HEALTH AND SAFETY PLAN
FOR REMOVAL AND CLOSURE
OF UNDERGROUND STORAGE TANKS
U.S. COAST GUARD ISC COMMAND
COAST GUARD ISLAND
ALAMEDA, CA

RAH Environmental, Inc.
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1. Site Location

This Health and Safety Plan (HSP) has been prepared for the U.S. Coast Guard ISC Command Center located on Coast Guard Island in Alameda, California. "Site" in this HSP refers to the project location identified above.

2. Site Description and Background

This HSP has been written to address the health and safety provisions that will be instituted during the removal of two underground storage tanks(UST), and the closure in-place of a third UST. The site is an operating Coast Guard facility, consisting of several buildings and marina facilities.

3. Planned Site Activities

Scheduled work will consist of the following activities:

- Pipe rinsing and removal
- Excavation and removal of tanks and underground piping
- Exposure and slurry filling of underground tank
- Environmental Sampling
- Backfilling

4. Key RAH Personnel and Responsibilities

Project Manager: Dan Herbst
Site Safety Officer: Scott Vickers
Director of Health and Safety: Ray Henry, Jr.

The responsibilities of RAH project personnel are outlined below.

Project Manager. The Project Manager has the ultimate responsibility for the health and safety of RAH personnel at the site. The Project Manager is responsible for:

- ensuring that all project personnel have received a copy of, and have read and understand this HSP
- keeping the Director of Health and Safety informed of project developments

- keeping on-site personnel, including subcontractors, informed of the expected hazards and appropriate protective measures at the site
- ensuring that resources are available to provide a safe and healthy work environment for RAH personnel and subcontractors

Director of Health and Safety. The Director of Health and Safety is responsible for the review, interpretation, and modification of this HSP. Modifications to this HSP that may result in less-stringent precautions cannot be undertaken by the Project Manager or Site Safety Officer without the approval of the Director of Health and Safety. In addition, he is responsible for:

- advising the Project Manager and Site Safety Officer on matters relating to health and safety on this project
- recommending appropiate safeguards and procedures
- modifying this HSP, when necessary
- approving changes in health and safety procedures employed at the site

Site Safety Officer. The Site Safety Officer is responsible for enforcing the requirements of this HSP once site work begins. By design, the Site Safety Officer has the authority to immediately correct all situations where noncompliance with this HSP is noted and to immediately stop work in cases where an immediate danger to site workers or the environment is perceived. Responsibilities of the Site Safety Officer also include:

- obtaining and distributing personal protective equipment (PPE) and air monitoring equipment necessary for this project
- limiting access at the site to authorized personnel
- communicating any unusual or unforeseen conditions at the site to the Project Manager
- supervising and monitoring the safety performance of all site personnel to ensure that required health and safety procedures are followed, and correcting any deficiencies
- conducting daily tailgate safety meetings before each day's activities begin

5. Hazards of Known or Expected Chemicals of Concern

Known Compounds	Source	Known Concentration Range
Diesel	Soil/ Water/ Pipe	N/A
Gasoline	Soil/Water/Pipe	N/A
Lead	Soil/Water/Pipe	N/A

Chemical descriptions of chemicals of concern, including health effects and exposure limits, are located in Appendix A.

On-site worker exposure to airborne contaminants will be monitored during site activities. A calibrated photo ionization detector (PID) or flame ionization detector (FID) will be used to monitor any changes in exposure to volatile organic compounds (VOCs). Personnel will perform routine monitoring during site operations to evaluate concentrations of VOCs in employee breathing zones. If VOCs are detected above predetermined action levels specified in section 10, the procedures found in section 7, of this HSP will be followed.

In accordance with Hazard Communication standard, material safety data sheets (MSDSs) will be maintained on site for chemical products used by RAH personnel at the site. In addition, all containers will be clearly labeled in English to indicate their contents and appropriate hazard warnings.

6. Physical Hazards

The following potential health and safety hazards may be encountered during tasks

- heavy equipment
- slips, trips and falls
- noise
- temperature stresses

To prevent or reduce the risk of hazards, use the buddy system to assist and monitor each other, wear proper protective clothing and equipment, replenish body fluids regularly, and maintain a clean work area.
The location of all underground pipes, electrical conductors, fuel lines, water, and sewer lines must be determined before any work is performed. All lines must be de-energized, locked out, or blinded where feasible.

Any equipment, including earth-moving equipment, or other heavy machinery will be operated in strict compliance with the manufacturer's instructions, specifications, and limitations, as well as any applicable regulations. The operator is responsible for inspecting the equipment daily to ensure that it is functioning properly and safely.

The use of heavy equipment may generate noise levels above the OSHA permissible exposure limit (PEL) for noise of 90 dBA for an 8-hour time-weighted average (TWA). If loud noise is present or normal conversation becomes difficult, hearing protection in the form of ear plugs, or equivalent, will be required.

Workers wearing protective clothing may experience varying degrees of heat stress. All project participants will be trained to recognize the forms of heat stress and their associated symptoms. Workers will be required to maintain adequate levels of body fluids before and during work activities at the site.

The walls and spaces of all excavations that are more than 5 feet deep and that will be entered by personnel shall be guarded by shoring, sloping, or benching. In addition, air monitoring will be performed in any excavation into which a person is required to descend, and that is greater than 4 feet in depth, and where the potential for a hazardous atmosphere exists. Air monitoring will include the use of an LEL/O_2 meter and PID/FID, or other air monitoring device, as appropriate. Side slopes shall not be steeper than 1:1 without a written report from a qualified civil or geotechnical engineer. All excavations shall be in accordance with Cal/OSHA Construction Orders, 8 CCR Subchapter 4, Article 6, Excavations.

The Site Safety Officer shall inspect the excavation daily. If there is evidence that a cave-in or slide is possible, all work shall cease until the necessary safeguards have been taken. Excavated material shall be placed far enough from the edge of the excavation (a minimum of 2 feet) so that it does not fall back into the opening. At the end of each day's activities, all open excavations will be clearly marked and securely covered to prevent nearby workers or unauthorized personnel from entering them.

Site personnel shall not enter confined spaces, including excavations and storage vessels, without first obtaining a Confined Space Entry Permit in accordance with RAH's Confined Space Entry procedures. Remote sampling techniques will be the preferred method of sample collection in excavations.

7. Minimum Required Health and Safety Procedures

All RAH personnel will be provided with appropriate personal safety equipment and protective clothing. The Site Safety Officer is to inform each worker about necessary protection and must provide proper training in the use of the safety equipment. The required personal protective clothing to be worn is described below.

Conditions Requiring Level D Protection

During work activities, sustained PID/FID readings (continuous over a 10 minute duration) above action levels specified in section 10 will require level D protection. Level D protection is as follows:

I. work shirt and long pants
II. outer nitrile gloves at a minimum for all material handling. Inner latex or nitrile surgical gloves are recommended where practical
III. steel-toed boots or safety shoes
IV. safety glasses
V. hardhat

Other personal protection readily available for use, if necessary, includes the following:

I. chemical-resistant gloves
II. hearing protection
III. Tyvek coveralls
IV. half-face respirator

Conditions Requiring Level C Protection

During work activities, sustained PID/FID reading above action levels specified in section 10 will require level C protection. Level C protection requires the following in addition to level D protection:

I. half-face air-purifying respirator (APR) equipped with combination organic vapor/ high efficiency particulate air (HEPA) filter cartridges.
II. chemical-resistant clothing (e.g., polycoated Tyvek, or Saranex) when contact with chemically affected soils or ground water is anticipated. Suits are to be one piece with attached hoods, booties, and elastic wrist bands.
III. outer nitrile gloves and inner latex surgical gloves
IV. safety shoes/boots with protective overboots or neoprene boots when direct contact with chemically affected soils is anticipated

During work activities, sustained PID/FID readings above action levels specified in section 10 will require level C protection with the addition of a full-face APR equipped with organic vapor/HEPA filter cartridges in lieu of half-face APR and safety glasses.

Sustained PID/FID reading above action levels specified in Section 10 require activities to cease, and personnel are to evacuate the exclusion zone. If questions arise, address them to the Site Safety Officer. The Project Manager and Director of Health and Safety will be contacted immediately.

8. Safety Procedures

Procedures must be followed to ensure site control so that persons who may be unaware of site conditions are not exposed to hazards. The work area will be barricaded by tape, warning signs, or other appropriate means. Any equipment or machinery will be secured and stored safely.

Access inside the specified work area will be limited to authorized personnel. Only RAH employees and designated RAH subcontracted personnel, as well as designated employees of the client, will be admitted to the work site. Only those workers possessing evidence of the required current 40-hour OSHA health and safety training (or current 8-hour refresher) and physician's authorization to conduct hazardous waste activities will be permitted in the designated exclusion zone. The Site Safety Officer will be responsible for ensuring that workers wear proper personal protective clothing. All personnel entering the site will sign the signature page in this HSP, indicating they have read and accepted the health and safety practices outlined in this plan.

Real-time air monitoring devices will be used to analyze for airborne contaminant concentrations every 30 minutes in the workers breathing zones while workers are in the exclusion zone. The equipment will be calibrated daily and results of the calibration recorded on RAH Air Monitoring Form or project log book. Copies of the air monitoring data will be retained in the project files.

All personnel entering the site will exit at the same location. There must be an alternate exit established for emergency situations. In all instances, worker safety will take precedence over decontamination procedures. If decontamination of personnel is necessary, exiting the site will include the decontamination procedures described below.

Despite protective procedures, personnel may come in contact with potentially hazardous compounds while performing work tasks. If so, decontamination needs to take place using an Alconox or TSP wash, followed by a rinse with deionized water. Standard decontamination procedures for levels C and D are as follows:

I. equipment drop
II. boot cover and glove wash and rinse
III. boot cover and outer glove removal
IV. suit wash and rinse
V. safety boot and suit removal
VI. inner glove wash and rinse
VII. respirator removal
VIII. inner glove removal
IX. field wash of hands and face

Workers should employ only applicable steps in accordance with level of PPE worn and extent of contamination present. All disposable items will be disposed of in a dry container. Wash and rinse water generated from decontaminating equipment that was used or personnel who have worked in areas of known concern will be drummed and sampled to determine proper disposal procedures. Nondisposable items will be sanitized before reuse. The Site Safety Officer is responsible for the maintenance, decontamination, and sanitizing of PPE.

Used Equipment will be decontaminated as follows:

I. Alconox or TSP and water solution will be used to wash the equipment
II. The equipment will be rinsed, first with tap water, then with deionized water

Each person must follow these procedures to ensure that potential contamination is not transferred off site.

9. Special Procedures and Precautions

I. All site personnel, including subcontractors, shall report any unsafe condition or practices to the attention of the Site Safety Officer.
II. The hands and faces of all workers shall be thoroughly cleaned before workers eat, drink or leave the Site.
III. All electrical equipment used during field activities shall be suitably grounded and insulated. Ground-fault circuit interrupters (GFCI) will be utilized with all heavy electrical equipment to reduce the potential for electric shock.
IV. Beards, long sideburns, or other physical features that prevent a proper face-to-face piece seal, may not be worn with respiratory protection equipment.
V. The use of PPE and protective eye wear may restrict vision: use caution.
VI. Chemical-protective clothing may limit full range of motion. Work/rest regimens and replenishment of body fluids to reduce temperature-related stress are required.
VII. Workers shall maintain good housekeeping practices during field activities in order to maintain a safe working environment. The worksite shall be kept free of debris, waste, and trash at all times.
VIII. The "buddy system" shall be used whenever appropriate.

10. Action Levels

See Section 7 of this HSP for minimum required health and safety procedures.

Activities/ Location	Action Level	Level of Respiratory Protection
All activities on site.	0 to 10 ppm above background	Level D: No respiratory protection required.
N/A	11 to 50 ppm	Level C: Half-face air-purifying respirator fitted with organic vapor/HEPA filter cartridges.
N/A	51 to 250 ppm	Level C: Half-face air-purifying respirator fitted with organic vapor/HEPA filter cartridges.
N/A	>250 ppm	Cease operations and evacuate work area. Contact Director of Health and Safety and Project Manager Immediately.

11. Contingency Procedures

In the event of an emergency, site personnel will signal distress with three blasts of a horn (a vehicle horn will be sufficient). Communication signals, such as hand signals, need to be established where communication equipment is not feasible, such as in a pit.

It is the Site Safety Officer's duty to evaluate the seriousness of the situation and to notify appropriate authorities. Section 12 of this plan contains emergency telephone numbers as well as directions to the hospital. Nearby telephone access must be identified and available to communicate with local authorities. If a nearby telephone is not available, a cellular telephone will be maintained on site during work activities. Dial 911 in the event of an emergency.

In the event that an underground conduit is damaged during excavation or drilling, all mechanized equipment will immediately be shut off until the nature of the piping can be determined. Depending on the nature of the broken conduit (e.g., natural gas, water, or electricity), the appropriate local utility will be contacted.

A daily morning briefing to cover safety procedures and contingency plans in the event of an emergency is to be included with a discussion of the day's activities . These daily meetings will be recorded on RAH's Daily Tailgate Safety Meeting Forms. A debriefing to cover the activities is to be held upon completion of the work.

12. Emergency Contacts

Ambulance: 911
National Response Center: (800) 424-8802
Poison Control Center: (800) 682-9211
Toxline: (301) 496-1131
Chemtrec: (800) 424-9300
RAH Director of Health and Safety: (916) 652-5777
RAH Loomis, California: (800) 234-7241

Urgent Care Facility: Port Medical Service, 2097 7th Street, Oakland, CA 94607

Directions to medical facility: Shown on job board to be on-site at all times.

13. Contractor and Subcontractor Personnel

Contractor and Subcontractor Agreement

1. Contractor certifies that the following personnel, noted below, to be employed on the project for underground storage tank removal activities, have met the requirements of the CAL/OSHA Hazardous Waste Operations Standard Title 8 CCR 5192, and other applicable CAL/OSHA Standards.

2. Contractor certifies that in addition to meeting the OSHA requirements, it has received a copy of this HSP, and will ensure that its employees are informed of and will comply with CAL/OSHA requirements and the guidelines in this HSP.

3. Contractor further certifies that it has read, understands, and will comply with all provisions of this HSP, and that it will take full responsibility for the health and safety of its employees and subcontractors, if any.

Contractor	Signature	Date

15. Visitors

I have read this Health and Safety Plan (HSP) and will comply with it.

Name	Company/ Agency	Signature	Date

APPENDIX A
CHEMICAL DESCRIPTIONS

Diesel Fuel

Diesel fuel is a gas oil fraction available in various grades as required by different engines. Composition of diesel varies in ratios of predominantly aliphatic, olefinic, cycloparaffinic, and aromatic hydrocarbons, and additives.

Ingestion of diesel can lead to systemic effects such as gastrointestinal irritation, vomiting, diarrhea, and in severe cases drowsiness and central nervous system depression, progressing to coma and death. Aspiration of diesel fuel can cause hemorrhaging and pulmonary edema, progressing to pneumonitis and renal involvement.

GASOLINE

Gasoline is produced from the light distillates during petroleum fractionation, with its major components including paraffins, olefins, naphthenes, aromatics, and recently ethanol. Gasoline also contains various functional additives as required for different uses, such as antiknock fluids, antioxidents, metal deactivators, corrosion inhibitors, anti-icing agents, preignition preventors, upper-cylinder lubricants, dyes, and decolorizers. Lead additives in particular were widely used in gasoline until the introduction of vehicle catalytic converters.

Mild cases of gasoline ingestion can cause inebriation, vomiting, vertigo, drowsiness, confusion, and fever. Aspiration into the lungs and secondary pneumonia may occur unless prevented. Gasoline is a skin irritant and a possible allergen. Repeated or chronic dermal contact can result in drying of the skin, lesions, and other dermatologic conditions. CAL/OSHA for gasolineis listed as 300 ppm.

Lead

Lead rarely occurs in the elemental state, but exists widely in a number of ores. Lead ores generally occur in nature associated with silver and zinc. Inorganic lead is a generally ubiquitous element being present in land, water, air, and food, hence measurable amounts exist in all adult body tissues and fluids.

Considerable data exists on the effects of lead exposure in humans. It is a poison by ingestion and a suspected human carcinogen of the lungs and kidneys. There are data to suggest that lead is a mutagen and can cause reproductive effects. Human systemic effects by ingestion and inhalation (the two routes of absorption) include loss of appetite, anemia, malaise, insomnia, headache, irritability, muscle and joint pains, tremors, flaccid paralysis without anesthesia, hallucinations and distorted perceptions, muscle weakness, gastritis, and liver changes.