WORKPLAN FOR
WONG'S TAXI TAXI
UNDERGROUND STORAGE TANK SITE
SOIL AND GROUNDWATER CHARACTERIZATION
2345 EAST 14TH STREET
OAKLAND, CALIFORNIA

Prepared by
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May 28, 1991

Doc. No.: 9105-E095.WP
Project No.: EB-8014-1

Ms. Cynthia Chapman
Alameda County Heath Agency
80 Swan Way, Room 200
Oakland, California 94621

SUBJECT: WONG'S TAXI TAXI
SOIL AND GROUNDWATER CHARACTERIZATION WORKPLAN
2345 EAST 14TH STREET, OAKLAND, CALIFORNIA

REFERENCE: SCS TANK REMOVAL REPORT, WONG'S TAXI, SEPTEMBER 19, 1988
DOC. NO.:38819.01
REFERENCE: CEC SITE CHARACTERIZATION, WONG'S TAXI, NOVEMBER 21, 1988
DOC. NO.:CEC/SBW, 9/88

Dear Ms. Chapman,

This communication presents our workplan for soil and groundwater characterization activities at the above referenced site (Figure 1). Earth Systems Environmental, Inc. (ESE) proposes to conduct a Phase I Soil Characterization associated with a release from former underground gasoline storage tanks along with a release from the former underground waste oil storage tank as well as conducting a Phase I Groundwater Characterization associated with a release from these former underground storage tanks at Wong's Taxi Taxi. ESE will then prepare a report of findings documenting the field activities, analytical results, data analysis, conclusions and recommendations resulting from the soil, and groundwater characterizations.

All methods to be employed are in compliance with regulations and guidelines set forth in California Code of Regulations (CCR) Title 22, Article 11, and Title 23, Chapter 3, California Site Mitigation Decision Tree Manual, the Code of Federal Regulations (CFR) Title 29, Part 1910, Section 120, CFR Title 40, Parts 300-399, as well as accepted professional environmental/geotechnical engineering procedures and applicable local regulations.

PURPOSE AND SCOPE

Subject to your acceptance of this workplan, ESE's plan to investigate the soil, and groundwater includes:

- Prepare a Site Health and Safety Plan covering the field operations associated with this investigation.

- Conduct a Phase I Soil Characterization in the vicinity of three former underground gasoline storage tanks including providing the geologic oversight during the drilling of five soil borings, sampling and laboratory analysis of these borings for the presence of total petroleum hydrocarbons as gasoline and volatile aromatics.

- Conduct a Phase I Soil Characterization in the vicinity of a former underground waste oil storage tank including providing the geologic oversight during the drilling of three soil borings, sampling and laboratory analysis of these borings for the presence of oil & grease.

- Conduct a Phase I Groundwater Characterization including providing the geologic oversight during the drilling and installing of three groundwater monitoring wells, sampling and laboratory analysis of those wells for the presence of oil & grease, total petroleum hydrocarbons as gasoline and volatile aromatics, and the investigation a groundwater flow direction, and gradient.

- Preparation of a Report of Findings documenting the field activities, analytical results, data analysis, conclusions and recommendations resulting from the soil and groundwater investigations.

BACKGROUND

On or about August 5, 1988, one 8,000 gallon underground gasoline storage tank, two 6,000 gallon underground gasoline storage tanks, and one 1,000 gallon underground waste oil storage tank were removed by SCS Engineers of Dublin, California from the above referenced property which had previous operated as a taxi cab service center (Figure 2). Soil samples were collected from beneath each of the removed tanks. The samples were analyzed for the presence of total petroleum hydrocarbons (TPH) as gasoline, the gasoline constituent volatile aromatics (BTEX), and total lead from beneath the former gasoline tanks along with oil & grease from beneath the former waste oil tank. **Gasoline was detected reaching a maximum concentration of 1,500 mg/kg beneath the west end of the northern gasoline tank, and the volatile aromatic benzene at a concentration of 61 mg/kg beneath the east end of the southern gasoline tank.. Oil & grease was detected at a concentration of 783 mg/kg beneath the former 1,000 gallon waste oil storage tank.** A Notice of Unauthorized Release from the Alameda County Health Care Services was issued. Subsequently, California Environmental Consultants was contracted to conduct a site characterization in the vicinity of the tank excavations. **Three soil borings were advanced on October 3, 1988.** Borings B1, and B2 were advanced immediately adjacent to the northern and western sidewall of the gasoline tank excavation pit, and Boring B3 was advanced immediately adjacent to the western sidewall of the waste oil tank excavation pit.

Soil samples were collected at a depth of 15 feet below surface grade in each of the borings. Gasoline was detected at 3.4 mg/kg, and 83 mg/kg, and benzene at 0.31 mg/kg and 1.6 mg/kg in borings B1, and B2, respectively. Oil and grease was detected at 88 mg/kg, and benzene at 0.36 mg/kg in boring B3. Groundwater was observed at approximately 19 feet below surface grade in each of the borings, and a grab sample of groundwater was collected. **Gasoline was detected at 67 mg/l and 110 mg/l, and benzene at 14 mg/l and 17 mg/l in borings B1 and B2 respectively. Oil and grease was detected at 290 mg/l and benzene 0.49 mg/l in boring B3.** Two soil sample were collected from the spoils pile of soil excavated from the gasoline tank pit. Gasoline was detected in these samples at 1.3 mg/kg, and 13 mg/kg, respectively. No volatile aromatics were detected in either of these samples. A sample was collected from the waste oil tank pit spoils pile. Oil and grease was detected 1,300 mg/kg, and no volatile aromatics were detected. At that time the pits were unfenced with open excavation pits and uncovered spoils piles. **Subsequently, the pits were backfilled with the stockpiled spoils and imported fill, compacted, graded to surface contours, and capped with concrete.**

This previous investigation did not determine the lateral or vertical extent of either gasoline or waste oil in the subsurface. Additionally, grab samples of groundwater from borings advanced through impacted soil may be cross contaminated with hydrocarbons from the overlying soil, and may not be indicative of concentrations present in the groundwater.

Mobile Labs, Inc. has been contracted by the current owner, Mr. Stanley Wong of Oakland, to conduct an investigation of the impacted soil and potentially impacted groundwater at the site. **This investigation will include advancing five soil borings to a depth of 20 feet in and around the location of the former gasoline tanks, advance three soil borings to a depth of 20 feet in and around the location of the former waste oil tank, and drill and install three groundwater monitoring wells at the site to assess potential groundwater impaction, flow direction, and gradient.** Groundwater flow is believed to be from the hills to the east down to the bay to the west. Mobile Labs has requested that Earth Systems Environmental provide geologic services associated with conducting the Phase I Soil and Groundwater Characterizations including supervising the drilling of eight soil borings, drilling and installation of three groundwater monitoring wells, obtaining twenty soil, and three groundwater samples which will be analyzed by Mobile Labs, **constructing cross sections showing the estimated limits of impacted soil, surveying the location and relative elevation of the wells, constructing a groundwater surface map showing flow direction and gradient, and providing a report of findings documenting the**

field activities, analytical results, data analysis, conclusions and recommendations resulting from the soil and groundwater investigation.

HEALTH & SAFETY PLAN

A written Health and Safety plan will be implemented for site work conducted during the field investigations conducted for this project. The purpose of the plan is to provide specific safety procedures to be implemented during the handling of petroleum hydrocarbon contaminated materials. The Health and Safety Plan is required under regulations set forth in Federal OSHA CFR 29 1910.120, since the referenced report documented the presence of potentially hazardous materials at the site. This Health and Safety plan is included as Appendix A to the workplan.

SITE CHARACTERIZATION

Soil Boring Drilling and Sampling

Prior to drilling, Underground Service Alert (USA) will be notified a minimum of 48 hours in advance drilling activities. A total of eight soil borings will be drilled within this phase of soil characterization (Figure 2). **One soil boring will be drilled through the center of the former gasoline tanks location, to assess vertical migration of gasoline hydrocarbons. Four soil borings will be drilled at varying distances laterally from the former tank location to assess the lateral limits of gasoline hydrocarbons. One boring will be drilled through the center of the former waste oil tank location to assess the vertical migration of waste oil hydrocarbons, and two soil borings will be advance at varying distances from the former tank to assess the lateral limits.** Drilling for all borings will be accomplished using a truck mounted CME™ 75 drill rig or equivalent utilizing 8-inch outside diameter hollow-stem augers. The borings will be drilled to a maximum depth of 20 feet below surface grade or to the first encountered groundwater.

Soil sampling will be performed while drilling the borings at a five foot interval beginning at 5 feet below grade to the designed termination depth. Soil sampling will be accomplished using a split-spoon sampler (ASTM D 3550 with shoe similar to ASTM D 1586) equipped with three 6-inch by 2.5-inch diameter brass sleeves for soil retention. The soil samples will be obtained by driving the sampler with a one hundred and forty pound hammer dropping thirty inches in accordance with ASTM D 1586.

The lowermost sleeve at each sample interval (corresponding to approximately 6 inches below the actual sample interval) will be screened for total organic vapors with a portable photo-ionization detector (PID) or a Foxboro® OVA (organic vapor analyzer) 108 flame-ionization meter (FID). Headspace vapor analysis will be performed by first discarding a portion of the soil retained at one end of the sleeve to produce a headspace. The sleeve is then capped and the probe of the PID or FID inserted through a hole in the cap and into the headspace for analysis. **The PID or FID readings will be recorded on the boring logs. The uppermost sleeve will be observed for lithology.**

The middle sample sleeve of the sampler will be immediately sealed with Teflon™ film, capped, labeled, and placed on ice at 4°C for transport to a California Department of Health Services (DHS) certified laboratory. Strict chain-of-custody procedures will be utilized for all samples collected to ensure sample integrity and to document sample possession from the time of collection to the final destination. **Two samples collected from each the three borings will be retained for possible laboratory analysis.** – Samples collected at five foot intervals - analyses based on PID readings and change in lithology especially in backfilled area

All sampling equipment will be washed with TSP (tri-sodium phosphate) cleanser, and rinsed with tap water and de-ionized water prior to sampling, between sample intervals, and between borings to reduce the possibility of cross-contamination. The drilling augers will be steam cleaned between borings, also to reduce the possibility of cross-contamination. Drill cuttings, and soil sample spoils,will be contained in D.O.T. approved 55 gallon drums awaiting confirmation from laboratory analysis as to whether the contents are hazardous. Disposal of any contaminated soil is the responsibility of the facility operator.

A field engineer or geologist will be on-site to log the borings in accordance with the Unified Soil Classification System, monitor soils during drilling for contamination, collect soil samples, and construct wells.

Monitoring Well Drilling and Sampling

Prior to drilling, Underground Service Alert (USA) will be notified a minimum of 48 hours in advance drilling activities. A total of three borings will be drilled within this phase of groundwater characterization (Figure 2). **Two soil borings will be drilled down groundwater gradient of the former underground storage tanks (one downgradient from the gasoline tanks, and the second downgradient from the waste oil tank), both of which will be converted into groundwater monitoring wells. One soil boring will be drilled east of the former tank locations in a presumed up groundwater gradient position and will also be completed as a groundwater**

monitoring well. Drilling for all borings will be accomplished using a truck mounted CME™ 75 drill rig or equivalent utilizing 8-inch outside diameter hollow-stem augers. The borings will be drilled to a maximum depth of 15 feet below the first encountered groundwater, or approximately 35 feet below surface grade. **Because an ESE geologist and a drilling rig were available in the area on May 22, 1991, one of the groundwater monitoring wells MW-1 was drilled, and installed on that date. This well drilled according to the following protocols. A sample of the groundwater from MW-1 will be collected at the time that MW-2, and MW-3 are also sampled.**

Soil sampling will be performed while drilling the borings at a five foot interval beginning at 5 feet below grade to the designed termination depth. Soil sampling will be accomplished using a split-spoon sampler (ASTM D 3550 with shoe similar to ASTM D 1586) equipped with three 6-inch by 2.5-inch diameter brass sleeves for soil retention. The soil samples will be obtained by driving the sampler with a one hundred and forty pound hammer dropping thirty inches in accordance with ASTM D 1586.

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The middle sample sleeve of the sampler will be immediately sealed with Teflon™ film, capped, labeled, and placed on ice at 4°C for transport to a California Department of Health Services (DHS) certified laboratory. Strict chain-of-custody procedures will be utilized for all samples collected to ensure sample integrity and to document sample possession from the time of collection to the final destination. **Two samples collected from each the three borings will be retained for possible laboratory analysis.**

All sampling equipment will be washed with TSP (tri-sodium phosphate) cleanser, and rinsed with tap water and de-ionized water prior to sampling, between sample intervals, and between borings to reduce the possibility of cross-contamination. The drilling augers will be steam cleaned between borings, also to reduce the possibility of cross-contamination. Drill cuttings, and soil sample spoils,will be contained in D.O.T. approved 55 gallon drums awaiting

confirmation from laboratory analysis as to whether the contents are hazardous. Disposal of any contaminated soil is the responsibility of the facility operator.

A field engineer or geologist will be on-site to log the borings in accordance with the Unified Soil Classification System, monitor soils during drilling for contamination, collect soil samples, and construct wells.

Groundwater Monitoring Well Completion

Three groundwater monitoring wells will be installed to determine the presence of groundwater contamination resulting from a release from the former underground tanks. The wells will be constructed in accordance with the State of California Department of Water Resources Water Well Standards, Bulletins 74-81 and 74-90, as well as County of Alameda regulations. The borings will be drilled to a depth of 15 feet into the water table, unless a substantial confining layer or dense bedrock is encountered. The maximum drill depth is estimated to be 35 feet below surface grade. The wells will be cased with 20 feet of 2-inch slotted PVC casing and appropriate filter pack sand, installed from the bottom of the boring to 3 feet below surface grade. Blank PVC casing packed in Volclay grout will extend from the surface downward to the one and one half foot bentonite seal placed above the filter pack. Locking, water-tight well covers will be set in concrete to protect and secure the well heads.

Well Development and Groundwater Sampling

Following completion of the groundwater monitoring wells, the wells will be developed by surging and bailing to remove drilling residues and produce low turbidity groundwater. All development, purging, and sampling equipment will be washed TSP (tri-sodium phosphate) detergent, rinsed with clean tap water and deionized water, then allowed to air dry before each well is purged and sampled, to reduce the possibility of cross-contamination. Prior to sampling, the groundwater monitoring wells will be purged with a pre-cleaned bailer to remove stagnant water in the wells. During purging, key parameters including temperature, conductivity, and pH will be measured with a portable electronic meter and recorded. The meter will be calibrated prior to the sampling event. The purging will continue until the monitored parameters stabilize (usually after three to four casing volumes of groundwater have been removed). The groundwater monitoring wells will be sampled after water in the wells has recharged to approximately 80% of the original groundwater elevation. If, during purging, the monitoring well is purged dry, purging will be stopped for five minutes to allow the well to

recharge. If the well does not recharge at a sufficient rate to continue purging the three to four casing volumes, the well will be allowed to recharge and will be sampled.

Following purging, groundwater samples will be collected with pre-cleaned Teflon™ bailers, and discharged with a non-aerating bottom emptying device into sterilized glass containers, capped with Teflon™ septa, labeled, and chilled in an ice chest for transport. Water samples will be handled and transported according to the United States Environmental Protection Agency (USEPA) protocol to the DHS certified laboratory requested. Sample identification and chain of custody procedures will be utilized to ensure sample integrity and to document sample possession from the time of collection to its ultimate disposal. The sample labels will identify the job number, sampler, date, time of collection, and sample number unique to the sample. The proposed monitoring wells will be surveyed relative to a permanent structure, and from a designated point on the north side of the top of the well casing, the groundwater level will be measured in each well to an accuracy of 0.01 feet.

Chemical Analysis of Soil and Groundwater Samples

Soil samples will be sent to Mobile Labs. Based on field observations, two soil samples from each boring will be selected for laboratory analysis. Soil samples will be analyzed for oil & grease, total petroleum hydrocarbons (TPH) as gasoline, and the gasoline constituent volatile aromatics benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 418.1, the California DHS LUFT Method, and USEPA Method 8020, respectively. Because total lead exceeded the soluble threshold limit concentration in four of the samples collected from beneath the gasoline tanks, but were an order of magnitude lower than the total threshold limit concentration, then a single sample collected in boring TH-1 from the center of the gasoline tank cluster will be analyzed for total, and soluble lead. If soluble lead exceeds the threshold limit concentration, then the samples from the other gasoline assessing borings will be analyzed for soluble lead. The groundwater samples will be analyzed for oil & grease, TPH as gasoline, and BTEX by the USEPA Methods 418.1, and 502.1, respectively. One trip blank and one blind duplicate sample will be collected and analyzed for each set of groundwater samples.

REPORT OF FINDINGS

A report will be prepared which details the field activities, sampling procedures, analytical results, data analysis, conclusions, and recommendations. Based upon the

conclusions, Earth Systems Environmental will recommend what further actions, if necessary, should be performed. **The report will be prepared under the supervision of a Registered Professional. Certified laboratory reports and chain of custody documents will be included.**

SCHEDULE OF COMPLETION

Excellent service and timely completion of projects is a major goal at Earth Systems Environmental, Inc. The majority of the hydrogeologic analysis will be performed from our Bakersfield office, but personnel from our San Luis Obispo office will also be involved to assist in the data review. An excellent and efficient working relationship is maintained between offices as part of our quality assurance practice. This provides both expertise and quick response to the project.

Earth Systems Environmental can mobilize on-site beginning work described in this workplan within approximately one week upon authorization to proceed from Client, and approval of the workplan by Alameda County. The projected time frame for completion of the major tasks is one week for drilling and sampling the wells, and two weeks for report preparation once the laboratory analysis has been completed.

Thank you for your consideration of this work plan. If you have any questions, or if we can be of service in any way, please contact this office at your convenience.

Respectfully Submitted,

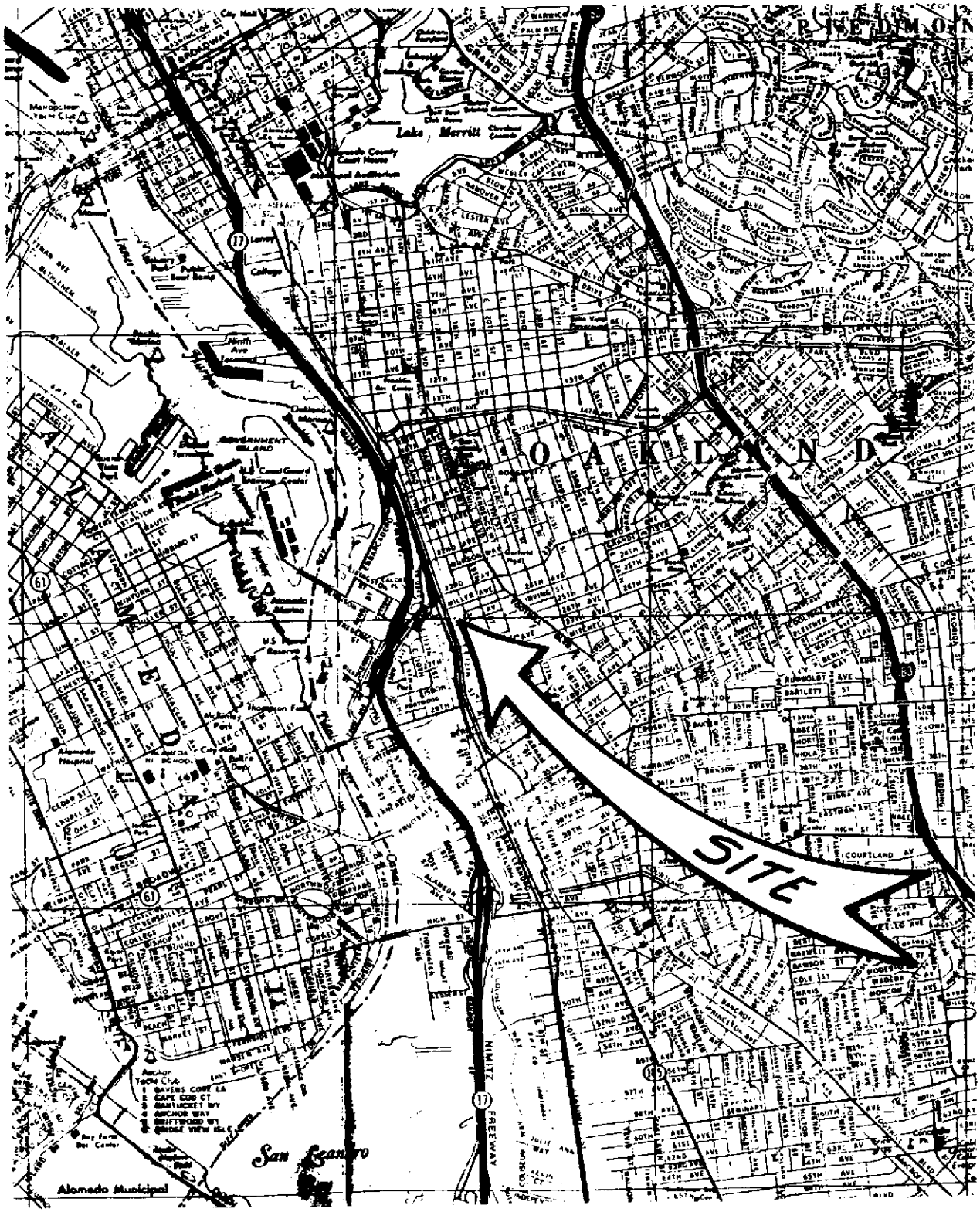
EARTH SYSTEMS ENVIRONMENTAL, INC.

REGISTERED GEOLOGIST
MARK MAGARGEE
No. 4892
STATE OF CALIFORNIA

Mark R. Magargee

Mark R. Magargee, R.G.# 4892
Senior Geologist

cc: Addressee - 1
Stanley Wong - Wong's Taxi - 1
Jeff Johnson - Mobile Labs - 1
BAK - 1
SLO - 1



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TITLE

WONG'S TAXI TAXI

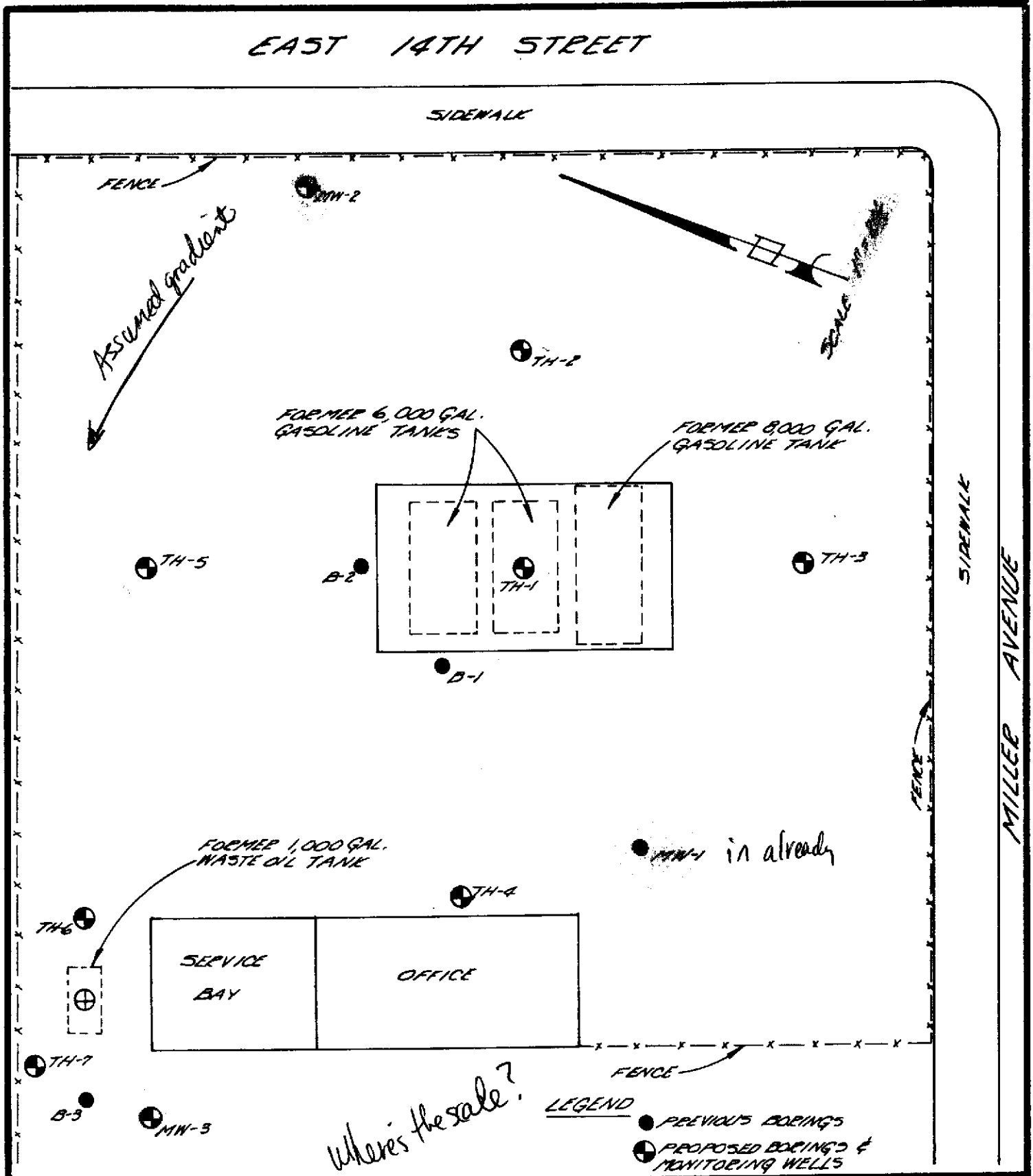
2314 EAST 14TH STREET
OAKLAND, CALIFORNIA

LOCATION MAP

Figure

1

JOB NO.
EB-8014-1



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2314 EAST 14TH STREET
OAKLAND, CALIFORNIA

SITE MAP

Figure 2

JOB NO. EB-8018-1

APPENDIX A

SITE HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN

SITE DESCRIPTION

The subject site is located southwest side of 14th Street between 23rd Avenue and Miller Avenue in the city of Oakland, Alameda County, California. The site is currently used as a used car sales lot with a single maintenance bay.

The site is situated within a densely developed urban area. Nearby businesses include retail, food services, a church, and a playground. The site itself is mostly paved with asphalt and concrete. A sales office and garage is situated on the southwestern portion of the site just west of the location of the former gasoline tanks, and south of the former waste oil tank. The overall site topography is essentially flat, with a very slight fall to the southwest.

SITE HISTORY

Based on a review of reports by SCS Engineers, and California Environmental Consultants, one 8,000 gallon underground gasoline tank, two 6,000 gallon underground gasoline tanks, a common dispenser island, and one 1,000 gallon underground waste oil tank were removed from the site under permit on August 5, 1988 by SCS Engineers. Reportedly, no soil was removed from the site during removal of the tanks and dispensers; the area displaced by the former tanks was filled by backfilling the excavated soil along with imported soil.

During the UST removal activities on August 5, 1988, soil samples were collected from beneath the tanks and dispensers. Subsequent laboratory analysis of the soil samples concentrations of total petroleum hydrocarbons (TPH) as gasoline, volatile aromatics, and oil & grease above the State Water Resources Control Board (WRCB) Action Level for these compounds in soil.

Based on these analytical results California Environmental Consultants was retained to perform a site characterization in the vicinity of the former gasoline and waste oil tanks. The data obtained from three soil borings advanced for the site characterization suggest that soil impacted with TPH as gasoline, gasoline constituent volatile aromatics, and oil & grease at concentrations above RWQCB Action Levels exists at the subject site. Laboratory analysis of grab samples of groundwater encountered while drilling indicate that these compounds may also have impacted groundwater resources. This previous assessment did not delineate the vertical or horizontal extent of these hydrocarbon compounds in either the soil or groundwater.

PURPOSE

The purpose of this plan, which was developed specifically for operations at the referenced site, is to assign responsibilities, establish personnel protection standards and mandatory safety procedures, and provide for contingencies that may arise while field operations associated investigating soil and groundwater are being conducted at the site. This plan complies with, but does not replace, Federal Health and Safety Regulations as set forth in 29 CFR 1910 and 1926, California Health and Safety Regulations set forth in Title 8, California Code of Regulations, and guidance established by the California Department of Health Services. This plan is to be used by ESE as a supplement to such rules, regulations, and guidance.

APPLICABILITY

The provisions of the plan are mandatory for all on-site ESE employees engaged in activities known to be or potentially associated with the presence of hazardous materials. These activities may include, but are not limited to, mobilization, project operations, and demobilization.

Changes and/or unanticipated site conditions may require modification of this Site Health and Safety Plan (SHSP) in order to maintain a safe work environment. Any proposed changes to this plan should be reviewed by the Corporate Health and Safety Officer of ESE, prior to their implementation.

If this is not feasible, the project team leader may modify the plan and record all changes in the field log book. Under no circumstances will the plan modifications conflict with Federal, state, or local health and safety regulations.

Under 29 CFR 1910.120 (b) (15) ESE is required to notify each subcontractor of the hazardous materials identified by ESE. The acceptance of such responsibility does not and shall not be deemed an acceptance of responsibility for any other health and safety requirements, such as those related to excavating, trenching, drilling or backfilling. Each subcontractor shall perform all work in accordance with a Site Health and Safety Plan for its employees, which covers any exposure to hazardous materials which may be present on site. The subcontractor shall hold ESE harmless from, and indemnify it against, all liability in the case of any injury or injury of its own employees. ESE reserves the right to review the subcontractor's Site Health and Safety Plan at any time.

ESE reserves the right to suspend the subcontractor's site work and ask the subcontractor's personnel to evacuate the hazard area in the event of grossly inadequate health

and safety precautions on the part of the subcontractor or the belief that the subcontractor's personnel are or may be exposed to an immediate health hazard.

KEY PERSONNEL AND RESPONSIBILITIES

The key personnel and their responsibilities for this project are as follows:

Corporate Health and Safety Officer

The ESE Corporate Health and Safety Officer (CHSO) for this project is Mr. Robert Mohle. It is his responsibility for developing and coordinating the ESE health and safety programs. For this project, he is responsible for reviewing and approving this SHSP for accuracy and incorporating new information or guidelines which aid the Project Manager and Site Health and Safety Officer in further definition and control of potential health and safety hazards associated with the project.

Project Manager

The ESE Project Manager (PM) for this project is Mr. Mark Magargee. It is his responsibility to report to upper-level management. The duties of the PM are as follows:

- Prepare and organize the SHSP which describes all planned field activities that may be encountered at the site.
- Obtains permission for site access and coordinate field activities.
- Brief field team on specific assignments and potential hazards, and ensures that all health and safety requirements are met.
- Provides a copy of this SHSP to each member of the project field team.

Site Health and Safety Officer

The ESE Site Health and Safety Officer (SHSO) for this investigation is also Mr. Mark Magargee. He advises the PM on all aspects of health and safety on-site and recommends stopping work if any operation threatens worker or public safety. Other duties include:

- Implement the SHSP.

- Select personal protective clothing and equipment specific for the project and ensures that they are properly stored and maintained.
- Assure that all personnel assigned to site have appropriate health and safety training and have a current baseline medical examination.
- Assign key safety duties and responsibilities to team members.
- Monitor the work parties for signs of stress, and also monitors on-site hazards and conditions.
- Know emergency procedures, evacuation routes, arranges on-site first aid facilities and off-site emergency care.
- Conduct daily safety meetings and periodic inspections to determine if SHSP is being followed.
- Establish and maintain site record keeping, including reporting accidents, as required.
- Participate in preparation of SHSP and revise it as necessary.
- Verify that drilling or excavation locations have been cleared for underground utilities and other subsurface structures before subsurface exploration is initiated.

Team Members

The responsibilities for the team members are as follows:

- Take all reasonable precautions to prevent injury to themselves and to their fellow employees; and
- Performing only those tasks that they believe they can do safely, and immediately reporting any accidents and/or unsafe conditions to the client and the CHSO.
- Implementing the procedures set forth in the SHSP, and reporting any deviations from the procedures described in the Plan to the SHSO and to the CHSO.

SITE INFORMATION

All field activities will take place on the Wong's Taxi Taxi property. All drilling activities will take place in the daylight hours between 7:00 A.M. and 7:00 P.M.

The presence and location of hazardous materials, which are hydrocarbon compounds, has been confirmed through previous investigations. If needed, three blasts of a horn will be

sounded for site evacuation. This site information is current and has been verified through analytical testing.

HAZARD ASSESSMENT

Hazardous Materials

Hazardous materials may be a health hazard to site personnel via ingestion, skin absorption, or inhalation. Biohazards or accidental ingestion of contaminants may occur via hand-to-mouth actions. Dust inhalation may also contribute to ingestion of chemical contaminants. During excavation, soil sample collection, and sample preparation, inhalation of contaminant vapors could occur. Skin absorption may occur via contact with contaminated soil and/or ground water. The degree of hazard depends upon the adverse characteristics and toxicity of the chemical contamination, the amount of potential contact, and the exposure time. The greatest potential for chemical hazard to site personnel is during excavation activities.

The following substance is potentially a chemical hazard at the subject site:

Substances Involved	Physical State	Characteristics
Hydrocarbon Fuels	Liquid/Absorbed	Irritant

The following materials potentially present at this project site are specified by California Health and Safety Code 25249.5 as recognized and confirmed by the State of California as carcinogenic and/or mutagenic:

1. **Gasoline fuel containing benzene.**

Potential Worker Hazards

With hydrocarbon-based liquids, contact may result in dermal irritation due to desiccation. Respiration of air laden with hydrocarbon vapors may result in oxygen deficiency and/or mucous membrane irritation. Mixtures of air and hydrocarbon fuels exhibit an explosive range thus presenting an explosion hazard. Gasoline fuel may contain significant amounts of benzene, a proven human carcinogen. Potential exposure values and limits for benzene are listed in the table below.

TABLE 1 - POTENTIAL EXPOSURE VALUES

Chemical	Highest Conc. Detected in Samples (ppm)	IP[1] (electron volts)	TLV[2] (ppm)	IDLH[3] Level	Flammable Range (percent)
Benzene	61.0	0.9245	10	Carcinogen	1.3 - 7.1

[1]Ionization Potential in electron volts (eV)
[2]Threshold Limit Value as the time-weighted average (TWA) published by the American Conference of Governmental Industrial Hygienists (ACGIH)
[3]Immediately dangerous to life and health (IDLH) level as published by National Institute of Occupational Safety and Health (NIOSH), Publication Number 85-114, September 1985.
NA: not available

Benzene is a colorless liquid with an aromatic odor. It is incompatible with strong oxidizers like chlorine or bromine with iron. The routes of exposure for benzene include inhalation, skin absorption, ingestion, and skin and/or eye contact. Symptoms of exposure to benzene include irritation to the eyes, nose, and respiratory system, giddiness, headache, nausea, staggering gait, fatigue, anorexia, lassitude, dermatitis, and abdominal pain.

The potential health hazard from benzene exposure moderate at this site.

Conditions for Suspension of Operations

Site monitoring equipment will include a Photo-ionization detector (PID) or a Flame-ionization detector (FID) during drilling and trenching. **Field activities at Level D will be suspended when the continuous FID or PID level in the breathing zone increases to ten times background levels (assuming an ambient range of five to ten ppm).**

Level of Protection

The level of Personal Protection Equipment (PPE) needed for this investigation is Level D. Level D PPE includes coveralls, leather boots with steel toes and shanks, eye protection, safety helmet and gloves. If warranted, this Site Safety Plan can be modified for use of Level C situations. **Modification to Level B or Level A is beyond the scope for this Site Safety Plan and is not permitted.**

The criteria for upgrading to Level C PPE is the detection of unknown gasses or vapors in concentrations greater than 10 times background levels or unknown liquids present within the work area. Level C PPE includes Tyvek suits, nitrile gloves and rubber boots, eye protection, hard hat, and a full-face air-purifying respirator with Scott 642-OA-H cartridge-filters or equivalent.

Physical Hazards

Drilling equipment will be working near buildings and overhead phone lines. Proper precautions required when working around an operating drill rig will be strictly adhered to. All workers will be positioned upwind from drilling equipment at all times.

Slips, Trips and Falls

All field personnel shall become familiar with the general terrain and potential physical hazards (ravines, potholes, and loose gravel) which would be associated with accidental risk to slips, trips and/or falls.

Splashes and Spills

All field personnel shall wear appropriate chemical resistant gloves and goggles to prevent potential dermal exposure to accident splashes and spills that may occur during excavation of contaminated soil and soil sampling.

Sunburn

Working outdoors on sunny days for extended periods of time can cause sunburn to the skin. Excessive exposure to sunlight is associated with the development of skin cancer. Field staff should take precautions to prevent sunburn by using sun-screen lotion and/or wearing hats and long-sleeved garments.

Heat Stress

Heat stress can be a major hazard, especially for workers donning personnel protective equipment (PPE). The same protective materials that shield the body from chemical exposure also limit the dissipation of body heat and moisture. Heat stress can occur very quickly,

depending on the work being performed, the ambient weather conditions, clothing, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illness at hazardous waste sites, regular monitoring and other preventive precautions are vital.

Heat stress monitoring should commence when personnel are wearing PPE, including Tyvek-type coveralls, and the ambient temperature exceeds 70°F. If impermeable garments are not worn, monitoring should start when the temperature reaches 85°F. The following monitoring program is for workers wearing semipermeable or impermeable encapsulating ensembles when the temperature in the work area is above 70°F:

> Heart Rate should be measured by the radial pulse during a 30 second period as early as possible in the rest period. The next work cycle should be shortened by one-third while the rest period is kept the same, if the heart rate exceeds 110 beats per minute. If the heart rate still exceeds 110 beats per minute at the beginning of the next rest period, shorten the following work cycle by one-third.

Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat injuries. To avoid heat stress, the following steps may be taken:

- Modify work/rest schedules according to monitoring requirements, and mandate slowdowns as needed.
- Alternate personnel assigned to particular tasks to minimize over stress at one job function.
- Add additional persons to work team, and work during cooler hours, if possible.
- Provide shelter or shaded areas to protect personnel during rest periods.
- Maintain workers body fluids to ensure that the cardiovascular system functions adequately by having workers drink 16 ounces of fluid (preferably water) before beginning work, and urge workers to drink at least 16 ounces of fluid during each rest period.
- Encourage workers to maintain an optimal level of physical fitness.

An initial work/rest cycle on one hour work and fifteen minutes rest is recommended for protection of staff when the heat stress hazard is high. The recommended cycle will be adjusted up or down based upon worker monitoring, environmental conditions, and the judgement of the site safety officer. At any time field team members recognize the signs or symptoms of heat

stress prior to a scheduled rest period, they will notify the site safety officer immediately in order that a rest period can be called.

Some of the signs and symptoms of heat stress are heat rash, heat cramps, heat exhaustion, and heat stroke. Heat rash is characterized by a decreasing ability to tolerate heat and skin irritation and may result from exposure to heat or humid air. Skin cleanliness and treatment with mild drying lotions are necessary to prevent infection. Heat cramps are caused by heavy sweating with inadequate electrolyte replacement and are characterized by muscle spasms and pain in the hands, feet, and abdomen. Treatment of this disability consists of administering salted liquids orally.

Heat exhaustion may result form physical exertion in a hot environment when cardiac output is inadequate to meet increased flow of blood that results from dilation of peripheral blood vessels or dehydration. It is distinguished by pale, cool, moist skin, heavy sweating, dizziness, nausea, and fainting. First aid for heat exhaustion is as follows:

1. Immediately remove victim to support area, or if you are the victim, proceed to the support area.
2. Decontaminate, if practical, before entering support area.
3. Start cooling, but be careful not to cause a chill.
4. If conscious and not in shock, give water to drink slowly.
5. If vomiting, and/or signs and symptoms are not lessening within an hour, call for emergency help and/or transport victim to emergency room.
6. If person is a victim of heat exhaustion, they should not work the remainder of the day.

The most serious form of heat stress is heat stroke. This is caused when the temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Red, hot, usually dry skin, lack of reduced perspiration, nausea, dizziness and confusion, strong, rapid pulse, and coma are the signs and symptoms of heat stroke. First aid for heat stroke is as follows:

1. Immediately move victim to cool, uncontaminated area, the support area, and remove and dispose of victim's chemical-resistant clothing, if wearing any.

2. Cool the victim rapidly using whatever means necessary. This can include, but may not be limited to, removing clothing, fanning, and placing in water.

3. Do not give drinking water to victim.

4. Treat for shock, if needed.

5. Transport the victim to a medical facility immediately for further cooling and monitoring of body functions.

Cold Stress

Cold stress is a particular concern when field activities are performed while the air temperatures at the site are below 40°F. If winds are blowing at 5 mph or grater and/or the weather is damp or wet, cold stress is even more of a potential hazard. Donning of appropriate clothing, having warm shelter readily available, carefully scheduling work and rest periods, and monitoring workers' physical conditions are precautions that will be taken to prevent cold stress.

Cold injury (frostbite and hypothermia) may occur if cold stress is not prevented. As a preventive measure, the body core temperature must not drop below 96.8°F. Pain in the extremities is the first early sign of cold stress. Severe shivering sets in when the body core temperature drops below 95°F. If this occurs, work will stop immediately and the affected worker(s) will take a warming break of sufficient duration that the signs and symptoms of cold stress go away.

Noise

Heavy equipment, such as excavators, may produce loud noise. The effects of noise can include, but may not be limited to:

- Distracted, annoyed, or startled workers.
- Physical damage to the ear, pain, and temporary and./or permanent hearing loss.
- Communication interference that may increase potential hazards due to the inability to warn of dangers and the proper safety precautions to be taken.

OSHA regulation 29 CFR Part 1910.95 describes an effective hearing conservation program that must be administered whenever noise exposures equal or exceed an 8-hour, time-

weighted average sound level of 85 dBA (decibels on the A-weighted scale). In addition, if workers are subjected to noise exceeding an 8-hour, time-weighted average sound level of 90 dBA, feasible administrative or engineering controls must be utilized.

Heavy Equipment and Drilling

Before beginning any site work, the drilling subcontractor will perform a safety inspection of the drilling equipment. Personnel shall not work with equipment that they judge to be unsafe because of deterioration, missing parts, obvious defects, or improper use for site conditions. All equipment shall be bonded and grounded, sparkproof, and explosion-resistant, as appropriate.

ANSI-approved hardhats must be worn at and near the drill rig or any other heavy equipment. Since heavy pieces of equipment will be used during drilling, steel-toed boots/shoes are required during drilling operations, as well as during operation of other heavy equipment.

The driller must maintain a safe clearance (at least 10 feet) between overhead utility lines and the drill rig at all times.

Underground Utilities

The general engineering contractor will locate all underground utility locations prior to the starting of drilling activities. Resources used include site plans, utility companies, and Underground Services Alert (USA). In California, USA must be contacted at least two, but not more than fourteen, days prior to drilling on public property.

MEDICAL MONITORING

All Earth Systems Environmental, Inc. (ESE) employees assigned to the sampling operations must be active participants in ESE Employee Medical Surveillance Program, which meets the requirements of 29 CFR 1910.120. ESE's program requires employees assigned to hazardous waste site investigations and remediation to take pre-assignment, annual, and exit medical examinations. The CHSO will maintain current copies of training certificates and statements of medical program participation for all site personnel.

Work-Rest Schedule

Depending on the prevailing temperature and humidity, a work-rest schedule may be necessary. Duration and frequency will be at the discretion of the excavator and/or site supervisor. A supply of potable water will be kept available near the site.

Safety Training

Field personnel must receive 40-hour basic health and safety training, designed to comply with the OSHA/EPA requirements for hazardous waste operations and eight hours of annual refresher as set forth in 29 CFR 1910.120, and attend a site-specific safety orientation conducted by the project supervisor. The briefing shall include the following:

1) A briefing on the work to be performed and the work schedule
2) A discussion of the potential chemical and physical hazards associated with the work to be performed
3) Hazard identification
4) Purpose and limitations of personal protective equipment
5) Decontamination and emergency response procedures
6) Proper on-site conduct.

EMERGENCY CONTACT AND PROCEDURES

Contacts

Should any situation or unplanned occurrence require outside or support services, the appropriate contact from the following should be made:

Agency	Person to Contact	Telephone
Ambulance	dispatcher	911
County Fire Department	dispatcher	911
Police	dispatcher	911
County Health Agency	Cynthia Chapman	(415) 271-4320

Paramedics should be summoned in the event of a serious injury; they will arrange to transport the victim to the nearest appropriate facility. A first aid kit will be available at the

site for use in case of minor injuries. If anyone receives a splash or particle in the eye, the portable eyewash will be used to irrigate the eye for 15 minutes. If direct contact with contaminants occurs, affected skin areas should be washed immediately with soap and water.

At least one person at the site will have current certification in First Aid and CPR.

SITE LAYOUT

The level of hazard associated with the work to be performed does not require dividing the site into formal exclusion, contamination reduction, and support zones. However, care will be taken to avoid breathing vaporized gasoline fuel.

CONTAMINATION MONITORING

Organic vapor monitoring of the ambient air shall be conducted at reasonable intervals as determined by project personnel. The purpose of monitoring is to determine if vapor levels in the work area are high enough to warrant personal protection measures or evacuation of the site.

Organic vapor levels should be monitored using an OVM photoionization meter with an 11.7 eV lamp (probe), calibrated to benzene or a Foxboro® OVA (organic vapor analyzer) 108 flame-ionization detector calibrated for non-methane hydrocarbons. Background should be determined by taking readings before sampling begins. All readings, background and others, must be recorded. If any continuous measurement is observed to be 10 times over background levels in the work area, respiratory protective action will be required. Lesser protective measures are at the field geologists or engineers discretion.

DECONTAMINATION

Before leaving the site/work area, personnel must remove all protective equipment and wash their hands, faces and necks. These washing procedures shall be observed before all work breaks.

To minimize the potential for cross-contamination, all excavation equipment shall be decontaminated before the start of drilling, between borings, and before removal from the site. Sampling equipment shall be decontaminated before sampling and between sampling with washing with laboratory-grade detergent, a water rinse and a contaminant-free distilled water rinse.

EMERGENCY PROCEDURES

Emergency conditions are considered to exist if:

* Any member of the field crew is involved in an accident, experiences any adverse effects or symptoms of exposure while on-site; or
* A condition is discovered that suggests the existence of a situation more hazardous than anticipated.

In the event of an on-site emergency, the procedures described below are to be immediately followed.

1. Personnel on-site should use the "buddy system" (stay in pairs). In the event of a communication breakdown, i.e. radio malfunction or if radios are not available, "buddies" should use prearranged hand signals or other means of emergency signals as follows:
   * Hand gripping throat - out of air, can't breath.
   * Grip partner's wrist or place both hands around waist - leave area immediately, no debate!
   * Hands on top of head - need assistance
   * Thumbs down - no, negative.
2. The field engineer or geologist will establish emergency evacuation routes and will make all project personnel aware of these routes prior to the first on-site activities. In the event of an emergency, selection other escape route will be based on the nature of the emergency and wind direction.
3. Visual contact should be maintained between "buddies" on-site, with the team remaining in close proximity in order to assist each other in case of emergencies.
4. In the event that any member of the field crew experiences any adverse effects of symptoms of exposure while on site, the entire field crew should immediately halt work and follow the instructions provided the project supervisor.

5. Wind indicators visible to all on-site personnel should be provided by the project supervisor to indicate possible routes for upwind escape.

6. The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated should result in the evacuation of the field team and re-evaluation of the hazard and the level of protection required.

7. In the event an should accident occur, it will be necessary to complete an Accident Report Form with the company Safety Officer.

STANDARD SAFE-WORK PRACTICES

General

1. Eating, drinking, chewing tobacco and smoking are prohibited in the contaminated or potentially contaminated area of where the possibility for the transfer of contamination exists.

2. Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on equipment or ground. Do not place monitoring equipment on potentially contaminated surfaces (i.e., ground, etc.).

3. All field crew members should be alert to the presence of strong, irritating or nauseating odors that could indicate a potentially dangerous situation. Other senses should be kept alert to possible hazards as well.

4. Precaution should be taken to prevent spillage. In the event a spillage should occur, the liquid should be contained.

5. Prevent splashing of the contaminated liquids.

6. Field crew members shall be familiar with the physical characteristics of investigations, including the following:

   * Wind direction in relation to ground-zero area.

   * Accessibility to associates, equipment, and vehicles.

* Communications.
* Hot Zone (areas of known or suspected contamination).
* Site access.
* Nearest water sources.

7. The number of personnel and equipment in the contaminated area should be minimized but only to the extent consistent with work-force requirements of safe site operations.

8. All wastes generated during Earth Systems Environmental, Inc. and/or subcontractor activities at the site remain the property of the client.

PLAN ACCEPTANCE FORM

The Plan Acceptance Form (attached) should be filled out by all employees working on the site and retained in the job file.

Corporate Health & Safety Officer	Robert Mohle	(805) 541-5983
Site Safety Officer	Mark Magargee	(805) 836-0901 - office (805) 323-0267 - home

Project-Site Safety Plan prepared by Mark Magargee in conjunction with the Corporate Health & Safety Officer.

Signature:_____Date:_____

The undersigned have read and understood the attached safety plan and agree to comply with the provisions of this plan.

Name	Date	Name	Date
Position		Position	
Name	Date	Name	Date
Position		Position	
Name	Date	Name	Date
Position		Position	
Name	Date	Name	Date
Position		Position	
Name	Date	Name	Date
Position		Position	