

**SUPPLEMENTAL COMPREHENSIVE INVESTIGATION
SITE SAFETY HEALTH PLAN**

**FOR
THE ALABAMA ARMY NATIONAL GUARD (ANG)
ORGANIZATIONAL MAINTENANCE SHOP 28 (OMS-28)
THE FORMER BROOKLEY AIR FORCE BASE
MOBILE, ALABAMA**

MARCH 2008

PREPARED FOR:



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FORMER BROOKLEY FIELD AIR FORCE BASE
SUPPLEMENTAL COMPREHENSIVE INVESTIGATION
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MOBILE, ALABAMA**

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List of Acronyms

AANG	Alabama Army National Guard
ACGIH	American Conference of Industrial Hygienists
AEROSTAR	Aerostar Environmental Services, Inc.
AFB	Air Force Base
ANSI	American National Standards Institute
ARBCA	Alabama Risk Based Corrective Action
ASTM	American Society of Test and Materials
BLS	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
CAP	Corrective Action Plan
CAS	Chemical Abstract System
CI	Comprehensive Investigation
CDC	Center for Disease Control
CDQM	Chemical Data Quality Manager
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLP	Contract Laboratory Program
CO ₂	carbon dioxide
COC	Chain-of-Custody
COR	Contracting Officer's Representative
CQC	Chemical Quality Control
CRZ	Contamination Reduction Zone
DCQCR	Daily Chemical Quality Control Reports
DO	Dissolved Oxygen
DoD	Department of Defense
DOT	Department of Transportation
DMP	Data Management Plan
DQCR	Daily Quality Control Report
DQO	Data Quality Objectives
DQAO	Data Quality Assurance Objectives
DSHO	Designated Safety and Health Officer
E&E	Ecology & Environment, Inc.
EDD	Electronic Data Deliverables
EPD	Environmental Protection Division
EPH	Extractable Petroleum Hydrocarbons
ERP	Emergency Response Plan
ESE	Environmental Science and Engineering
eV	Electron Volts
EZ	Exclusion Zone
FCO	Field Change Order
FID	Flame Ionization Detector
FM	Field Manager
FOIA	Freedom of Information Act
FSP	Field Sampling Plan
ft	feet
FUDS	Formerly Used Defense Sites
GC/MS	Gas Chromatograph/Mass Spectrometer
GPM	gallons per minute
HDPE	High Density Polyethylene
HPLC	High-Performance Liquid Chromatography
HPS	Hantavirus Pulmonary Syndrome
HTRW	Hazardous, Toxic and Radioactive Wastes

List of Acronyms (Continued)

IDW	Investigation-Derived Waste
IP	Ionization Potential
LCS	Laboratory Control Sample
LEL	Lower Explosive Limit
LIMS	Laboratory Information Management System
LNAPL	Light Non-Aqueous Phase Liquid
MAA	Mobile Airport Authority
MDL	Method Detection Limit
mg/kg	milligram per kilogram
MPE	Multi-Phase Extraction
MSDS	Material Safety Data Sheet
MS/MSD	Matrix Spike and Matrix Spike Duplicate
NCR	Nonconformance Report
NDIR	Non-Destructive Infrared Detector
NIOSH	National Institute of Occupational Safety
NTP	Notice to Proceed
OMS	Organizational Maintenance Shop
OSHA	Occupational Safety and Health Administration
O ₂	Oxygen
°C	degrees Centigrade
°F	degrees Fahrenheit
PE	Professional Engineer
PG	Professional Geologist
PAH	Polycyclic Aromatic Hydrocarbons
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PEL	Permissible Exposure Level
PID	Photo-Ionization Detector
PMP	Project Management Plan
PgM	Program Manager
PM	Project Manager
POC	Point-of-Contact
PPE	Personal Protective Equipment
ppb	parts per billion
ppm	parts per million
PQL	Practical Quantitation Limit
PVC	Polyvinyl Chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QCSR	Quality Control Summary Report
RAC	Risk Assessment Code
RCRA	Conservation & Recovery Act
ROI	Radius of Influence
ROW	Right of Way
REL	Recommended Exposure Level
RPD	Relative Percent Difference
RORO	Roll On Roll Off
SAP	Sampling and Analysis Plan
SCAPS	Site Characterization and Analysis Penetrometer

	System
scfm	standard cubic feet per minute
SHO	Safety & Health Officer
SSHO	Site Safety & Health Officer

List of Acronyms (Continued)

SSHP	Site Safety & Health Plan
STEL	Short Term Exposure Level
SVE	Soil Vapor Extraction
SZ	Support Zone
TLV	Threshold Limit Value
TPH	Total Petroleum Hydrocarbons
TVH	Total Volatile Hydrocarbons
TWA	Time Weighted Average
µg/Kg	micrograms per kilogram
µg/L	micrograms per liter
USCE	United States Army Corps of Engineers
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VPH	Volatile Petroleum Hydrocarbons
VOA	Volatile Organic Analyzer
VOC	Volatile Organic Hydrocarbon
WHE	Walker-Hill Environmental, Inc.
WP	Work Plan

1.0 INTRODUCTION

This Site Safety and Health Plan (SSHP) has been prepared by Aerostar Environmental Services, Inc. (AEROSTAR) at the direction of the Department of the United States Army Corps of Engineers (USACE), Mobile District, Alabama and pertains to supplemental Comprehensive Investigation (CI) activities at the Organizational Maintenance Shop Number 28 (OMS-28) located west of the Fort Floyd A. McCorkle Alabama Army National Guard on the former Brookley Air Force Base in Mobile, Alabama; hereafter referred to as the site. Specifically, this SSHP addresses the policies and procedures to assist in anticipating, recognizing, evaluating and controlling potential hazards and hazardous substances that may be encountered as part of this project.

All personnel participating in field activities must be trained in the general and specific hazards unique to this job and, if applicable, meet all medical examination and Occupational Safety and Health Administration (OSHA) requirements. All site personnel and visitors shall follow the guidelines, rules, and procedures in this SSHP. The Project Manager (PM) or Site Safety and Health Officer (SSHO) may impose any other procedures or prohibitions judged necessary for safe operations. A hospital direction map is included in Appendix A.

This document is prepared to inform AEROSTAR personnel and all subcontractors of potential hazards onsite. However, each retained contractor or subcontractor must assume direct responsibility for the safety and health of its own employees and must assign a Designated Safety and Health Officer (DSHO). This document may not be applicable to other contractors, site tasks, and/or other sites unless approved for such use by a designated AEROSTAR representative.

This SSHP establishes the policies and procedures that protect the workers and the general public from potential safety and health hazards posed at this site. This plan establishes general personnel protection standards and mandatory safety practices and procedures; assigns authority and responsibility; and identifies appropriate training for individuals performing tasks on this project. This document is also intended to assist in compliance with relevant federal and state, safety and health regulations governing supplemental remedial investigation; and was developed in accordance with the following:

- Federal Acquisition Regulation (FAR) Clause 52.236-13: Accident Prevention.
- USACE, Safety and Health Requirements Manual; EM 385-1-1 (3 November 2003).
- OSHA Construction Industry Standards, 29 CFR 1926.
- OSHA General Industry Standards, 29 CFR 1910; including but not limited to 29 CFR 1910.120 - Hazardous Waste Operations and Emergency Response.
- EPA's Hazardous Waste Requirements, 40 CFR 260-270
- USACE, Guide Specification, CEGS-01350, Safety, Health, and Emergency Response (HTRW).
- Other applicable federal, state, and local safety and health requirements.

Because site conditions are subject to change and unforeseen conditions may arise, amendments or additions may need to be made to this APP/SSHP during the course of work. The PM and SSSH can only authorize modifications to this plan with the assistance of AEROSTAR's Certified Industrial Hygienist (CIH) assigned to this project.

2.0 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

2.1 Site Description and History

The former Brookley AFB is located in Mobile, Mobile County, Alabama. All figures unless otherwise referenced here will be found in the accompanying WP. OMS-28 is a wooded, undeveloped area located north of Nowlin Street and west of the Fort Floyd A. McCorkle Alabama Army National Guard facility (see Figures 1-1, 2-1 and 2-2 of the WP). No structures are present on OMS-28. OMS-28 is bounded on the east by the Fort Floyd A. McCorkle Alabama Army National Guard facility, to the south by Farmers Fresh Produce and undeveloped land, to the west by U.S. Interstate Highway I-10, and to the north by Duval Street and residential property. The surface features consist of heavy vegetative cover comprised of scrub trees, grasses and brush. Surface flow from storm water runoff across the site varies due to heavy vegetation and a porous surface medium. The site becomes topographically lower across the western edge as it approaches I-10.

2.2 Contamination Characterization

Organic vapors and chemical exposure hazards may be encountered during site activities. Information about the Potential Exposures to Chemicals of Concern is included in Table 3-1 and section 3.0 of this SSHP.

2.3 Scope of Work

Field activities involved in this supplemental remedial investigation project have been identified and categorized into individual component activities. An activity hazard analysis (AHA) for each activity is found in Appendix B.

- Abandon existing temporary monitoring wells already on site.
- Install one soil boring approximately 120 feet deep to collect soil sample for use in an Alabama Risk Based corrective Action (ARBCA) evaluation of the site.
- Installation of four new shallow (approximately 20 feet deep) and three deep (approximately 120 feet deep) monitoring wells, soil sample collection, and groundwater collection.
- Perform a site survey after the installation of the new monitoring wells to determine horizontal and vertical locations of the newly installed wells.
- Perform two additional groundwater sampling events.

2.3.1 Subcontractors

Presented below is the subcontractors that has been assigned to the project by AEROSTAR, and their associated task for the project.

Gulf Coast Labnet, Inc., (GCLI), will provide laboratory analytical services for soil and groundwater samples collected during this CI.

Walker-Hill Environmental, Inc. (WHE) will provide well installation services.

2.4 Site Control

OMS-28 is located within the boundaries of the Alabama Army National Guard (AANG) and the Mobile Airport Authority (MAA) and access is restricted to ANG and MAA personnel only. A small portion of the site activities will occur along the State of Alabama Department of Transportation (DOT) Right of Way (ROW). Prior to beginning any site work the site will be secured as follows:

- An Exclusion Zone (EZ) will be set up by flagging the area with barricade tape or cones with signs that indicate that only authorized personnel and vehicles may enter the area where the work will take place. AEROSTAR shall coordinate work schedule with the ANG, MAA, USACE and the State of Alabama DOT.

Section 11.0 of this document contains more detailed information on site control and access to the site during work activities.

2.5 Site Mobilization

All equipment and supplies needed in the work area that are mobilized and staged onsite within the work area will be decontaminated and removed after each mobilization to the site.

3.0 HAZARD AND RISK ANALYSIS

3.1 Project Hazard Identification and Mitigation Measures

The purpose of the site activity hazard analysis is to identify and assess potential hazards that may be encountered by site personnel and visitors. A preliminary evaluation of the site's characteristics was performed by a CIH to aid in the selection of appropriate employee protection methods prior to site entry. After the start of work, a more detailed evaluation may be conducted under the direct supervision of a CIH, to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed. All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH) or other conditions that may cause death or serious harm have been identified during the preliminary site investigation and evaluated during the contamination investigation.

3.2 Chemical Hazards

Based on previous TCE Comprehensive Site Investigation results (see Section 2.2.3 of the WP) the chemical of concern is trichloroethylene (TCE) in the soil and groundwater.

The potential exposure to chemicals during this project occurs during drilling of soil borings for the installation of monitoring wells and during collection of soil and groundwater samples. Table 3-1 provides additional information regarding the chemical hazards anticipated during this project.

3.3 Carcinogens

A carcinogen is a substance that is either known to cause cancer or is believed to cause cancer. A carcinogen must be classified as such by either the National Toxicology Program (NTP) or the International Agency for Research on Cancer (IARC). NIOSH will establish REL's for carcinogens if sufficient evidence is available to do so. If no exposure limit is set for a carcinogen, then every reasonable attempt to eliminate exposure should be incorporated.

3.4 Chemical Routes of Exposure

Bodily injury can result to people onsite if they are exposed to chemicals at concentrations above recommended exposure limits. Toxic chemicals can enter the body through injection, ingestion, eye and skin absorption, and inhalation.

TABLE 3-1: Chemicals of Concern

Chemical	CAS#	NIOSH REL	OSHA PEL	IDLH	Carcinogen	Chemical Information
Trichloroethylene	79-01-06	25 ppm (10 hour TWA)	100 ppm (8 hour TWA)	1000 ppm	Yes	Colorless liquid with a chloroform like odor

TWA = Time weighted average
ppm = parts per million or milligrams/meter³

3.4.1 Injection

Injection or skin punctures by sharp or pointed objects represent a very hazardous route of exposure because some form of tissue damage (and the likelihood for infection) is combined with direct transport into the body. Many such routes of entry, such as through broken glass, needles, or work-related tools, can be avoided by following approved safety procedures and wearing appropriate safety boots, long pants, long-sleeved shirt, hard hat, gloves, and shatter-resistant eye and face protection.

3.4.2 Ingestion

Exposure by ingestion involves the oral intake of a hazardous substance. Workers may ingest materials unintentionally when they handle food, drink, smoke, or bite fingernails after contact with the material and before thoroughly washing their hands. Workers may also unintentionally contaminate their families by bringing hazardous substances home with them on their bodies, clothes, or vehicles without adequately decontaminating. This route of exposure can be minimized if workers practice adequate personal hygiene by washing thoroughly prior to leaving the work site. Also, many hazardous substances have been known to adsorb into foods, liquids, and tobacco products, thus creating a potential route of exposure through ingestion. For this reason, at no time will food, gum, or tobacco products be allowed in the EZ.

3.4.3 Eye and Skin Absorption

The skin is the largest organ of the body, comprising about 2,880 square inches or 19 square feet of surface area and about 15 percent of total body weight. Skin is a tough flexible cover and is the first body barrier to come into contact with a wide variety of industrial hazards. Chemical hazards can cause physical injury to the skin (e.g., chemical burns and dermatitis). The skin may also act as a vehicle of transport for some chemicals through long-term and sometimes brief dermal contact. Similarly, the sensitive eye tissues and mucous membranes, with their inherent high moisture content, may act as a "chemical sponge" that adsorbs hazardous substances causing tissue damage or provides a mode of transport into the body.

Adverse effects of eye and skin absorption of hazardous substances depend on the specific contaminant present and may include local tissue damage, dermatitis, or systemic effects such as liver, kidney, or central nervous system (CNS) effects. Some chemicals such as formaldehyde act as sensitizing agents that produce little effect upon first exposure but exhibit extreme effects (such as heightened allergic reactions) upon subsequent exposures.

Adverse reactions to chemical contact with skin or eyes can be avoided if workers wear appropriately selected and used Personal Protective Equipment (PPE), such as Tyvek® suits, safety glasses/chemical goggles, gloves, and chemical-resistant boots.

3.4.4 Inhalation

Many foreign materials may be inhaled into the respiratory system, which, generally speaking, comprises numerous nasal and lung tissues. The respiratory system presents a quick and direct avenue of entry for toxic materials into the body because of its intimate association with the circulatory system and the consistent need to oxygenate human tissue cells. Anything affecting the respiratory system also affects the entire human organism, whether the inhaled material is contaminated air such as a toxic gas, dust, or an irritant, or whether insufficient oxygen is delivered to the body. Inhaled contaminants that adversely affect the body fall into three general categories:

- Aerosols and dusts, which, when deposited in the lungs, may produce either acute or chronic tissue damage, tissue reaction, adverse health, disease, or physical destruction. For example asbestos fibers cause fibrotic growth in the alveolar tissue of the lungs and may lead to mesothelioma (a form of lung cancer).
- Toxic gases that produce adverse reaction in the tissue of lungs themselves. One toxic gas, hydrogen fluoride, will cause pulmonary edema and chemical burns of the lung tissues.
- Toxic aerosols or gases that do not affect the lung tissue but are passed from the lung into the bloodstream, where they are carried to other body organs or have adverse effects on the oxygen-carrying capacity of the blood. Carbon monoxide (CO) is an example of a toxic gas that is passed into the bloodstream. Carbon monoxide ties up red blood cells so they cannot accept oxygen, causing oxygen starvation.

Individual susceptibility to inhalation hazards in the occupational setting varies according to factors that include rate of clearance of the lung, effects due to cigarette smoking, any existing pulmonary disease, and genetic factors.

Inhalation hazards can be successfully avoided by using the appropriate National Institute of Occupational Safety and Health (NIOSH)-approved respirator when necessary and by eliminating downwind work stations whenever possible.

3.5 Safety Hazards

Site features, conditions, and activities that are potential safety hazards include:

- Excavations, trenches, holes, or ditches (either constructed or naturally occurring);
- Slip, trip, and fall hazards;
- Contact with sharp or jagged objects such as nails, sharp metal, or broken glass;
- Contact with blunt or immovable objects, such as overhangs and beams;
- Electrical hazards;
- Equipment and machinery hazards;
- Unstable surfaces, which may fall or give way; and
- Unstable objects or structures, which may fall or give way.

Other safety hazards can be caused by the work itself. For example, protective clothing or equipment may impair a worker's agility, hearing, and vision, increasing the risk of an accident.

All personnel, contractors, and subcontractors shall become familiar with the field activities. Hard hats, eye protection and safety shoes are required in all areas of the site. These minimum PPE requirements will be donned prior to performing any site activities. This will prevent minor injuries caused by bumping one's head while working around and under construction equipment. Personnel will be trained in and required to use proper lifting techniques when lifting heavy objects. The following are safety hazards that may be present at the site:

3.5.1 Tripping, Slipping, and Falling Hazards

Personnel will be reminded daily to maintain sure footing on all surfaces. Use of safety harnesses will be required for any personnel working six or more feet above any surface, including on man-

lifts. Use of hand rails when climbing stairs will be enforced, and handrails will remain secure until the support structure itself is removed and lowered to ground level.

Work surfaces of unknown or suspect integrity will be strengthened or overlain with a work platform capable of supporting all personnel and equipment in use in that area.

To minimize tripping hazards caused by construction debris, material will be removed daily from the work areas and stockpiled in appropriate designated storage areas. This “house cleaning” effort will be enforced by the Field Manager (FM)/Site Safety and Health Officer (SSHO) at the end of each day.

3.5.2 Falling Objects

All tasks can be accomplished without any object free-falling to the ground. All equipment and material will be slowly lowered to the ground using a crane or skip bucket. No personnel shall work under this equipment at any time. Also, the FM/SSHO will ensure that an adequate area is clear of personnel while the equipment is in operation.

3.5.3 Heavy Equipment and Traffic

The use of heavy equipment onsite presents a significant potential for injury to personnel. To minimize these hazards, designated routes will be established for mobilization through the facility and specific traffic patterns will be established. All trucks will use spotters for backing procedures. All personnel working along roadsides will wear class 1 high visibility apparel approved by the American National Standards Institute (ANSI), ANSI/ISEA 107-2004.

Personnel needing to approach heavy equipment during operation will observe the following protocols:

1. Make eye contact with the operator.
2. Signal the operator to cease heavy equipment activity.
3. Approach the equipment and inform the operator of intentions.

Only qualified personnel, as determined by the FM/SSHO and A&D Field Supervisors, will operate heavy equipment. Those crew members directly involved with spotting for the operator will be the only personnel allowed within the operating radius of the heavy equipment. All other personnel will remain a safe distance away from these operations. Vehicles will yield to all bikes, pedestrians, and railroad crossings.

Only equipment that is in safe working order will be used. To maintain this policy, all equipment brought onto the project site will be inspected for structural integrity, smooth operational performance, and proper functioning of all critical safety devices in accordance with the manufacture’s specifications. This inspection will be performed by a qualified equipment operator and the FM/SSHO. Equipment not conforming to the operational and safety requirements during this inspection will not be put into service until all necessary repairs are made to the satisfaction of the inspection group. Only qualified operators familiar with the equipment will be permitted to operate equipment.

3.5.4 Electrical Hazards

To prevent accidents caused by electric shock, the FM/SSHO will inspect all electrical connections on a daily basis. The FM/SSHO will shut down and lock out any equipment found to have frayed wiring or loose connections until a qualified electrician can be contacted and repairs effected.

Electrical equipment will be de-energized and tested by an electrician before any electrical work is done. All equipment will be properly grounded prior to and during all work.

In addition, ground fault circuit interrupters (GFCIs) will be installed whenever possible in each circuit between the power source and tool, unless the presence of a potentially explosive atmosphere precludes this procedure. In the event that generators are used to supply power, these generators will be equipped with GFCIs.

3.6 Physical Hazards

Physical hazards involve the potential for injury or adverse health from physical agents such as:

- Noise;
- Heat and cold stress;
- Vibration;
- Explosion and fire;
- Illumination;
- Oxygen deficiency;
- Electrical;
- Lacerations, cuts and scrapes;
- Vehicular traffic;
- Falling into excavation;
- Underground utilities;
- Hit by heavy equipment; and
- Lifting heavy equipment.

Physical hazards are discussed in more detail in Section 8.0 Exposure Monitoring.

3.7 Biological Hazards

Biological hazards that may be found onsite include insects and arachnids, such as: bees, wasps, mosquitoes, spiders, and ticks. Poisonous snakes, alligators, and hazardous plants may also be encountered on the project site. Employee awareness and the safe work practices should reduce the risk associated with these hazards to acceptable levels.

3.8 General Safety and Health Work Practices

This SSHP advocates exercising every reasonable precaution when performing the work to prevent property damage and to protect the safety and health of employees, the public, and the environment.

Employees have certain responsibilities for their own safety, as follows:

- Report to work rested, physically and mentally fit to perform the job assignment;
- Work outside the influence of intoxicants, narcotics, or controlled substances;
- Wear suitable clothing for the weather and the work;

- Wear PPE and follow established procedures for a particular job. Do not wear jewelry or loose-fitting clothing when operating or near equipment;
- Call the supervisor's attention to any behavior or condition that may cause injury or illness to others or damage to property;
- Read warning labels on containers and equipment. Follow specified precautions;
- Discontinue any operation that could lead to injury, illness, or property damage;
- Keep horseplay and other disruptive behavior away from the job;
- Promptly report to the FM/SSHO any occupational injury, illness, or exposure to toxic material. If injured, get first aid. Small injuries can become serious if neglected;
- Promptly inform the FM/SSHO whenever new substances, processes, procedures, or equipment that could present new safety and health hazards are brought into work areas or onto projects;
- Do not eat, smoke and/or chew tobacco, or chew gum in the EZ;
- Do not allow visitors without adequate safety training into the EZ;
- Work upwind of any field activity;
- Perform work in a manner that will minimize dust from becoming airborne (i.e., use water spray or wet technique when feasible);
- Do not work alone inside the EZ. Use the "buddy system" during all work activities;
- Enter the EZ only while in proper PPE and with a "buddy." The buddy system will also be in effect at any work zone where respirators are being worn;
- Although not anticipated, ensure that a stand-by person is added to the buddy system when PPE is upgraded to Level B (supplied air). The stand-by person shall not enter the EZ unless an emergency calls for such action. The stand-by person must have first-aid training and act as the emergency response person;
- While in the EZ, avoid contact with objects or soil unless the contact is necessary to the field operation;
- Be alert to abnormal behavior of other personnel that may indicate distress, disorientation, or other ill effects;
- Verify that vehicles have an ABC-rated fire extinguisher and first-aid kit;
- Monitor weather conditions, particularly wind direction, because they could affect potential exposure;
- Be aware of the amount of solar radiation exposed skin is receiving. Take steps to minimize the potential for sunburn;
- Operate a vehicle only if you are a licensed driver. Seatbelts must be worn when operating a company vehicle or when driving a private vehicle on company business;
- Drive vehicles in a safe manner and obey traffic regulations;
- Operate equipment only if you are a trained operator. Conduct and document a daily equipment inspection. Post equipment operating rules in accordance with OSHA regulations;

- Contact the FM/SSHO if contact with human body fluids occurs during the administration of first aid;
- These general safety responsibilities listed above also apply to subcontractors and visitors.

3.9 Activity Hazard Assessment

The Activity Hazard Assessment (AHA) identifies potential safety, health, and environmental hazards and provides for the protection of personnel, the community and the environment. Because of the possibility for change exists in construction projects, supervisors must continually inspect the work site to identify hazards that may harm site personnel, the community, or the environment. The FM/SSHO will inform the PM of these changing conditions and will implement measures to protect the safety and health of site personnel, adjacent general population and the environment. The FM/SSHO and SHO will write addenda to change the Activity Hazard Analysis and associated hazard controls as necessary.

All AEROSTAR personnel and subcontractors shall be familiar with the hazards, and strictly adhere to the appropriate safety procedures. The potential hazards and the appropriate controls shall be presented to project personnel during Daily Safety Briefings. A summary of site-specific activities and associated hazards is presented in the Activity Hazard Analyses in Appendix B.

3.10 Action Levels

All personal exposure monitoring records will be maintained in accordance with 29 CFR 1910.120. The minimum monitoring requirements and action levels for chemical contaminants of concern are presented in Section 8.0 Exposure Monitoring/Air Sampling Program and summarized in Table 3-2.

3.11 Potential Exposures

Information on the significant suspected contaminants and job-associated chemicals that will be used for this project is contained in Table 3-1. If additional contaminants or job associated chemicals that pose new or significantly greater hazards are identified prior to, or during the course of, site activities, the FM/SSHO will update this section as information developed during this project warrants. For MSDS information, see Appendix C.

TABLE 3-2: Air Monitoring Action Levels

Analyte/Instrument	Calibration Schedule	Monitoring Frequency	Recommended Action
VOC's / FID or OVA	1 x daily before startup of work in accordance with manufacturer's specifications.	Continuously during activities in the EZ that disturb soil. Frequency may be downgraded based on measured levels.	If sustained reading (≥ 1 minute) of 10 ppm (Action level for benzene) in breathing zone, use benzene colorimetric tube. If benzene is detected and the source cannot be eliminated, work may resume after donning appropriate respirator. If benzene is not detected, work may resume without a respirator as long as the OVA reading is below 30 ppm. An approved respirator must be worn if OVA readings are above 30 ppm.
*Background levels must be obtained in fresh air environment, away from organic vapor sources			
Action levels for known contaminants shall be based on the PEL or REL's of the contaminants, whichever is the most conservative. Action levels for unknown contaminants are based on the following:			
Instrument	Contaminant	Breathing Zone Reading	Action
FID/OVA ACTIONS TAKEN ARE BASED ON SUSTAINED OR FREQUENT READINGS.	Volatile Organic Chemicals, uncharacterized	Background to 30 ppm Between 30 and 300 ppm above background Over 300 ppm above background	Level D protection Level C protection Stop work, notify SSHO and SHO for evaluation.

FID Flame ionization detector.
 OVA Organic vapor analyzer.

4.0 STAFF ORGANIZATION, QUALIFICATIONS AND RESPONSIBILITIES

The organizational structure part of this SSHP establishes the specific chain of command and specifies the overall responsibilities of supervisors and employees. The organizational structure shall be reviewed and updated as necessary to reflect the current status of site operations. Refer to Table 4-1 for names of specific persons working on this project.

TABLE 4-1: Project Personnel

Name and Company	Position	Job Description	Phone No.	Cell No.
Ms. Melissa Shirley, USACE, Mobile District	Technical Manager (TM)	Project Oversight	(251) 690-2616	(251) 591-8275
Mr. Bill Parrish AEROSTAR	Project Director (PD) Field Manager/Site Safety and Health Officer (FM/SSHO)	Project Oversight Field direction	(251) 432-2664	(251) 370-2405
Marshall Eschete AEROSTAR	Project Manager (PM)/Quality Control Manager (QCM), Field Manager/Site Safety and Health Officer (FM/SSHO)	Project Oversight	(251) 432-2664	(251) 604-1211
Jeff Mitchell, CIH AEROSTAR	Safety and Health Officer (SHO)	S&H Program Administration	(904) 565-2820	(904) 654-5813
Thalas Rattanaxay AEROSTAR	Alternate QCM/FM/SSHO	Project Oversight Field direction, S&H Implementation	(251) 432-2664	(251) 802-8210

S&H = Safety and Health

4.1 Organizational Structure

All personnel are responsible for continuous adherence to these safety and health procedures during the performance of their work. No person may work in a manner that may conflict with the intent of, or the inherent safety and environmental precautions expressed in these procedures. After due warnings, AEROSTAR will dismiss from the site any person who violates safety procedures. AEROSTAR employees are subject to progressive discipline and may be terminated for continued violations.

All fieldwork will be under the supervision of the FM/SSHO. The FM/SSHO will oversee normal and emergency work and will perform any required emergency notification. Table 4-1 identifies the individuals who are planned to fill key roles for the project field activities. However, personnel

availability will dictate the actual roster of individuals who will perform field activities. In the event personnel other than those presented in Table 4-1 are assigned to the project, AEROSTAR will provide the names of those individuals to the USACE Mobile District Project Manager prior to mobilization for fieldwork.

4.2 Aerostar Project Director

Bill Parrish is the Project Director (PD) for this project. The PD is responsible for ensuring conformance with AEROSTAR Corporate, AEROSTAR Engineering, and USACE policies and procedures. Specific responsibilities of the PD include:

- Coordinate with USACE personnel;
- Ensure that projects have the necessary resources to operate safely;
- Ensure that project managers satisfy AEROSTAR and USACE safety and health requirements;
- Ensure that project staff abide by the SSHP; and
- Ensure that project personnel have the appropriate regard for safe job performance.

4.3 Aerostar Safety and Health Officer

Jeff Mitchell is AEROSTAR's CIH and Safety and Health Officer (SHO). The SHO is responsible for developing and coordinating the Site Safety and Health Plan (SSHP) and addenda as required. The SHO will issue addenda to the SSHP if warranted by changed conditions. The SHO and his designee report to the PM for operational matters. The SHO is the contact for regulatory agencies on matters of safety and health. Other SHO responsibilities include:

- General Safety and Health program administration;
- Determining the level of personnel protection required;
- Updating equipment or procedures based on information obtained during site operations;
- Establishing air-monitoring parameters based on expected contaminants;
- Establishing employee exposure monitoring notification programs;

- Investigating significant accidents and illnesses and implement corrective action plans;
- Performing regular site inspections; and
- Developing site-specific employee emergency response plans as required based on expected hazards.

The SHO has the ultimate responsibility to stop any operation that threatens the safety or health of the team or surrounding population or causes significant adverse impact to the environment. Other responsibilities include but are not limited to:

- Implementing all safety procedures and operations onsite;
- Observing work party members for symptoms of onsite exposure or stress;
- Upgrading or downgrading the levels of personal protection based upon site observations and monitoring results;

The SHO reports directly to the PD, but will inform the PM of all information and decisions reported.

4.4 Aerostar Quality Control Manager

The AEROSTAR Quality Control Manager (QCM) is Marshall Eschete. The QCM is responsible for maintaining the project QC in accordance with the requirements of the WP and appropriate management guidance. This person will be responsible for:

- Participating in the project field activity readiness review;
- Approving variances during field activities before work continues;
- Approving, evaluating, and documenting the disposition of Nonconformance Reports (NCRs);
- Overseeing and approving any required project training, and
- Designing audits/surveillance plans followed by supervision of these activities.

The QCM reports directly to the PD, but will inform the PM of all information and decisions reported.

4.5 Aerostar Project Manager

Marshal Eschete is the AEROSTAR Project Manager (PM). As an alternate, Thalass Rattanaxay may perform the duties of PM. The PM is ultimately responsible for ensuring that all project activities are completed in accordance with requirements set forth in this plan. The PM has been given the authority to administer all instructions from the USACE. In addition, the following are the responsibilities of the PM:

- Accomplish contractual obligations including cost, schedules, and technical performance;
- Ensure contractual requirements are in order;
- Prepare and submit project plans for review by the USACE; Coordinate work flow and outputs, manpower allocation and deliverables;
- Review all invoices and cost details; and
- Track project performances; and maintain frequent direct communication with the USACE PM and provide information regarding project status.

4.6 Aerostar Site Safety and Health Officer

The AEROSTAR Site Safety & Health Officer (SSHO) is Marshall Eschete. As an alternate, Thalass Rattanaxay may perform the duties of SSHO. The SSHO supervises all AEROSTAR activities at the site and is responsible for field implementation of the SSHP. This includes communicating site requirements to all personnel, ensuring field supervisors and subcontractors enforce all provisions of the plan, and consulting with the SHO regarding changes to the APP/SSHP. Other responsibilities include:

- Being familiar with this SSHP;
- Enforcing this SSHP and other safety regulations;
- Being familiar with local emergency services

- Determining evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation;
- Maintaining and inspecting personal protective equipment (PPE), monitoring onsite hazards, and monitoring the physical condition of site personnel
- Ensuring that all site personnel and visitors have received the proper training and medical clearance prior to entering the site (see Section 5.0 of this plan);
- Verifying that managers and supervisors are trained in workplace safety and are familiar with the safety and health hazards to which employees under their immediate direction or control may be exposed
- Conducting safety and health meetings before work start-up and as needed thereafter for specific tasks and maintaining attendance logs and records;
- Assuring that there is a qualified first-aid administrator onsite;
- Discussing potential safety and health hazards with the PM;
- Implementing changes as directed by the SHO and PM;
- Verifying that employees are trained in accordance with this program;
- Inspecting the workplace daily to better anticipate, recognize, evaluate, and control workplace hazards on a continuing basis;
- Developing methods for abating workplace hazards and checking that workplace hazards are abated in a timely and effective manner; and
- Maintaining compliance with applicable federal, state, and local regulations, and requirements of this SSHP.

4.7 Aerostar Field Manager

The AEROSTAR FM is Marshall Eschete. As an alternate, Thalass Rattanaxay or William Davis may perform the duties of FM. The FM is responsible for implementing field activities conducted during the project in accordance with this SSHP. This person is responsible for:

- Proper technical performance of field survey and sampling activities;
- Adherence to required sample custody and other related QA/QC field procedures;
- Coordination of field personnel management of Investigation-Derived Waste (IDW);
- Field documentation; and
- Preparation of field change orders, if required.

4.8 Subcontractor-Conducted Activities

All onsite personnel and visitors are required to comply with the provisions of this SSHP and all applicable federal, state, and local regulations. Each person is responsible for their own safety and health, for completing tasks in a safe manner and for reporting any unsafe acts or conditions to his supervisor or the AEROSTAR representative. Personnel will monitor themselves and their fellow employees for signs and symptoms of heat/cold stress and chemical exposure.

4.8.1 Subcontractor Project Manager

WHE's PM is Eric Meitzler. The subcontractor PM is responsible for overseeing the field activities of his employees. The subcontractor FM is responsible for enforcing the field requirements of this SSHP.

Specific responsibilities include:

- Ensuring that onsite subcontractor personnel follow the requirements of the SSHP and any other applicable safety and health requirements;
- Verify that this SSHP adequately addresses the hazards and controls of the subcontracted work, and supplementing the information to the SSHP, if necessary;
- Ensuring the safe operation of any subcontractor equipment;
- Coordination of onsite operations of his/her personnel; and
- Maintaining any required documentation specific to his/her operations.

5.0 TRAINING

Personnel who participate in field activities associated with this project are subject to the training requirements presented in Table 5-1. Field activities include all the activities specified in Section 2.3 of this SSHP as well as any other unspecified tasks that take place within the exclusion EZ.

Personnel who will not perform intrusive work or otherwise be exposed to hazards associated with the site contaminants are not subject to the HAZWOPER training or medical surveillance requirements, or respirator fit test requirements. This includes activities such as driving or walking on paved roads that are not within the area of field activities, meetings inside routinely occupied buildings, and paperwork or similar activities in onsite office trailers are not field activities and are not subject to these training requirements. Casual visitors, such as package deliverers, who access only the office or staging area of the support zone, are not subject to these training requirements.

TABLE 5-1: Training Requirements

Training	Worker (Non-Intrusive Activities)	Worker (Intrusive Activities)	Supervisor	Site Visitor
40 Hours Hazardous Materials Safety and Health, per OSHA 29 CFR Part 1910.120		X	X	
Annual Hazardous Materials Safety and Health 8 Hour Refresher, per OSHA 29 CFR Part 1910.120		X	X	
Respiratory Protection Training (required only if respirators are worn, (included in 40 Hour Courses)		X	X	
General Hazard Communication Training (included in 40 Hour and 8 Hour Courses)		X	X	
Hearing Conservation Training [for workers in hearing conservation program (included in 40 Hour and 8 Hour Courses)]		X	X	
Specialized Hazardous Materials Safety and Health Supervisory Training			X	
Pre-entry Briefing	X	X	X	X
Site Specific Hazardous Communication (included in Pre-entry Briefing)	X	X	X	X
Safety Briefing (including in Pre-entry Briefing)	X	X	X	X
First Aid /CPR (Standard Red Cross, or equivalent)	X	X		

5.1 Off-Site Training Requirements

All AEROSTAR employees, subcontractors, and visitors at the site who may be exposed to hazardous substances, health hazards, or safety hazards will receive site-specific training before they are permitted to engage in site operations. Personnel will not be permitted to participate in or

supervise field activities until they have been trained to a level required by their specific job function and responsibility.

General site workers engaged in hazardous substance removal or other activities that expose or potentially expose workers to hazardous substances and health hazards will receive a minimum of 40 hours of Hazardous Materials Safety and Health off-site instruction, given in compliance with the Occupational Safety and Health Administration (OSHA) requirements, as found in Title 29 of the Code of Federal Regulations (CFR) Part 1910.120. Workers will also receive a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

The Hazardous Materials Safety and Health 8-hour Refresher instruction, given in compliance with OSHA requirements, per 29 CFR Part 1910.120, is required annually to maintain currency in the 40-hour course.

Onsite management and supervisors directly responsible for, or who supervise, employees engaged in hazardous waste operations will receive OSHA 29 CFR Part 1910.120 40-hour initial training, three days of supervised field experience, and at least eight additional hours of specialized supervisory training.

5.2 Site-Specific Training

Onsite personnel must receive the site-specific safety training. Two versions of this training will be used:

1. The site worker version will contain full information onsite hazards, hazard controls, and emergency procedures; and
2. A shortened version will be used for visitors who will be onsite for short times and who will not do hands-on work.

Signatures of those attending and the type of briefing will be entered in the field logbook before site access will be granted.

5.2.1 Site Workers Basic Safety Briefing

The FM/SSHO will conduct a Site Workers Basic Safety Briefing the beginning of each week or whenever new employees arrive at the job site once the job commences. Following is a general list of topics covered in the Site Workers Basic Safety Briefing:

- Names and titles of key personnel responsible for site safety and health at the site;
- Components of the site safety and health program;
- General site safety;
- Hazards and symptoms of contaminant exposure (chemical);
- Routes of exposure to onsite contaminants;
- Physical hazards (fall protection, noise, heat stress, cold stress);
- Radiological hazards (when appropriate);
- Biological hazards;
- Location and availability of written hazard communication program;
- Site and activity PPE (including purpose, donning, doffing, and proper use);

- Work practices by which employees can minimize risks from hazards;
- Safe use of engineering controls and equipment onsite;
- Site control measures;
- Reporting requirements for spills and emergencies;
- Personnel decontamination procedures;
- Contingency plans (communications, phone numbers, emergency exits, assembly points, etc.);
- Worker Right-to-Know / Hazard Communication (See MSDS in Appendix C); and
- Emergency equipment locations and use (fire extinguishers, spill kits, first aid kits, etc.).

Attendance records and meeting notes will be maintained with the project files.

5.2.2 Daily Safety Briefings

The FM/SSHO will conduct a Safety Briefing at least at the beginning of each workday and whenever conditions or tasks change. These briefings will be attended by all site workers. These briefings will be used as an opportunity to address site-specific safety issues and will be used as an opportunity to refresh workers on specific procedures and to address new hazards and controls. The topics discussed at the safety meeting include:

- Safety and health considerations for the day's/week's activities;
- Problems encountered; and
- New operations or activities.

Attendance records and meeting notes will be maintained with the project files. Field forms are included in Appendix D.

5.2.3 Supervisors Meeting

The FM/SSHO will conduct a Supervisors Meeting the beginning of each week or whenever site conditions change. Management and supervisors will further review:

- General safety and health program; and
- Personal protective equipment program.

5.2.4 Pre-Entry Briefing

The FM/SSHO will conduct a pre-entry briefing for visitors who will be onsite for short times and who will not do hands-on work. This shortened version will contain the hazard information that is directly relevant to the purpose of the visit.

5.3 Training Documentation

Certificates of completion of 40-hour OSHA Hazardous Materials Safety and Health training and/or 8-hour annual refresher course, as appropriate, will be presented by subcontractor personnel and visitors to the FM/SSHO prior to entering the site. Certificates of completion will be maintained onsite for the duration of the project. Individuals without proper records of their training will not be permitted to work onsite.

6.0 PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) has been selected which will protect employees from the hazards and potential hazards they are likely to encounter as identified during the site characterization, analysis, tank removal, and associated activities. The level of protection provided by PPE selection shall be increased when onsite conditions show that increased protection is necessary to reduce employee exposures below established permissible exposure limits and published exposure levels for hazardous substances and health hazards.

6.1 PPE Selection and Action Levels

This section describes the available levels of PPE and specifies when each should be used. Subcontractors shall submit product description and specification for each type of PPE to be used to the SHO. Where specific type of material or brand is indicated, the contractor may substitute an equivalent product, subject to the approval of the PM and SHO for use on the project.

The level of protection used is based on site-specific information. The level of protection and types of materials selected for a particular task are based on the following:

- Potential for exposure, due to work being performed;
- Route of exposure;
- Measured, or anticipated concentration, in the medium of concern;
- Toxicity, reactivity, or other measure of adverse effect; and
- Physical hazards, such as falling objects or projectiles.

Levels of protection will not be downgraded without prior approval from the SHO.

6.2 Types of Equipment

This section presents the types of protective clothing that may be used for the project. The selection of the PPE has been done after a thorough evaluation of the hazards involved at the site during each phase of the operation. All persons entering the site area shall put on the required personal protective equipment according to established procedures in this plan.

Level D PPE

A work uniform affording minimal protection used for nuisance contamination only. All AEROSTAR site activities are anticipated to be performed in Level D PPE. The following constitutes Level D PPE, which may be used as appropriate:

- Coveralls or field clothing;
- Gloves Outer-Nitrile-22-mil maximum with nitrile inner glove (when potential contact with contaminated items exists);
- Boots/shoes; leather or chemical-resistant, steel toe and shank;
- Safety glasses;
- Hardhat, and;
- Earplugs and/or earmuffs (optional as applicable).

Note: Use of an air-purifying respirator with Level D PPE will constitute Level C PPE.

Level C PPE

This level of protection applies when the concentration(s) and type(s) of airborne substance(s) are known and the criteria (action levels) for using air purifying respirators are met. The following constitute Level C PPE, which may be used as appropriate:

- Full-face or half-mask, air purifying respirators (NIOSH-approved) with organic vapor cartridges;
- Chemical-resistant clothing (e.g., Tyvek[®], polyethylene-coated Tyvek[®], or Saranex[®]) is optional as applicable;
- Gloves, outer, chemical-resistant (Nitrile, 22-mil minimum);
- Gloves, inner, chemical-resistant (Latex, 2-mil minimum);
- Boots, outer, chemical-resistant, steel toe and shank;
- Boot covers, outer, chemical-resistant (disposable);
- Hardhat (optional as applicable), and;
- Earplugs and/or earmuffs (optional as applicable).

Level B PPE

Level B is the same as for Level C except for the addition of pressure-demand, full-face –Self-Contained Breathing Apparatus (SCBA) or pressure-demand supplied air respirator with escape SCBA.

Level A PPE

Level A PPE is the same as Level B except for the addition of a vapor-tight chemical protective suit.

6.3 PPE Limitations

The PPE selected for use at the site provides limited protection against chemical contaminants. Tyvek[®] protective clothing must not be worn in areas where splashing of hazardous liquids on the skin is possible.

6.4 PPE Maintenance and Storage

All PPE, including over-boots and gloves shall be maintained in good condition. Any PPE found to be torn, cut, punctures, or otherwise damaged shall be disposed of immediately. After use and decontamination, respirators shall be stored overnight in a closed container. The following day, the closed container shall be transported to the PPE donning area for reuse.

6.5 PPE Training and Proper Fitting

All personnel shall be thoroughly trained in the proper use and limitations of the equipment they are assigned to wear. Annual qualitative respirator fit tests are required of all personnel wearing negative pressure respirators. Qualitative fit tests will utilize isoamyl acetate and/or irritant smoke. Fit tests must incorporate the make and size of respirator to be used. Additionally, a positive and negative fit check shall be conducted each time a respirator is donned.

6.6 PPE Donning and Doffing Procedures

All PPE shall be donned prior to entering the area the PPE is designed to protect against or the EZ. PPE shall be donned with the assistance of a “buddy” to verify that equipment is worn properly. All PPE shall be worn in accordance with the manufacturer’s recommendations. At no time shall a person remove the PPE while in the EZ. Disposable PPE shall only be removed upon exiting the EZ. Personnel shall be seated during decontamination and doffing procedures to prevent tripping and falling.

6.7 PPE Inspection Procedures

PPE shall be inspected by employees prior to donning. Boots, gloves, and disposable clothing found to be defective shall not be worn and shall be disposed of. Defective respirators, safety glasses, and hard hats shall be reported to the FM/SSHO.

6.8 Evaluation of the Effectiveness of the PPE Program

Based on the anticipated inhalation and skin contact hazards, Level D is considered adequate for the work that is to be accomplished at the site. Work at the Site within the EZ will be in Level D unless air monitoring data show that levels of airborne organics using the FID, or equivalent instrument show air monitoring levels are above the action levels set forth in Table 3-2. If air monitoring illustrates levels consistently above the action levels in the worker’s breathing zone, work at the site will be upgraded to Level C, depending on the phase of work. No downgrades of PPE can occur without determination from AEROSTAR’s CIH.

Fit testing is to be performed as needed based upon individuals personal changes that could interfere in the proper fit of face piece (i.e. Facial hair, weight gain, etc.). Periodic inspections and observations of personnel using PPE shall be made by the FM/SSHO to check that the PPE program elements are being followed.

7.0 MEDICAL SURVEILLANCE

7.1 Medical Examination

As required by AEROSTAR Policy all personnel onsite will have successfully completed a pre-placement or periodic/update physical examination.

7.1.1 Pre-Placement Exam

This examination has been designed to meet the requirements of 29 CFR 1910.120 requirements for hazardous waste site operations.

- The AEROSTAR medical surveillance program examination consists of:
- Medical and occupational history questionnaire, which includes information on past gastrointestinal, hematological, renal cardiovascular, reproductive, immunological and neuralgic problems;
- Information and history of respiratory disease and personal smoking habits;
- Physical examination;
- Blood pressure measurements;
- Complete blood count and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology;
- Blood urea nitrogen and serum creatinine;
- SMAC 24;
- Pulmonary function test (if use of respirators are potentially required);
- Audiogram (if exposure to 85 dB is likely);
- EKG for employees over 45 years old or when other complications indicate the necessity;
- Drug and alcohol screening; and
- Visual acuity.

All personnel that are subjected to noise levels greater than 85 dB will be in a hearing conservation program. A baseline audiogram will be done as well as yearly to evaluate for potential hearing loss.

The following information is provided to the examining physician:

- Description of employee's duties;
- Anticipated chemical and asbestos exposure and levels;
- Description of the personal protective equipment to be used; and
- Information from previous medical exams.

The medical surveillance provided to the employees includes a judgment by the medical examiner of the ability of the employee to use either positive or negative pressure respiratory equipment. Any employee found to have a medical condition could directly or indirectly be aggravated by exposure

to these chemical substances or by the use of respiratory equipment will not be employed for the project. A copy of the medical examination is provided at the employee's request.

The employee shall be informed of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites.

Contractors will certify that all their employees have successfully completed a physical examination by a qualified physician on the Certification Form. The physical examinations shall meet the requirements of 29 CFR 1910.120 for Hazardous Waste Operations and Emergency Response, and 29 CFR 1910.134 for respiratory protection. Contractors will supply copies of the medical examination certificate for each onsite employee.

7.1.2 Annual Exam

All AEROSTAR employees receive an annual update exam meeting the requirements of 29 CFR 1910.120. The results of these exams are compared to previous results and the baseline physical to determine if any effects due to exposure have occurred. Appropriate actions are taken as recommended by the physician should the results indicate an exposure, otherwise employees are cleared for continued work. The company's occupational doctor issues medical clearances. The physician certifies that the employees are physically able to perform the fieldwork and safely wear a respirator as needed.

7.1.3 Exit Exam

AEROSTAR conducts exit physical exams for all employees involved in the medical surveillance program who are leaving the company for any reason to ensure they are in good health.

7.2 First Aid and Medical Treatment

AEROSTAR employees participating in HAZWOPER are trained in Red Cross first aid treatment skills. A first aid kit will be maintained onsite for the duration of this project. During the course of this project employees needing emergency medical attention will be referred to the Springhill Memorial Hospital (See Appendix A for directions to the nearest hospital). A copy of the hospital route map will be in an easily visible, easily accessible location. Prior to the start of work, each employee should familiarize themselves with the route to the hospital.

7.3 Medical Restriction

Should an occupational injury or illness occur that restricts an employee's ability to function at full capacity, AEROSTAR maintains a policy of providing these employees with light duty assignments whenever possible to allow them to continue to be productive.

7.4 Medical Records

Medical and personal exposure monitoring records will be retained for a minimum of 30 years. Employee confidentiality shall be maintained.

8.0 EXPOSURE MONITORING/AIR SAMPLING PROGRAM

Air monitoring shall be performed to quantify airborne levels of hazardous substances in order to determine the appropriate level of employee protection needed onsite, and to evaluate engineering controls and work practices. Employee air monitoring shall be performed where airborne concentrations of hazardous substances are anticipated to be the highest, as determined by the CIH.

This section describes instruments and procedures that will be used for air monitoring activities and to determine exposure compliance. It may not be necessary to perform all of these activities. Decisions regarding air monitoring will be made by the CIH and the FM/SSHO.

A daily monitoring log will be kept by the FM/SSHO for each piece of air monitoring equipment. The following information will be recorded:

- Name and model number of the equipment;
- Calibration information;
- Field work to be performed;
- Air monitoring results and monitoring locations;
- PPE worn;
- Accidents or incidents; and
- Unusual occurrences and personnel complaints.

In addition to the specified monitoring, the FM/SSHO may perform, or require, additional monitoring in the equipment decontamination area or personnel exposure sampling for specified chemicals, etc. The deployment of monitoring equipment will depend on the activities being conducted and the potential exposures. All personal exposure monitoring records will be maintained. The minimum monitoring requirements and action levels are presented in Table 3-2.

Site perimeter or offsite monitoring and sampling may be conducted if conditions indicate the potential for significant offsite exposure. Environmental air monitoring may be conducted within and downwind of the work area during site operations. Meteorological data (wind speed, wind direction, and ambient temperature) shall be collected onsite for the duration of all air monitoring activities. Within two working days, air monitoring results will be provided to USACE.

8.1 Airborne Organics

Air monitoring for VOC's will be conducted using an Organic Vapor Monitor (OVM), or equivalent instrument. The instrument used to monitor for organic vapors will be calibrated daily, using the technique specified by the manufacturer. Although not all volatile organic chemicals can be detected equally, many site contaminants can be detected and will serve as indicators of contamination.

If organic vapors in the breathing zone exceed the criteria set forth in Table 3-2, engineering control measures will be instituted. The PM, SHO and FM/SSHO will be notified and will determine appropriate control measures. Following assessment of the situation, appropriate actions will be taken. These may include:

- Identification of the airborne contaminant(s);
- Suspend all field operations until airborne contaminants have decreased;

- Evaluation of measures to reduce the airborne concentration; and/or
- Consideration of the use of respiratory protection.

If breathing zone readings decrease to less than the action levels, the activity will be resumed without the institution of control measures.

8.2 Time Weighted Sampling

Time weighted air sampling will be conducted to determine the exposures of representative employees if direct-reading air monitoring or other indicators suggest the potential for exposures greater than the TLV or PEL or established OSHA action levels. If readings using the OVM consistently show exposures below the action levels in Table 3-2, then TWA sampling is not required. However, if fleeting excursions above the levels in Table 3-2 are observed, sampling may be required.

If this sampling is required, it will be conducted in accordance with National Institute of Occupational Safety and Health (NIOSH) or OSHA methods. Laboratories participating in and meeting the requirements of the American Industrial Hygiene Association's Proficiency Analytical Testing or Laboratory Accreditation programs will conduct analysis.

Personal air monitoring is conducted to identify the need to increase or decrease engineering controls. During initial onsite activities and whenever previously undisturbed soil is worked, the FM/SSHO will monitor the work area at least twice daily to determine air contaminant emissions and background worker exposure levels. If personal monitoring is required, refer to Table 3-2 for monitoring parameters, action levels and designated responses.

8.3 Noise

Occupational noise is a significant health hazard. In general, the use of earplugs or earmuffs is mandatory when noise prevents conversation in a normal voice at a distance of three feet. This "rule of thumb" is an indication that noise levels may exceed the OSHA action level of 85 decibels. When these conditions are present, or suspected, the FM/SSHO will be notified to conduct a noise survey using a sound level meter or noise dosimeter that meets OSHA requirements (ANSI S1.4-1971[R1976], Specifications for Sound Level Meters, Type 2) for measuring noise levels in decibels with an A- and C-weighted scale in slow response.

All personnel entering the work zone will be required to wear hearing protection in accordance with the SSHP. "Caution, Hearing Protection required in this Area" signs will be posted at safe, low noise level location from the field activities.

All personnel shall wear hearing protection when noise levels exceed 85 dB. AEROSTAR will examine noise survey data to determine the extent of hearing protection necessary for this project.

All project personnel required to wear hearing protection regularly shall be in a hearing conservation program. Baseline audiometric testing is conducted and repeated annually to evaluate for changes or presence of standard threshold shifts. All site personnel will be provided with hearing protection, the advantages, disadvantages, and attenuation of various types of hearing protectors, instructions on their selection, fitting, use and care; the purpose of audiometric testing; and an explanation of the test procedures.

AEROSTAR will conduct time- and activity-sensitive noise surveys to monitor noise levels during site work where noise levels are expected to be high. This will include the equipment running at various times. The specific activity and sound levels will be recorded during times when both single

and multiple pieces of equipment are in use and this data will be used to establish work zones where hearing protection is essential.

Site-specific noise data will be conducted since the sources of noise at the site will be intermittent and not continuous during removal of the concrete tanks. If noise levels are above 85 dB, without regard to duration, hearing protection will be provided to exposed workers. The hearing protection provided will have a sufficient Noise Reduction Rating (NRR) to reduce exposure below 85 dB. As a safety factor, the rated NRR will be reduced by 7 dB when determining exposure reduction due to hearing protective devices. All noise monitoring results and PPE selection will be documented on the form in Appendix D. A copy of AEROSTAR's Hearing Conservation Program is included in Appendix E.

8.4 Bloodborne Pathogens Program

During field activities, Marshall Eschete, FM/SSHO will be the designated responders for rendering medical assistance should the need arise. All designated responders will comply with the requirements stated within AEROSTAR's Bloodborne Pathogen (BBP) program. Furthermore, all remaining AEROSTAR personnel that conduct medical assistance in a "Good Samaritan" role will be covered by AEROSTAR's BBP program. A copy of AEROSTAR's BBP program is included in Appendix F.

8.5 Heat and Cold Stress

It is the responsibility of the FM/SSHO and each crew member to ensure that temperature stress controls are adequate for the site conditions and tasks. All crew members, and specifically the FM/SSHO, are empowered and expected to stop or modify work and take any precautionary measures to prevent temperature-related illnesses.

Heat Stress

In summary, heat stress may be caused by factors that include combinations of elevated ambient temperatures, relative humidity, radiant heat, and wearing of PPE. The effects of heat stress are heat rash, cramps, exhaustion, and in extreme cases, heat stroke, which are described below. The project site is characterized by hot summers. Field personnel will be trained to recognize heat stress symptoms. Cool water or fluids will be readily available to the employees, who will be encouraged to drink frequently during each break. Use of shade canopies and work scheduled at non-peak temperature periods of the day shall be maximized. In situations where heat stress may impact worker safety and health, work/rest regimens will be established in accordance with the American Conference of Governmental Industrial Hygienists (ACGIH).

Heat stress monitoring should begin when personnel are wearing PPE, including Tyvek® coveralls. Monitoring frequency shall be increased as the ambient temperature increases or as slow recovery rates from the employees after breaks are observed.

Effects of heat stress are:

Heat Rash- this caused by continual exposure to heat and humid air, and aggravated by chaffing clothes. Heat rash decreases a person's ability to tolerate heat as well as becoming an irritating nuisance.

Heat Cramps- heavy sweating and inadequate electrolyte replacement cause Heat Cramps. Signs and symptoms include muscle spasms, and pain in the hands, feet and abdomen.

Heat Exhaustion- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: Pale, cool moist skin, heavy sweating, dizziness, nausea and fainting.

Heat Stroke- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained immediately. This is a true emergency. Signs and symptoms are: red, hot, usually dry skin, lack of or reduced perspiration, nausea, dizziness and confusion, strong, rapid pulse initially, coma.

One or more of the following control measures will be used to help control heat stress. Heat stress is detected by elevated heart rate above 110 beats per minute, such implementation will become mandatory.

- Employees should drink plenty of water throughout the day;
- Onsite drinking water will be kept cool (50-60°F) to encourage personnel to drink often;
- A work regimen that will provide adequate rest periods for cooling down will be established as required;
- All personnel will be advised of the dangers and symptoms of heat stroke and exhaustion;
- Employees shall be encouraged to monitor themselves and their co-workers for the effects of heat disorders and to take additional breaks as needed;
- All breaks are taken in a shaded rest area;
- Employees shall not do other tasks during rest periods; and
- All employees shall be informed of the importance of adequate rest, acclimatization, and proper diet in the prevention of heat stress.

Cold Stress

Workers are not expected to regularly experience cold exposure at sites during summer and fall months in Alabama. However, all persons working outdoors in low temperatures during wet and windy conditions or during early morning hours may suffer from cold injury or hypothermia.

During prolonged outdoor periods with inadequate clothing, effects of cold exposure may even occur at temperatures well above freezing. Extreme cold exposure may cause severe injury by freezing exposed body surfaces (resulting in frostbite) or by effecting profound generalized cooling, possibly causing death. Areas of the body with high surface area-to-volume ratios such as fingers, toes, and ears are the most susceptible to frostbite.

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperatures. Hypothermia exhibits five stages of symptoms: (1) shivering; (2) apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95°F; (3) unconsciousness, glassy stare, slow pulse, and slow respiratory rate; (4) freezing of the extremities; and (5) death. Hypothermia victims should be warmed, and medical help should be obtained.

Workers shall be excluded from working in the cold (30°F or below) if they are suffering from diseases or taking medication that interferes with normal body temperature regulation or reduces tolerance to work in a cold environment. Pain in the extremities may be the first early warning of danger to cold stress. During exposure to cold, maximum severe shivering develops when the core body temperature has fallen to 95°F. This shall be taken as a sign of danger to any worker, and

exposure to cold shall be immediately terminated when severe shivering becomes evident. The following are the common signs and symptoms of cold stress that may be encountered by workers at the site.

Incipient frostbite is a mild form of cold stress and is characterized by sudden blanching or whitening of the skin. Chilblain is an inflammation of the hands and feet caused by exposure to cold and moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears produced by mild frostbite. Such a sequence produces severe spasms accompanied by pain. Second degree frostbite is manifested by skin with a white waxy appearance which is firm to the touch. Individuals with this condition are generally unaware of the seriousness, as the underlying nerves are frozen and unable to transmit signals to warn the body. Immediate first aid and medical treatment is required. Third degree frostbite will appear as blue, blotchy skin. The tissue is cold, pale, and solid. Immediate medical attention is required.

Hypothermia develops when the core body temperature falls below 95°F. In extreme cases progressive loss of consciousness, muscular rigidity, and decrease in respiratory rate may occur which could lead to cardiac failure and death. Immediate medical attention is warranted when the following symptoms are observed:

- Involuntary and uncontrolled shivering;
- Irrational behavior;
- Slurred speech; and
- Sluggishness.

Critical factors in preventing cold stress disorders are adequate clothing and staying dry. The FM/SSHO will ensure the capability to quickly move individuals who become wet to a sheltered, warm area. The protocol for the prevention of cold stress disorders identified in *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices* (ACGIH, 1999) will be followed, including:

- If ambient temperatures fall below 40°F, site training will include prevention of cold injury, cold-injury symptoms, and cold-injury first aid;
- If ambient temperatures fall below 40°F, and there is a potential for workers to become significantly wet, the FM/SSHO will ensure that at least one of the following controls is in place:
 - A sufficient supply of dry, warm clothing is immediately available;
 - Employees wear clothing appropriate for water contact; or
 - A heated break area is immediately available.
- If ambient air temperatures fall below 32°F, a heated break area will be provided;
- If ambient air temperatures fall below 32°F, breaks will be taken in a warm area every 120 minutes, at a minimum;
- Workers will be allowed to take unscheduled breaks, if needed, in a warm area; and
- If the equivalent chill temperature falls below -29°F, outdoor work will discontinue or effective engineering controls such as windscreens, temporary shelters, or portable heating units, will be used.

8.6 Vibration

Control of vibration hazards, such as those generated by the operation of heavy equipment, will be achieved through the compliance with equipment manufacturers' use specifications. The heavy equipment onsite (dozers, excavators, etc.) will have suspension adjustable padded seats. This will be sufficient to reduce vibration hazards to an acceptable level. No personnel will be allowed to touch equipment while in operation unless they are at the controls of the equipment.

8.7 Explosion and Fire

Explosions and fires at hazardous sites can be caused by situations and/or events, such as:

- Chemical reactions that produce explosion, fire, or heat;
- Ignition of explosive or flammable chemicals;
- Ignition of materials due to oxygen enrichment;
- Agitation of shock- or friction-sensitive compounds;
- Sudden release of materials under pressure; and
- Explosion due to the ignition of combustible airborne dusts.

Although explosions and fires may arise spontaneously, they are more commonly caused by onsite activities such as the accidental mixing of incompatible chemicals or the introduction of an ignition source (such as a spark from equipment) into an explosive or flammable environment. To reduce the possibility of an explosion or fire, when the potential for an explosive atmosphere exists, field personnel will monitor for explosive atmospheres using a combination oxygen and combustible gas indicator and organic vapors using a FID.

Field personnel will keep all potential ignition sources away from areas where explosion and fire are likely to occur and use non-sparking, explosion-proof equipment.

8.8 Oxygen Deficiency

Oxygen deficient atmospheres will not be anticipated nor encountered.

8.9 Hazardous Pathways and Engineering Controls

To effectively control exposures to contaminants and protect workers, the public, and the environment from the effects of site activities, hazard control strategies for specific site activities are crucial and involve the combination and progression of the following activities in the order listed below.

Engineering controls. Engineering controls are those designed to eliminate or minimize a hazard through the design of the task, for example, by selecting a less hazardous chemical, tool, or process to perform the task. Other examples of engineering controls are structures that minimize exposures to contaminants or sound walls that dampen noise. A common engineering control at sites where airborne dust is a concern is to spray water on the solid surface to control dust.

Administrative controls. After all feasible engineering controls have been implemented, administrative (work practice) controls may be established, for example, structuring work schedules or shifts to minimize adverse health or physical effects to workers (e.g. where daytime heat is a concern scheduling site work during the evening hours or establishing rest/work schedules during

the site operations whereby the workers are infrequently exposed to potentially hazardous conditions).

Personal protective equipment as a hazard control. Only after all appropriate engineering and administrative controls are implemented or exhausted can PPE be introduced as a hazard control mechanism. Decisions regarding PPE upgrades and/or downgrades will be made by the CIH/SHO and FM/SSHO, based on their knowledge of the site conditions, observation, field/sampling results or readings, and best professional judgment. At no time will anyone be required or allowed to perform field operations if he/she is uncomfortable or uneasy with the level of PPE, selected for such duty. If such a situation arises, the criteria and conditions used to select PPE for the site activities will be reviewed by the FM/SSHO and any appropriate changes will be made once the CIH/SHO approves of the changes. If no changes in PPE levels are determined to be appropriate, the FM/SSHO will communicate such findings to field personnel in an open forum and will present the rationale for such determination through an appropriate mechanism such as a supplemental safety meeting.

Since the known contaminants at the site could be carried by construction generated dust, engineering controls in the form of application of water to dry soils will be conducted wherever visible dust is generated from field activities. If field operations generate dust which is not suppressed by available controls, consult the FM/SSHO for appropriate monitoring instruments and associated action levels.

9.0 STANDARD OPERATING SAFETY PROCEDURES, ENGINEERING CONTROLS AND WORK PRACTICES

This section presents those general safety rules that apply to all operations performed by AEROSTAR and its subcontractors. The following procedures are mandatory. These requirements are generic in the sense that they apply to all projects. Therefore, there may be portions of this section that do not apply to this specific project. All site visitors must follow these procedures. Personnel not following procedures will be warned. If they refuse to follow these procedures, they will be escorted from the site.

9.1 Site Rules

The following rules apply to all site activities:

- A copy of the hospital route map and emergency contact information will be prominently displayed onsite;
- OSHA Poster No. 3165 will be prominently displayed onsite;
- The SSHP shall be offered to each person entering the site. They must read the plan and sign that they will abide by it;
- Daily safety briefings will be conducted by the FM/SSHO to inform personnel of new hazards or procedures;
- The FM/SSHO, project personnel, and management personnel are responsible for suspending/stopping work and requiring all personnel to evacuate the affected area if any of the following situations occur:
 - Inadequate safety and/or health precautions on the part of any onsite personnel, or
 - Potential significant environmental impact as a result of planned activities;
- Personnel will perform only those tasks they believe they can do safely;
- Personnel will notify the FM/SSHO of any medical conditions that require special consideration;
- Personnel will maintain proper workplace housekeeping to minimize the potential for accidents;
- Contact with potentially contaminated substances will be avoided;
- Spills will be prevented to the greatest extent possible;
- All injuries and accidents requiring first aid will be reported to the FM/SSHO, SHO, and USACE;
- All onsite workers will abide by the buddy system, members of a buddy team will maintain verbal or visual contact;
- All personnel entering the site shall be thoroughly briefed on the hazards, equipment requirements, safety practices, emergency procedures, and communication methods;
- Personnel will be prohibited from being transported by any other means than those prescribed for movement of personnel (when trucks or other heavy equipment enters or leaves the site, an individual shall direct the driver);

- Any employee not willing to comply with this or any other safety and health procedure will be subject to disciplinary action;
- All onsite personnel must wear steel-toed safety shoes, hard hats, and safety glasses (long pants or trousers and shirts covering the upper body and upper arms must also be worn);
- No electrical equipment will be permitted in areas where a flammable atmosphere may exist;
- All static ignition sources will be identified and eliminated by the use of bonding and grounding techniques;
- All equipment shall meet the standards for rollover protective structure as defined in 29 CFR 1926 Subpart W;
- All heavy lifting equipment will be equipped with a working horn and back-up alarm;
- Hand signals shall be employed between the operator and all ground personnel, see Section 11.7;
- The operator must be aware of his surroundings before proceeding in any direction;
- No one is permitted to stand in a blind spot to the operator;
- Spotters will be employed when the equipment must be moved while the operator has an obstructed view; and
- All personnel will employ hearing protection if the noise meter readings exceed 85 dB(A).

All operators of equipment used onsite will be familiar with the requirements for inspection and operation of such equipment. Unfamiliar operations shall be discussed with affected employees before beginning work. The site supervisor will be responsible to check the proficiency of the operator. Perimeter barricades will be placed around the particular equipment used in a fixed location. Audio and/or visual back-up alarms will be utilized on all heavy equipment onsite.

Material Safety Data Sheets (MSDS) will be obtained for every chemical product used onsite. This information will be made readily available to all employees upon request and stored in a central location (Appendix C). All containers of any chemical products will be properly labeled to comply with the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200).

All information regarding work to be performed, emergency procedures, and safety and health hazards will be reviewed before the work begins during a Daily Safety Briefing. No work will be performed before this meeting has taken place. At least one copy of this plan shall be available at the job work site. Only authorized personnel will be permitted in the work area. All personnel will be knowledgeable of the contents of this SSHP. All visitors shall check in with the FM/SSHO and/or client representative.

9.2 Work Permit Requirements

AEROSTAR will obtain and coordinate with USACE to obtain all permits necessary for the safe execution of this project.

9.3 Material Handling

Site personnel will be instructed in the use of safe lifting techniques. All bulky items such as tanks shall be moved by way of a lift truck or overhead crane. Materials will not be moved over personnel and precautions will still be taken to protect persons from falling objects.

9.4 Drum and Container Handling

It is anticipated that only two 55- gallon drums will be present on site that will be used to store drill cuttings during monitoring well installation. These drums for this project will be labeled to comply with applicable U.S. Environmental Protection Agency (USEPA) requirements. Each drum will be labeled to identify the type of waste, site location, date, USACE PM and phone number, and AEROSTAR phone number.

No additional containers will be used as part of this project.

9.5 Confined Space Entry

No confined space entry is required on site for this project.

9.6 Hot Work, Sources of Ignition, Fire Protection

NO HOT WORK will be conducted onsite for this project. There will be no cutting or welding.

- All portable electrical equipment will be double insulated or grounded and connected through a ground fault circuit interrupter.
- Conductive materials will be kept clear of energized power lines.

9.7 Drilling and Monitor Well Installation

Drilling for this project will comply with AEROSTAR procedures and OSHA regulations governing monitoring well installation.

All project personnel shall participate in the Daily Safety Meetings and be instructed on the following requirements:

- Prior to beginning the drilling and monitor well installation, AEROSTAR will contact Alabama ONE CALL, Alabama's utility location service, at (800)-292-8525 to establish the location of all overhead and underground utilities at the site;

9.8 Machinery and Equipment Guarding

All equipment will be operated with all guards provided by the manufacturer. If any guarding must be removed for servicing, the equipment will be disabled to preclude movement or release of energy.

The FM/SSHO will inspect all machinery and heavy equipment before they are brought onto the project site for compliance with OSHA standards. The FM/SSHO will complete the equipment safety checklist (included in Appendix D) for each piece of equipment.

Mounting and dismounting heavy equipment or vehicles while in motion is prohibited. Machinery or equipment requiring an operator will not be permitted to run unattended.

Machinery will not be operated in a manner that will endanger persons or property, nor will the safe operating speeds or loads be exceeded.

All hand tools will be kept in good repair and used only for the purpose for which designed. The FM/SSHO will remove tools having defects that will impair their strength or render them unsafe for use from service. The FM/SSHO will inspect and test power tools to ensure good condition and proper maintenance procedures.

If required for this project, circular saws will be equipped with guards that automatically and completely enclose the cutting edge. Power saws will not be left running unattended.

9.9 Lockout/Tagout

The potential hazard associated with energized work for this project comes from working on heavy equipment. All equipment should be verified to be in good working order when received from the rental facility. Only a certified mechanic may perform repair work on equipment if equipment breaks down.

9.10 Fall Protection

The walking and working surfaces can become wet and slippery during work tasks. Personnel will be instructed to use extra caution when working on these types of surfaces. Visible barriers will be erected around any open excavations to prevent personnel from falling into these areas. Fall protection measures include implementation of the Safety Monitoring System. The FM/SSHO shall inspect portable ladders. Any ladder with a structural defect such as missing or broken rungs, cleats, or steps; broken or split rails; or corroded components shall not be utilized and will be removed from the project site

9.11 Hazard Communication

AEROSTAR's written Hazard Communication Program will govern hazard communication. All personnel will be informed of any/all chemicals used onsite. No hazardous chemicals will be brought to the site as part of the tank removal processes. Material Safety Data Sheets have been provided in Appendix C for all potential chemicals to which employees may be exposed during the course of this work.

9.12 Illumination

All site activities are outdoors and above ground. No work will be performed after dark under the scope of this SSHP. As with other hazards, at no time will job task completion have greater priority than personal safety.

9.13 Signs and Labels

Signs, tags and labels shall give adequate warnings and caution of hazards and instruction and directions to workers and the public. Posted signs during site activities will include the following: "Caution Wear Hard Hats Eye Protection and Ear Protection Beyond this Point," "Danger Do Not Enter", and "Noise hazard, Hearing Protection Required". The signs will be at least 7 inches high by 11 inches wide. They shall be visible at all times when the hazard exists. Each container of hazardous material shall be labeled with the identity of the material, importer, or the responsible party.

10.0 SANITATION AT TEMPORARY WORKPLACES

10.1 Potable Water

An adequate supply of potable water shall be provided on the site. Portable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap, and shall be otherwise designed, constructed, and serviced so that sanitary conditions are maintained. Water shall not be dipped from containers. Any container used to store, dispense, or distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.

Where single-service cups (to be used once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

10.2 Non-Potable Water

Outlets for non-potable water, such as water for equipment decontamination, dust control, or firefighting purposes, shall be identified to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes. There shall be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing non-potable water.

10.3 Toilet Facilities

A minimum of one separate toilet facility shall be provided for each 20 employees or fraction thereof of each sex. Urinals provided that the number of toilets shall not be less than one half of the minimum required number of facilities. EXCEPTION: Where there are less than 5 employees, separate toilet facilities for each sex are not required provided the toilet facilities can be locked from the inside and contain at least one toilet. Under temporary field conditions, provision shall be made to assure that at least one toilet facility is available.

If the site is not provided with a sanitary sewer, it shall be provided with one of the following toilet facilities unless prohibited by local codes:

- Chemical toilets;
- Re-circulating toilets;
- Combustion toilets; or
- Flush toilets

Doors entering toilet facilities shall be provided with entrance locks controlled from inside the facility. Toilet facilities shall be kept clean, maintained in good working order, and provided with an adequate supply of toilet paper.

Washing facilities shall be onsite for washing of hands and face following decontamination procedures. Such facilities shall be in near proximity to the EZ.

10.4 Housekeeping

AEROSTAR employees will keep the work and support areas neat and orderly and free of trash and debris. An area will be established where personnel can take a break. The area will be clearly marked. All refuse will be deposited into designated containers while onsite. It is the responsibility of the FM/SSHO to ensure that the area is kept clean. This “house cleaning” effort will be enforced by the FM/SSHO at the end of each day.

11.0 SITE CONTROL

11.1 Site Control Measures

A site zone will be established to prevent or minimize exposure (of unauthorized personnel) to hazards by establishing a boundary around the work zone. For this site, a one-zone approach will be used for all field activities. This zone will be identified during safety briefings and will be clearly marked by traffic cones, barricades, signs, or other means. This zone shall be designated as the Exclusion Zone (EZ). Site entrance and exit shall be through a controlled access point.

In addition, all efforts will be made to retain runoff, protect all buildings and structures and maintain the integrity of trees, lawns and sidewalks on and around the work site.

11.2 Site Access

The PM will maintain contact with airport security and notify site personnel of airport access and directions to the site. No subcontractor personnel or visitors shall be allowed onsite without the presence of the FM/SSHO.

Physical boundaries shall be established around the EZ using barricade tape during operations. Supervisors shall instruct all workers and visitors on the limits of the restricted area. No one shall be allowed to enter a restricted area without the required PPE for that area. The FM/SSHO shall ensure compliance with all restricted area entry and exit procedures.

Only authorized visitors will be allowed access to the EZ. Each visitor will be required to provide and wear the necessary PPE during visits and shall be escorted by supervisory personnel while onsite. All visitors, subcontractors and other personnel will be required to sign a safety plan acknowledgment sheet to certify that they have read and will comply with the SSHP. Failure to comply with this site entry procedure will result in expulsion from the site.

11.3 Work Zones

Each work area shall involve the establishment of an Exclusion Zone. The EZ will be a radius of no less than 50 feet extending from any heavy equipment location. Portable traffic cones and caution tape will identify the boundaries. Barricades and caution tape will be used to protect the general public from the work area.

11.3.1 Exclusion Zone

The EZ is the area where work activities at the site will occur. Only authorized, trained, and qualified personnel with the appropriate personal and respiratory equipment shall be admitted. Personnel entering the EZ must use the buddy system. It is anticipated that the EZ will encompass the immediate confines of the work area with a 10-foot buffer zone from the edge of the work area to the EZ boundary, if practical.

Since this area shall be considered contaminated, all personnel within the area must use the prescribed levels of PPE. A checkpoint shall be established at the periphery of the EZ to regulate the flow of personnel and equipment in and out of the area. The boundaries shall be readjusted based on subsequent observations and/or measurements. Work zone boundaries shall be marked with safety cones and brightly colored barrier tape or equally effective means. Any change in the protection level specified by the original SSHP, must be approved by the FM/SSHO and CIH/SHO, in conjunction with the PM and the USACE's Contracting Officer before being initiated. The hotline

shall be well-defined by geographical or physical boundaries and shall be secured to prevent unauthorized entry.

Hard hats are required in the EZ. Any item taken into the EZ is considered to be contaminated until decontaminated. All vehicles, equipment, instruments, and materials taken into the EZ shall remain in the zone until no longer needed. During all work activities within the EZ, the implementation of a buddy system is mandatory. A buddy system requires that at least two people work as a team and maintain visual and audio contact with each other at all times. The FM/SSHO shall maintain a portable cellular telephone onsite for emergency response notifications and communications.

Work activities within the EZ pose the greatest possibility of exposure to personnel and equipment. The FM/SSHO shall be responsible for controlling the access points and keeping bystanders and unauthorized personnel to a minimum.

11.3.2 Contamination Reduction Zone

This zone will serve as the interface between the Exclusion Zone (contaminated) and the Support Zone (clean). This Contamination Reduction Zone (CRZ) will serve as a buffer to further reduce the probability of the Support Zone becoming contaminated. Decontamination procedures will be conducted at the interface of the Exclusion Zone and the CRZ to assure that the physical transfer of contaminated substances on people, equipment, or in the air is minimized. The CRZ also provides a segregation of work functions between segregated zones.

Material supplies will be staged within the CRZ for the servicing of equipment and personnel within the Exclusion Zone. All vehicles, equipment, and personnel which come in contact with hazardous materials will be totally decontaminated before leaving this area. All protective clothing which is removed will be stored in the CRZ and disposed of properly.

11.3.3 Support Zone

The Support Zone (SZ) is the clean area in which the possibility of encountering hazardous materials or conditions is minimal. Therefore, personal protective and respiratory equipment are not necessary. The SZ will contain the command post for field operations. Inside the SZ, the following will be available: an effective means of communication, first-aid supplies, fire extinguisher, drinking water, toilet facilities, and other appropriate support facilities. Normal work clothes and safety shoes are worn in this area. The SZ shall also serve as the main point of contact for the visitor check-in and initiation of emergency services when necessary. In the event of a site emergency a rally point will be designated and identified in the SZ.

11.4 Personal Hygiene and Decontamination

Field work is anticipated to be performed in Level D. Site workers shall wash their hands, face, and exposed skin surfaces with soap and water upon leaving the EZ and prior to ingestion of food, liquids or smoking. A portable hand washing facility with potable water, soap, and paper towels shall be located in the SZ. Disposable personal protective equipment shall be placed in a sealed metal container, which is double-lined with 6-mil polyethylene bags.

11.5 Equipment Decontamination

All equipment coming in contact with contaminated soil or groundwater will be properly decontaminated before leaving the site. Light equipment (i.e., ambient sampling devices) will be decontaminated at the personnel decontamination area. Heavy equipment decontamination shall be

performed by the Contractor at the designated wash down station using approved means (water and/or steam).

11.6 Respirator Decontamination

The cleaning and sanitizing of respirators shall be accomplished in the following manner:

- The apparatus is broken down into its components as described in the manufacturer's schematic display that accompanies the unit. Each of the components will be inspected for any defects, excessive wear and tear, etc.;
- Thoroughly wash the face-piece and mask components in a disinfecting cleaning solution at a water temperature not exceeding 120°F. The components shall be scrubbed with a sponge or soft brush to remove dust, dirt, or other contaminants;
- Thoroughly rinse all component pieces in warm water; and
- Air dry all components thoroughly, inspect for defects, reassemble units, and store properly until the next use.

11.7 Site Communications and Alerting Means for Emergencies

In the unlikely event that an emergency situation occurs, all field activities at that site will cease. Temporary radio and telephone communications will be established at the site. Emergency alerts shall be made using two-way radios from the job trailer on the site, or vice versa. Personnel working on the site shall be alerted by air horns using the following alerts:

1 long blast...exit the work area

3 short blasts in sequence...all clear.

A complete table of site communication signals is presented in Table 11-1. These hand/body emergency communication signals should be used when other forms of communication are difficult or impossible. Minor emergencies will be handled within the SZ utilizing the onsite first-aid kit. A portable emergency eyewash will be available in the field vehicle. The appropriate emergency response personnel (i.e., ambulance and fire department) will be contacted for all major emergencies.

11.8 Places of Refuge

All personnel, when alerted during emergencies, shall exit the EZ and assemble in the SZ. Personnel are to remain in the staging area and await further instructions.

11.9 Identification of Nearest Medical Assistance

Name of Facility	Springhill Memorial Hospital
Telephone Number	(251) 344-9630
Address	3719 Dauphin St. Mobile, AL 36608-1798

The Hospital location map and directions are presented Appendix A. The route map and phone number shall be posted at the site and at all phones in the main office trailer. All onsite

personnel will familiarize themselves with the route to the hospital. Additional Emergency Phone numbers are included as Table 11-2.

TABLE 11-1: Site Communications

HAND SIGNALS	
Signal	Meaning
Point index finger toward self	I/Me
Point index finger toward object	It/them
Point index finger toward person	You/them
Circle index finger at group	We/us/all of us
Beckon with index finger	Come here
Point with thumb in a particular direction	Move this way/go this way
Bring index finger across throat	Quit
Slowly ease palm face down	Relax/slow down
Put palm over brow	Scout it out/check it out
Move hand far away from body	Stay away
Put fist in air	Stop/hold position
Hold index finger up near head	Wait
Hands on top of head	I'm OK/Good/OK
Thumb down	Bad/not OK
Slap forehead	Bad idea
Palm down and rotated from side to	Unsure/can't decide
Wave goodbye	Goodbye
Form a circle with thumb and index finger	OK/I understand/agree
Military salute	I understand and will comply
Shake head from side to side	No/disagree
Shake head up and down	Yes/agree
EMERGENCY COMMUNICATION SIGNALS	
Signal	Meaning
One long blast on air horn/siren/whistle	Evacuate area
Three short blasts in sequence on horn/siren/whistle	All clear
Hands on top of head	I'm OK
Strongly wave arms over head	Help/need assistance
Cross arms in front of head, fists closed	Stop/Stay away
Point one arm in direction of evacuation, make large circling motion with other arm in direction of evacuation	Evacuate area
Hand clutching throat	Out of air/can't breathe
Grip partner's wrist or waist	Leave area immediately

Note: Personnel should practice the signals to be used in various circumstances, such as hand and body signals during excessive background noise or while using respirators. All new employees or personnel joining the crew should be instructed on the proper signals prior to entering the site. Below are the hand and body signals that should be used for communication when voice communication is impractical.

TABLE 11-1: Site Communications; (continued)

ADDITIONAL SIGNALS FOR VEHICLE OPERATION	
Signal	Meaning
Move arm in circular (cranking) motion at waist level	Start engine
Move hand, palm down across throat	Lower equipment
Circular motion with hand pointing to ground	Lower equipment
Circular motion with hand pointing up	Raise equipment
Palms in front of head at ear level, moving lateral to indicate distance to go	This far to go
Point to vehicle, beckon with arm motioning toward body	Come toward me
One hand above head, palm toward face, waving Move straight back	Move straight back
Both arms pointing in same directing, index fingers extended	Turn (direction indicated)
Put fist in air or cross arms in front of head, fists closed	Stop
Thrust fist upward from shoulder and downward to shoulder several times	Speed Up
Extend arm sideways, palm down, and wave arm downward at 45 degrees several times	Slow Down

Note: Personnel should practice the signals to be used in various circumstances, such as hand and body signals during excessive background noise or while using respirators. All new employees or personnel joining the crew should be instructed on the proper signals prior to entering the site. Below are the hand and body signals that should be used for communication when voice communication is impractical.

11.10 Status and Capabilities of Emergency Response Providers

Local emergency responders (fire department, medical providers and transporters) are on full time alert and have the capabilities to respond to any anticipated site emergency.

11.11 Pre-Emergency Planning

The types of emergencies anticipated include personal injuries, fire, and small chemical spills. An OSHA-approved first aid kit shall be made available at the site. Also, two employees trained and currently certified in first aid and CPR shall be onsite at all times. A charged and inspected fire extinguisher shall be available on each piece of equipment. Spill containment equipment will be made available if hazardous materials are stored onsite.

TABLE 11-2: Emergency Phone Numbers

Public Agencies		
Poison Control Center		(800) 292-6678 or (800) 462-0800
Alabama Department of Environmental Management (ADEM) – Jamie Foster		(334) 270-5687
National Response Center (Toxic Chemicals and Oil Spills)		(800) 424-8802
Mobile Fire Department		(251) 208-7311 or 911
Ambulance		911
Mobile Police Department		(251) 208-7211 or 911
Alabama State Troopers		(251) 660-2300
Springhill Memorial Hospital (Emergency Unit)		(251) 344-9630
Key Personnel		
AEROSTAR Project Director	Mr. Marshall Eschete	(251) 634-8832 - Cell
AEROSTAR Safety & Health Officer	Mr. Jeff Mitchell, CIH	(904) 565-2820 - Office
AEROSTAR PM/SSHO	Mr. Prent Davis	(228) 990-0662 - Cell
AEROSTAR PM/SSHO alternate	Ms. Thalass Rattanaxay	(251) 802-8210 - Cell
USACE Program Manager	Ms. Melissa Shirley	(251) 690-2616
Walker-Hill Environmental	Mr. Eric Meitzler	(601) 736-3500
OMS 28	Chief Gibbs	(251) 405-4926 Office
OMS 28	SFC Uptagraph	(251) 405-4975 Office
Mobile Airport Authority	Mr. Paul Faggard	(251) 438-7334 Office
AEROSTAR Corporate Office (Jacksonville, FL)		(904) 565-2820
AEROSTAR Mobile Office		(251) 432-2664
AFTER HOURS EMERGENCY:		
Bill Parrish – (251) 370-2405 - Cell		
Hospital Information		
Springhill Memorial Hospital		
3719 Dauphin St.		
Mobile, AL 36608-1798		
ER Phone – (251) 344-9630		

12.0 EMERGENCY RESPONSE PLAN

Pertinent emergency information is provided in this section.

12.1 Emergency Information

12.1.1 Telephone Numbers

See Table 11-2 Emergency Points of Contact.

12.1.2 Emergency Equipment and First Aid Equipment

A complete first aid kit, (16-unit in a waterproof container) will be readily available onsite. It will be located not more than 25 feet from the work activity. The contents will be checked prior to their utilization for sterility and to replace expended items.

A fire extinguisher, (dry chemical or carbon-dioxide) will be readily available onsite. It will be located not more than 25 feet from the work activity. A 5 lb-A:B:C fire extinguisher will be maintained in each piece of heavy equipment as well. Personnel will be instructed on the proper use of fire extinguishers.

12.2 Emergency Response Plan (ERP)

12.2.1 Anticipated Site Emergencies

There are several emergencies, which could reasonably be anticipated during supplemental remedial investigation activities, including:

- Worker injuries and/or illness;
- Fires;
- Equipment failure; and/or
- Bites or stings from vectors.

12.2.2 Personnel and Lines of Authority

The FM/SSHO shall be responsible for the overall direction and implementation of this Emergency Response Plan (ERP), and for overall coordination of any emergency response actions. Specific responsibilities of the FM/SSHO include, but are not limited to, the following:

- Notifying local police, fire department, and other offsite emergency units, as required;
- Rescuing personnel if unqualified or summoning qualified rescue personnel;
- Directing offsite emergency response personnel to the scene and providing assistance;
- Accounting for all site personnel, subcontractors, and visitors;
- Establishing emergency decontamination and providing emergency first aid;
- Preventing further injury and/or contamination of personnel;
- Ensuring that onsite emergency response personnel don the proper PPE if needed;
- Assisting onsite emergency response personnel with treatment and transport of sick/injured;

- Providing medical background information of the sick/injured and applicable site safety and health information to the offsite emergency medical responders;
- Accompanying sick/injured personnel to hospital;
- Notifying the PM and providing updates as conditions change;
- Site control;
- Completing any follow-up reports; and
- In the event that the FM/SSHO is unable to perform these duties, the AEROSTAR Construction Forman shall assume the responsibilities.

All AEROSTAR personnel, subcontractor personnel, and visitors shall be responsible for:

- Reporting any site emergencies to the FM/SSHO;
- Knowing the exit location and evacuation route from the EZ;
- Knowing the pre-planned evacuation assembly point and going there in the event of an emergency;
- Decontaminating themselves to the fullest extent possible before leaving any containment area;
- Preventing spread of further contamination by leaving all contaminated PPE and equipment at the work site; and
- Assisting emergency response personnel as requested.

12.3 Emergency Recognition and Prevention

An emergency is an unplanned event that threatens the safety of any personnel. Compliance with this SSHP can assist in the prevention of anticipated site emergencies. These emergency situations can easily be recognized by visual observations, worker complaints, or monitoring instruments.

12.4 Safe Distances and Places of Refuge

The FM/SSHO shall determine safe distances and places of refuge. Prior to the start of each workday, the FM/SSHO shall hold a safety meeting with all personnel and discuss the following:

- Evacuation routes from work areas;
- The assembly point to be used in the event of an emergency;
- Locations of the nearest fire extinguishers and spill containment equipment (to be provided by subcontractor); and
- Discussion on specific safety and health concerns of personnel.

12.5 Response Procedures

12.5.1 Evacuation Procedures

The FM/SSHO shall establish evacuation routes. Evacuation notification shall be intervals of three short blasts on an air horn, vehicle horn, or direct verbal communication. An air horn shall be kept in the support zone at all times during site activities.

If evacuation is necessary, all personnel are to:

- Decontaminate to the maximum extent possible;
- Evacuate to the vehicle parking area adjacent to the site; and
- The FM/SSHO shall account for all personnel.

12.5.2 Medical Emergency Procedures

Any person(s) who become ill or injured during work activities must immediately inform the FM/SSHO, regardless of the severity of the illness or injury. The victim(s) shall be decontaminated to the maximum extent possible prior to leaving the EZ. In the event that the medical emergency is severe enough, the FM/SSHO shall order a cessation of work and notify offsite emergency personnel. All personnel at the work site shall use the buddy system. All personnel using the buddy system shall stay within sight of their partner. If a partner becomes incapacitated or severely ill, an ambulance shall be called. The FM/SSHO shall have current CPR and first aid training. In the event that a cessation of work is ordered, all personnel should:

- Assist the FM/SSHO, if required, in decontaminating the victim and/or administering first aid;
- Leave the contaminated area and undergo decontamination prior to entering the worker rest area; and
- Assist emergency response personnel when requested.

If the medical emergency is not of the severity to require an ambulance, the victim(s) shall be transported to Springhill Memorial Hospital. A map is provided in Appendix A. The FM/SSHO shall provide hospital personnel with the victim's medical background information and information regarding site contamination.

12.6 Fire and/or Explosion Procedures

In the event of any fire or explosion, the FM/SSHO shall:

- Notify the police, fire department, and ambulance service;
- Contact the PM;
- Upon arrival of the fire department, advise the officer in charge of the location, nature, and identification of the hazardous materials onsite; and
- Escort the response personnel to the location of the fire or explosion.
- Determine the extent of the fire;
- Coordinate and manage fire suppression efforts until the fire department arrives;
- Coordinate the evacuation of injured or non-essential personnel from the site following the evacuation procedure;
- Provide emergency first aid as required;
- Provide guidance and approvals for other personnel to:
 - Use available onsite fire extinguishers on incipient stage fires only; and

- Remove or isolate flammable or other hazardous materials, which may contribute to the fire.

12.7 Spill Procedures

The FM/SSHO shall conduct cleanup operations in the event of a spill during the excavation and disposal process. Spills may occur from equipment hydraulic hoses or fuel reservoirs. In the event of this type of release absorbent pads and other containments devices such as hay bales, booms, etc. will be used to minimize area of impact and the impacted soils will be excavated and placed within a RORO container and labeled accordingly until it can be properly disposed. In the event of a spill of contaminated soil while en route to the disposal facility the driver/or other significant others will call local authorities and report the release/accident and follow all regulatory requirements for the safety of human and ecological health. Either the driver or local authorities will contact emergency contact numbers on the disposal manifests. Once project personnel have been contacted all elements of section 12.0 will be followed.

12.8 Personal Protective Equipment and Emergency Equipment

12.8.1 Personal Injury or Illness

A first-aid kit approved by the Occupation Medicine Physician and ANSI-approved emergency eyewash shall be maintained onsite within the worker rest area, under control of the FM/SSHO.

12.8.2 Incipient Stage, Nonstructural Fires

In the event of a fire or explosion, the FM/SSHO shall summon the Mobile Fire Department immediately. The FM/SSHO and site personnel shall maintain the following fire extinguishers at the project site for use against incipient fires:

- Fire extinguishers — Two- 20 pound ABC to be used by the FM/SSHO.
- Each vehicle shall have a 2 pound ABC Dry Chemical fire extinguisher.

Upon arrival of the Mobile Fire Department, the FM/SSHO shall advise the fire commander of the location, nature, and identification of the hazardous materials on the site.

12.9 Emergency Notification Procedures

This section provides information on emergency notification procedures. Emergency notification sheets shall be posted at sites and easily accessible.

12.10 Emergency Telephone Procedure

In the event of an emergency at the project site, the FM/SSHO shall call 911 and provide the following information:

- Services needed (police, fire, ambulance);
- Location of incident and where to meet site personnel;
- Nature of the incident (injury/illness, fire/explosion, or spill);
- Environmental hazards;
- Time incident occurred; and

- Name and telephone number

Additional Emergency Points-of-Contact are included in Table 11-2.

12.11 Emergency Response Follow-Up Actions

Following activation of the Emergency Response Plan (ERP), the FM/SSHO shall keep the PM notified of site events and shall submit a written accident/incident report documenting the event within 48 hours. The written report shall be submitted to the:

1. USACE Contracting Officer;
2. USACE PM;
3. AEROSTAR SHO; and
4. AEROSTAR PM.

13.0 ACCIDENT PREVENTION

13.1 Accident Reporting

All lost time injuries and property damage accidents (excluding on-the-road vehicle accidents) in which the property damage exceeds \$2,000 shall be reported to the USACE PM within 48 hours of the accident/incident, using ENG Form 3394. A copy of the Report-of-Injury shall also be provided to the USACE PM. All accidents shall be investigated by the FM/SSHO in conjunction with the PM.

All workers receiving medical treatment by a physician shall obtain a release from the physician on the date of treatment stating one of the following: (1) the employee is not fit for duty; (2) the employee is fit for light duty; or (3) the employee is fit for duty. A copy of the release shall be attached to the accident report [ENG Form 3394] and submitted to the USACE PM.

The following reporting procedures apply to all activities at the project site:

- In the event of an accident which results in a lost work day or \$2,000 or more in property damage, an ENG Form 3394 shall be completed and submitted within five workdays.
- Should an accident occur resulting in a fatality, \$100,000 or more in property damage, five or more persons being hospitalized, or possible adverse publicity to the USACE, immediate notification shall be made to the PM. The reporting requirement of submitting ENG Form 3394 within five working days still applies.

The following signature chain shall be used on the ENG Form 3394; the name of the individual shall be typed or printed legibly after each signature:

- Item 15c. USACE Construction Representative and Contractor Field Manager
- Item 16. USACE PM
- Item 17. Division Chief
- Item 18. Safety and Occupational Health
- Item 19. Commander

Copies of ENG Form 3394 and First Report-of-Injury forms are included in Appendix D

**APPENDIX A
HOSPITAL DIRECTION MAP**

APPENDIX B
ACTIVITY HAZARD ANALYSIS

APPENDIX C
MATERIAL SAFETY DATA SHEETS (MSDS)

APPENDIX D REPORTING FORMS

APPENDIX E
HEARING CONSERVATION PROGRAM

APPENDIX F
BLOODBORNE PATHOGEN PROGRAM