Lake Chabot Corporation Yard
17930 Lake Chabot Road, Castro Valley, CA 94546

SITE HEALTH AND SAFETY PLAN

Introduction

This health and safety plan prescribes the work-place procedures which will be followed during the installation of two underground fuel storage tanks and earthwork located at 17930 Lake Chabot Road, Castro Valley, Alameda County, California. The provisions of this plan are mandatory for all V.C.I. personnel and subcontractors assigned to this project. All authorized visitors to the site will be required to abide by the procedures. The requirements in this plan may change due to changes in the work conditions, however, no changes will be made without prior written approval of the Health and Safety Consultant and the Project Manager.

VERL CONSTRUCTION, INC. is committed to providing a safe and healthful working environment for all its employees and subcontractors.

ASSIGNMENT OF RESPONSIBILITY

Project Manager

VCI's Project Manager will be Mr. Verl K. Rothlisberger, who will be responsible for oversight and management of the project. Mr. Verl K. Rothlisberger will also be responsible for the implementation and management of the health and safety plan.

Health and Safety Consultant George K Nihua or his designee will visit the site periodically and during critical phases of the project. The health and safety plan consultant is responsible for preparation of this plan.

VCI Site Representative/Safety and Health Officer

During this tank installation there will be a VCI representative on site. That representative will be responsible for day to day implementation of the health and safety plan and overall direction of subcontractor personnel. The VCI representative is empowered to stop all site work in the case of violation of the requirements of the health and safety plan.

Other Project Personnel/Subcontractor

All project and subcontractor personnel will be responsible for understanding and complying with the project health and safety requirements.

HAZARD CHARACTERIZATION AND RISK ANALYSIS

Petroleum Contaminated Water and Soils

Prior to conducting any subsurface excavation in the vicinity of potentially contaminated soils, risk assessment and evaluation shall be done, prior to any excavation work. Due to the scope of work and probable low hazards anticipated, Level D, clothing shall be adequate for PPE. Following are other concerns which may impact site. As site conditions require, Level C PPE will be on-site. Following are risks pertinent to this project.

Petroleum products and its constituents pose health hazards in two major classifications: explosivity and toxicity, the flammability of various petroleum products are commonly known. For example, the lower explosion limit (LEL) of gasoline vapor is 1.3 percent in air. If the Concentration of gasoline vapor in air exceeds 1.3. percent (13,000 parts per million) and sufficient quantities of oxygen are present, then the introduction of sufficient heat, spark, or flame will result in an explosion.

A lesser known health hazard resulting from exposure to petroleum products is toxicity. Over exposure to petroleum hydrocarbon vapor can cause depression of the central nervous system. Inhalation of high concentrations of gasoline, for example, can cause chemical pneumonia and/ or pulmonary edema. Repeated or prolonged skin exposure to gasoline or gasoline contaminated materials can cause dermatitis or even blistering of the skin.

Several common constituents of petroleum products have been shown to cause serious health problems resulting from relatively minor exposures include benzene, toluene, meta, para, and ortho xylenes, ethyl benzene and tetraethyl lead.

Typical percentages (by weight) of these constituents in gasoline are: benzene - 0.12-3.50%, toluene - 2.73-21.80%, meta xylene -1.77-3.87%, para xylene -0.77-1.58%, ortho xylene - 0.68-2.66%, and ehtyl benzene -0.36-2.36%. Typical percentage of tetraethyl lead is not available.

Units used to describe occupational exposures to hazardous substances include: exposure limit, also known as the "threshold limit value" (TLV), ceiling limit, and the concentration level that is "Immediately dangerous to life and health" (IDLH). the exposure limit defines the maximum concentration of a substance to which one can be exposed During an 8 hour period without suffering significant health effects. The ceiling limit is the concentration level that cannot be exceeded at any time; i.e., a suitable respirator must be worn if concentration values reach the ceiling limit.

The IDLH level represents a maximum concentration from which one could escape within 30 minutes of respirator failure without experiencing escape-impairment or irreversible health damage. IDLH values are not listed for substances that are potential human carcinogens.

EXPOSURE TABLE

Substance	Exposure Limit	Ceiling Limit	IDLH
Benzene	0.1 ppm (8 hrs)	1 ppm (15 min)	Carcinogen
Toluene	100 ppm (10 hrs)	200 ppm (10 min)	2000 ppm
Xylene	100 ppm (8 hrs)	200 ppm (10 min)	1000 ppm
Ethyl Benzene	100 ppm (8 hrs)	N/A	2000 ppm
Tetraethyl lead	0.0067 ppm	N/A	3.6 ppm

Prolonged exposures to concentrations above the limits noted may affect the central nervous system, cardiovascular system, respiratory system, eyes, skin, kidneys, bones and bone marrow. Research has shown that benzene is a carcinogen.

Immediate symptoms of over-exposure include: eye irritation, nose irritation, throat irritation, headache, nausea, dizziness, weakness, confusion, euphoria, excitement, staggered gait, abnormal pain, respiratory difficulties, muscle fatigue, and coma.

In order to protect against over-exposure to these compounds, the ambient air will be monitored with a "lower explosion limit/oxygen content meter and/or handled photo ionizing detector (PID). As soon as vapor concentrations approach 75% of the exposure limit value, work will cease until all on-site personnel have donned protective clothing and suitable respiratory devices.

Personnel exposures to excessive job-related hazards are expected to be minimal using these safeguards.

It should be noted that summertime heat may initiate weather stress-related problems and decrease productivity on the job site. Based upon VCI's experience with investigations of potentially petroleum product contaminated soil and water, overexposure of personnel to petroleum product vapor is unlikely.

Personnel however may be exposed to short term vapor concentrations approaching 100 ppm. Respiratory protection plans will be directed to protecting personnel from the transient exposures.

Drilling Activities

Various hazards are present during excavating procedures.

- electrical hazards due to overhead and underground utility line
- excessive noise
- confined space
- moving portions of the drilling
- falling of heavy overhead objects
- fall hazards due to working at heights

SITE CONTROL

A site map has been attached to this plan. The areas where work will occur, will be on the site, and may be barricade to prevent unauthorized access. Only authorized personnel shall be allowed in the work areas and any unauthorized visitors must remain outside any barricade area.

The site is small enough that normal voice communication can be used. In the vicinity of the excavation, common hand signals will be used.

TRAINING

VCI Personnel

All VCI project personnel shall have completed 40 hours of off-site health and safety training, related to hazardous waste operations. In general, the VCI personnel will have completed a combination of paid training courses which meet the requirements of both the interim and final Occupational Safety and Health Administration (OSHA) rule for Hazardous Waste and Emergency Response Operations (29 CFR 1910.120). All VCI supervisory personnel on site will have completed an additional 8 hours of relevant health and safety training.

VCI personnel who may visit the site occasionally, and are unlikely to be exposed to chemical hazards will have completed at least 24 hours of relevant health and safety training.

Any VCI or contractor personnel operating specialized industrial equipment such as forklifts, heavy equipment, drilling equipment, etc. shall be able to demonstrate their competency in the safe operation of such items.

Personnel
All subcontractor personnel who are likely to be exposed to hazards materials either by inhalation or dermal contact shall have completed 40 hours of off-site health and safety training, in accordance with the OSHA interim and final Hazardous Waste and Emergency Operations rule. Subcontractor personnel who are required to work on the site for short periods of time (1-day or less), and who will not be required to wear any protective equipment, shall have completed at least 24 hours of off-site health and safety training.

All Site Personnel
Prior to starting off the project, a kick-off safety will be on the site. During this meeting all personnel will be briefed on the requirements contained within the health and safety plan, and will be told the site safety rules. The kick-off safety meeting will be conducted jointly by the project manager and the HSO.

At the beginning of each work shift, or whenever new personnel arrive on the site, a tailgate safety meeting will be held. The purpose of such meetings is to highlight health and safety concerns and to ensure that employees are fully briefed on the site work procedures to be followed during the shift. The tailgate safety meetings will be conducted by the first line supervisors. The project manager will review records of all tailgate safety meetings.

MEDICAL SURVEILLANCE

All VCI subcontractor personnel shall provide proof of having successfully completed a preplacement or annual update physical examination. This examination shall have been designed to comply with regulatory requirements for hazardous waste operations and shall include the following:

- medical and occupational history form
- physical examination
- blood analysis
- urinalysis
- chest x-ray
- pulmonary function test
- audiogram
- electrocardiogram (if indicated during the physical exam)
- alcohol and illegal drug screening

GOVERNMENT AND VCI STANDARDS

Currently the health and safety of workers performing hazardous waste activities regulated by OSHA (29 CFR 1910.120).

The OSHA PEL for gasoline vapor is 300 ppm average over an eight-hour period. The 15-minute short term exposure limit is 500 ppm. To ensure that no project workers monitored several times each day using either a photoionization detector (PID) or colorimetric indicator tubes.

If the PID or colorimetric indicator tube samples indicate that hydrocarbon vapor levels are 50 ppm or greater, then daily air samples will be collected from representative project personnel using charcoal tube sampling methods (OSHA Method 1M1S1340). Personnel will be notified in writing of the results of any personal air samples and their significance. A copy of this report will be maintained in the employee's medical surveillance file.

ACCESS AND DECONTAMINATION

Access

Access to the project work area zones shall be regulated and limited to authorized persons. a daily log shall be kept all persons entering such areas. The work area itself shall be cordoned off using barrier tape or other suitable barriers.

Decontamination

Due to the low toxicity of the material involved (hydraulic fluids), the anticipated low levels of contamination, and the minimal hazard posed of spread of contaminated soil, formal decontamination procedures will not be required. The following site requirements will be enforced:

- Eating, drinking and smoking within the work area are prohibited.
- project personnel may eat, drink or smoke outside the work area, only if they have washed their hands and face.
- An emergency eye wash station maybe located on the job site adjacent to the work area.

Any potentially contaminated equipment will either be disposed of, or washed off with soap and water.

Any equipment used in the contaminated zone should be washed with soap and water before it is removed from the site.

SAFE USE OF FLAMMABLE AND COMBUSTIBLE MATERIALS
(29CFR 1926.152)

Employees shall make sure that combustible scrap, debris and waste materials (oily rags, etc.) are stored in covered metal receptacles and removed from the worksite promptly. Be sure that proper storage is practiced to minimize the risk of fire including spontaneous combustible liquids and that approved containers and tanks are used for the storage and handling of flammable and combustible liquids.

Employees shall make sure that all connections on drums and combustible liquid piping, vapor and liquid are tight, that all bulk drums of flammable liquids are grounded and bonded to containers during dispensing.

Be certain that storage rooms for flammable and combustible liquids have explosion-proof lights and that storage rooms for flammable and combustible liquids have mechanical or gravity ventilation.

Make sure that liquefied petroleum gas is stored, handled and used in accordance with safe practices and standards, pay particular attention in that no smoking signs are posted on liquified petroleum gas tanks. All solvent wastes, and flammable liquids will be kept in fire-resistant, covered containers until they are removed from the worksite.

Vacuuming shall be used whenever possible, rather than blowing or sweeping combustible dust. Be certain that firm separators are placed between containers of combustibles or flammables, when stacked one upon another, to assure their support and stability.

All fire extinguishers will be selected and provided for the particular types of materials in areas where they are to be used.

Class A: Ordinary combustible material fires.
Class B: Flammable liquid, gas or grease fires.
Class C: Energized-electrical equipment fires.

All appropriate fire extinguishers shall be mounted within 75 feet of outside areas containing flammable liquids, and within 10 feet of any inside storage area for such materials. Said fire extinguishers shall be free from obstructions or blockage and that all extinguishers are serviced, maintained and tagged at intervals not to exceed one year.

Be certain that "NO SMOKING" signs are posted where appropriate in areas where flammable or combustible materials are used or stored and that safety cans are used for dispensing flammable or combustible liquids at a point of use. Spills of flammable or combustible liquids are to be cleaned up promptly.

Make sure that storage tanks are adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes. Be certain that storage tanks are equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure and that "NO SMOKING" rules are enforced in areas involving storage and use of hazardous materials.

EMPLOYEE AND WORK RULES AROUND EXCAVATIONS
(29 CFR 1926.651, and 29 CFR 1926.652)

When excavation is necessary at a job site, before work commences and during the performance of work the site shall be adequately protected to prevent sloughing of earth by shoring or sloping. The site shall be fenced in or boarded over to prevent personnel from slipping or falling in the area when moving about.

No employee shall enter or perform work in an excavation which requires the person's head be below the surface of the ground until all confined space procedures are followed.

Employees are not permitted to work in or adjacent to any excavation until an inspection is conducted to determine that they will not be exposed to injuries resulting from moving ground and that necessary permits have been obtained.

SLIPS, TRIPS AND FALLS

Inattentiveness is one of the major factors contributing to injuries caused by slips, trips and falls. An employee who is not fully aware of his or hers working conditions, allows himself or herself to be put in a potentially dangerous position.

Another contributing factor is practicing GOOD HOUSEKEEPING ! Working conditions are made hazardous by the spillage of liquids, petroleum products and or residual material unto working areas around machinery and walkways. If spills, unused material, and construction debris are left in walkways, work areas and near construction site, such hazardous shall be immediately cleaned up.

TOOL AND EQUIPMENT HANDLING (29 CFR 1926.301)

SAFETY DEVICES- Employees must never remove, displace, damage, destroy, or carry away any safety device, safeguard, notice, or warning used at the Company facilities, Company property, or customer job locations.

Never, in any way, interfere with the use of another employee's safety device or safeguard. Verify that all guards and other protective devices are in their proper place, in good repair, and properly adjusted for safe operation. Any deficiency or malfunction must be reported immediately to the supervisor or Safety Representative.

DAMAGED/UNSAFE EQUIPMENT- REPAIR WORK

Employees must not repair operating equipment or machinery, oil moving parts, except when the equipment or machinery is designed or fitted with safeguards to protect the employee while performing the work.

Equipment that is worn, damaged, or otherwise defective to the extent that it is unsafe must be reported immediately to the supervisor or Safety Representative.

CRANE/HOISTING EQUIPMENT

Unauthorized persons are not to be permitted in a crane cab or on a crane at any time. All unattended equipment shall be guarded against operation by unauthorized persons, signals to the operator of the equipment shall be given by a designated person.

Cranes, derricks, hoists or other equipment shall not be used for side pulls or lifts that would affect the stability or overstress the equipment.

Hoisting equipment shall be loaded so that the load is in a stable position and does not exceed the designated safe load. Loads shall be test lifted, brakes checked, and slings readjusted when required, to check the stability and safety of the lift.

Outriggers, when provided, shall be used for the stability and safe operation of the equipment. The operator shall personally check that the outriggers have been properly placed and blocked in position.

A mobile or overhead traveling crane, hoist, or shovel shall not be operated unless the gong or other effective warning device is in suitable operating condition. Equipment surfaces

6. Chemtrec	(800)424-9300
7. EPA Region 9	(415)974-8153
8. HHS Region 9	(415)556-7260
9. OSHA Region 9	(415)556-3782

Any injures or incidents which have the potential to result in an injury will be recorded by the VCI site representative on the supervisor's employee injury report form. This form, when completed by the site representative, shall be forwarded to the VCI project manager, and to the VCI. Corporate Health and Safety Department.

PERSONAL PROTECTIVE EQUIPMENT OSHA 29 CFR 1910

The following items represent some common health and safety issues that may need to be addressed prior to initiating hazardous work activities. In particular, included in this " Site and Safety Plan " are exerts from Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities in reference to PPE (Personal Protective Equipment).

Eye and Face Protection (29 CFR 1910.133)

Eye and face protection is required when there is the potential for on-site injury. Particular information on goggle, spectacles, and face protection is provided to all employees and covered in the initial 40 hour training and reviewed in the annual re-training program for all employees of VCI of California. All sub-contractors must meet the minimum safety requirements and training as accepted by VCI of California Health Safety Coordinator (HSC).

All employees are to wear protective eye wear and or face shields when entering the work site area, eye protection is provided to all employees by the health and safety coordinator for each particular work site.

Occupation Head Protection (29 CFR 1910.135)

On-site situations requiring head protection include: presence of overhead objects, on-site operations of heavy equipment, potential for flying objects in the work area, and possible electrical shock hazards. All employees and site personal are required to wear head gear protection that affords limited protection from electric shock and burn and meets ANSI Z89.1-1969 specifications.

and walkways shall be maintained free of oil, grease, or debris, and , where necessary, non-slip material shall be used.

Wire rope, under tension, shall not be guided by the hands or feet. Employees shall avoid standing or passing under suspended loads. Extreme care shall be exercised in the selection, inspection, and use of chains.

Precautions in dealing with wire rope slings:
Do not use knots to make slings.
Pad or block sharp corners.
Do not jerk loads. lift and lower loads slowly.
Use slings of adequate capacity. Consult the charts.
Know how much weight you are lifting.

EMERGENCY RESPONSE (29 CFR 1910.151)

In the event of an emergency such as a sickness, injury or fire, the following procedures will be followed:

- Emergency procedures will be initiated by the first person recognizing the emergency situation. This person shall immediately notify the VCI site representative.
- The designated VCI First Aid/CPR provider and a project member shall provide assistance to any injured or sick employee. In the case of suspected release of toxic material, these personnel shall first don protective suites and self-contained breathing apparatus. The injured employee will first be moved to a safe location, before any attempt at treatment is made.
- A project member or other responsible person will notify appropriate government agencies or individuals.

1. Police, Fire or Ambulance emergency: 911
   East Bay Regional Park District (510) 881-1833
2. Nearest Emergency Hospital: (510) 889-5015
   Eden Medical Center
   20103 Lake Chabot Road, Castro Valley, CA
   California
3. Alameda County Health Services, Hazardous Division
   Harbor Bay Parkway, Alameda, CA 94501
4. Poison Control 911
5. Office of Emergency Service (800)852-7550

Occupational Foot Protection (29 CFR 1910.136)
All employees and or site personal shall be required to wear safety toe footwear meeting ANSI Z41.1-1967 for Men's Safety-Toe Footwear. In, general workers at hazardous waste sites must wear leather or rubber boots with steel toes and steel shanks.

Personal Protective Equipment (PPE), (29 CFR 1910)
Selection of Respiratory Equipment

As previously discussed, air purification respirators will be used when ambient levels of fuel constituents reach levels over 300 parts per million on a eight hour basis, and or exceed 500 parts per million in a 15 minute period. Air-purifying respirators consist of a facepiece and an air-purifying device, which is either a removable component of the facepiece or an air-purifying apparatus worn on a body harness and attached to the facepiece by a corrugated breathing hose. Air-purifying respirators selectively remove specific airborne contaminates from ambient air by filtration, absorption, adsorption, or chemical reactions.

They are approved for use in atmospheres containing specific chemicals up to designated concentrations, and not for IDLH atmospheres. Air-purifying respirators have limited use at hazardous waste sites and can be used only when the ambient atmosphere contains sufficient oxygen (19.5%). Selection of the proper chemical absorbant cartridge for constituents encountered at the work site is necessary for proper protection of the wearer. Additionally most chemical sorbent canisters are imprinted with an expiration date. They may be used up to that date as long as they were not opened previously. Once opened, they begin to sorb humidity and air contaminates whether or not they are in use. Their efficiency and service life decreases and therefore they should be used immediately.

Selection of Protective Clothing and Accessories
The individual components of clothing and equipment will be assembled into a full protective ensemble that both protects the worker from the site-specific hazards and minimizes the hazards and drawbacks of the PPE ensemble itself. Following are the levels of protection with recommended equipment, protection provided, when level should be used and limiting criteria. Level D and Level C are most common levels of protection required in the scope of work anticipated, Level B is not anticipated.

B 1187

Environmental Health Consultants

Certificate of Completion

George K. Nihau

has sucessfully completed a forty hour course in health and safety for hazardous waste site operations as required by 29 CFR 1910.120 (e) 3 (i).

October 12, 13, 19 & 20, 1990 Hayward, Ca.

Course Date and Location

Instructor

Irene S. Fanelli, CIH

Instructor

CERTIFICATE OF TRAINING

PRESENTED TO

GEORGE NIHAL

FOR HAVING SUCCESSFULLY COMPLETED A TRAINING COURSE IN

8 Hours Of Hazardous Waste Retraining

Presented By
V.C.I. Of California

Coordinating Trainer

Merlin Bauer

Date

JULY 22, 1998

COVENANT ENVIRONMENTAL TRAINING

P.O. BOX 1006 · LOTUS, CALIFORNIA 95651
(916) 626-0918

This is to certify that

WILLIAM N. GAMBLE

[40 HOUR HAZARDOUS WASTE OPERATIONS]

has completed and satisfactorily passed the exam for the EPA/OSHA accredited Hazardous Waste Operation Training Course in accordance with 40 and 29 Code of Federal Regulation.

AUGUST1994
Exam Date

81394
Certificate Number

Course Instructor

REGISTERED ENVIRONMENTAL ASSESSOR
CRAIG WRIGHT
No. 00554
Expires: 6/95
STATE OF CALIFORNIA

CERTIFICATE OF TRAINING

PRESENTED TO

WILLIAM N. GAMBLE SR.

FOR HAVING SUCCESSFULLY COMPLETED A TRAINING COURSE IN

8 Hours Of Hazardous Waste Retraining

Presented By
V.C.I. Of California

Coordinating Trainer

Merlin Bauer

Date

MAY, 24, 1998

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H E A L T H & S A F E T Y P L A N

for

EAST BAY REGIONAL PARK DISTRICT
2950 Peralta Oaks Court
P.O. Box 5381
Oakland, CA 94605-0381

Sites

Del Valle Regional Park
Crown Memorial State Beach
Redwood Regional Park
South County Corporation Yard

August 20, 1992

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HEALTH AND SAFETY PLAN

1.0 INTRODUCTION

PERSONNEL INVOLVED IN FIELD INVESTIGATIONS AND REMEDIATION AT SITES WHERE HAZARDOUS WASTES MAY BE PRESENT ARE POTENTIALLY EXPOSED TO A VARIETY OF HAZARDS INCLUDING:

* INHALATION OF TOXIC AIRBORNE CONTAMINANTS.
* SKIN CONTACT WITH CONTAMINATED SOIL AND WATER.
* PRESENCE OF FLAMMABLE/COMBUSTIBLE VAPORS.
* OXYGEN-DEFICIENT ATMOSPHERES.
* HEAT STRESS DUE TO PROTECTIVE CLOTHING AND ENVIRONMENTAL CONDITIONS.
* PHYSICAL STANDARDS INHERENT TO FIELD OPERATIONS (E.G., WORKING NEAR HEAVY EQUIPMENT OR AT REMOTE LOCATIONS).

ADEQUATE PLANNING IS NEEDED PRIOR TO PERFORMING WORK AT THESE SITES TO MINIMIZE THE RISK OF EMPLOYEE INJURY OR ILLNESS.

1.1 PURPOSE

THE PURPOSE OF THE HEALTH AND SAFETY PLAN FOR EAST BAY REGIONAL PARKS, OAKLAND, CALIFORNIA, IS TO PROVIDE PERSONNEL PROTECTION STANDARDS AND MANDATORY SAFETY PRACTICES, PROCEDURES, AND CONTINGENCIES WHILE PERFORMING THE TASKS OUTLINED IN THE SCOPE OF WORK. THIS HEALTH AND SAFETY PLAN ADDRESSES THE FOLLOWING REGULATIONS AND GUIDANCE:

* OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR GENERAL INDUSTRY, 29 CFR 1910 (ESPECIALLY 29 CFR 1910.120 "HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE").
* OSHA STANDARDS FOR CONSTRUCTION INDUSTRY, 29 CFR 1926
* NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH), OSHA, U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA), AND U.S. COAST GUARD "OCCUPATIONAL SAFETY AND HEALTH GUIDANCE MANUAL FOR HAZARDOUS WASTE SITE ACTIVITIES," OCTOBER 1985.

1.2 Responsibilities

The chain of command for safety and health-related issues during investigation, remediation and tank removal activities at the site is delineated below. Petroleum Engineering Inc. is to be in overall control of the Health and Safety activities at the site.

1.2.1 Contracting Officer (CO)

Any modification in this Health and Safety Plan must be approved by East Bay Regional Parks, the Contracting Officer (CO), and the Petroleum Engineering Site Safety and Health Officer (SSHO).

1.2.2 All Petroleum Engineering personnel

All Petroleum Engineering and subcontractor personnel must follow the requirements of this Health and Safety Plan. Any unsafe conditions must be promptly reported to the Site Safety and Health Officer.

1.2.3 Petroleum Engineering Project Manager

Prior to the initiation of on site activities, the Project Manager will have assigned site safety support personnel to execute health and safety measures required during project work. The Project Manager will designate a SSHO. The designated SSHO will be on site during field investigation activities and will be responsible for daily compliance with site health and safety requirements. The SSHO will report directly to the Project Manager on all project-related health and safety matters.

Other Project Manager responsibilities include:

* Coordinating with the East Bay Regional Parks designated contact.
* Providing overall supervisory control for all health and safety protocols in effect for the project.
* Establishing and ensuring compliance with site control areas and procedures.

* PREPARING ANY INCIDENT REPORTS REQUIRED.

1.2.4 PETROLEUM ENGINEERING SITE SAFETY & HEALTH OFFICER (SHHO)

THE SSHO'S RESPONSIBILITIES INCLUDE:

* REVIEWING AND CONFIRMING ANY CHANGES IN PERSONAL PROTECTIVE CLOTHING OR RESPIRATORY PROTECTION REQUIREMENTS.
* REVIEWING ALL HEALTH AND SAFETY DOCUMENTATION.
* EVALUATING ON-SITE AMBIENT AIR MONITORING RESULTS.
* PROVIDING SITE-SPECIFIC TRAINING, AS REQUIRED, TO ALL EMPLOYEES ASSIGNED TO WORK AT THE SITE.
* PROVIDING TECHNICAL SUPPORT TO THE SSHO, PARTICULARLY IN THE MODIFICATION OF THE SITE HEALTH AND SAFETY REQUIREMENTS OR WORK PLANS.
* ESTABLISHING HEAT STRESS PREVENTION PROCEDURES AND PERFORMING DAILY PROGRAM EVALUATIONS.
* STOPPING WORK WHEN UNACCEPTABLE HEALTH SAFETY RISK EXISTS.
* PROVIDING A HEALTH AND SAFETY BRIEFING TO ALL SITE VISITORS.
* SUPERVISING DECONTAMINATION TO ENSURE COMPLETE DECONTAMINATION OF ALL PERSONNEL, TOOLS AND EQUIPMENT.
* SUPERVISING THE DISTRIBUTION, USE, MAINTENANCE, AND DISPOSAL OF PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT.
* CONDUCTING ANY NECESSARY MONITORING, INCLUDING COLLECTION OF AIR SAMPLES AND HEAT STRESS MONITORING.

1.3 LIST OF PERSONNEL WITH 40 HOUR OSHA, 29CFR

40 HOUR OSHA STANDARD, 29 CFR 1910.120 HAZARDOUS WASTE OPERATIONS

ROBERT CHRISTIANSEN
DAVE DYESS
BILL ELLIOTT, JR.
GERNOT GELDON
ANTHONY GRIJALVA
ROBERT HENRY
MICHAEL JORDAN
TOM KEEGAN
LARRY LIDSTER
DONALD MARCHANT
STEVE MYERS
CLAYTON PROCTOR
CESAR SIERRA
RAYMOND VEGA
ALAN WACHTER

8 HOUR REFRESHER TRAINING OSHA STANDARD
29 CFR 1910.120 HAZARDOUS WASTE OPERATIONS

DOUG BRADSHAW
KEVIN DOUGLAS
CHRIS FRANCHETTI
JAMES HAWK
JAMES MCGRATH
BRYAN MUSCO
HARRY PLEVNEY
DENNIS TAIPALE

TABLE 1

CHEMICAL CONTAMINANTS

MATERIAL	LEL/UEL (%)	TLV-TWA (PPM)	ODOR THRESHOLD (PPM)	ACUTE EXPOSURE SYMPTOM
BENZENE	0.339/7.1	1	4.68	FEVER CONVULSIONS CONFUSION DIZZINESS DROWSINESS HEADACHE NAUSEA RESPIRATORY SYSTEM IRRITATION SKIN IRRITATION TREMORS VOMITING WEAKNESS
ETHYLBENZENE	1.0/6.7	100	0.25 - 200.00	FEVER ABDOMINAL PAINS DIZZINESS DROWSINESS HEADACHE NAUSEA RESPIRATORY SYSTEM IRRITATION SKIN IRRITATION UNCONSCIOUSNESS VOMITING WEAKNESS
TOLUENE	1.3/7.1	100	0.17 - 40	CONFUSION DIZZINESS DROWSINESS HEADACHE NAUSEA RESPIRATORY SYSTEM IRRITATION SKIN IRRITATION TREMORS UNCONSCIOUSNESS VOMITING WEAKNESS FEVER

TABLE 1 - CONTINUED

CHEMICAL CONTAMINANTS

MATERIAL	LEL/UEL (%)	TLV-TWA (PPM)	ODOR THRESHOLD (PPM)	ACUTE EXPOSURE SYMPTOM
XYLENE	1.1/7.0	100	0.5 - 200	DIZZINESS DROWSINESS HEADACHE NAUSEA RESPIRATORY SYSTEM IRRITATION SKIN IRRITATION UNCONSCIOUSNESS VOMITING FEVER
LEAD	EXPLOSIONS OF DUST IN CONFINED AREAS CAN OCCUR	50 UG/M3	N/A	CONVULSIONS ABDOMINAL PAINS DIZZINESS DIARRHEA TREMORS WEAKNESS FEVER
GASOLINE	1.4/7.6	300	<1	CONFUSION DIZZINESS DROWSINESS FEVER HEADACHE NAUSEA RESPIRATORY SYSTEM IRRITATION SKIN IRRITATION UNCONSCIOUSNESS
METHYLENE CHLORIDE	12/NA	50	25 - 320	FEVER HEADACHE NAUSEA RESPIRATORY SYSTEM IRRITATION SKIN IRRITATION WEAKNESS

2.0 RISK ANALYSIS

THIS SECTION ASSESSES THE CHEMICAL AND PHYSICAL HAZARDS THAT ARE KNOWN TO EXIST AT THE SITE AND THOSE THAT MAY BE CREATED BY THE REMEDIATION EFFORTS. TABLE 2 SUMMARIZES THE HAZARDS ASSOCIATED WITH EACH OF THESE TASKS. THE HAZARD ANALYSIS HAS BEEN DIVIDED INTO THREE CRITICAL AREAS:

* EXPOSURE: EXPECTED FREQUENCY OF EXPOSURE TO A HAZARD;
* PROBABILITY: LIKELIHOOD OF AN INJURY UPON EXPOSURE TO A HAZARD; AND
* CONSEQUENCE: PROBABLE DEGREE OF INJURY OF EFFECT AN INJURY WILL HAVE ON THE EFFECTIVENESS OF A TEAM MEMBER.

AN EXPLANATION OF THE LETTERS DENOTING THE DEGREES OF EXPOSURE, AND CONSEQUENCE IS PROVIDED AT THE END OF THE TABLE.

CONTAMINANTS MOST LIKELY TO BE ENCOUNTERED DURING FIELD OPERATIONS AT THE SITE ARE THE PETROLEUM HYDROCARBONS AND METALS LISTED ON TABLE 1. A LIST OF THE OCCUPATIONAL EXPOSURE LIMITS AND SIGNS AND SYMPTOMS OF EXPOSURE IS ALSO LISTED IN TABLE 1.

MOST WORK REQUIRED IN THIS PROJECT MAY POTENTIALLY EXPOSE PERSONNEL TO MATERIALS THAT MAY CONTAIN ANY OR ALL OF THESE CONTAMINANTS. ANY PERSONNEL ENTERING THE SITE SHALL BE INFORMED OF ALL HAZARDS ASSOCIATED WITH THESE CONTAMINANTS.

THE PHYSICAL HAZARDS EXPECTED TO BE PRESENT DURING SITE INVESTIGATION ACTIVITIES INCLUDE:

* SAW CUTTING
* SNAPPING CABLES, SLINGS, AND ROPE
* DRILLING EQUIPMENT
* MOVING EQUIPMENT

* Heavy equipment
* Sharp objects
* Loose foundations
* Open pits or ditches
* Excessive noise
* Fire/explosions
* Buried utility lines
* Energized overhead and underground power lines
* Heat stress

TABLE 2

Hazard Analysis

Job Hazard	Exposure	Probability	Consequence
Drilling			
Drill Rig			
Mechanical	A	C	A-D
Noise	A	C	E
Buried Utilities			
Electrical	C	C	A-D
Chemical Exposure	A	B	A-E
Fire and Explosion	D	D	A-D
Dust	B	D	D-E
Tank Removal/Excavation			
Heavy Equipment, Including Crane Excavator, Loader, Backhoe			
Mechanical	A	C	A-D
Noise	C	C	E
Chemical Exposure	A	B	A-E
Biological Exposure	D	D	A-D
Fire and Explosion	D	D	A-D
Dust	B	D	D-E
Saw Cutting	C	D	A-E
Tank Lifting	C	D	A-D
Soil Slope Failure	D	D	A-D
Fire and Explosion	D	D	A-D

TABLE 2 - CONTINUED

HAZARD ANALYSIS

JOB HAZARD	EXPOSURE	PROBABILITY	CONSEQUENCE
SOIL AND GROUND WATER SAMPLING			
CHEMICAL EXPOSURE	A	B-D	A-E
BIOLOGICAL EXPOSURE	D	D	B-D
DECONTAMINATION			
STEAM CLEANER			
MECHANICAL	B	D	B-D
ELECTRICAL	B	D	A-D
GENERATOR			
MECHANICAL	C	D	C-D
ELECTRICAL	B	D	A-D
CHEMICAL EXPOSURE	B	D	A-E
BIOLOGICAL EXPOSURE	D	D	A-D

EXPLANATIONS

EXPOSURE: THE FREQUENCY OF EXPOSURE TO THE HAZARD EVENT.

A = CONTINUOUSLY
B = FREQUENTLY
C = OCCASIONALLY
D = SELDOM

PROBABILITY: THE LIKELIHOOD THAT AN INJURY WILL OCCUR UPON EXPOSURE TO THE HAZARD EVENT.

A = CERTAIN OR ALMOST CERTAIN
B = LIKELY, NOT UNUSUAL, 50/50 CHANCE OF OCCURRING
C = UNUSUAL, WOULD GENERALLY OCCUR LESS THAN 50% OF THE TIME
D = IMPROBABLE, VERY LOW CHANCE OF OCCURRENCE

CONSEQUENCE: THE DEGREE OF INJURY RESULTING FROM EXPOSURE TO THE HAZARD EVENT OF SIGNIFICANT ENOUGH DEGREE TO CAUSE AN INJURY.

A = FATALITY
B = SERIOUS INJURY, INCLUDING CHEMICAL EXPOSURE, REQUIRING HOSPITALIZATION
C = MODERATE INJURY, INCLUDING CHEMICAL EXPOSURE, REQUIRING ON-SITE FIRST AID TREATMENT
D = MINOR INJURY, INCLUDING CHEMICAL EXPOSURE, REQUIRING ON-SITE FIRST AID TREATMENT
E = CHEMICAL, ACOUSTICAL, OR OTHER EXPOSURE ABOVE THE THRESHOLD LIMIT VALUE (TLV) OR OTHER RECOMMENDED STANDARD THAT MAY NOT PRODUCE IMMEDIATE ACUTE EFFECTS, ESPECIALLY FOR CHRONIC TOXICANTS

3.0 PROCEDURES TO MITIGATE HAZARDS

THIS SECTION DESCRIBES THOSE PROCEDURES TO BE FOLLOWED IN ORDER TO ENSURE THE AVOIDANCE OF OPERATIONAL HAZARDS, AS DISCUSSED IN SECTION 2.0. THESE HAZARDS INCLUDE MECHANICAL, ELECTRICAL, CHEMICAL, ACOUSTICAL, BIOLOGICAL, AND TEMPERATURE HAZARDS. THOSE HAZARDS ASSOCIATED WITH CONFINED SPACES ARE NOT ANTICIPATED TO OCCUR, AND ARE NOT DISCUSSED.

3.1 MECHANICAL HAZARDS

THE FOLLOWING PROCEDURES SHALL BE FOLLOWED DURING ALL PHASES OF THE OPERATION TO REDUCE THOSE RISKS ASSOCIATED WITH MECHANICAL EQUIPMENT:

* STAY WELL CLEAR OF DRILL RODS AND AUGERS WHILE THEY ARE ROTATING AND BEING HOISTED. EXTREME CARE IS TO BE EXERCISED WHEN STEEL CABLES ARE BEING USED TO LIFT THE DRILLING APPARATUS FROM THE GROUND.
* STAND CLEAR OF THE OPERATING CIRCLE OF EXCAVATORS, BACKHOES, ETC.
* EQUIPMENT MAINTENANCE SCHEDULES ARE THE RESPONSIBILITY OF EACH INDIVIDUAL CONTRACTOR. EQUIPMENT IS TO BE CHECKED DAILY. ANY EQUIPMENT DEEMED BY A PETROLEUM ENGINEERING EMPLOYEE TO BE IN AN UNSAFE STATE OF REPAIR, OR OPERATED IN AN UNSAFE MANNER SHALL BE SHUT DOWN UNTIL CORRECTIVE ACTION IS TAKEN. EQUIPMENT SAFETY FEATURES, SUCH AS BACK-UP ALARMS, SHALL BE CHECKED DAILY.

3.2 ELECTRICAL HAZARDS

THE FOLLOWING PROCEDURES SHALL BE FOLLOWED DURING ALL PHASES OF OPERATION, IN ORDER TO REDUCE THOSE RISK ASSOCIATED WITH ELECTRICAL HAZARDS:

* UNDERGROUND SERVICE ALERT (1-800-422-4133) WILL BE CONTACTED PRIOR TO SITE ACTIVITIES TO LOCATE THE PRESENCE OF LOCATION OF UNDERGROUND CABLES, UTILITY LINES, PIPES, AND STORAGE VESSELS AT THE PROPOSED SITES WHERE SOIL BORINGS WILL BE PLACED.
* THE LOCAL POWER COMPANY SHALL BE CONTACTED, IN ORDER TO VERIFY THE MINIMUM ALLOWABLE CLEARANCE FROM HIGH-VOLTAGE POWER LINES. UNDER NO CIRCUMSTANCES WILL ANY PERSON, PIECE OF EQUIPMENT, OR PHASE OF OPERATION COME WITHIN 10 FEET OF OVERHEAD POWER LINES.
* IF THE WORK AREA IS UNAVOIDABLY CLOSE TO BURIED OR OVERHEAD POWER LINES, THE POWER SHALL BE TURNED OFF, WITH THE CIRCUIT BREAKER LOCKED AND TAGGED OUT.

* ALL ELECTRICAL EQUIPMENT IS TO BE PROPERLY GROUNDED, AND UNDER NO CIRCUMSTANCES ARE ANY MODIFICATIONS TO BE MADE TO ANY PIECE OF ELECTRICAL EQUIPMENT. ALL ELECTRICAL EQUIPMENT IS TO BE INSPECTED DAILY FOR DAMAGED LEADS OR PLUGS. ANY PIECE OF EQUIPMENT THAT IS DAMAGED SHALL NOT BE USED ON THE SITE, AND SHALL, IN FACT, BE REMOVED FROM THE SITE FOR DISPOSAL OR REPAIR.

* IF ELECTRICAL EQUIPMENT MUST BE CONNECTED BY SPLICING WIRES, THE SOURCE SHALL BE DE-ENERGIZED FIRST, THE BREAKER BOX LOCKED OUT AND APPROPRIATELY TAGGED BY THE PERSON WHO IS TO PERFORM THE SPLICING OPERATION. ALL CONNECTIONS ARE TO BE APPROPRIATELY TAPED. ONCE THE SPLICING OPERATION IS COMPLETE, THE PERSON WHO PERFORMED THE SPLICE SHALL BRING THE SOURCE BACK INTO OPERATION.

* EACH PERSON THAT HAS CAUSE OR NEED TO USE A PIECE OF ELECTRICAL EQUIPMENT SHALL ENSURE THAT HE/SHE IS FULLY FAMILIAR WITH THAT EQUIPMENT'S OPERATION AND FEATURES.

3.3 CHEMICAL HAZARDS

TO REDUCE THE POSSIBILITY OF INJURY DUE TO CHEMICAL HAZARDS, PERSONNEL SHALL WEAR THOSE PIECES OF PERSONAL PROTECTIVE EQUIPMENT AS SPECIFIED BY TASK, IN SECTION 5.0. AIR MONITORING SHALL BE CONDUCED TO EVALUATE RESPIRATORY AND EXPLOSION HAZARDS. THE INSTRUMENTS AND ACTION LEVELS TO BE USED ARE LISTED IN TABLE 3. THE PETROLEUM ENGINEERING EMPLOYEE CONDUCTING EACH FIELD TASK SHALL BE RESPONSIBLE FOR PERFORMING THE SPECIFIED AIR MONITORING. IN ORDER TO ENSURE THE PROTECTION OF OFF-SITE PUBLIC HEALTH, SITE PERIMETER AIR MONITORING FOR VOLATILE ORGANICS WILL BE PERFORMED (SEE SECTION 6.1.2). IF AIRBORNE LEVELS OF CONTAMINANTS CONSISTENTLY EXCEED 5 PPM BACKGROUND LEVELS AT THE PERIMETER OF THE SITE, THE WORK WILL BE STOPPED, THE SUSPECTED SOURCE OF THE CONTAMINATION WILL BE COVERED TO ELIMINATE EMISSIONS AND THE PETROLEUM ENGINEERING PROJECT MANAGER, AND THE CO WILL BE NOTIFIED. A DECISION WILL THE BE MADE AS TO HOW TO PROCEED WITH THE WORK AND HOW TO MORE FULLY CHARACTERIZE AND REDUCE THE AIRBORNE EMISSIONS.

TABLE 3

AIR MONITORING INSTRUMENTATION AND ACTION LEVELS

HAZARD	INSTRUMENT	READING	LOCATION	ACTION
RESPIRATORY	PID/DRAEGER TUBE	1-2 PPM	BREATHING	DON RESPIRATOR (MODIFIED D)
RESPIRATORY	PID/DRAEGER TUBE	5 PPM	BREATHING	DON LEVEL C PROTECTION
RESPIRATORY	PID/DRAEGER TUBE	10 PPM	BREATHING	LEAVE AREA
EXPLOSION	COMBUSTIBLE GAS METER	10% LEL	AMBIENT AIR	VENT AREA
EXPLOSION	COMBUSTIBLE GAS METER	20% LEL	AMBIENT AIR	LEAVE AREA
OXYGEN DEFICIENCY	OXYGEN METER	19.5%	OXYGEN AMBIENT AIR	LEAVE AREA

APPARENT EXPOSURE LEVEL ABOVE THE BACKGROUND AMBIENT AIR CONCENTRATION. BACKGROUND LEVELS MAY CHANGE DUE TO FACTORS SUCH AS WEATHER AND LOCATION OF WORK SITE.

HIGH EFFICIENCY ORGANIC VAPORS CARTRIDGES WITH DUST FILTERS SHALL BE USED.

AS EACH CHEMICAL CONSTITUENT IS IDENTIFIED THROUGH SOIL AND SURFACE WATER TESTING, SPECIFIC ACTION LEVELS WILL BE DETERMINED. THESE SITE-SPECIFIC ACTION LEVELS AND ANY MODIFICATIONS TO SAFETY PROCEDURES PRESENTED IN THIS PLAN SHALL BE INCORPORATED IN FUTURE REVISIONS. IT IS PRESENTLY ANTICIPATED THAT CHEMICAL HAZARDS WILL WARRANT THE DIVISION OF THE WORK SITE INTO WORK, DECONTAMINATION AREA PRIOR TO ENTERING THE SUPPORT AREA. THE SUPPORT AND DECONTAMINATION AREAS WILL BE UPWIND OF THE WORK SITE. NO VISITORS SHALL BE ALLOWED TO APPROACH THE WORK SITE UNLESS THEY ARE PROPERLY TRAINED AND UNDER THE SUPERVISION OF DELEGATED PETROLEUM ENGINEERING PERSONNEL.

3.4 ACOUSTICAL HAZARDS

IN ORDER TO PREVENT HEARING IMPAIRMENT, THE USE OF EAR PLUGS OR EAR MUFFS SHALL BE REQUIRED FOR ALL PERSONNEL WHEN HEAVY EQUIPMENT IS IN USE AT THE SITE. HOWEVER, SHOULD ANY PERSONNEL DEVELOP PAIN IN THE EAR DUE TO WORK-SITE NOISE, THEY SHALL IMMEDIATELY DON A SET OF EAR PLUGS OR MUFFS.

NOISE LEVELS WILL ALSO BE CONTROLLED TO CONFORM TO LOCAL NOISE ORDINANCES.

3.5 BIOLOGICAL HAZARDS

IN ORDER TO REDUCE THE RISK OF BIOLOGICAL CONTAMINATION, PERSONAL PROTECTIVE EQUIPMENT, DESCRIBED IN SECTION 5.0, SHALL BE WORN FOR EACH SPECIFIED TASK. THIS PROTECTIVE EQUIPMENT SHALL BE REMOVED, AND HANDS AND FACE WASHED PRIOR TO CONTACT WITH THE MOUTH, BY THE HANDS, FOR SUCH PURPOSES AS EATING, DRINKING, OR SMOKING. SMOKING SHALL ONLY BE PERMITTED IN THOSE AREAS DESIGNATED BY THE SSHO.

3.6 HEAT STRESS

ALL PERSONNEL ENTERING THE WORK AREA SHOULD BE FAMILIAR WITH THE SIGNS AND SYMPTOMS OF HEAT STRESS. THESE INCLUDE:

* HEAT EXHAUSTION--DIZZINESS, LIGHT-HEADEDNESS, SLURRED SPEECH, RAPID PULSE, CONFUSION, FAINTING, FATIGUE, COPIOUS PERSPIRATION, COOL SKIN THAT IS SOMETIMES PALE AND CLAMMY, AND NAUSEA.

* HEAT STRESS--HOT, DRY, FLUSHED SKIN; DELIRIUM, AND COMA (IN SOME CASES).

HEAT STRESS CAN BE PREVENTED BY RESTING FREQUENTLY IN A SHADED AREA AND CONSUMING LARGE QUANTITIES OF FRESH, POTABLE WATER. IF HEAT EXHAUSTION SYMPTOMS ARE OBSERVED, THE PERSON WILL BE REQUIRED TO REST IN A SHADED AREA AND CONSUME LIQUIDS. IF SYMPTOMS ARE WIDESPREAD OF OBSERVED FREQUENTLY, AN APPROPRIATE WORK/REST REGIMEN WILL BE INSTITUTED. THIS MAY INVOLVE LIMITING THE WORK PERIOD SO THAT AFTER ONE MINUTE OF REST, A PERSON'S HEART RATE (HR) DOES NOT EXCEED 110 BEATS PER MINUTE.

IF THE HR IS HIGHER THAN 110 BEATS PER MINUTE, THE NEXT WORK PERIOD SHOULD BE SHORTENED BY 33 PERCENT, WHILE THE LENGTH OF THE REST PERIOD STAYS THE SAME. IF THE HR IS 110 BEATS PER MINUTE AT THE BEGINNING OF THE NEXT REST PERIOD, THE FOLLOWING WORK CYCLE SHOULD BE SHORTENED BY 33 PERCENT. RESTING HR SHOULD BE DETERMINED PRIOR TO START OF ON SITE ACTIVITIES. A HEALTHY INDIVIDUAL'S RESTING HR IS USUALLY 60 TO 72 BEATS PER MINUTE.

IF SYMPTOMS OF HEAT STRESS ARE OBSERVED, THE VICTIM WILL BE TRANSPORTED TO THE NEAREST HOSPITAL IMMEDIATELY. WORKERS SHOULD NOT HESITATE TO SEEK MEDICAL ATTENTION IF HEAT STRESS IS SUSPECTED.

3.7 Confined Space Hazards

WHEN WORK IS TO BE DONE IN AN AREA WHERE THE NATURAL CIRCULATION OF FRESH AIR OR THE ABILITY TO READILY ESCAPE THE SITE IS RESTRICTED, THAT SITE SHALL BE CONSIDERED A CONFINED SPACE, AND THE FOLLOWING GUIDELINES SHALL BE FOLLOWED:

* PERSONNEL SHALL MONITOR THE LEVELS OF OXYGEN, COMBUSTIBLE GASES, AND ORGANIC VAPORS PRIOR TO ENTERING. UNDER NO CIRCUMSTANCES SHALL THE SPACE BE METERED IF THE FOLLOWING LEVELS ARE EXCEEDED:

  1. OXYGEN CONTENT IS LESS THAN 19.5%.
  2. COMBUSTIBLE GAS LEVEL IS GREATER THAN 3% OF THE LEL.
  3. TOTAL HYDROCARBONS ARE GREATER THAN THE ACTION LEVELS DEFINED IN TABLE 3 OF THIS SECTION, IF ALL AIR CONTAMINANTS HAVE NOT BEEN IDENTIFIED.

* PERSONNEL SHALL MONITOR THE LEVELS OF OXYGEN, COMBUSTIBLE GASES, AND ORGANIC VAPORS CONTINUOUSLY WHILE INSIDE THE CONFINED SPACE. IF THE VALUES STATED IN SUBPARAGRAPH (A) ARE EXCEEDED, THE SPACE SHALL BE EVACUATED OF ALL PERSONNEL IMMEDIATELY.

* AT LEAST ONE ADDITIONAL PERSON, WHO SHALL BE PRESENT FOR THE EXPRESS PURPOSE OF MONITORING THE PERSONNEL IN THE SPACE, SHALL BE WITHIN SIGHT AND CALL OF THOSE PERSONNEL WITHIN THE SPACE, WHILE REMAINING OUTSIDE THE SPACE PROPER. THIS PERSON SHALL HAVE, READILY AVAILABLE TO HIM, ALL RESCUE EQUIPMENT NECESSARY TO REMOVE PERSONNEL WHO MAY REQUIRE EXTRACTION FROM THE SPACE AND THE SITE. THIS EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO, RESPIRATION EQUIPMENT OF THE SAME LEVEL AS THOSE USED BY THE PERSONNEL IN THE SPACE, FIRST AID EQUIPMENT, INCLUDING COMPRESSES, HARNESSES, AND ALL REQUIRED EXTRACTION EQUIPMENT.

* PORTABLE FANS OR BLOWERS SHALL BE USED TO INTRODUCE FRESH AIR INTO A CONFINED SPACE. THESE FANS OR BLOWERS SHALL BE LOCATED ON THE UPWIND SIDE OF THE SPACE. THE SPACE SHALL NOT BE ENTERED UNTIL VALUES OF OXYGEN, ORGANIC VAPORS, AND COMBUSTIBLE GASES ARE BROUGHT BELOW AND MEASURED BELOW THEIR RESPECTIVE ACTION LEVELS.

* NO PERSONNEL SHALL ENTER ANY UNSHORED OR UNSUPPORTED EXCAVATION WITH A DEPTH GREATER THAN 5 FEET, OR WITH UNSTABLE GEOLOGICAL CONDITIONS.

4.0 TRAINING

4.1 Site Workers

All personnel who will perform on site tasks shall be trained by U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) standard, 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response. Training will include:

* A minimum of 40 hours initial instruction off site be required for those personnel conducting invasive field work at the site. Proof of training shall be required to be present at the site.
* A minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor.
* Regulatory officials at the site shall be required to have completed at least 24 hours of initial instruction, and shall present training certification as requested.
* A minimum of 8 hours of refresher training annually.
* First air and CPR training.
* Additional training which addresses any unique or special hazards.

All personnel entering the site shall be requested to present proof of current training. Failure to present such certification shall result in removal from the site.

4.2 On Site Management and Supervisors

On site management and supervisors shall receive at least 8 additional hours of specialized training on managing such operations.

4.3 Pre-entry Orientation Session

Prior to entering the site, personnel shall attend a daily pre-entry orientation session presented by the SSHO which addresses the following issues. All personnel shall verify attendance of this daily meeting by signing the Safety and Health Plan Review Record, Appendix A.

4.3.1 Degree and Nature of Potential Health and Safety Hazards

The health effects and hazards of the chemicals identified or suspected to be on the site shall be discussed. The physical and chemical properties of the contaminants, the most likely route of exposure, and possible adverse consequences of working on the site if proper safety procedures are not observed or if protective equipment fails or is improperly worn shall be reviewed. Other hazards which are unique to site operations shall be presented.

4.3.2 Personal Protective Equipment

Personnel shall be instructed in the use, care, maintenance, limitations, and fitting of personal protective equipment. Respirator training shall conform to ANSI Z88.2 (1980) and OSHA 29 CFR 1910.134. Personnel shall not be fit tested or issued a respirator if facial hair interferes with the face-to facepiece seal of the respirator. Qualitative fit testing shall be performed annually. Records of the fit testing shall be maintained. Positive/negative fit testing shall be performed by the user each time a respirator is donned.

4.3.3 Decontamination Procedures

The procedures, materials, equipment, and facilities specific to the site will be discussed during the morning briefing by the SSHO.

4.3.4 Accepted Practices

Specific safe work practices which must be adhered to during site operations

WILL BE DISCUSSED. THIS WILL INCLUDE PROCEDURES FOR ENTERING AND EXITING THE SITE, AND ACCEPTED AND UNACCEPTED PRACTICES WITHIN THE PERSONNEL DECONTAMINATION AREA.

4.3.5 EMERGENCY PROCEDURES

PROCEDURES FOR RESPONDING TO EMERGENCIES AS SPECIFIED IN THE EMERGENCY RESPONSE PLAN SHALL BE COVERED.

4.3.6 MEDICAL REQUIREMENTS

THE MEDICAL REQUIREMENTS FOR ALL PERSONNEL ASSIGNED TO PERFORM WORK AT THE SITE SHALL BE PRESENTED.

5.0 PERSONAL PROTECTIVE EQUIPMENT

ALL RESPIRATORY PROTECTIVE EQUIPMENT MUST BE APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)/MINE SAFETY AND HEALTH ADMINISTRATION (MSHA). THE MINIMUM PROTECTIVE EQUIPMENT REQUIREMENTS FOR EACH SITE TASK SHALL BE LEVEL D. HOWEVER, SHOULD AIRBORNE MONITORING INDICATE ORGANIC VAPORS CONSISTENTLY IN EXCESS OF 1-2 PPM, THE LEVEL OF PROTECTION SHALL BE UPGRADED TO LEVEL C1. IF MONITORING INDICATES ORGANIC VAPORS CONSISTENTLY IN EXCESS OF 5 PPM, THE LEVEL OF PROTECTION SHALL BE UPGRADED TO LEVEL C2.

5.1 LEVELS OF PROTECTION

5.1.1 LEVEL D PROTECTION

THE FOLLOWING PERSONAL PROTECTIVE EQUIPMENT IS REQUIRED TO BE WORN IN BY ALL ON-SITE PERSONNEL:

* POLY/COTTON REUSABLE COVERALLS OR LONG SLEEVE SHIRTS AND LONG PANTS
* STEEL TOE BOOTS/SHOES
* EAR PLUGS OR EAR MUFFS
* HARD HAT
* NITRILE GLOVES (IF CONTACT WITH POTENTIALLY-CONTAMINATED SOIL OR WATER IS EXPECTED)

* SAFETY GLASSES
* NEOPRENE OR BUTYL RUBBER BOOTS OR LATEX BOOT COVERS (IF CONTACT WITH POTENTIALLY-CONTAMINATED SOIL OR WATER IS EXPECTED)

5.1.1.A LEVEL C1 PROTECTION

* ONE-HALF OR FULL FACE RESPIRATOR WITH HIGH EFFICIENCY ORGANIC VAPOR CARTRIDGES WITH DUST FILTER

5.1.2 LEVEL C PROTECTION

* CLOTH COVERALLS
* STEEL-TOED BOOTS WITH WATERPROOF COVERS, OR STEEL-TOED RUBBER BOOTS
* HARD HAT
* EAR PLUGS OR EAR MUFFS
* NITRILE GLOVES
* SAFETY GLASSES
* FULL FACE RESPIRATOR WITH HIGH EFFICIENCY ORGANIC VAPOR CARTRIDGES WITH DUST FILTER

5.2 MAINTENANCE AND IN-USE INSPECTION OF PROTECTIVE EQUIPMENT

EFFECTIVE USE OF PROTECTIVE EQUIPMENT REQUIRES THAT THE EQUIPMENT BE PROPERLY USED, MAINTAINED, AND INSPECTED PERIODICALLY DURING THE DAY. PROCEDURES WILL BE PRESENTED DURING PRE-ENTRY TRAINING.

5.2.1 GLOVES/BODY COVERINGS

GLOVES AND COVERALLS WILL BE REGULARLY INSPECTED AND REPLACED IF TORN. COVERALLS WILL BE LAUNDERED DAILY AT A MINIMUM. REUSABLE GLOVES WILL BE DECONTAMINATED WHENEVER EXITING WORK AREAS.

5.2.2 RESPIRATORS

SITE CONDITIONS ARE NOT ANTICIPATED TO REQUIRE RESPIRATORY PROTECTION, THEREFORE, NO RESPIRATORS ARE EXPECTED TO BE NECESSARY; HOWEVER, RESPIRATORS SHALL BE INSPECTED AND CHECKED DAILY FOR LEAKS BOTH VISUALLY AND WITH

NEGATIVE OR POSITIVE PRESSURE CHECKS ON THE WEARER. RESPIRATOR CARTRIDGES WILL BE REPLACED DAILY OR MORE FREQUENTLY IF EXCESSIVE RESISTANCE DEVELOPS. ALL RESPIRATOR MAINTENANCE WILL BE PERFORMED BY THE SSHO. THE TYPE OF RESPIRATORS USED WILL BE EQUIPPED WITH HIGH EFFICIENCY ORGANIC VAPOR CARTRIDGES AND DUST FILTERS.

RESPIRATOR EXTERIORS WILL BE WET-WIPED WHENEVER EXITING WORK AREAS, AS SPECIFIED IN SECTION 8.3. RESPIRATORS WILL BE RINSED WITH A SOLUTION CONTAINING A SANITIZER RECOMMENDED BY THE RESPIRATOR MANUFACTURER. RESPIRATORS WILL THE BE HUNG TO DRIP DRY AND, IF NOT USED DAILY, WILL BE PLACED INSIDE PLASTIC BAGS FOR PROTECTION AGAINST DUST.

6.0 ENVIRONMENTAL MONITORING

6.1 REAL TIME AIR MONITORING

A TOTAL VOLATILE ORGANICS INSTRUMENT SHALL BE USED TO PERIODICALLY MONITOR AIRBORNE CONCENTRATIONS OF CONTAMINANTS ON THE SITE. A PHOTOIONIZATION DETECTOR (PID) (E.G., HNU OR OVM) OR EQUIVALENT AND EXPLOSIMETER/OXYGEN METER WILL BE USED TO SCREEN EXCAVATED SOILS FOR VOLATILE ORGANIC COMPOUND CONTAMINATION. THE PID WILL ALSO BE USED TO MEASURE AND RECORD EMPLOYEE BREATHING ZONE LEVELS OF ORGANIC VAPORS AND GASES.

THE MONITORING PROGRAM MAY BE INCREASED, REDUCED, OR MODIFIED BY THE SSHO, WITH CONCURRENCE OF THE CO, BASED ON SITE CONDITIONS AND MONITORING RESULTS. ALL MONITORING WILL BE ACCOMPLISHED UNDER THE DIRECTION OF THE SSHO, WHO WILL INTERPRET THE RESULTS.

THE AIR MONITORING PROGRAM WILL INCLUDE SUFFICIENT MONITORING OF AIR QUALITY IN WORK ZONES AND OTHER ON-SITE AREAS TO ASSESS LEVELS OF EMPLOYEE EXPOSURE, DETERMINE THAT THE WORK ZONE DESIGNATIONS ARE VALID, AND VERIFY THAT THE RESPIRATORY PROTECTION BEING WORN BY PERSONNEL IS ADEQUATE. THE AIR MONITORING PROGRAM IS ALSO DESIGNED TO ENSURE THAT CONTAMINANTS ARE NOT MIGRATING OFF SITE TO MINIMIZE EXPOSURE OF NEARBY POPULATIONS AND/OR

WORKERS. AIR MONITORING SHALL BE CONDUCTED AT 15 MINUTE INTERVALS, UNLESS IT IS DETERMINED THAT AIR MONITORING MAY OCCUR AT LESS FREQUENT INTERVALS. THESE LESS FREQUENT INTERVALS WOULD BE THE RESULT OF AMBIENT AIR MOVEMENT (WIND), OR THROUGH THE REDUCTION OF THE AIR THREAT THROUGH VERIFICATION MONITORING. SUCH CHANGES TO PLAN WILL BE LOGGED.

MONITORING SHALL BE CONDUCTED:

* WHEN WORK BEGINS ON A DIFFERENT PORTION OF THE SITE.
* WHEN CONTAMINANTS OTHER THAN THOSE PREVIOUSLY IDENTIFIED ARE BEING HANDLED.
* WHEN A DIFFERENT TYPE OF OPERATION IS INITIATED.
* IF A SUFFICIENT REASONABLE INTERVAL HAS PASSED SO THAT EXPOSURES MAY HAVE SIGNIFICANTLY INCREASED.

MEASUREMENTS SHALL BE TAKEN AT THE ANTICIPATED SOURCE AND IN THE BREATHING ZONE OF SITE PERSONNEL.

INSTRUMENTS SHALL ONLY BE USED BY EMPLOYEES WHO HAVE BEEN TRAINED IN THE PROPER OPERATION, USE, LIMITATION, AND CALIBRATION OF THE MONITORING INSTRUMENT AND WHO HAVE DEMONSTRATED THE SKILLS NECESSARY TO OPERATE THE INSTRUMENT.

6.1.2 PERIMETER MONITORING

MONITORING SHALL BE CONDUCTED AT LEAST TWO TIMES EACH DAY WITH A TOTAL VOLATILE ORGANICS DIRECT-READING INSTRUMENT AT LOCATIONS UPWIND AND DOWNWIND AT THE PERIMETER OF THE SITE. MEASUREMENTS SHALL ALSO BE TAKEN PERIODICALLY DOWNWIND OF EACH ACTIVE SAMPLING SITE TO ASSESS THE POTENTIAL FOR OFF-SITE MIGRATION. IF AIRBORNE LEVELS OF CONTAMINATION EXCEED BACKGROUND LEVELS FOR A SUSTAINED PERIOD OF TIME AT THE PERIMETER OF THE SITE, THE WORK AREA SHALL B EXPANDED TO ENCOMPASS ALL AREA SUBJECTED TO THE ELEVATED LEVELS. IF AIRBORNE LEVELS OF CONTAMINANTS EXCEED BACKGROUND LEVELS BY 5 PPM AT THE PERIMETER OF THE SITE, THE WORK WILL BE STOPPED, THE SUSPECTED SOURCE OF THE

CONTAMINATION (BOREHOLE OR PRODUCTION WELL) WILL BE COVERED TO ELIMINATE EMISSIONS, AND THE PETROLEUM ENGINEERING PROJECT MANAGER, AND THE CO WILL BE NOTIFIED. IF AIRBORNE LEVELS OF CONTAMINANTS EXCEED BACKGROUND LEVELS, A DECISION WILL THEN BE MADE AS TO HOW TO PROCEED WITH THE WORK AND HOW TO MORE FULLY CHARACTERIZE THE AIRBORNE EMISSIONS.

6.2.2 FIELD INSTRUMENTS

TWO TYPES OF PID VAPOR ANALYZERS ARE AVAILABLE FOR ON-SITE SCREENING DURING FIELD OPERATIONS: HNU MODEL PI 101 AND/OR THERMO ENVIRONMENTAL INSTRUMENTS 580A OR 580B.

A GASTECH FLAMMABLE GAS DETECTOR IS SHALL BE USED TO MEASURE EXPLOSIVE/ OXYGEN LEVELS. EQUIVALENT INSTRUMENTS MAY BE USED.

CALIBRATION OF INSTRUMENTS WILL BE PERFORMED PRIOR TO FIELD USE ON A DAILY BASIS. CALIBRATION METHODS AS SPECIFIED IN MANUFACTURER-SUPPLIED MANUALS FOR EACH INSTRUMENT WILL BE FOLLOWED. A TWO-POINT CALIBRATION IS PERFORMED ON PORTABLE GAS ANALYZERS USING HYDROCARBON-FREE AIR AS THE ZERO POINT AND A MANUFACTURED CALIBRATION GAS AS THE HIGH POINT. A GAS ANALYZED INSTRUMENT IS CONSIDERED TO BE ACCURATE IF READINGS OF THE STANDARD ARE WITHIN 20 PERCENT OF THE ACTUAL CONCENTRATION OF STANDARD GAS.

6.2.3 RECORDKEEPING REQUIREMENTS

THE RESULTS OF AIR MONITORING READINGS SHALL BE RECORDED ON STANDARD AIR MONITORING DATA FORMS. A CALIBRATION AND MAINTENANCE LOG FOR EACH INSTRUMENT SHALL ALSO BE MAINTAINED. RECORDS SHALL ALSO BE KEPT OF ALL SIGNIFICANT EVENTS, ADDENDUMS, OR CHANGES TO LEVELS OF PROTECTION.

6.3 HEAT-STRESS MONITORING

AMBIENT TEMPERATURES AT THE SITE COMBINED WITH THE REQUIREMENTS FOR PPE USE MAY CONTRIBUTE TO HEAT STRESS. WHEN AMBIENT TEMPERATURES REACH OR EXCEED 70

DEGREES FAHRENHEIT. BODY TEMPERATURES WILL BE MONITORED USING FEVER STRIPS OR ORAL THERMOMETERS AND HEART RATES WILL BE MONITORED WHEN HEAT STRESS CONDITIONS MAY OCCUR. WORK-REST REGIMENS WILL BE ADJUSTED ACCORDINGLY (SEE SECTION 3.6).

7.0 SITE CONTROL

A CHECK-IN AND CHECK-OUT SYSTEM WILL BE USED TO CONTROL AND RECORD EACH EMPLOYEE AND PIECE OF EQUIPMENT INSIDE THE SITE BOUNDARIES. ONLY PERSONNEL IDENTIFIED AS "AUTHORIZED" WILL BE PERMITTED TO ENTER THE SITE. A MASTER LIST OF AUTHORIZED PERSONNEL WILL BE AVAILABLE AND WILL ONLY INCLUDE PERSONNEL WHO HAVE RECEIVED THE APPROPRIATE TRAINING AND CERTIFICATION REQUIRED BY THIS HEALTH AND SAFETY PLAN AND OSHA REQUIREMENTS.

7.1 WORK ZONES

WORK ZONES ARE DESIGNATED TO PREVENT EMPLOYEES, VISITORS, AND THE SURROUNDING ENVIRONMENT FROM EXPOSURE TO CONTAMINATION DURING ALL ASPECTS OF SITE REMEDIATION ACTIVITIES. ALL WORK ZONES AND SUPPORT AREAS WILL BE ESTABLISHED BY PETROLEUM ENGINEERING. MOVEMENT OF PERSONNEL AND EQUIPMENT BETWEEN ZONES AND ON AND OFF SITE WILL BE CONTROLLED BY MEANS OF DESIGNATED ACCESS POINTS. MINIMUM PERSONAL PROTECTIVE EQUIPMENT FOR WORK IN EACH ZONE IS DESCRIBED IN SECTION 5.0.

7.1.1 WORK AREAS

THE WORK AREAS ENCOMPASS THE SURFACE AREAS AROUND THE BOUNDARY OF THE PROPERTY. IT IS ANTICIPATED THAT THIS WILL BE A LEVEL D AREA AND BE UTILIZED DURING INVASIVE OPERATIONS.

7.2 Safe Work Practices

7.2.1 Site-Specific Practices

Safe work practices, which must be followed by all site workers, include:

* Eating, drinking, chewing gum or tobacco, and smoking are prohibited in the work and decontamination areas.
* Do not sit or kneel in areas of obvious contamination.
* Hands and face must be thoroughly washed upon leaving the work area.
* Repair or replace immediately any defective PPE.
* Prescription drugs must not be taken by personnel unless specifically approved by a qualified physician.
* If respirators are required, facial hair that interferes with the face-to-facepiece fit of the respirator will not be permitted.
* Contact lenses will not be permitted to be worn when the potential for chemical splash exists or when full face-piece respirators are required.
* Personnel on site must use the buddy system; visual contact must be maintained between team members at all times.

7.2.2 Daily Start-up and Shutdown Procedures

The following protocols will be followed daily prior to start of work activities:

* The SSHO will review site conditions to determine if modification of work and safety plans are needed.
* Personnel will be briefed and updated on any new safety procedures.
* All safety equipment will be checked for proper function.
* The SSHO will ensure that first air equipment is readily available.
* The SSHO will initiate appropriate air monitoring.

The following protocol will be followed at the end of daily operations and

BEFORE BREAKS:

* ALL PERSONNEL WILL PROCEED THROUGH APPROPRIATE DECONTAMINATION PROCEDURES AND FACILITIES.

8.0 DECONTAMINATION

8.1 General

EMPLOYEES WILL BE TRAINED IN DECONTAMINATION PROCEDURES THAT WILL BE IMPLEMENTED WHEN EMPLOYEES OR EQUIPMENT ENTER WORK OR DECONTAMINATION AREAS. DECONTAMINATION WILL BE PERFORMED TO MINIMIZE POTENTIAL CONTAMINATION OF EQUIPMENT AND THE SPREAD OF CONTAMINATION FROM ONE ZONE TO ANOTHER.

8.2 Personnel

IF IT BECOMES NECESSARY TO UPGRADE THE LEVEL OF PROTECTION FROM LEVEL D TO LEVEL C OR ABOVE, NO WORKER, EXCEPT UNDER EMERGENCY SITUATIONS, WILL LEAVE THE WORK AREA WITHOUT GOING THROUGH THE PROPER DECONTAMINATION SEQUENCES.

BEFORE LEAVING THE WORK AREA, PERSONNEL WILL WASH BOOTS AND OUTER GLOVES AT THE DECONTAMINATION AREA. THE WASH SOLUTION WILL BE A SIMPLE DETERGENT/WATER SOLUTION. OUTER DISPOSABLE CLOTHING WILL BE REMOVED AND PLACED IN SEALED 6-MIL PLASTIC BAGS FOR DISPOSAL. EXTERIOR SURFACES OF RESPIRATORS WILL BE WET-WIPED, THEN RESPIRATORS WILL BE REMOVED AND PLACED IN A PLASTIC BAG FOR TEMPORARY STORAGE AND CLEANING.

8.3 Respirator Decontamination

WHEN REQUIRED, RESPIRATORS WILL BE CLEANED DAILY BY THE INDIVIDUALS TO WHOM THEY HAVE BEEN ASSIGNED. EACH INDIVIDUAL WILL BE RESPONSIBLE FOR CLEANING AND MAINTAINING HIS/HER OWN RESPIRATOR. A WASH BASIN OR SINK, WITH SOLUTION CONTAINING SANITIZER RECOMMENDED BY THE MANUFACTURER, WILL BE PROVIDED IN THE DECONTAMINATION AREA FOR FINAL RINSING OF RESPIRATORS AT THE END OF THE DAY. RESPIRATORS WILL THEN BE HUNG TO DRIP-DRY AND, IF NOT USED DAILY, WILL BE PLACED INSIDE PLASTIC BAGS FOR PROTECTION AGAINST CONTAMINATION.

RESPIRATOR CARTRIDGES WILL BE CHANGED AT LEAST DAILY OR MORE FREQUENTLY IF SAMPLING DATA INDICATE POTENTIAL SATURATION CONCENTRATIONS EXIST OR BREATHING RESISTANCE BECOMES DIFFICULT. THE SSHO WILL ALSO SPOT CHECK RESPIRATORS TO ENSURE THAT THEY ALL REMAIN CLEAN AND ARE PROPERLY MAINTAINED AND STORED.

8.4 EQUIPMENT DECONTAMINATION

IF IN LEVEL C OR ABOVE, ALL EQUIPMENT BEING USED IN THE WORK AREA WILL BE SUBJECT TO COMPLETE DECONTAMINATION PROCEDURES BEFORE THE EQUIPMENT IS REMOVED FROM THESE WORK AREAS. EQUIPMENT AND VEHICLES WHICH CONTACT POTENTIALLY CONTAMINATED SOIL WILL BE DECONTAMINATED USING A STEAM CLEANER OR HOT WATER PRESSURE WATER. WASTE WATER WILL BE CONTAINED IN AL HOLDING TANK OR DRUMS FOR FUTURE DISPOSAL AT AN APPROPRIATE FACILITY. ALL CONTAMINATED ITEMS WILL BE CAREFULLY INSPECTED AND/OR DECONTAMINATED TO THE SATISFACTION OF THE SSHO BEFORE BEING TAKEN OFF SITE.

9.0 EMERGENCY RESPONSE PLAN

ON SITE EMERGENCIES WILL ULTIMATELY BE HANDLED BY OFF SITE EMERGENCY SUPPORT PERSONNEL. INITIAL RESPONSE AND FIRST-AID TREATMENT, HOWEVER, WILL BE AVAILABLE ON SITE.

IN CASE OF A HAZARDOUS MATERIALS EMERGENCY, THE SENIOR SUPERVISOR ON SITE WILL ASSUME FULL CONTROL AND DIRECTION OF THE EMERGENCY RESPONSE AS THE INCIDENT COMMANDER. THE INCIDENT COMMANDER WILL WORK WITH THE SSHO TO IDENTIFY AND EVALUATE HAZARDS. ALL EMERGENCY RESPONDERS AND COMMUNICATIONS WILL BE COORDINATED AND CONTROLLED THROUGH THE INCIDENT COMMANDER.

9.1 EMERGENCY EQUIPMENT

EMERGENCY EQUIPMENT FOR THE WORK AREAS WILL BE KEPT IN THE DECONTAMINATION AREA. THE EQUIPMENT WILL INCLUDE:

* PORTABLE EMERGENCY EYE WASH WITH A CAPACITY FOR PROVIDING CLEAN WATER AT A RATE OF AT LEAST 0.4 GALLONS PER MINUTE

FOR A 15-MINUTE PERIOD.

* TWO 20-LB MULTIPURPOSE (ABC-RATED) FIRE EXTINGUISHERS.
* AN ADEQUATELY STOCK FIRST-AID KIT.

ANOTHER ADEQUATELY STOCKED FIRST-AID KIT AND AN EMERGENCY SIREN WILL BE AVAILABLE IN THE SUPPORT AREA.

9.2 PRE-EMERGENCY PLANNING

PRIOR TO THE START OF WORK, PETROLEUM ENGINEERING WILL CONTACT LOCAL AUTHORITIES TO INFORM THEM OF THE START DATE AND ANTICIPATED SCOPE OF WORK. FIRST-AID KITS AND AT LEAST ONE PETROLEUM ENGINEERING EMPLOYEE TRAINED IN FIRST AID AND CARDIOPULMONARY RESUSCITATION (CPR) WILL BE ON SITE AT ALL TIMES DURING REMEDIAL ACTIVITIES.

9.3 EMERGENCY RECOGNITION AND PREVENTION

EMERGENCY CONDITIONS THAT MAY BE ANTICIPATED AT THE SIT INCLUDE:

* MEDICAL EMERGENCY
* HEAVY EQUIPMENT ACCIDENT
* DISCOVERY OF UNANTICIPATED BURIED HAZARDS
* POISONOUS SNAKES AND SPIDERS
* OVEREXPOSURE OF PERSONNEL TO ON SITE CONTAMINANTS
* HEAT STRESS

TO ENSURE THAT HAZARD RECOGNITION AND ACCIDENT PREVENTION PROTOCOLS ARE BEING MAINTAINED, PERSONNEL MUST FOLLOW THE REQUIREMENTS OF THE HEALTH AND SAFETY PLAN.

9.4 Operations Shutdown

Operations shutdown may be mandated by the CO on recommendation from the SSHO or by the emergency response Incident Commander. Conditions warranting work stoppage will included:

* Uncontrolled fire
* Uncovering potentially dangerous buried material
* Any condition immediately dangerous to life and health or the enviroment
* Heat stress illness exhibited by the crew
* Air contaminant concentrations in excess of the protection factors afforded by the respirators in use

When any of these conditions exist, operations will be stopped and the site secured. All personnel will leave the work area until the Incident Commander has determined that operations may resume.

9.5 Fire and Explosion Response Procedures

Fires on site can be started by natural events, work activities, or the activities of others. These shall be a multipurpose (ABC-rated) fire extinguisher on hand at all times. Personnel will be instructed in the use of these fire extinguisher and to attempt control of only very small fires. The procedure for using a fire extinguisher is to pull the safety pin, point at the base of the flames, and discharge the extinguisher by sweeping the flames from a distance of about 6 feet. The extinguisher operator should move in as the flames are being put out. Petroleum Engineering will inform the local fire district immediately in case of any fire when its support will be required.

9.6 Evacuation from Work Areas

If an on-site emergency occurs, the Incident Commander will sound the site

EMERGENCY ALARM. ALL WORKERS WILL MEET AT A PREDESIGNATED AREA LOCATED IN THE SUPPORT AREA. AN EMPLOYEE HEAD-COUNT WILL BE PERFORMED TO ENSURE ALL WORKERS ARE ACCOUNTED FOR.

IN CASE OF AN EMERGENCY, EVACUATED EMPLOYEES MAY BE DECONTAMINATED RAPIDLY BY REMOVING EXTERIOR CLOTHING. IF A WORKER IS CRITICALLY INJURED IN THE WORK AREA, THE WORKER MAY BE REMOVED IMMEDIATELY FROM THE AREA--DO NOT TAKE THE TIME TO DECONTAMINATE THE INJURED WORKER; SEEK MEDICAL ATTENTION IMMEDIATELY.

9.7 EMERGENCY MEDICAL TREATMENT AND FIRST AID

AT LEAST ONE PETROLEUM ENGINEERING EMPLOYEE TRAINED IN FIRST AID AND CPR WILL BE ON SITE AT ALL TIMES. ONLY MINOR INJURIES WILL BE TREATED ON SITE. THEY WILL BE TREATED WITH THE FIRST-AID KIT AVAILABLE ON SITE.

FOR MAJOR INJURIES, CONTACT 911. THE PHONE NUMBER FOR THE HOSPITAL, FIRE, AND AMBULANCE IS 911. A COMPLETE LIST OF EMERGENCY TELEPHONE NUMBERS AND ROUTE TO THE NEAREST HOSPITAL IS PROVIDED IN APPENDIX B.

THIS HEALTH AND SAFETY PLAN HAS BEEN PREPARED BY:

PETROLEUM ENGINEERING, INC.

Harold Dye — 8-19-92

PROJECT MANAGER — DATED

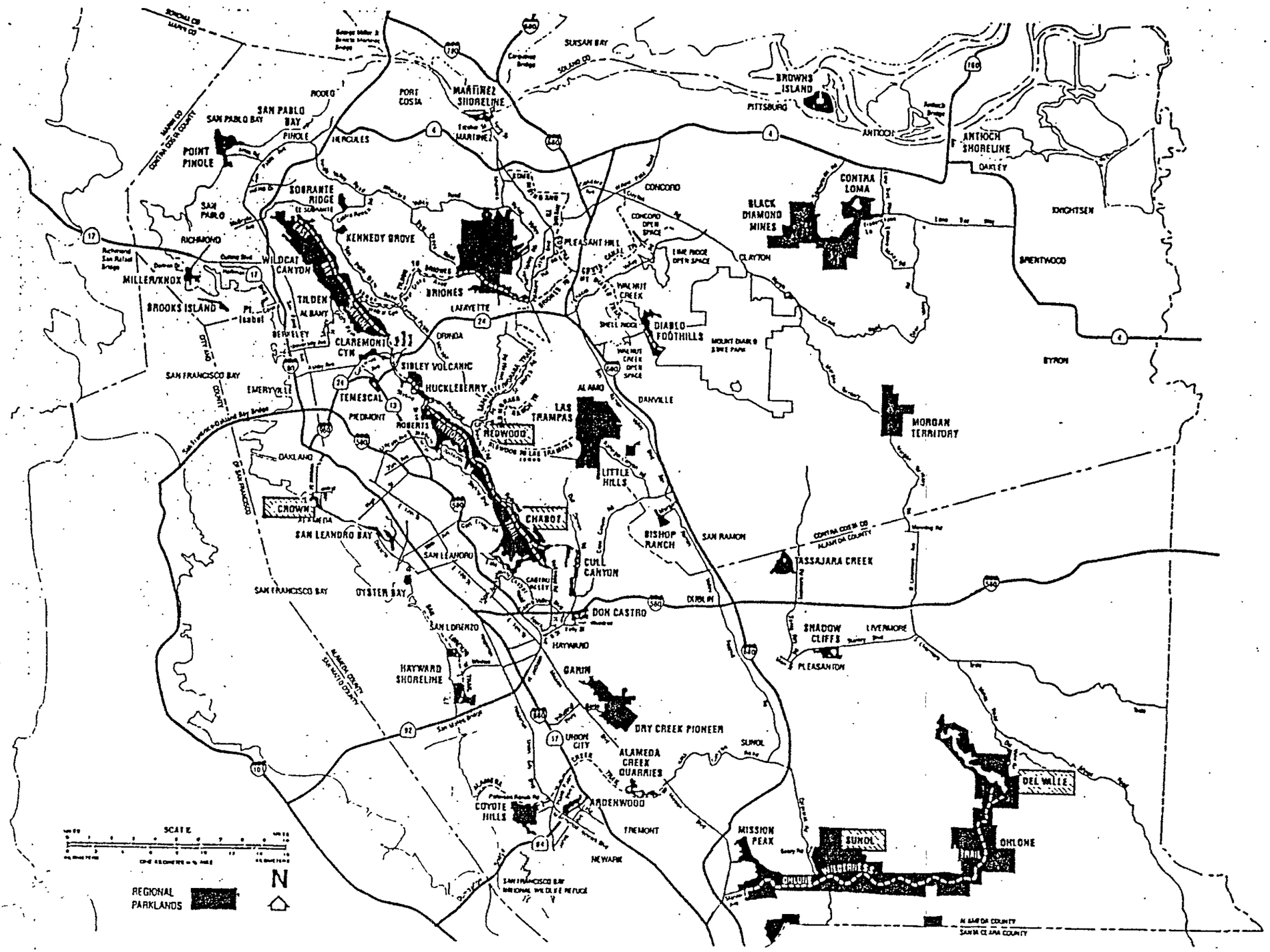
THIS HEALTH AND SAFETY PLAN HAS BEEN REVIEWED BY:

Mike Anderson — 8-19-92

EAST BAY REGIONAL PARKS DISTRICT — DATED

FIGURE 1

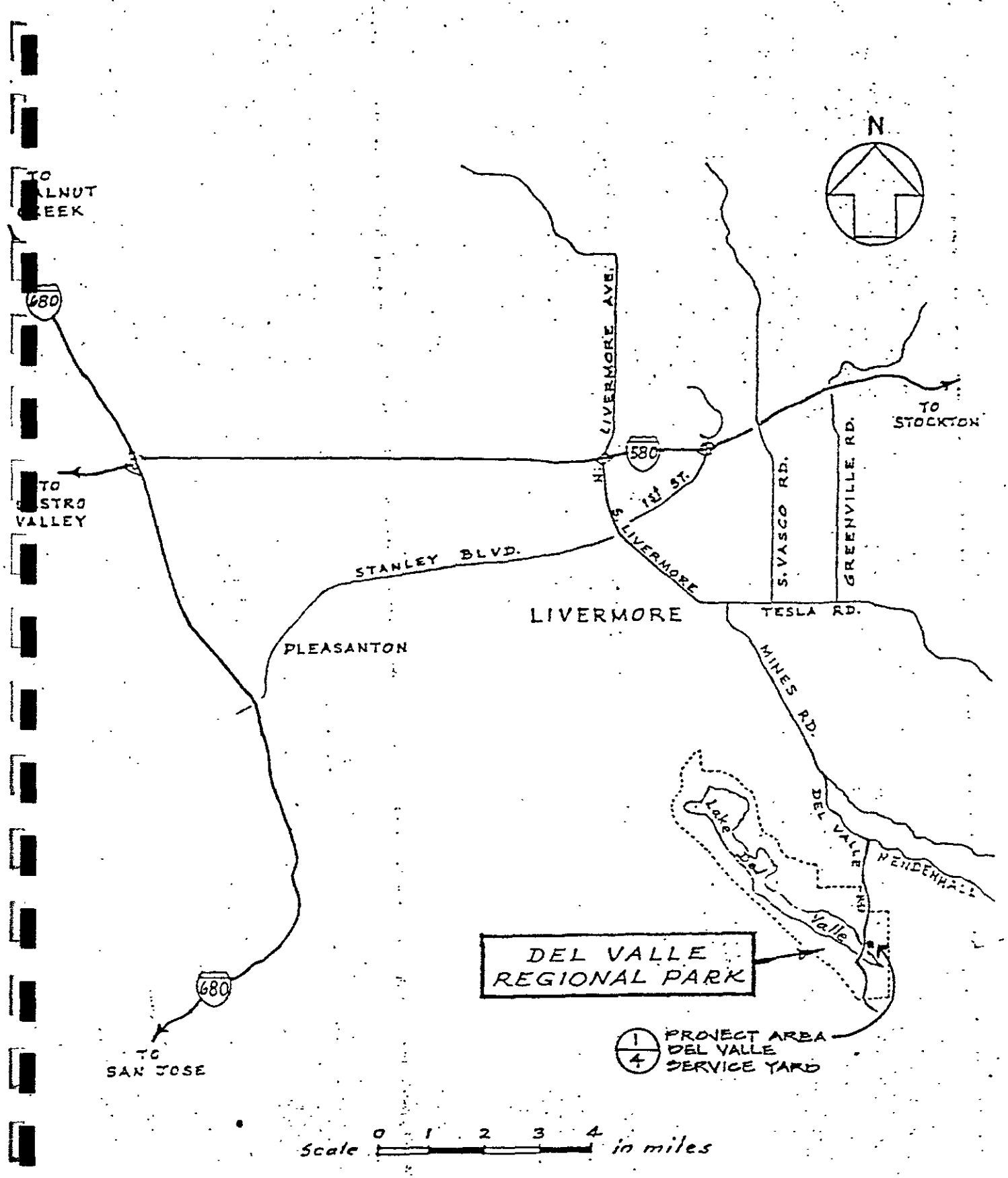
LOCATION MAP



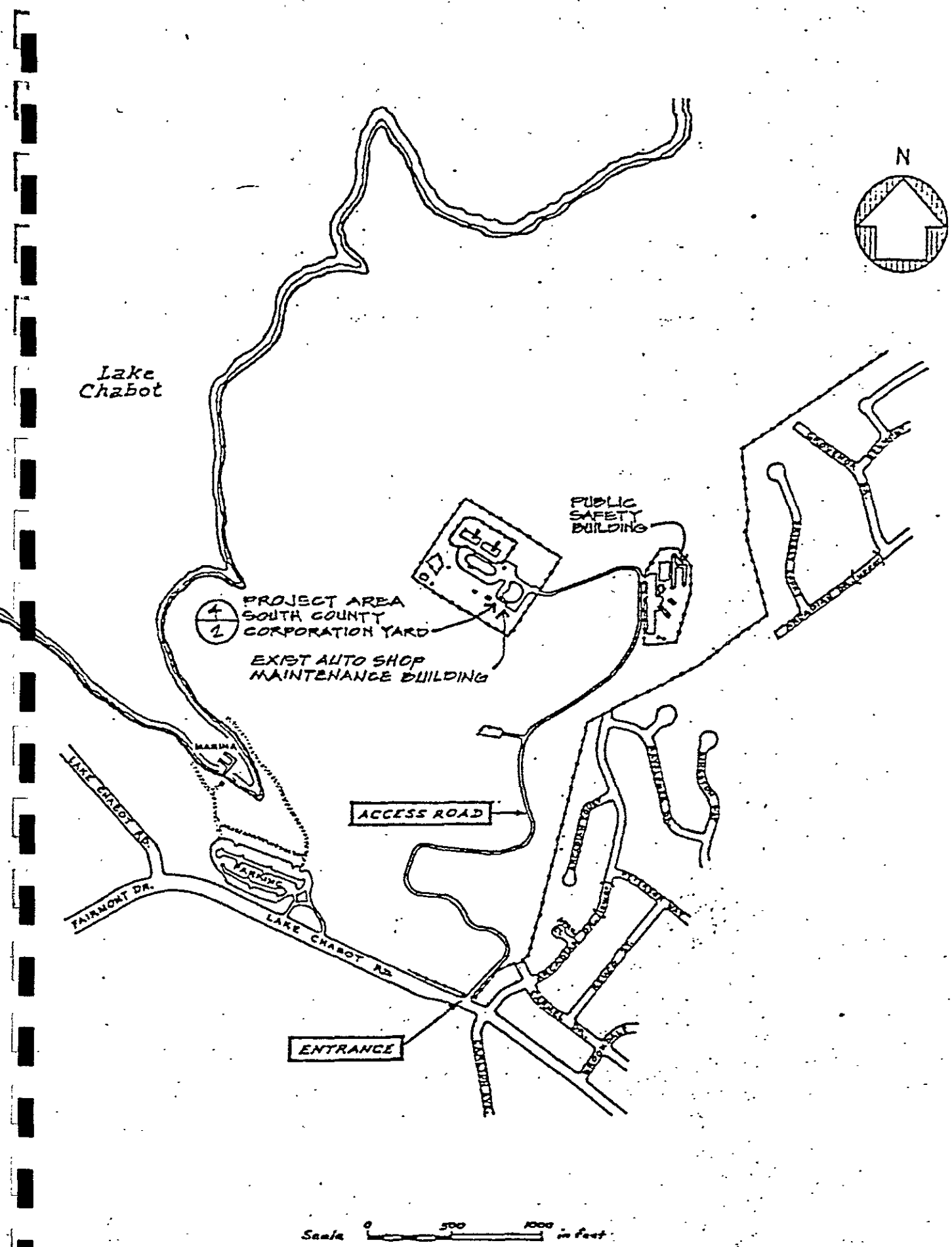
SITE LOCATION MAP

FIGURE 2

SITE MAP

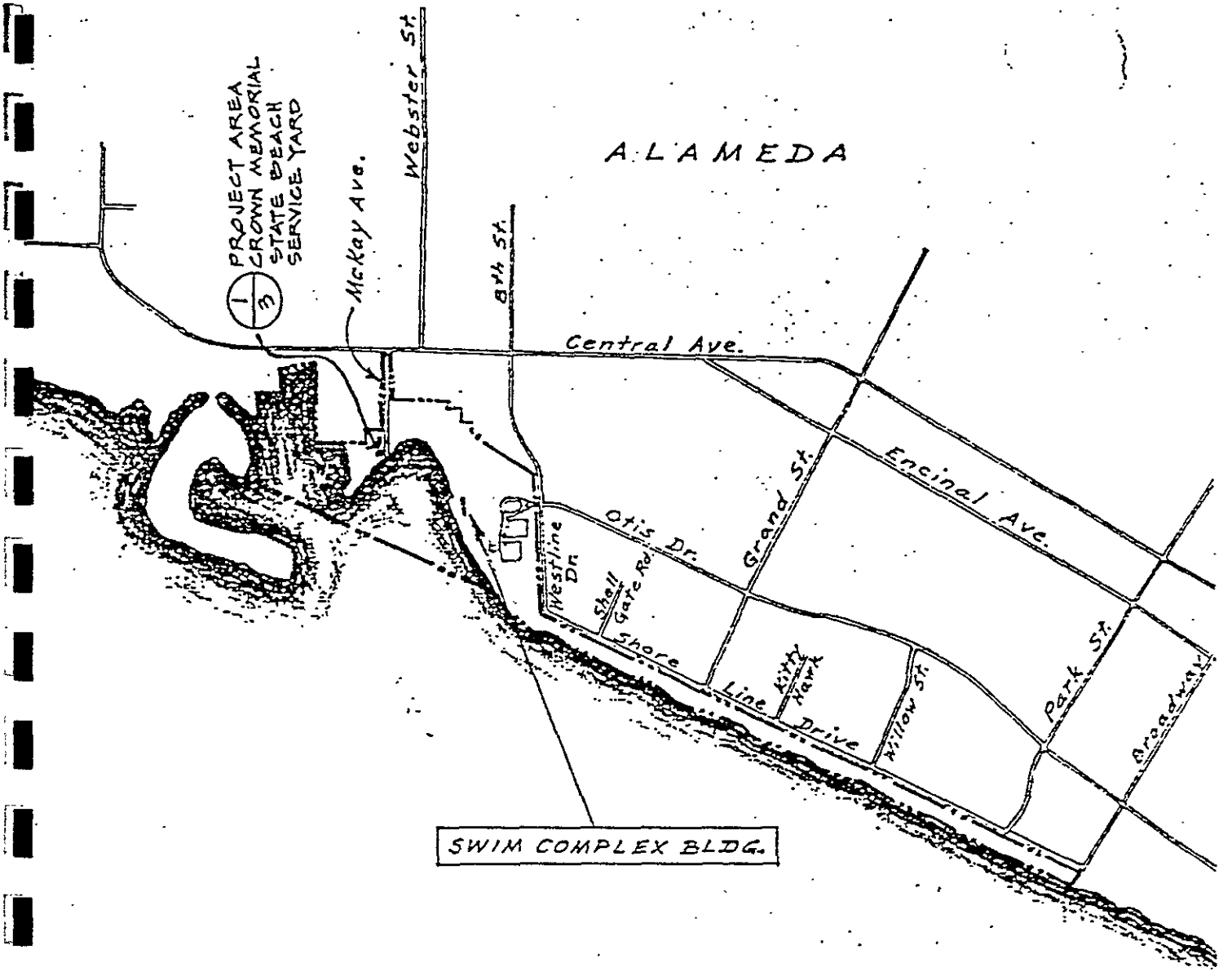


SITE VICINITY MAP
DEL VALLE REGIONAL PARK



SITE VICINITY MAP

SOUTH COUNTY CORPORATION YARD



N

0 1000 2000 3000 4000

Scale in Feet

SITE VICINITY MAP

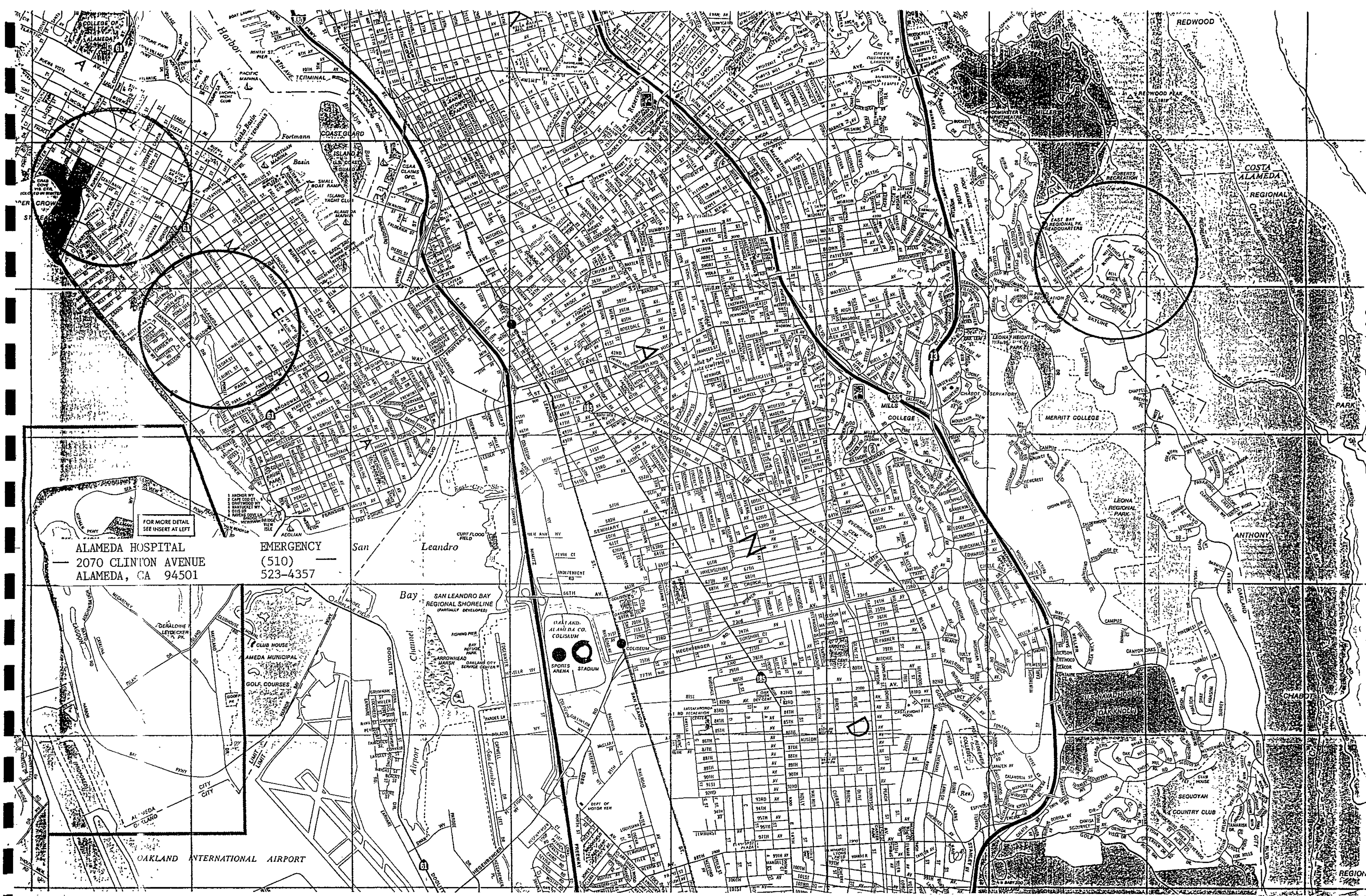
CROWN MEMORIAL STATE BEACH

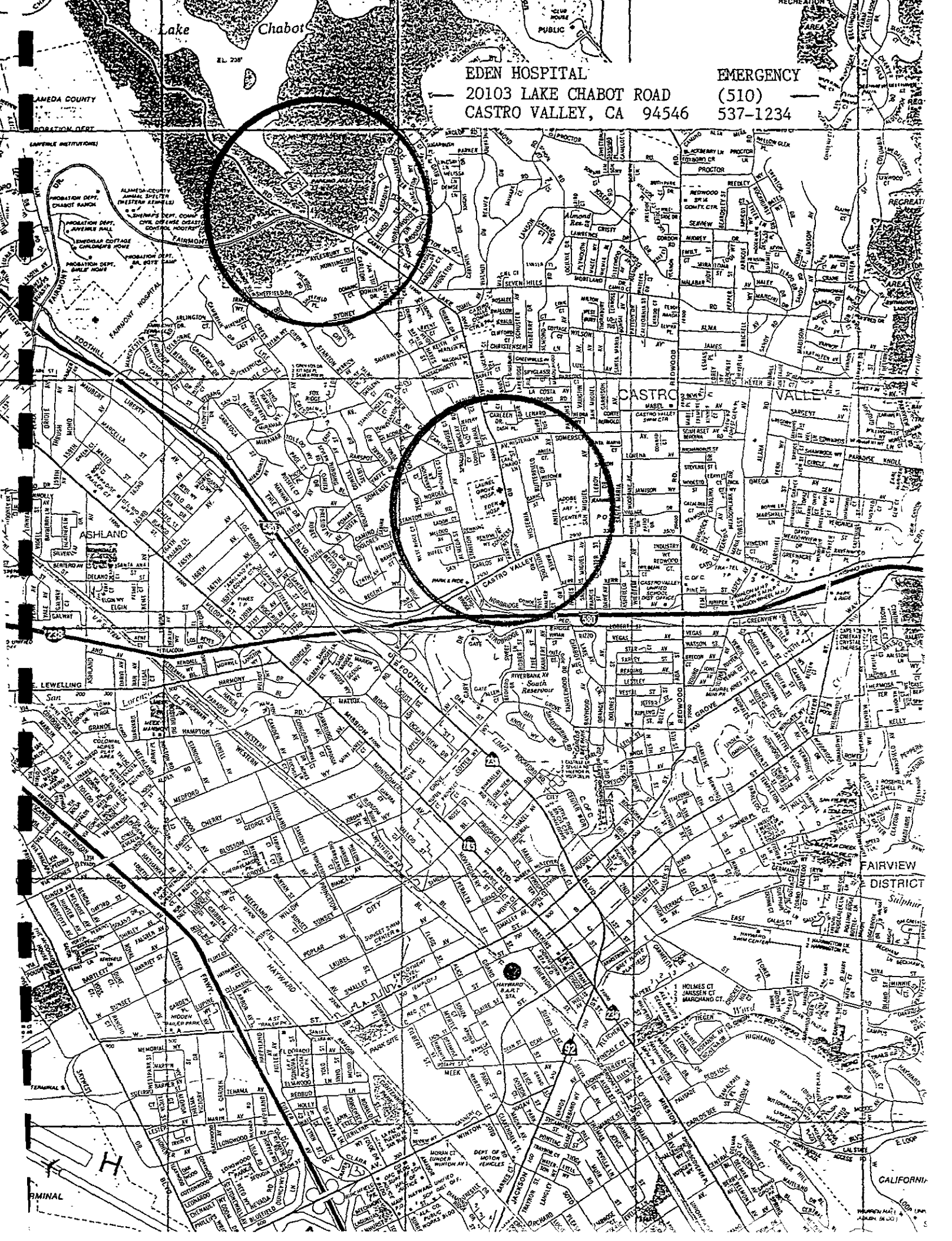
Livermore
and Vicinity

LEGEND

VALLEY MEMORIAL HOSPITAL
1111 EAST STANLEY BLVD
LIVERMORE, CA 94550

EMERGENCY
(510)
447-7000


ALAMEDA HOSPITAL
2070 CLINTON AVENUE
ALAMEDA, CA 94501
EMERGENCY
(510)
523-4357
FOR MORE DETAIL SEE INSERT AT LEFT
COLLEGE OF ALAMEDA
COAST GUARD ISLAND
Fortmann Basin
San Leandro Bay
SAN LEANDRO BAY REGIONAL SHORELINE (PARTIALLY DEVELOPED)
OAKLAND ALAMEDA CO. COLISEUM
SPORTS ARENA
STADIUM
OAKLAND INTERNATIONAL AIRPORT
MILLS COLLEGE
MERRITT COLLEGE
LEONA REGIONAL PARK
LEONA HEIGHTS PARK
CHABOT OBSERVATORY
EVERGREEN CEM.
EAST BAY REGIONAL PK. HEADQUARTERS
ROBERTS RECREATION
REDWOOD PEAK RECREATION
COSTA ALAMEDA REGIONAL
REDWOOD
ANTHONY
SEQUOYAH
COUNTRY CLUB
ALAMEDA MUNICIPAL GOLF COURSES
ARROWHEAD MARSH
SKYLINE
OAKNOLL
CHABOT


EDEN HOSPITAL
20103 LAKE CHABOT ROAD
CASTRO VALLEY, CA 94546
EMERGENCY
(510)
537-1234
Lake Chabot
CASTRO VALLEY
ASHLAND
FAIRVIEW
HAYWARD

APPENDIX A

APPENDIX A

SITE SAFETY AND HEALTH PLAN REVIEW RECORD

SITE: _____

I HAVE READ THE HEALTH AND SAFETY PLAN FOR THIS SITE AND HAVE BEEN BRIEFED ON THE NATURE, LEVEL, AND DEGREE OF EXPOSURE LIKELY AS A RESULT OF PARTICIPATION IN THIS PROJECT. I AGREE TO CONFORM TO ALL REQUIREMENTS OF THIS PLAN.

NAME	SIGNATURE	AFFILIATION	DATE

APPENDIX B

APPENDIX B

EMERGENCY TELEPHONE NUMBERS

AMBULANCE	911
POISON CONTROL CENTER	1-800-523-222
FIRE DEPARTMENT	911
EXPLOSIVE UNIT	911
PETROLEUM ENGINEERING, INC.:	
PROJECT FOREMAN: ANTHONY GRIVALJA	
CONTACT: HAROLD DYE	707-545-0360

REGULATORY CONTENT

BAY REGION, 1111 JACKSON ST., OAKLAND	510-464-1255
COUNTY OF ALAMEDA, ENVIRONMENTAL HEALTH, SOUTH SWAN WAY, OAKLAND, CA 94921	510-271-4320
OFFICES OF EMERGENCY SERVICES, 360 CIVIC DRIVE, PLEASANT HILL, CA	510-646-5908

HOSPITALS

PLEASANTON - DE VALLE SITE:	
VALLEY MEMORIAL HOSPITAL 1111 EAST STANLEY BLVD. LIVERMORE, CA 94550	EMERGENCY 510-447-7000
ALAMEDA - CROWN SITE:	
ALAMEDA HOSPITAL 2070 CLINTON AVENUE ALAMEDA, CA 94501	EMERGENCY 510-523-4357
CASTRO VALLEY - REDWOOD & CHABOT SITES:	
EDEN HOSPITAL 20103 LAKE CHABOT ROAD CASTRO VALLEY, CA 94546	EMERGENCY 510-537-1234
OAKLAND REDWOOD SITE ADDITIONAL HIGHLAND GENL.HOSPITAL 1411 E. 31ST OAKLAND	EMERGENCY 510-534-8055

APPENDIX C

CERTIFICATE OF TRAINING
OSHA-SARA
ROBERT T. CHRISTIANSEN
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training — Date

Certification

May it be known by all who read this that

ROBERT T. CHRISTIANSEN

has met and surpassed all of the requirements of

40 Hour OSHA Standard, 29CFR 1910.120
Hazardous Waste Operations

Presented this 16 Day of May, 19 92

ENVIRONMENTAL COMPLIANCE SERVICES
Organization

Signed

Control # 051692-40 I

CERTIFICATE OF TRAINING
OSHA/SARA
DAVE E. DYESS
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

DAVE E. DYESS

has met and surpassed all of the requirements of

E C S

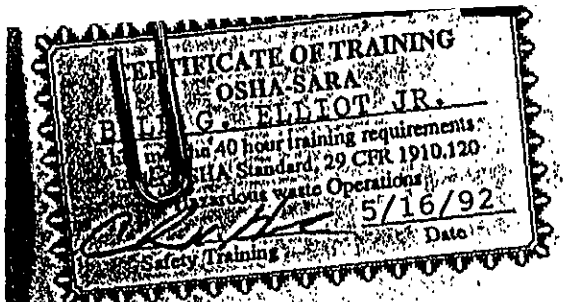
40 HOUR OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 E



Certification

May it be known by all who read this that

BILL G. ELLIOT JR.

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES

ORGANIZATION

SIGNED

CONTROL # 051692-40 0

CERTIFICATE OF TRAINING
OSHA-SARA
GERNOT H. GELDON
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

GERNOT H. GELDON

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 E

CERTIFICATE OF TRAINING
OSHA-SARA
ANTHONY PEREZ GRIJALVA
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

ANTHONY PEREZ GRIJALVA

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 D

CERTIFICATE OF TRAINING
OSHA-SARA
ROBERT B. HENRY
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

ROBERT B. HENRY

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 G

CERTIFICATE OF TRAINING
OSHA-SARA
MICHAEL JORDAN
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

MICHAEL JORDAN

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 N

CERTIFICATE OF TRAINING
OSHA SAF
TOM KEEGAN
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training
5/16/92
Date

Certification

May it be known by all who read this that

TOM KEEGAN

has met and surpassed all of the requirements of

40 Hour OSHA Standard 29CFR 1910.120
Hazardous Waste Operations

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 C

CERTIFICATE OF TRAINING
OSHA - SARA
MARRYOTT LISTER
has met the 40 hour training requirements
under OSHA Standard 29 CFR 1910.120
for Hazardous waste Operations
Safety Training 5/16/92 Date

Certification

May it be known by all who read this that

LARRY L. LISTER

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 A

CERTIFICATE OF TRAINING
OSHA-SARA
DONALD C. MARCHANT
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

DONALD C. MARCHANT

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 B

CERTIFICATE OF TRAINING
OSHA-SARA
STEVE MYERS
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training 5/16/92 Date

Certification

May it be known by all who read this that

STEVE MYERS

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 H

CERTIFICATE OF TRAINING
OSHA-SARA
CLAYTON PROCTOR
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training 5/16/92 Date

Certification

May it be known by all who read this that

CLAYTON PROCTOR

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 L

CERTIFICATE OF TRAINING
OSHA SARA
CESAR SIERRA
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training 5/16/92 Date

Certification

May it be known by all who read this that

CESAR SIERRA

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 K

CERTIFICATE OF TRAINING
OSHA-SARA
RAYMOND VEGA
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training
5/16/92
Date

Certification

May it be known by all who read this that

RAYMOND VEGA

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 J

CERTIFICATE OF TRAINING
OSHA/SARA
ALAN WACHTER
has met the 40 hour training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous Waste Operations

Safety Training — 5/16/92 Date

Certification

May it be known by all who read this that

ALAN WACHTER

has met and surpassed all of the requirements of

40 HOUR OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-40 M

CERTIFICATE OF TRAINING
OSHA-SARA
DOUG BRADSHAW
has met the 8 hour refresher training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training — 5/16/92 Date

Certification

May it be known by all who read this that

DOUG BRADSHAW

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-8 F

CERTIFICATE OF TRAINING
OSHA-SARA
KEVIN DOUGLAS
has met the 8 hour refresher training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations

Safety Training — 5/16/92 Date

Certification

May it be known by all who read this that

KEVIN DOUGLAS

has met and surpassed all of the requirements of

8 Hour Refresher Training OSHA Standard 29CFR 1910.120
Hazardous Waste Operations

Presented this 16 Day of May ,19 92

Environmental Compliance Services
Organization

Signed

Control # 051692-8 G

CERTIFICATE OF TRAINING
OSHA-SARA
CHRIS FRANCHETTI
has met the 8 hour refresher training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training
5/16/92
Date

Certification

May it be known by all who read this that

CHRIS FRANCHETTI

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-8 C

CERTIFICATE OF TRAINING
OSHA-SARA
JAMES M. HAWK
has met the 8 hour refresher training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

JAMES M. HAWK

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD, 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-8 D

CERTIFICATE OF TRAINING
OSHA-SARA
JAMES MCGRATH
has met the 8 hour refresher training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
Safety Training 5/16/92 Date

Certification

May it be known by all who read this that

JAMES MCGRATH

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-8 A

CERTIFICATE OF TRAINING
OSHA-SARA
BRYAN H. MUSCO
has met the 8 hour refresher training requirements under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

BRYAN H. MUSCO

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-8B

CERTIFICATE OF TRAINING
OSHA-[illegible]
HARRY PLEVNEY
has met the 8 hour refresher training requirements
under OSHA Standard 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

HARRY PLEVNEY

has met and surpassed all of the requirements of

8 HOUR REFRESHER TRAINING OSHA STANDARD 29CFR 1910.120
HAZARDOUS WASTE OPERATIONS

Presented this 16 Day of May ,19 92

ENVIRONMENTAL COMPLIANCE SERVICES
ORGANIZATION

SIGNED

CONTROL # 051692-8 H

CERTIFICATE OF TRAINING
OSHA-SARA
DENNIS TAIPALE
has met the 8 hour refresher training requirements
under OSHA Standard, 29 CFR 1910.120
Hazardous waste Operations
5/16/92
Safety Training Date

Certification

May it be known by all who read this that

DENNIS TAIPALE

has met and surpassed all of the requirements of

8 Hour Refresher Training OSHA Standard 29CFR 1910.120
Hazardous Waste Operations

Presented this 16 Day of May ,19 92

ECS

Environmental Compliance Services
Organization

Signed

Control # 051692-8 E