TANK PROTECT ENGINEERING
Of Northern California, Inc.

TRANSMITTAL FORM

DATE: 2/24/93 PROJECT NO.: 250

TO: Alameda County Health Care Services Agency
Dept. of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

FROM: John V. Mrakovich
Tank Protect Engineering
2821 Whipple Road
Union City, CA 94587-1233

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1	2/24/93	Soil Boring Workplan For 834 Blossom Way, Hayward, CA 94541

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SIGNATURE: John V. Mrakovich

SOIL BORING WORKPLAN

834 BLOSSOM WAY
HAYWARD, CA 94541

Mr. George Haywood
132 Ivy Drive
Orinda, CA 94563

Submitted By:
TANK PROTECT ENGINEERING
Of Northern California, Inc.
February 24, 1993

John V. Mrakovich, Ph.D.
Registered Geologist

Jeff J. Farhoomand, M.S.
Civil Engineer

SOIL BORING WORKPLAN

834 BLOSSOM WAY
HAYWARD, CA 94541

February 23, 1993

This Workplan has been prepared by the staff of **Tank Protect Engineering** under direction of an Engineer and/or Geologist whose seal(s) and/or signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied.

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1.0 INTRODUCTION

The subject site is a residence located at 834 Blossom Way in Alameda County, California (see Figure 1). The owner of the property is Mr. George Haywood [telephone no. (510) 376-4117] who resides at 132 Ivy Drive in Orinda, California 94563. Mr. Haywood has contracted with Tank Protect Engineering of Northern California, Inc. (TPE) to drill a soil boring near the former location of an underground fuel tank complex at the subject site. The following background discussion is based on information provided by Mr. Haywood and on written correspondence from the Alameda County Health Care Services Agency (ACHCSA) to Mr. Haywood.

In 1989, one 500-gallon, underground diesel tank, one 1,000-gallon, underground gasoline tank, and associated dispensers and piping were removed from the subject site. On May 15, 1991, soil samples collected in native soil from beneath the location of the former tanks at depths ranging from 7 to 12.5 feet detected total petroleum hydrocarbons as gasoline (TPHG), at concentrations up to 24,000 parts per million (ppm), in the northeast corner of the excavation. According to information provided to TPE by a representative of the ACHCSA in a telephone conversation on February 16, 1993, all or most of the contamination was present in the easterly side of the excavation as evidenced by soil samples collected from the northeast and southeast corners.

Fuel contaminated soil was removed from the floor of the excavation to a depth of about 15 feet and stockpiled on site. About 130 cubic yards (cyds) of soil are stockpiled on site as a result of tank removal activities and excavation of contaminated soil.

On September 23, 1991, two discrete soil samples were collected by Trace Analysis Laboratory, Inc. (TAL), located in Hayward, California, from the easterly side of the floor of the excavation to verify that all contaminated soil had been removed. TAL analyzed the 2 samples for total petroleum hydrocarbons as diesel (TPHD) and TPHG by the California Department of Health Services (DHS) Method; and for benzene, toluene, ethylbenzene, and xylenes (BTEX) by the United States Environmental Protection Agency (EPA) Method 8020. All analytical results were nondetectable.

Due to the soil contamination, the ACHCSA, in a January 26, 1993 letter to Mr. Haywood, is requiring an investigation to: (1) determine the depth to groundwater, (2) determine the vadose zone soil types, and (3) investigate soil and groundwater contamination, if any, beneath the location of the former tanks. To meet these objectives, the ACHCSA is allowing the option of drilling a soil boring to a depth of 50 feet or the depth of first encountered groundwater, if shallower, near the former soil contamination to identify soil types and collect soil samples for chemical analyses. If groundwater is encountered, a "grab" groundwater sample is required for chemical analyses.

If no contamination is detected in the soil and groundwater samples (if encountered) the ACHCSA will consider the site for closure.

2.0 PROPOSED SCOPE OF WORK

This workplan proposes to drill a soil boring at the northeast corner of the excavation at the location shown in Figure 2. The proposed location was chosen because most or all of the former soil contamination was located on the easterly side of the excavation and the greatest concentration of contamination was detected in the northeast corner.

TPE's objective in this investigation is to document the geologic stratigraphy of the vadose zone to a depth of 50 feet or to the depth of first encountered groundwater, whichever occurs first. A minimum of 2 soil samples will be collected for chemical analyses from the vadose zone and a "grab" groundwater sample will be collected for analyses if groundwater is present.

All work will be conducted under the direction of a California Registered Geologist.

To meet the above objectives TPE will perform the following scope of work:

- Drill 1 soil boring and collect soil samples at approximately 5-foot depth intervals and changes in lithology for determining the geologic stratigraphy

and for field screening with an organic vapor meter to detect soil contamination.

- Collect a minimum of 2 vadose zone soil samples and 1 "grab" groundwater sample, if groundwater is present, and analyze the samples for TPHD, TPHG, and BTEX.

- Prepare a soil boring report (SBR) to document work performed, soil boring and analytical results, and to make conclusions and recommendations.

Details of the above scope of work are presented below.

2.1 Drilling Permit

Before commencing drilling activities TPE will make application to the Alameda County Flood Control and Conservation District, Water Resources Management, Zone 7 and obtain a drilling permit.

2.2 Soil and Groundwater Investigation

The following discusses soil boring procedures, and soil and groundwater sampling and handling procedures. Appendices A, B, and C document TPE's protocols relative to hollow-stem auger drilling and soil sampling procedures, sample handling procedures, and waste handling and decontamination procedures.

2.2.1 Soil Boring and Soil and Groundwater Sampling Procedures

The exploratory boring will be drilled using 8-inch outside diameter, hollow-stem auger drilling equipment. The augers and sampling equipment will be steam-cleaned before drilling the boring to prevent the introduction of potential off-site contamination. Representative soil samples will be collected at about 5-foot depth intervals and

changes in lithology for use in constructing the geological profile, for field screening for contamination by headspace analysis, and for selection for chemical analysis.

Headspace analysis will be conducted on all soil samples by sealing each sample in a quart size plastic bag and warming the bagged sample in the sun to promote volatilization of any hydrocarbons that may be present in the soil. The headspace in the plastic bag will be tested by inserting the probe of a GasTech Inc. Trace-Techtor Hydrocarbon Vapor Tester into the bag (while minimizing the entry of new air into the bag) and recording the response in ppm. All headspace responses will be recorded on a geologic log of the boring.

Soil samples will be collected by advancing a California split-spoon sampler, equipped with three 6-inch long by 2-inch diameter brass tubes, into the undisturbed soil beyond the tip of the augers. The sampling equipment will be cleaned before each sampling event by washing in a trisodium phosphate solution and rinsing in distilled water. When soil samples are collected for chemical analysis, the leading brass tube will be selected, if full. If not full, the middle tube will be selected. In no case will the trailing tube be selected for chemical analysis since soil in this tube may not be representative of the geologic horizon being drilled.

Soil samples collected for chemical analysis will be preserved in the brass tubes by quickly covering the open ends with teflon tape and capping the ends with plastic end-caps. The tubes will be labeled to show site address, project number, sample number, sample depth, date, time, and sampler and will be individually sealed in quart size plastic bags and stored in an iced cooler.

If groundwater is encountered, a "grab" groundwater sample will be collected by lowering a disposable polyethylene bailer through the augers to collect the sample. After retrieving the bailer, the water in the bailer will be examined for floating product or sheen. The water sample will be collected and stored in laboratory prepared bottles which will be labeled to show site address, project number, sample number, sample depth, date, time, and sampler and stored in an ice cooler.

All samples will be transported to a California DHS certified laboratory accompanied by chain-of-custody documentation.

After drilling the boring to the final depth, the boring will be sealed to ground surface with neat Portland cement.

Drill cuttings will be stored on site in 55-gallon steel drums. The drums will be labeled to show contents, suspected contaminant, date filled, expected removal date, company name, contact person, and telephone number.

A detailed boring log will be prepared under the direction of a California Registered Geologist from auger return material and split-spoon samples according to the Unified Soil Classification System.

2.3 Proposed Chemical Analyses

All soil and groundwater samples (if any) are proposed to be analyzed for TPHD and TPHG by the DHS Method and for BTEX by the EPA Method 8020.

2.4 Soil Boring Report

The information collected, analytical results, and TPE's conclusions and recommendations will be summarized and documented in a SBR. The report will describe the work performed and include: an area map, a copy of the drilling permit, a detailed site plan showing location of the soil boring, a graphic boring log, tables summarizing the results of chemical analyses, and copies of all certified analytical results. Conclusions regarding the type(s) of contamination, if any, will be presented within the context of this workplan. Recommendations for feasible remedial alternatives and/or supplemental sampling and analyses will be included.

3.0 SITE SAFETY PLAN

A Site Safety Plan for conducting work under this workplan is included in Appendix D.

4.0 TIME SCHEDULE

The projected time schedule for implementation of the activities described in this workplan is presented below. The schedule reflects a relatively problem-free program. However, delays in the workplan review, permitting, or laboratory analyses could lengthen the project schedule. Access difficulties, adverse weather, and regulator review could also delay the proposed time schedule. TPE will make every effort to adhere to the project schedule.

Week 1: Workplan Submitted for Regulator Approval.

Week 2: Regulator Approval Received.

Week 3: Subcontract Driller, Drill Soil Boring, Submit Soil and Groundwater Samples for Chemical Analysis.

Week 5: Receive Chemical Analysis.

Week 8: Submit SBR to Client.

LEGEND

REFERENCE: USGS 7.5 MINUTE
SERIES QUADRANGLE MAP
HAYWARD, CALIFORNIA
PHOTOREVISED 1980

N

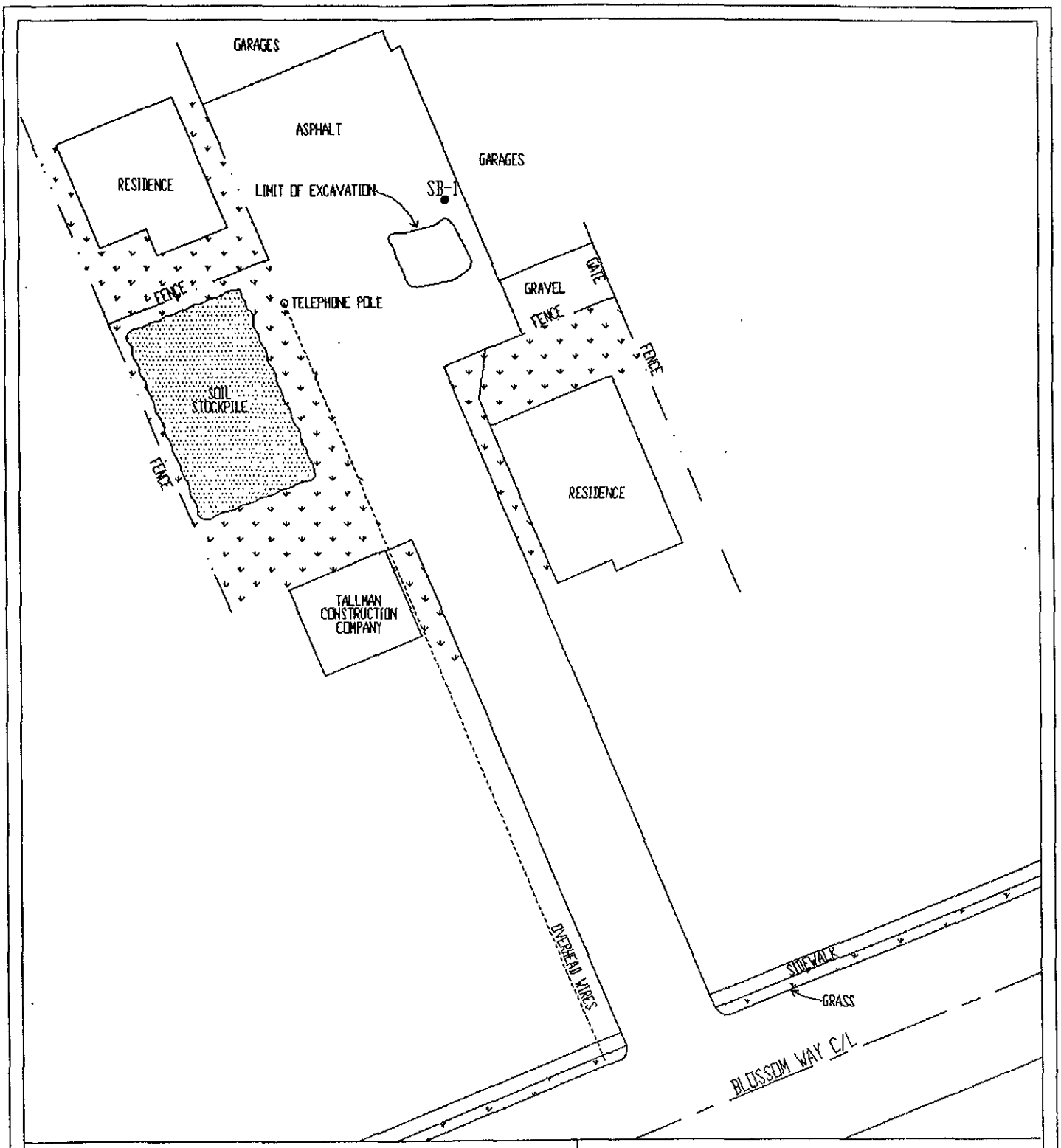
0 2,000
SCALE IN FEET

TANK PROTECT ENGINEERING

SITE VICINITY MAP

834 BLOSSOM WAY
HAYWARD, CA 94541

DATE	2/22/93
FIGURE	1
FILE #	250C-2
DRAWN BY	MAC
CHECKED BY	JVM



LEGEND

SB-1 NAME AND LOCATION OF PROPOSED SOIL BORING

-N-

NOTE: NOT ALL FEATURES ARE SHOWN.

0 40

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN

834 BLOSSOM WAY
HAYWARD, CA 94541

DATE	2/22/93
FIGURE	2
FILE #	250C-1
DRAWN BY	NAC
CHECKED BY	JVN

APPENDIX A

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

APPENDIX A

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

Undisturbed soil samples will be recovered from soil without introducing liquids into the borings. Soil samples as core will be taken at 5-foot depth intervals and changes in lithology from ground surface to termination depth, or through the aquifer zone of interest for lithologic logging.

Borings will be drilled with a hollow-stem auger and sampled with a California or modified California-type split-spoon sampler. Soil samples will be of sufficient volume to perform the analyses which may be required, including replicate analyses.

Soil from all borings will be described in detail using the Unified Soil Classification System and will be logged by a geologist, civil engineer, or engineering geologist who is registered or certified by the State of California and is experienced in the use of the Unified Soil Classification System.

All wet zones above the free water zone will be noted and accurately logged.

Soil samples will be collected in clean brass or stainless steel sampling tubes in the split-spoon. Sediment traps will be used when unconsolidated sands and gravels fall from the sampler during retrieval. The brass tubes will be cut apart using a clean knife. The ends of the tubes will be covered with a thin sheet of Teflon tape or aluminum foil beneath plastic end caps and sealed with electrical or duct tape and properly labeled. The samples will be stored on ice at a temperature of 4 degrees Celsius.

Drill cuttings will be stored on site in 55-gallon drums or covered with plastic sheeting. Analytical results will be submitted immediately to the site owner for determination of appropriate disposal procedures. The soil borings not completed as wells will be backfilled with a cement grout.

APPENDIX B

SAMPLE HANDLING PROCEDURES

APPENDIX B

SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination, and will be delivered to the laboratory at proper storage temperatures. The following sample packaging requirements will be followed.

- Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers and have custody seals affixed to them.

- Samples will be secured in coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory.

- A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory.

- Ice, blue ice, or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) will be used to keep samples at a constant temperature during transport to the laboratory.

- Each sample will be identified by affixing a pressure sensitive, gummed label, or standardized tag on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection, and the collector's initials.

All groundwater sample containers will be precleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

Sample Control/Chain-of-Custody: All field personnel will refer to this work plan to verify the methods to be employed during sample collection. All sample gathering activities will be recorded in the site log book; all sample transfers will be documented in the site logbook; samples are to be identified with TPE labels and all sample

bottles are to be custody-sealed. All information is to be recorded in waterproof ink. All TPE field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician who has been designated by the TPE project manager as being responsible for sample shipment to the appropriate laboratory. The custody record will include, among other things, the following information: site identification, name of person collecting the samples, date and time samples were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used, and signature of the TPE person relinquishing samples to a non-TPE person with the date and time of transfer noted. The relinquishing individual will also put all the specific shipping data on the custody record.

Site log books will be maintained by a designated TPE field employee to record, for each sample, site identification, sampling locations, station numbers, dates, times, sampler's name, designation of the samples as a grab or composite, notation of the type of sample (e.g. groundwater, soil boring, etc.), preservatives used, on-site measurement data, and other observations or remarks.

APPENDIX C

WASTE HANDLING AND DECONTAMINATION PROCEDURES

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WASTE HANDLING AND DECONTAMINATION PROCEDURES

Decontamination: Any drilling, sampling or field measurement equipment that comes into contact with soils or groundwater will be properly decontaminated prior to its use at the site and after each incident of contact with the soils or groundwater being investigated. Proper decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights and the drill bit will be steam-cleaned between the drilling of each well.

All sample equipment, including the split-tube sampler and brass tubes, will be cleaned by washing with tri-sodium phosphate detergent, followed by sequential rinsing with tap water, and deionized water.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting and the appropriate disposal procedure will be determined by the site owner or TPE following receipt of the soil sample analytical results. Drums or plastic sheeting will be labeled to show material stored, known or suggested contaminant, date stored, expected removal date, company name, contact, and telephone number.

APPENDIX D

SITE SAFETY PLAN

TPE SITE SAFETY PLAN

TANK PROTECT ENGINEERING OF NORTHERN CALIFORNIA, INC.
SITE SAFETY PLAN

Site: ***834 Blossom Way***
Hayward, CA 94541

Project ***250***

Original Site Safety Plan: Yes (X) No ( )
Plan Prepared by: ***John Mrakovich***
Plan Approved by: ***N/A***

Revision Number
Date: ***2/24/93***
Date:

Please respond to each item as completely as possible. Where an item is not applicable, please mark "N/A".

1. KEY PERSONNEL AND RESPONSIBILITIES

Project Manager	***John Mrakovich***	***(510) 429-8088***
Site Safety Manager	***John Mrakovich***	
Alternate Site Safety Manager	***Michael Casso***	***(510) 429-8088***
Field Team Members	***Michael Casso***	

Agency Reps: [Please specify by one of the following symbols: Federal: (F), State: (S), Local: (L), Contractor(s): (C)

(L) Alameda County Health Care Services Agency, Juliet Shin (510) 271-4320

TPE SITE SAFETY PLAN

2. JOB HAZARD ANALYSIS

2.1 OVERALL HAZARD EVALUATION

Hazard Level:	High ( )	Moderate ( )	Low (X)	Unknown ( )
Hazard Type:	Liquid (X)	Solid ( )	Sludge ( )	Vapor/Gas (X)

Known or suspected hazardous materials present on site

Diesel vapors and liquid

Characteristics of hazardous materials included above (complete for each chemical presents):

MATERIAL #1

Corrosive ( )	Ignitable (X)	Toxic (X)	Reactive ( )
Volatile (X)	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation (X)	Ingestion ( )	Contact (X)

MATERIAL #2

Corrosive ( )	Ignitable ( )	Toxic ( )	Reactive ( )
Volatile ( )	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation ( )	Ingestion ( )	Contact ( )

MATERIAL #3

Corrosive ( )	Ignitable ( )	Toxic ( )	Reactive ( )
Volatile ( )	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation ( )	Ingestion ( )	Contact ( )

MATERIAL #4

Corrosive ( )	Ignitable ( )	Toxic ( )	Reactive ( )
Volatile ( )	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation ( )	Ingestion ( )	Contact ( )

2.2 JOB-SPECIFIC HAZARDS

For each labor category specify the possible hazards based on information available (i.e., Task-driller, Hazards-trauma from drill rig accidents, etc.) For each hazard, indicate steps to be taken to minimize the hazard.

Backhoe operator and soil sampler, trauma from equipment accidents-wear hard hat, gloves, steel-toed boots.

The following additional hazards are expected on site (i.e., snake infested area, extreme heat, etc.):

Open excavation

Measures to minimize the effects of the additional hazards are:

Restrict access to site. Barricade excavation.

3. MONITORING PLAN

3.1 (a) Air Monitoring Plan

Action levels for implementation of air monitoring. Action levels should be based on published data available on contaminants of concern. Action levels should be set by persons experienced in industrial hygiene.

Level (i.e.,.5 ppm)	Action Taken (i.e., commence perimeter monitoring)
5 ppm	Leave area until <5ppm total organic vapors are detected.

(b) Air Monitoring Equipment

Outline the specific equipment to be used, calibration method, frequency of monitoring, locations to be monitored, and analysis of samples (if applicable).

Gastech hydrocarbon vapor detector.

If air monitoring is not to be implemented for this site, explain why:

N/A

3.2 Personnel Monitoring
(Include hierarchy of responsibilities decision making on the site)

N/A

3.3 Sampling Monitoring

(a) Techniques used for sampling: Sample air in work area.

(b) Equipments used for sampling: Gastech hydrocarbon vapor detector.

(c) Maintenance and calibration of equipments: Calibrate prior to arriving at job site.

4. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Equipment used by employees for the site tasks and operations being conducted. Be Specific (i.e., hard hat, impact resistance goggles, other protective glove, etc.).

Hard hat, gloves, steel-toed boots.

5. SITE CONTROL AND SECURITY MEASURES

The following general work zone security guidelines should be implemented:

- Work zone shall be barricaded and caution tape used.
- Excavations shall be closed when drilling and sampling activities are not actually taking place.
- No excavations shall be left unattended. Visitors will not enter the work zone unless they have attended a project safety briefing.

6. DECONTAMINATION PROCEDURE

List the procedures and specific steps to be taken to decontaminate equipment and PPE.

Wash with soapy water and rinse with tap water.

7. TRAINING REQUIREMENTS

Prior to mobilization at the job site, employees will attend a safety briefing. The briefing will include the nature of the wastes and the site, donning personal protection equipment, decontamination procedures and emergency procedures.

8. MEDICAL SURVEILLANCE REQUIREMENTS

If any task requires a very high personnel protection level, personnel shall provide assurances that they have received a physical examination and they are fit to do the task. Also personnel will be instructed to look for any symptom of heat stress, heat stroke, heat exhaustion or any other unusual symptom. If there is any report of that kind it will be immediately followed through, and appropriate action will be taken.

9. STANDARD OPERATION PROCEDURES

Tank Protect Engineering of Northern California, Inc. (TPE) is responsible for the safety of all TPE employees on site. Each contractor shall provide all the equipment necessary to meet safe operation practices and procedures for their personnel on site and be responsible for the safety of their workers.

A "Three Warning" system is utilized to enforce compliance with Health and Safety procedures practices which will be implemented at the site for worker safety:

* Eating, drinking, chewing gum or tobacco, and smoking will be allowed only in designated areas.
* Wash facilities will be utilized by workers in the work areas before eating, drinking, or use of the toilet facilities.
* Containers will be labeled identifying them as waste, debris or contaminated clothing.
* All Excavation/drilling work will comply with regulatory agencies requirement.
* All site personnel will be required to wear hard hats and advised to take adequate measures for self protection.
* Any other action which is determined to be unsafe by the site safety officer.

10. CONFINED SPACE ENTRY PROCEDURES

No one is allowed to enter any confined space operation without proper safety measures. Specifically in case of an excavated Tank Pit no one should enter at no time.

11. EMERGENCY RESPONSE PLAN

Fire extinguisher(s) will be on site prior to excavation. Relevant phone numbers:

Person	Title	Phone No.
John Mrakovich	Project Manager	(510) 429-8088
	Fire	911 or
	Police	911 or
	Ambulance	911 or
	Poison Control Center	(800) 523-2222
N/A	Site Phone	
N/A	Nearest off-site no.	
N/A	Medical Advisor	
George Haywood	Client Contact	*(510) 376-4117*
U.S EPA - ERT		(201) 321-6660
Chemtrec		(800) 424-9300
Centers for Disease Control	Day	(404) 329-3311
	Night	(404) 329-2888
National Response Center		(800) 424-8802
Superfund/RCRA Hotline		(800) 424-8802
TSCA Hotline		(800) 424-9065
National Pesticide Information Services		(800) 845-7633
Bureau of Alcohol, Tobacco, and Firearms		(800) 424-9555

TPE SITE SAFETY PLAN

HEALTH AND SAFETY COMPLIANCE STATEMENT

I, _____, have received and read a copy of the project Health and Safety Plan.

I understand that I am required to have read the aforementioned document and have received proper training under the occupational Safety and Health Act (29 CFR, Part 1910.120) prior to conducting site activities at the site.

_____ _____

Signature Date

Nearest Hospital: ***Eden Hospital***
20103 Lake Chabot Road
Castro Valley, CA 94546
Gen. Info. # (510) 537-1234
Emergency # (510) 889-5015

Directions: ***Follow Blossom Way to Mission Blvd., make a left turn onto Mission Blvd., Follow it until Mattox Road, make a right turn onto Mattox Road. Keep following Mattox Road it will turn into Castro Valley from Castro Valley make a left turn onto Lake Chabot Road the hospital will be on the left hand side.***