6 pm

Environmental Science & Engineering, Inc.

FACSIMILE

DATE: 11-18-92 (Wed) **TIME:** 5 PM

TO: Ravi Arulanantham
AC HCSA

FROM: ESE Pat Galvin
4090 Nelson Way, Suite I
Concord, CA 94520

FAX #: 569 4757 **JOB #:** ~~572~~

SUBJECT: Santa Rita Jail

Number of Pages

(Including this Cover Sheet)

7

ADDITIONAL MESSAGE: Ravi - We intend to begin drilling on 11-23-92 (Mon) - This is an extremely fast track project. Please call with any questions.

Pat G.

If you have any questions, please call us immediately at (510) 685-4053.

First Work Plan: Tank # 11, 12, 12A

Environmental
Science &
Engineering, Inc.

November 18, 1992

Project No. 6-92-5454

Mr. Ravi Arulanatham
Alameda County Health Care Services Agency
80 Swan Way, Room 350
Oakland, CA 94621

SUBJECT: Old Graystone Area, Santa Rita Correctional Facility, Dublin, Alameda County, California.

Dear Mr. Arulanatham:

The following is a proposed workplan prepared by Environmental Science & Engineering, Inc. (ESE) for a subsurface investigation to be conducted at the subject location. The work proposed herein is designed to more accurately define the extent of petroleum hydrocarbons in soil surrounding a previously-removed underground storage tank (UST) cluster comprised of one 11,000-gallon regular gasoline UST, one 10,000-gallon unleaded gasoline UST, and one 500-gallon waste oil UST. The abovementioned USTs, identified respectively as Tanks 11, 12, and 12A, were owned and operated by Alameda County General Services Agency (GSA).

ESE removed and disposed of Tanks 11 and 12A on May 8, 1992. Tank 12 was removed on May 20, 1992. During the removal of these USTs, a strong gasoline odor was observed in soil samples collected from the Tank 11 excavation pit. Waste oil was observed in soil removed from the Tank 12A excavation pit. A visible petroleum hydrocarbon sheen was observed on the surface of water encountered in the Tank 12 excavation pit. Based on these findings, ESE proposed overexcavation of impacted soil in the UST cluster area. On November 9, 1992 ESE excavated approximately 250 cubic yards of soil impacted with petroleum hydrocarbons at the former tank locations. After this excavation work, ESE concluded that the vertical and lateral extent of the contaminant plume in soil are significantly greater than the previously proposed scope of work could include.

Based on these findings, ESE proposes the following work scope to determine the vertical and lateral extent of petroleum hydrocarbons in the soil, identify local sediment stratigraphy and potential product migration routes, and measure the depth to ground water. The proposed scope of work includes:

- Prepare a Site Specific Health and Safety Plan (HSP);

- Obtain permits for soil borings with Alameda County Water Resources Management (Zone 7);
- Conduct a subsurface investigation;
- Analyze soil and ground water samples; and
- Prepare a report of findings upon completion of the field work.

PROPOSED WORKPLAN

The proposed scope of work is detailed in three tasks below.

Task 1 - Permitting of Soil Borings and Preparation of a HSP

Prior to the commencement of field activities, ESE will permit all soil borings with Zone 7 and prepare a site specific Health & Safety Plan that address potential physical and chemical hazards associated with the proposed field work. Field work will commence when the required permits are obtained. All authorized personnel involved with field activities at the subject site will partake in a site safety meeting immediately prior to the commencement of sitework and will be required to acknowledge an understanding of the HSP by providing his/her signature.

Task 2 - Conduct Soil Boring Investigation and Sampling, Hydropunch® Sampling, and Sample Analyses

ESE proposes to delineate the vertical and lateral extent of the petroleum hydrocarbon plume in soil at the subject site by drilling a maximum of 16 soil borings at selected locations at and around the former UST cluster. Three of the soil borings will be drilled to the top of the ground water table immediately adjacent to the locations of the three former USTs in order to determine whether vertical migration has extended to ground water. The remaining 13 borings will be located surrounding the former tank cluster area at distances selected by the ESE geologist in the field. The locations of the remaining borings will be based on the extent of contaminant migration observed in previous borings, and will be decided on a borehole by borehole basis.

ESE proposes to continuously sample one soil boring drilled immediately adjacent to the former USTs in order to accurately identify and document the sediment stratigraphy at the site. ESE will collect and retain soil samples at five-foot depth intervals from the remaining 13 borings and immediately above the first occurrence of ground water, estimated at a depth of approximately 40 feet below ground surface (bgs). All soil samples will be collected in strict accordance with ESE Standard Operating Procedure No. 1 (Attachment No. 1). Two soil samples from each borehole will be submitted for chemical analysis. All soil samples will be screened for Volatile Organic Compounds (VOC's) using a Photoionization Detector (PID).

All TPH-G BTEX 12 TOC HVOC SVOC metals

Analyses for soil samples collected will be performed by a California Certified laboratory on a normal turnaround time basis, and will include Total Petroleum Hydrocarbons as Gasoline (TPH-G) using EPA Method 8015 (modified) and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) using EPA Method 8020. Two soil samples collected from the borehole located immediately adjacent to the former waste oil UST (Tank 12A) will also be analyzed for Halogenated Volatile Organic Compounds (HVOC) using EPA Method 8010, Semi-Volatile Organic Compounds (SVOC) using EPA Method 8270, Total Oil and Grease (O&G) using Method SMWW 5520, Total Petroleum Hydrocarbons as Diesel (TPH-D) using EPA 8015 (modified), and the metals: total lead (Pb); total nickel (Ni); total cadmium (Cd); total chromium (Cr); and total zinc (Zn) using EPA Method 7000 series. Two soil samples collected from the borehole located immediately adjacent to the former regular leaded gasoline UST (Tank 11) will also be analyzed for Total Pb using EPA Method 7000 series.

11 Pb

To determine whether soil venting may be a feasible remedial technique at this site, two additional soil samples will be collected from a pebbly sand unit observed during recent excavation activities. This unit contains visibly high concentrations of petroleum hydrocarbons. These samples will be submitted for mechanical testing including horizontal and vertical air flow permeability, grain density, and fluid saturation.

To gain a preliminary determination as to whether ground water has been impacted beneath the former UST cluster, ESE proposes to collect at least one ground water sample in the soil boring located immediately adjacent to the former waste oil UST (Tank 12A) using a Hydropunch®. Initially, the soil boring will be drilled to a depth at which water-saturated sediment is detected and a Hydropunch® tool will be driven through the center of the hollow-stem augers into the relatively undisturbed soil beneath the lower extent of the augers. The outer sheath of the Hydropunch® will then be retracted approximately 36-inches to expose an unused Teflon® screen. The Teflon® screen will remain exposed to the

subsurface for a period of approximately 15 to 30 minutes after which a clean stainless steel bailer will be lowered into the screened interval. Ground water collected in the bailer will be decanted into appropriate laboratory supplied glassware, labeled, and placed in a cooler with ice for cold transport to the laboratory under chain of custody documentation. The ground water sample will be analyzed on a normal turnaround time basis for TPH-G using EPA Method 8015 (modified), BTEX using EPA Method 8020, HVOC using EPA Method 8010, and O&G using method SMWW 5520.

The stainless steel bailer will be washed in an Alconox® and tap water solution followed by a tap water rinse in order to prevent cross-contamination. Drill cuttings generated during this field activity will be stockpiled on plastic at the site and covered with plastic. Rinseates generated during equipment decontamination will be stored in labeled Department of Transportation (DOT) rated drums until appropriate recycling or disposal is arranged.

Task 3 - Prepare a Report of Findings

ESE will evaluate all observational and analytical data, and prepare a report of findings suitable for submittal to the HCSA. The report will present current analytical data in tabular format, iso-concentration maps of detected compounds in soil, discussion of findings including an estimated volume of impacted soil, conclusion of findings, and recommendations for future work.

In summary, the proposed subsurface investigative work is expected to more accurately define the extent of petroleum hydrocarbons in the vadose zone and ground water at the subject site. Should you have any questions pertaining to the contents of this workplan, please feel free to contact Bart Miller or Pat Galvin at (510) 685-4053.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Bart S. Miller
Senior Staff Geologist

Susan S. Wickham, RG 3851
Senior Geologist

BSM/SSW:gm

Attachment

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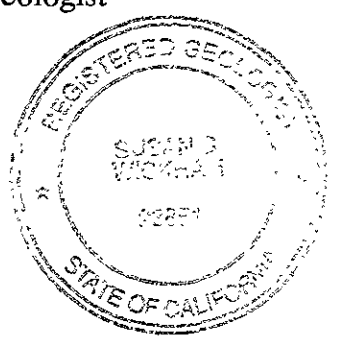

ATTACHMENT NO. 1

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE

STANDARD OPERATING PROCEDURE NO. 1
FOR SOIL BORINGS AND SOIL SAMPLING WITH HOLLOW-STEM AUGERS IN UNCONSOLIDATED FORMATIONS

Environmental Science & Engineering, Inc. (ESE) typically drills soil borings using a truck-mounted, continuous-flight, hollow-stem auger drill rig. The drill rig is owned and operated by a drilling company possessing a valid State of California C-57 license. The soil borings are conducted under the direct supervision and guidance of an experienced ESE geologist. The ESE geologist logs each borehole during drilling in accordance with the Unified Soil Classification System (USCS). Additionally, the ESE geologist observes and notes the soil color, relative density or stiffness, moisture content, odor (if obvious) and organic content (if present). The ESE geologist will record all observations on geologic boring logs.

Soil samples are collected during drilling at a minimum of five-foot intervals by driving an 18-inch long Modified California Split-spoon sampler (sampler), lined with new, thin-wall brass sleeves, through the center of and ahead of the hollow stem augers, thus collecting a relatively undisturbed soil sample core. The brass sleeves are typically 2-inches in diameter and 6-inches in length. The sampler is driven by dropping a 140-pound hammer 30-inches onto rods attached to the top of the sampler. Soil sample depth intervals and the number of hammer blows required to advance the sampler each six-inch interval are recorded by the ESE geologist on geologic boring logs. The ends of one brass sleeve are covered with Teflon sheeting, then covered with plastic end caps. The end caps are sealed to the brass sleeve using duct tape. Each sample is then labeled and placed on ice in a cooler for transport under chain of custody documentation to the designated analytical laboratory. A portion of the remaining soil in the sampler is placed in either a new Ziploc® bag or a clean Mason Jar® and set in direct sunlight to enhance the volatilization of any Volatile Organic Compounds (VOCs) present in the soil. After approximately 15-minutes that sample is screened for VOCs using a photoionization detector (PID). The PID measurements will be noted on the geologic boring logs. The PID provides qualitative data for use in selecting samples for laboratory analysis. Soil samples from the saturated zone (beneath the ground-water table) are collected as described above, are not screened with the PID, and are not submitted to the analytical laboratory. The samples from the saturated zone are used for descriptive purposes. Soil samples from the saturated zone may be retained as described above for physical analyses (grain size, permeability and porosity testing).

If the soil boring is not going to be completed as a well, then the boring is typically terminated upon penetrating the saturated soil horizon or until a predetermined interval of soil containing no evidence of contamination is penetrated. This predetermined interval is typically based upon site specific regulatory or client guidelines. The boring is then backfilled using either neat cement, neat cement and bentonite powder mixture (not exceeding 5% bentonite), bentonite pellets, or a sand and cement mixture (not exceeding a 2:1 ratio of sand to cement). However, if the boring is to be completed as a monitoring well, then the boring is continued until either a competent, low estimated-permeability, lower confining soil layer is found or 10 to 15-feet of the saturated soil horizon is penetrated, whichever occurs first. If a low estimated-permeability soil layer is found, the soil boring will be advanced approximately five-feet into that layer to evaluate its competence as a lower confining layer, prior to the termination of that boring.

All soil sampling equipment is cleaned between each sample collection event using an Alconox® detergent and tap water solution followed by a tap water rinse. Additionally, all drilling equipment and soil sampling equipment is cleaned between borings, using a high pressure steam cleaner, to prevent cross-contamination. All wash and rinse water is collected and contained onsite in Department of Transportation approved containers (typically 55-gallon drums) pending laboratory analysis and proper disposal/recycling.

ATTACHMENT NO. 2

SOIL SAMPLING PROCEDURES

Soil samples are collected during excavation activities from the backhoe bucket under the direction of the field geologist. The samples are collected from selected locations and depths by hand-driving the sampler into the sidewall or base of excavation or from the backhoe bucket. New, unused brass sleeves (typically 2-inches in diameter and 6-inches in length) will be used to retain the samples. The sampler is driven into the soil by either physically pushing the tube into the soil, or driving it with a wooden mallet. The ends of the brass sleeve are then covered with Teflon sheeting and plastic end caps. The end caps are sealed to the brass sleeve using duct tape. Each sample is then labeled and placed in a cooler for transport under chain of custody documentation to the designated analytical laboratory. Field logs are prepared describing the soil sample using the Unified Soil Classification System. The location of the sample is noted on the sample label, in the field logs, and on a field map.

If field photoionization readings are required, a portion of the soil sample is placed in either a new Ziploc® bag or a clean Mason Jar® and set in direct sunlight to enhance the volatilization of any Volatile Organic Compounds (VOCs) present in the soil. After approximately 15-minutes, the sample is screened for VOCs using a photoionization detector (PID). The PID measurements will be noted on the field logs. The PID provides qualitative data for use in selecting samples for laboratory analysis.

ATTACHMENT NO. 3

HEALTH AND SAFETY PLAN
for
ALAMEDA COUNTY GENERAL SERVICES AGENCY
SANTA RITA CORRECTIONAL FACILITY
Dublin, California

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

1.1 INTRODUCTION

This Health and Safety Plan shall provide the safety and health requirements for general site work taking place under a contract with Alameda County General Services Agency. This Plan provides the structure for a Site-Specific Health and Safety Plan, and provides information which will apply to all Environmental Science & Engineering, Inc. (ESE) projects. Together, they comprise the Site Health and Safety Plan (HASP). This HASP will be considered complete only with an associated Site-Specific HASP.

The purpose of this HASP is to protect individuals, those working at the site, visitors, and the surrounding populace, and the environment during on site sampling and site characterization activities at petroleum hydrocarbon impacted sites. This plan includes preventive and protective measures against health hazards, fire and explosion hazards, and mechanical hazards which may exist or occur during field activities.

1.2 SITE INFORMATION

The General Information section of each Site-Specific Health and Safety Plan will provide the following information:

1. Name and Location of the Site;
2. Name of Individual Preparing the Plan, and Date of Preparation;
3. Brief Site History;
4. Investigative Objective and Work Plan;
5. Proposed Dates of Investigation; and
6. Assessment of Overall Worker and Public Health Hazards.

1.3 REGULATORY REQUIREMENTS:

Occupational Safety and Health Administration (OSHA) standards 29 Code of Federal Regulations (CFR) 1910 and 1926 apply to work under this site-specific HASP. Title 8 of California Code of Regulations (General Construction Safety Orders and General Safety Orders) must be complied with at California sites. Additional requirements are contained in Code of Federal Regulations title 40, Protection of the Environment.

2.0 PERSONNEL REQUIREMENTS

2.1 ORGANIZATION

The overall project organization as described in this document will be shown in the Site-Specific Health and Safety Plan, and will identify and show responsibilities for all key personnel, employees, and subcontractors.

2.2 ESE HEALTH AND SAFETY POLICY AND RESPONSIBILITY

It is the policy of the management of ESE and also a contract requirement that a safety plan be implemented at hazardous material contamination sites to protect individuals and the environment. All ESE personnel involved in work on these sites will conform and comply with all aspects of this safety program. Each and every individual is, and therefore must regard and conduct him/herself as, a member of the safety team and adhere to the prescribed site safety plan to ensure his/her own safety as well as that of fellow workers, visitors, and the public.

2.3 PERSONNEL RESPONSIBILITIES

For each site, the responsibilities of the Project Manager include:

1. Preparing an effective site safety plan for the project;
2. Categorizing and identifying for the project staff the levels of potential exposure and dangerous levels of hazardous materials possibly encountered on site;
3. Ensuring that adequate and appropriate safety training and equipment are available for project personnel; and
4. Arranging for medical examinations for specified project personnel.
5. Ensuring a qualified on-site field person is designated Site Safety Officer (SSO) and is present when work is in progress. Alternates may also be designated as needed, however, the project manager must ensure the designated (SSO) is familiar with the safety plan and his/her responsibilities.
6. Ensuring any subcontractors (i.e. drillers, excavators) get an advance copy of the Health and Safety Plan and a start-up safety briefing is scheduled.
7. Determining appropriate level of protection and exposure monitoring strategy for the project by task or phase.

Overall responsibility for safety during the site investigative activities rests with the Project Manager. To assist the Project Manager, a qualified Site Safety Officer will be appointed for each site.

The Site Safety Officer's (SSO's) responsibilities include:

1. Implementing all safety procedures and operations on site.
2. Conducting start-up safety briefing with project personnel and subcontractors. Ensure all necessary equipment and procedures are in place before start-up. Addressing any substandard conditions requiring correction prior to start up.
3. Updating equipment or procedures based upon new information gathered during the site inspection.
4. Upgrading or downgrading the levels of personal protection based upon site observations and/or measurements.
5. Determining and posting locations and routes to medical facilities and arranging emergency transportation to medical facilities (as required).
6. Controlling site entry and notifying (as required) local public emergency officers (i.e., police and fire departments) of the nature of the team's operations and making emergency telephone numbers available to all team members.
7. Ensuring that at least one member of the field team is available to stay behind and notify emergency services if the Site Safety Officer must enter an area of maximum hazard or entering this area only after notifying emergency services (police department).
8. Observing work party members for symptoms of on-site exposure or stress.
9. Arranging for the availability of on-site emergency medical care and first aid, as necessary.
10. Documenting field activities and incidents. Keeping Project Manager informed. Consulting with Health and Safety Officer as needed.

The Health and Safety Officer (HSO) is responsible for:

1. Assisting Project Manager with development of the site specific Health and Safety Plan.
2. Providing technical support during normal operations and upsets for hazard assessment, exposure monitoring, level of protection changes.
3. Reviewing and approving the site specific safety plan.

The responsibilities of all other on site personnel include:

1. Complying with all aspects of the project Safety plan, including strict adherence to the buddy system.
2. Obeying the orders of the Site Safety Officer.
3. Notifying the Site Safety Officer of hazardous or potentially hazardous incidents or working situations.

Subcontractors and other non-ESE site personnel are also responsible for complying with this plan and all applicable federal, state and local safety and environmental regulations and codes.

2.4 TRAINING

All ESE site personnel working on the hazardous material contamination site investigations will have completed a safety and health training course for hazardous waste site work meeting the requirements of 29CFR1910.120 and have worked at least 3 days of supervised on the job training. The course consists of an initial 40-hour session and annual refreshers of 8 hours. Subcontractors and visitors are required to provide proof of equivalent training. The field team leader will have completed an additional 8 hours of waste site supervisory training. For each location, specific training is given by the Project Manager or Site Safety Officer to inform employees of site-specific hazards. Additionally, at least one field team member will be trained to perform cardiopulmonary resuscitation (CPR) and first aid.

2.5 MEDICAL MONITORING PROGRAM

All ESE on site personnel, subcontractors, and visitors for this project will be required to have the medical examination outlined in Table 1. This examination is given annually and more often if specified by the attending physician. All medical examinations include certification by the physician of the employee's ability to wear a negative-pressure respirator and to perform strenuous work. If a person sustains an injury or contracts an illness related to work on site that results in lost work time, he must obtain written approval from a physician to regain access to the site.

2.6 RECORDS DOCUMENTATION

Air monitoring data generated during the project will become part of the written record. Both medical and air monitoring data will be retained for the time period required by OSHA in various standards [29 CFR 1910.20(D)(i), 1910.20(D)(ii), 1910.1018, 1910.1025]. Training records are maintained in project files and on ESE's personal identification cards and are available for inspection at all times. Subcontractors are required to have similar documents available for inspection as required.

All personnel associated with work at a site will be required to sign a statement indicating that they have read, and will comply with the site safety plan. This signature page will also include information on their training and medical surveillance status.

Table 2.1

Medical Examination--Monitoring Program

Basic physical exam
Heart status and functions (EKG) baseline only except if >40
Chest X-ray (Roentgenogram posterior-anterior)
Pulmonary function--forced vital capacity, forced expiratory volume at 1 second and reserve volume
Blood--full SMAC Series
Hemoglobin--cell counts, protein levels
Liver function--full enzyme profile
Renal function--BUN, Creatinine, Creatine/Creatinine ratio, lipoprotein count and differential, uric acid
Urinalysis
Audiometry--audio spectrum response of ear
Eye--physical condition, visual acuity

Other laboratory tests may be ordered depending on actual or expected exposures and physician recommendations.

The individuals listed in the Site-Specific Plan organization chart will be certified to wear respirator protection in accordance with criteria from the ANSI Z88.2 and 29 CFR 1910.134.

3.0 HAZARD EVALUATION

3.1 CHEMICAL CONTAMINANTS

Potential site contaminants at petroleum contamination sites include gasoline, gasohol, motor oil, fuel oils (including kerosene, diesel fuel), and aviation grade gasoline. These materials may exist as free product in soil or on groundwater, and/or as contaminants to soil and water, and/or in tanks, piping, and systems. Fuel products include materials in and around storage tanks, such as gasoline, kerosene, diesel, and their derivatives, xylene, toluene, benzene, tetraethyl lead (TEL), and chlorinated solvents. The chlorinated solvents include trichloroethylene and tetrachloroethylene.

3.2 PHYSICAL AND MECHANICAL HAZARDS

Activities on site may include site visits, soil gas sampling, headspace sampling, installation and sampling from monitor wells, installation of free product recovery systems, installation of groundwater recovery systems, installation of soil venting systems, installation of biological treatment systems, installation of air strippers, installation of carbon absorption units, removal of tanks, piping, and systems, and removal of contaminated soil.

Hazards associated with these activities are varied and include vehicle/pedestrian collisions, fire, collapse of excavation and trenching, handling of heavy materials and equipment operations resulting in contact and crushing type injuries, and use of air- and electrically-powered tools which may result in abrasions, contusions, lacerations, etc.

3.3 JOB HAZARD ANALYSIS AND RISK ASSESSMENT

The chemical contaminants which may be present and the hazardous activities which may be performed at the site will be identified through preliminary site assessment activities, such as site visits or records search. Based on this preliminary information, initial risk assessments will be made by the Site Safety Officer, in consultation with an ESE Regional Health and Safety Officer, defining hazards (both chemical and physical) to workers and other on site personnel, the surrounding populace, and the environment.

The identities of potential hazards and resultant initial risk assessments will be included in the Hazard Evaluation section of the Site-Specific Plan, will be reviewed daily, and will be updated as necessary by the Site Safety Officer. Updated information will be communicated to all other on site personnel immediately.

3.4 AIR MONITORING

An air monitoring program is fundamental to the safety of on site and off site personnel. Total organic vapor (TOV) levels associated with on site activities will be monitored with a Photoionization Detection (PID) instrument (Photovac® TIP or HNU PI-101). This instrument will be the primary source of information for upgrading personal protection. Calibration and maintenance of monitoring equipment will be in accordance with manufacturer recommendations.

The Site Safety Officer, or designee, will establish daily a background TOV prior to initiating on site activities. Under most circumstances, this level can be determined by taking multiple readings at representative locations along the perimeter of the site and averaging the results of sustained measurements. (A sustained measurement is defined as the arithmetic average of six readings taken at 10-second intervals.) If, due to site conditions, it appears that perimeter readings will not yield a truly representative background level, the Site Safety Officer or an ESE Regional Health and Safety Officer will be consulted for guidance.

Decisions to upgrade personal protection will be based on sustained breathing zone TOV that exceeds background levels. Breathing zone refers to the area from the top of the shoulders to the top of the head.

Explosivity levels associated with on site activities will be monitored with an explosimeter or combustible gas meter. This will be the primary source of information for determining the potential hazard due to explosion or fire in confined spaces and other enclosed areas with little or no ventilation.

Prior to entry of any area which may contain an explosive or flammable atmosphere, the Site Safety Officer or designee will take representative readings of the suspect area. Representative readings include readings from top, middle, and lower levels of the area, and at various points at each level in larger areas. Areas in which any one reading exceeds 20% of the lower flammable limit will be considered potentially explosive, and will be vented to below 20% of the lower flammable limit before the introduction of any personnel or non-explosion proof powered equipment.

4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment to be used at petroleum contamination sites will consist of several components. These components will protect the respiratory system, eyes and face, hands, feet, body, and head from a variety of chemical and physical hazards. Levels of personal protection will be categorized in accordance with the criteria described in accordance with the guidelines given in Section 3, Air Monitoring. Additional guidance for personal protective equipment can be found in the ESE Corporate Respiratory Protection Program, or can be obtained from an ESE Regional Health and Safety Officer.

Action levels for upgrading to the various protective levels and levels of personal protection required for the various tasks to be performed on each site, as well as any special site requirements, will be given in the Personal Protective Equipment section of the Site-Specific Plan.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL A

1. Open-circuit, pressure-demand, self-contained breathing apparatus (SCBA);
2. Totally encapsulated suit;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank; and
6. Booties, chemical protective.

CRITERIA

1. Sites known to contain hazards which:
   a. Require the highest level of respiratory protection (as previously stated),
   b. Will cause illness as a result of personal exposure,
   c. Permit a reasonable determination that personal exposure could occur to any part of the body; or
2. Sites for which the Project Manager and/or Site Safety Officer make a reasonable determination that, based on the lack of information to the contrary, the site may be described as previously stated.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL B

1. Open-circuit, pressure-demand SCBA;
2. Chemical protective
   a. Overalls and long-sleeved jacket, or
   b. Coveralls;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank; and
6. Booties, chemical protective.

CRITERIA

1. Sites known to contain hazards which:
   a. Require the highest level of respiratory protection (as previously stated),
   b. Will cause illness as a result of personal exposure,
   c. Permit a reasonable determination that personal exposure to areas of the body not covered by Level B protective clothing is unlikely; and
2. Sites for which the Project Manager and/or Site Safety Officer make a reasonable determination that, based on the lack of information to the contrary, the site may be described as previously stated.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL C

1. Full face-piece, air-purifying respirator (high-efficiency particulate/organic vapor cartridges);
2. Emergency escape oxygen pack (carried);
3. Chemical protective (Tyvek® is the minimum protection)
   a. Overalls and long-sleeved jacket, or
   b. Coveralls, or
   c. Apron;
4. Gloves, inner (surgical type) (Latex);
5. Gloves, outer, chemical protective (Nitrile);
6. Boots, chemical protective (neoprene or NBR), steel toe and shank; and
7. Booties, chemical protective (Latex).

CRITERIA

1. Sites known to contain hazards which:
   a. Do not require a level of respiratory protection greater than the level afforded by air-purifying respirators (nominal protection of 10), as previously stated;
   b. Will cause illness as a result of personal exposure; or
   c. Permit a reasonable determination that personal exposure to areas of the body not covered by Level C protective clothing is unlikely; and
2. Sites for which the Project Manager and/or Site Safety Officer make a reasonable determination that, based on the lack of information to the contrary, the site may be described as previously stated.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL D

1. Coveralls, cotton;
2. Boots/shoes, safety;
3. Safety glasses;
4. Hard hat with optional face shield (where overhead hazards exist); and
5. Air-purifying respirator (readily available).

CRITERIA

Sites where the Project Manager and/or Site Safety Officer make a reasonable determination that hazards due to exposure to hazardous materials are unlikely.

ADDITIONAL PERSONAL PROTECTION

In addition to personal protective equipment, field personnel having duties on or near the hazard site should have ready access to:

1. A fully stocked industrial-size first-aid kit;
2. An eyewash kit; and
3. At least 6 gallons of potable water in a pressurized container to permit decontamination in event of accidental skin or eye contact with chemicals.

5.0 STANDARD WORK PRACTICES

5.1 GENERAL SAFETY RULES:

In addition to the specific requirements of the Site-Specific Plan, common sense should prevail at all times.

The following general safety rules and practices will be in effect at the site.

1. The site will be suitably marked or barricaded as necessary to prevent unauthorized visitors, but will not hinder emergency services if needed.
2. All open holes, trenches, and obstacles will be properly barricaded in accordance with local site needs. These needs will be determined by proximity to traffic ways, both pedestrian and vehicular, and site of the hole, trench, or obstacle. If holes are required to be left open during nonworking hours, they will be adequately decked over or barricaded and sufficiently lighted.
3. Prior to conducting any digging or boring operations, underground utility locations will be identified. The site representative and local utility authorities will be contacted to provide locations of underground utility lines and product piping. All boring, excavation, and other site work will be planned and performed with consideration for underground lines.
4. Smoking and ignition sources in the vicinity of flammable or contaminated material is prohibited.
5. Drilling, boring, movement and use of cranes and drilling rigs, erection of towers, movement of vehicles and equipment, and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs, lights, canopies, buildings, and other structures and construction, and natural features such as trees, boulders, bodies of water, and terrain.
6. When working in areas where flammable vapors may be present, particular care must be exercised with tools and equipment that may be sources of ignition. All tools and equipment so provided must be properly bonded and/or grounded.
7. Approved and appropriate safety equipment, as specified in this site-specific HASP, such as eye protection, hard hats, foot protection, and respirators, must be worn in areas where required by the site-specific HASP. In addition, eye protection must be worn when handling free product, contaminated soil or water, or fill dirt.
8. Beards that interfere with respirator fit are not allowed within the site boundaries. This is necessary because all site personnel may be called upon to use respirator protection in some situations, and beards do not allow for proper respirator fit.
9. No smoking, eating, or drinking will be allowed in the contaminated areas.
10. Tools and hands must be kept away from the face.
11. Personnel must shower at the end of the shift or as soon as possible after leaving the site.
12. Each sample must be treated and handled as though it were extremely toxic.
13. Tank pit excavations must be sampled cautiously, using a remote sampling device or securing samples from excavated soil, and the pit should be entered only as a last resort and only if it is properly shored or sloped. The pit may meet the criteria for a confined space, in which case any entry must be made in accordance with NIOSH recommended Confined Space Entry Procedures. No confined space entry except by written procedure approved by the Health and Safety Officer.
14. Persons with long hair and/or loose-fitting clothing that could become entangled in power equipment are not permitted in the work area.
15. Horseplay is prohibited in the work area.
16. Working while under the influence of intoxicants, narcotics, or controlled substances is prohibited.

5.2 WORK LIMITATIONS:

HOURS

Work shall be limited to daylight hours and during normal weather conditions. Extremes in temperature and weather condition (i.e., wind and lightning) will restrict working hours.

HEAT STRESS

For monitoring the body's recuperative ability toward excess heat, the following techniques will be used as a screening mechanism. Monitoring of personnel wearing protective clothing will commence when the ambient temperature is 70 degrees Fahrenheit (°F) or above. When temperatures exceed 85°F, workers will be monitored after every work period. Monitoring will include visual observations for signs of heat stress and measurement of radial pulse rate for 30 seconds at the beginning of each rest period. If the heart rate exceeds 110 beats per minute (beats/min) at the beginning of a rest period, the next work period will be shortened by 10 minutes, and the rest period stays the same. If the pulse rate is 100 beats/min at the beginning of the next rest period, the following work cycle will be shortened another 10 minutes.

Also, good hygienic standards must be maintained by frequent change of clothing and daily showering. Clothing should be permitted to dry during rest periods. If skin problems occur, consult medical personnel.

COLD STRESS

The human body "senses" cold as a result of two factors, the air temperature and the wind velocity. Cooling of the flesh increases rapidly as wind velocity goes up. Frostbite can occur at relatively mild temperatures if wind penetrates the body insulation. For example, when the air temperature is 40°F and the wind velocity is 30 miles per hour (mph), the exposed skin would perceive an equivalent still air temperature of 13°F. Table 5-1 illustrates windchill indices and the associated hazards to exposed flesh. Precautions will be taken to minimize exposed flesh, and layered clothing will be provided, as appropriate.

Table 5-1.

Windchill Index

Windspeed (mph)	Actual Thermometer Reading (°F)									
	50	40	30	20	10	0	-10	-20	-30	-40
Calm	50	40	30	20	10	0	-10	-20	-30	-40
5		48	37	27	16	6	-5	-15	-26	-36	-47
10		40	28	16	4	-9	-21	-33	-46	-58	-70
15		36	22	9	-5	-18	-36	-45	-58	-72	-85
20		32	18	4	-10	-25	-39	-53	-67	-82	-96
25		30	16	0	-15	-29	-44	-59	-74	-88	-104
30		28	13	-2	-18	-33	-48	-63	-79	-94	-109
35		27	11	-4	-20	-35	-49	-67	-82	-98	-113
40		26	10	-6	-21	-37	-53	-69	-85	-100	-116

Source: National Safety Council, 1982.

5.3 ACCIDENT PREVENTION PLAN/ACCIDENT REPORTING:

The purpose of the Safety Plan is to prevent accidents and minimize the impact of an accident if one should occur.

All accidents must be reported to the Site Safety Officer immediately. Prompt reporting is essential to the prevention of future incidents in addition to the well-being of the affected individual or individuals. The Site Safety Officer will notify the Project Manager of any serious accidents. The Site Safety Officer or other key members of the field team will be trained in first aid and CPR. First aid will be administered to affected personnel under the direction of the Site Safety Officer. For serious accidents, the nearest ambulance service will be contacted for transport of injured personnel to the nearest medical facility (see Section 6.0). The Site Safety Officer will have established contact and liaison with medical authorities (see Section 6.0) whose personnel will be knowledgeable of the activities of the field team. Telephone numbers and addresses of ambulance and medical services will be posted on site.

A formal report of any OSHA-recordable accident will be filed with ESE. All reports must be received within 2 working days.

5.4 WORK ZONES AND DECONTAMINATION PROCEDURES:

Work zones will be established in accordance with guidance provided in Figure 5-1. These zones may be modified to fit applicable field conditions; however, proposed modifications must be approved by the Project Manager and Site Safety Officer prior to being implemented in the field.

Personnel decontamination will be initiated on site. Disposable clothing will be removed and stored in designated containers. If additional decontamination is necessary, based on preliminary or subsequent risk assessment by the Site Safety Officer in consultation with ESE Regional Safety and Health Officer, additional decontamination procedures will be implemented. Site specific decontamination procedures will be listed in the Site-Specific Plan.

All heavy equipment will be decontaminated on site. Water in the form of steam cleaning and/or pressure washing may be used to remove any visual contamination from drilling equipment and backhoe.

5.5 SITE SECURITY AND ENTRY:

Site security measures, including barricading, fencing, and lighting, and any special site entry procedures will be described in the Section 5 of the Site-Specific Plan.

6.0 EMERGENCY INFORMATION AND CONTINGENCY PLANS

All emergency information, including phone numbers, site resources, and routes to emergency medical care, will be maintained on site in the Site-Specific Plan by each field team.

The phone list will include the following numbers:

AMBULANCE:
FIRE DEPARTMENT:
HOSPITAL (primary):
HOSPITAL (secondary):
POISON CONTROL CENTER:
POLICE:
TOXIC WASTE AND OIL SPILL:
CLIENT CONTACT:
AGENCY CONTACT:
PROJECT MANAGER:
CORPORATE SAFETY AND HEALTH OFFICER:

The list of site resources will include fire extinguishers, first aid equipment, eyewash units, communications (telephone), emergency personal protective equipment, spill containment equipment and materials, and any other special equipment, supplies or resources.

6.1 INJURY CONTINGENCY PLAN

First aid equipment will be kept on site during all site activities. Additionally, one member of the field team will be trained in first aid. Emergency telephone numbers for ambulance and poison control will be maintained on site in a readily accessible location. Names, addresses, and routes to two emergency medical care providers (hospitals or emergency clinics) will be verified prior to any site activity, and will be listed in the Site-Specific Plan. Maps showing the location of the site, the emergency medical care providers, and hotels and restaurants (if any) used by the field team should be provided in each vehicle. In the event of an injury that cannot be treated on site, the injured person will be immediately transported to the medical provider either by support vehicle or ambulance on determination by the Site Safety Officer, Project Manager, and/or first aid provider.

6.2 FIRE CONTROL AND CONTINGENCY PLAN

No smoking will be allowed during field activities. Fire extinguishers will be available at sites for use on small fires. All samples must be treated as flammable or explosive. The Site Safety Officer will have available the telephone number of the nearest fire station and local law enforcement agencies in case of a major fire emergency.

6.3 SPILL CONTROL AND CONTINGENCY PLAN

In the event of a spill, the Site Safety Officer will be notified immediately. The important factors are that no personnel are overexposed to vapors, gases, or mists and that the liquid does not ignite. Waste spillage must not be allowed to contaminate any local water source. Small dikes will be erected to contain spills, if necessary, until proper disposal can be completed. Subsequent to cleanup activities, the Site Safety Officer will survey the area to ensure that no toxic or explosive vapors remain.

6.4 OFF SITE INCIDENT CONTINGENCY PLAN

The Site Safety Officer will provide field team members with emergency medical care information similar to that kept on site in event of an off site emergency, such as a motor vehicle accident, food poisoning, or other injury sustained off the site.

6.5 COMMUNITY THREAT CONTINGENCY PLAN

The potential for exposure to the surrounding community will be assessed in conjunction with the preliminary site assessment.

The Site Safety Officer will consult with a representative of the local emergency services agency (police or fire department, in accordance with local governmental procedures), and will outline procedures in the Site-Specific Plan to be followed in the event of an emergency threat to the surrounding populace. Situations requiring specified procedures include fire, explosion, accidental ingestion, large spills consisting of free product, and accumulation of potentially explosive vapors off site.

The Site-Specific Plan will identify individuals who will respond to reports of non-emergency community threats arising from site activities. This non-emergency response will include sampling of air, wells and ground water, and soil. Situations requiring specified procedures include small spills and presence of existing concentrations of potentially explosive vapors on site.

APPENDIX A

SITE SPECIFIC

HEALTH & SAFETY

INFORMATION

ENVIRONMENTAL SCIENCE & ENGINEERING

SITE SPECIFIC INFORMATION

PROJECT NAME: Excavation of Diesel-impacted Soil, Santa Rita Jail, Tank No. 2942-23

PROJECT NUMBER: 6-92-5423

PROJECT MANAGER: Patrick Galvin

HEALTH AND SAFETY OFFICER: Patrick Galvin

THIS HEALTH AND SAFETY PLAN HAS BEEN REVIEWED AND APPROVED BY:

_____

Lionel S. Reynolds
CERTIFIED INDUSTRIAL HYGIENIST

DECLARATION OF UNDERSTANDING

I have read and understand the Health and Safety Plan and agree to abide by it.

NAME	EMPLOYEE NUMBER OR COMPANY NAME	SOCIAL SECURITY NUMBER	DATE

A. GENERAL PROJECT INFORMATION

SITE: Santa Rita Jail DATE PREPARED: 9-18-92

LOCATION: 5325 Broder Boulevard, Dublin, California

PREPARED BY: Patrick Galvin

OBJECTIVE (S): Excavation of diesel-impacted soil at tank no. 2942-23 site.

PROPOSED DATE(S) OF ON-SITE WORK: Sept. 28, 1992 - Oct. 12, 1992

BRIEFING DATE(S):_____BACKGROUND REVIEW:

COMPLETE: x

PRELIMINARY: __

----------PROJECT H.A.S.P. SUMMARY----------

LEVEL(S) OF PROTECTION: A__ B__ C__ D x MIXED__ MODIFIED x

OVERALL HAZARD ESTIMATE: HIGH___ MODERATE___ LOW x UNKNOWN___ADDITIONAL

DOCUMENTATION: TLV TABLE__ FULL HASP x METHODS__

OTHER__

B. SITE/MATERIAL CHARACTERISTICS

MATERIAL/WASTE TYPE(S): LIQUID__ SOLID x GAS__ SLUDGE__

MATERIAL PRESENT IN: DRUMS__ TANKS__ OPEN x OTHER__

CHARACTERISTICS: IGNITABLE__ CORROSIVE__ TOXIC x REACTIVE__

RADIOACTIVE__ VOLATILE__ UNKNOWN__ OTHER_____

FACILITY TYPE: Former Correctional Facility CLOSED__ OPEN x

FACILITY SIZE:_____

TOPOGRAPHY: Relatively flat, at approximately 350-feet above mean sea level.

PRINCIPAL DISPOSAL METHOD AND LOCATION(S) Diesel-impacted soil to be transported to "Old Graystone" area and stockpiled.

D. WORK PLAN INSTRUCTIONS

PERSONAL PROTECTION REQUIRED:

Level of protection: A__ B__ C__ D x MIXED__ MODIFICATIONS__

For MIXED levels of protection describe areas and levels.

For MODIFICATIONS identify action levels. This site will involve D level protection which includes a hard hat, gloves, steel toe boots.

ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT (PPE): Goggles, respirator, etc. should be available and ready for use.

MONITORING EQUIPMENT: PID__ FID__ TOXIC GAS__ OXYGEN__

DETECTOR TUBES__ EXPLOSIMETER__ PERSONAL MONITOR__

OTHER INSTRUMENTS N/A

EQUIPMENT CALIBRATION N/A

MONITORING STRATEGY N/A

DECONTAMINATION PROCEDURES: If required, equipment and personnel decontamination areas will be designated by the Project Manager at the start of the project. All tools will be cleaned adequately prior to final removal from the work zone, to prevent the transfer of contamination from the work site into clean areas. Protective clothing such as Tyvek coveralls, latex gloves, boot covers, etc. will be changed on a daily basis or at the discretion of the Project Manager. All disposable protective clothing will be put into plastic bags and disposed of in a proper manner. Excavated soils will be stockpiled in an area designated by the Project Manager, until chemical analysis has been performed on representative samples.

SITE CONTROL MEASURES: Set up 25-foot perimeter with traffic cones or surveyor's tape. Visitors within perimeter to read and sign H&S plan and abide by directions of site H&S officer.

SPILL CONTAINMENT PROCEDURES: Soil will be stockpiled on plastic sheeting and covered with same.

NOTES: N/A

E. EMERGENCY PROCEDURES

FIRE OR EXPLOSION: Evacuate the area and call the Fire Department at 911 immediately. All burn victims should seek medical attention immediately.

INJURY: Call 911 and administer first aid to victims who have severe injuries. Ensure all injured are transported to the nearest medical facility doctor.

WEATHER:

OTHER:

CHEMICAL EXPOSURE ACTIONS: (See Appendix B for Optional Material Safety Data Sheets)

EMERGENCY TELEPHONE NUMBERS

POLICE/FIRE/AMBULANCE: 911

POISON CONTROL: (800) 523-2222

ESE CONCORD OFFICE: (510) 685-4053

CHEMTREC: (800) 424-9300

UNDERGROUND SERVICE ALERT: (800) 642-2444

PROJECT CONTACTS

AGENCY CONTACT: Alameda County Health Care Services Agency (510) 271-4320

SITE CONTACT: Mr. Ernie Hall, Facility Supervisor (510) 551-6674

CLIENT CONTACT: Mr. Jim de Vos, Alameda County GSA (510) 535-6248

F. EMERGENCY PRECAUTIONS

PRIMARY HOSPITAL/INFIRMARY:

Name: Valley Memorial Hospital

Address: 1111 East Stanel Blvd., Livermore, CA Telephone Number: (510) 447-7000 (emergency)

Directions from site to emergency unit: Take Tassajara Road (south) to Interstate 580. Take Interstate 580 east. Exit south on First Street (Highway 84). After junction with Railroad Avenue, turn left into driveway of hospital.

Remarks: See Figure A