank was inerted by PERFEX with dry ice for safe transport. The UST was then excavated and checked for holes (Figure 2-1). The tank appeared intact. It was placed on H & H Ship Service Company's truck and transported under manifest number 95208681, as a "*Residue Diesel Tank, Non-RCRA Hazardous Waste Solid*," to H & H's facility located at 220 Terry Francois/China Basin, San Francisco, California

94107 (see Appendix II).

Ms. Susan Hugo, Senior Hazardous Materials Specialist of the County was present during the field activities. A copy of Ms. Hugo's "*Hazardous Materials Inspection Form*" is enclosed in Appendix I. Representatives from the City of Oakland Fire Department were unavailable for Site inspection, and requested that Ms. Hugo oversee all the field activities.

Approximately forty yards of soil was excavated and stockpiled at the site. The soil was placed on and covered by a visquin (Figure 2-2). Following waste characterization (discussed in Section 2.3), on November 10, 1995, the stockpile was transported to ECDC in Oakland, California as a Class I RCRA Hazardous Waste.

The approximate dimensions of the excavation pit were: 15 feet by 15 feet and 7.5 feet deep. On October 9, 1995, the excavation pit was backfilled by PERFEX with borrowed soil from another part of the Cypress A Project.

2.3 SOIL AND GROUNDWATER SAMPLING AND ANALYSIS

The soil sampling area was identified by the project geologist/engineer and Ms. Hugo. Sampling depth was approximately 6 feet below ground surface. A hand auger was used to collect the samples in a 6 inch brass sleeves. The sleeves were capped on both ends and labeled.

On August 30, 1995, two soil samples were collected from the walls of the excavation (Figure 2-3) from an approximate depth of 6 feet bgs. One groundwater sample was also collected from the bottom of the excavation pit. Samples were placed in an ice chest with ice packs. Each cooler contained sufficient ice and/or ice packs to ensure that proper temperature of 4° Celsius was maintained and were packed in a manner to prevent damage to sample containers. Field Chain-of-Custody records, completed at the time of sample collection, accompanied the samples inside the cooler for shipment to ChromaLab Inc., a California Certified Analytical Laboratory located in Pleasanton, California. All coolers were Picked-up by ChromaLab Inc., within 24 hours after sampling.

Soil and groundwater samples were analyzed for the following parameters:

- Total Petroleum Hydrocarbons as gasoline (TPH-g) and Benzene, Toluene, Xylenes, and Ethyl benzene (BTEX) (EPA Method 5030/8015M/8020).
- Total Extractable Petroleum Hydrocarbons as diesel, kerosene, and motor

oil (TEPH-d,k,mo) (EPA Method 3350/8015M).
- Lead (EPA Method 3050AM/6010).

One composite soil sample, as shown on Figure 2-2, was collected from soil stockpile and analyzed for the following parameters:

- Eight RCRA Metals (EPA Method 3050AM/6010/7471), and WET (EPA Method 3005AM/6010/7470).
- Total Recoverable Petroleum Hydrocarbons (TRPH) (EPA Method 418.1).
- Total Petroleum Hydrocarbons as gasoline (TPH-g) and Benzene, Toluene, Xylenes, and Ethyl benzene (BTEX) (EPA Method 5030/8015M/8020).

2.4 ANALYTICAL RESULTS

Laboratory analytical results for soil and water samples are presented in Tables 2-1 through 2-3 and Figures 2-4 and 2-5. Laboratory analytical reports are enclosed as Appendix I.

2.4.1 Soil Analytical Results

One soil sample collected from the north wall of the excavation pit contained TPH-g (47 mg/kg) and Total Xylenes (0.073 mg/kg). In addition, ChromaLab Inc., reported detection of unknown hydrocarbons in the diesel range (380 mg/kg) and motor oil range (1100 mg/kg) were also detected in this sample. Lead was detected at 52 mg/kg.

The soil sample collected from the south wall of the excavation pit contained TPH-g (6.4 mg/kg), Benzene (0.0064 mg/kg), Toluene (0.010 mg/kg), Ethyl Benzene (0.012 mg/kg) and Total Xylene (0.043 mg/kg). ChromaLab Inc., reported detection of unknown hydrocarbons in the diesel range (45 mg/kg) and motor oil range (180 mg/kg) in this sample. Lead was detected at 43 mg/kg. Table 2-1 and Figure 2-4 present the detected analytical results.

All the other analytes tested for were not detected above the reported detection limits.

2.4.2 Groundwater Analytical Results

None of the petroleum hydrocarbons tested for were detected in the water sample above the method detection limits. However, an unknown hydrocarbon in kerosene range at a concentration of 0.63 mg/l was reported by ChromaLab Inc.

Lead was detected at a concentration of 0.04 mg/l. Table 2-1 and Figure 2-4 present the detected analytical results.

All the other analytes tested for were not detected above the reported detection limits.

2.4.3 Soil Stockpile Analytical Results

The following metals were detected in the composite soil stockpile sample (Figure 2-5, Table 2-2): Barium (84 mg/kg), Cadmium (0.6 mg/kg), Lead (44 mg/kg), and Mercury (0.27 mg/kg). Soluble barium (5.4 mg/l) and lead (2.9 mg/l) were also detected in this sample. As presented in Table 2-2, none of the metals exceeded their TTLC and Soluble Threshold Limit Concentration (STLC) levels.

As indicated in Table 2-3 and Figure 2-5, TRPH (93 mg/kg) was detected in the composite soil stockpile sample. All the other parameters tested for were not detected above the reported detection limits.

SECTION 3.0
SUMMARY OF FINDINGS

Soil and groundwater contamination has been encountered at the former Container Freight. As stated in Section 1.0 of this report, the Site is under remedial investigation and cleanup by Caltrans, and DTSC is the lead agency. According to Caltrans, any contamination associated with the UST will be addressed under an overall site cleanup activity.

SECTION 4.0
REFERENCES

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.

CH2M Hill, 1990. Initial Site Assessment for the Alternative Corridor Study for the Cypress Replacement Facility for De Leuw Cather and Company, October..

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.

Department of Health Services, Sacramento, California 1983. Preliminary Assessment Summary.

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.

Groundwater Hydrology, 1980. Wiley, John and Sons, Inc., Second Edition.

Harding Lawson Associates (HLA), 1988. Aquifer Study, Fourth Quarterly Report, Naval Air Station, Alameda Naval Supply Center, Oakland, California.

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.

United States Geological Survey, 1957. Areal and Engineering Geology of the Oakland West Quadrangle, California.a

United States Geological Survey (USGS), 1959, photorevised 1980. Oakland West, California, 15-minute Quadrangle Map.

TABLE 2-1
CONTAINER FREIGHT UST REMOVAL
EXCAVATION PIT SOIL AND WATER SAMPLE RESULTS
TOTAL PETROLEUM HYDROCARBONS AND LEAD

CONTAINER FREIGHT EXCAVATION PIT SOIL SAMPLE RESULTS

Sample No.	Sample Location	EPA 3050A M/6010	EPA 3550/8015M			EPA 5030/8015M/8020				
		Lead (mg/kg)	TEPH-d (mg/kg)	TEPH-k (mg/kg)	TEPH-mo (mg/kg)	TPH-g (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylene (mg/kg)
CF-N-END-1'[1]	North Wall of the Excavation	52	ND (1.0)	ND (1.0)	ND (10)	47	ND (0.05)	ND (0.05)	ND (0.05)	0.073
CF-S-END-1'[2]	South Wall of the Excavation	43	ND (1.0)	ND (1.0)	ND (10)	6.4	0.0064	0.010	0.012	0.043

[1] : Unknown hydrocarbons in the diesel range, concentration = 380 mg/kg; Unknown hydrocarbons in the motor oil range, concentration = 1100 mg/kg, reporting limit raised to 10x due to dilution.
[2] : Unknown hydrocarbons in the diesel range, concentration = 45 mg/kg; unknown hydrocarbon in the motor oil range, concentration = 180 mg/kg

CONTAINER FREIGHT EXCAVATION PIT WATER SAMPLE RESULTS

Sample No.	Sample Location	EPA 3010A M/6010	EPA 3510/8015M			EPA 5030/8015M/602/8020				
		Lead (mg/l) (STLC)	TEPH-d (mg/l)	TEPH-k (mg/l)	TEPH-mo (mg/l)	TPH-g (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Total Xylene (mg/l)
CONTAINER-GW[3]	Bottom of the Excavation	0.04	ND (0.05)	ND (0.05)	ND (0.5)	ND (0.05)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)

[3] : Unknown hydrocarbons in the kerosene range, concentration = 0.63 mg/l.

TABLE 2-2
CONTAINER FREIGHT UST REMOVAL
SOIL STOCKPILE SAMPLE RESULTS
TOTAL 8 RCRA METALS

Analyte	SAMPLE NO: CF-STOCKPILE-COMP			
	TOTAL 8 RCRA METALS METHOD: 3050A M/6010/7471 mg/kg	TTLC REGULATORY LEVELS mg/kg	TOTAL 8 RCRA METALS METHOD: WET 3005A M/6010/7470 mg/l	STLC REGULATORY LEVELS mg/l
Arsenic	ND (1.0)	500	ND (0.5)	5
Barium	84	10,000	5.4	100
Cadmium	0.6	100	ND (0.1)	1
Chromium	ND (1.0)	500	ND (0.5)	5
Lead	44	1000	2.9	5
Selenium	ND (2.0)	100	ND (0.2)	1
Silver	ND (1.0)	500	ND (0.5)	5
Mercury	0.27	20	ND (0.005)	0.2

TABLE 2-3
CONTAINER FREIGHT UST REMOVAL
SOIL STOCKPILE SAMPLE RESULTS
TOTAL PETROLEUM HYDROCARBONS

Sample No.	Sample Location	EPA 418.1	EPA Method 5030/8015M/8020				
		TRPH (mg/kg)	TPH-g (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylene (mg/kg)
CF-STOCKPILE-COMP	Composite from four locations from a depth of 1.5 feet below the surface of the stockpile.	93	ND (1.0)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)

APPENDIX G

Health, Safety, and Work Plan by Harding Lawson Associates