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HEALTH AND SAFETY PLAN FOR SITE ASSESSMENT ACTIVITIES AT THE AVGAS SITE
NORTH OF SITE 1438/1439 NAS WHITING FIELD FL
4/1/2002
NAS WHITING FIELD

Health and Safety Plan
for
Site Assessment Activities
at the
AVGAS Site North of Site 1438/1439

Naval Air Station Whiting Field
Milton, Florida



Southern Division
Naval Facilities Engineering Command
Contract No. N62467-94-D-0888
Contract Task Order 0200

April 2002

**HEALTH AND SAFETY PLAN
FOR
SITE ASSESSMENT ACTIVITIES
AT THE
AVGAS SITE NORTH OF SITE 1438/1439**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION-NAVY (CLEAN) CONTRACT**

**Submitted to:
Southern Division
Naval Facilities Engineering Command
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North Charleston, South Carolina 29406**

**Submitted by:
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**CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0200**

APRIL 2002

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1.0 INTRODUCTION

Authorization: This Health and Safety Plan (HASP) and the work described within are completed under the authorization of:

Contract: Comprehensive Long-Term Environmental Action - Navy (CLEAN) III
Contract Number: N62467-94-D-0888
Contract Task Order: 0200
Statement of Work Number: 0217, Revision A, dated January 23, 2002
Proposed Dates of Work: To be determined (TBD)

Application: This HASP has been written to encompass site activities that are to be conducted at properties associated with Naval Air Station (NAS) Whiting Field, located in Milton Florida, as part of Contract Task Order (CTO) 0200, Statement of Work (SOW) 0217, Rev. A. Specifically, this HASP addresses Site Assessment activities to be conducted at the Aviation Gasoline (AVGAS) Site located north of Site 1438/1439.

It is the policy of Tetra Tech NUS, Inc. (TTNUS) to provide their employees a safe and healthful work place (See Attachment I). It is the intent and purpose of this HASP to provide project organization and responsibilities, as well as, policy, procedures, safe work practices, and guidelines necessary to protect site workers, and the general population from chemical, physical, and biological hazards associated with the planned site activities. It is through the execution of the elements defined within this HASP that efforts will be directed to minimize potential incidents and associated injury and to support elements of the TTNUS Health and Safety Program.

Site activities to be conducted at the AVGAS Site located North of Site 1438/1439 will be performed in three phases and shall include the following (see Section 4.0 for a detailed description):

Phase 1

Install soil borings {approximately 20 to a depth of 25 feet below land surface (bls)} to evaluate the extent of product saturation using a Direct Push Technology (DPT) rig equipped with a Membrane Interface Probe (MIP).

Phase 2

Install soil borings (approximately 20 feet) using a DPT rig and a mobile lab to delineate the horizontal and vertical extent of petroleum impacted soil. In addition, groundwater samples will be collected for mobile lab screening to determine if the groundwater has been impacted and aid in determining the optimum number and location of permanent monitoring wells.

Phase 3

Installation of approximately six monitoring wells to delineate the horizontal extent of petroleum impacted groundwater.

Compliance: The elements of this HASP are intended to be in compliance with the requirements established by:

- Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120, "Hazardous Waste Operations and Emergency Response" (HAZWOPER)
- TTNUS Health and Safety Program
- Applicable NAS Whiting Field policies and procedures

Modifications/Changes: This HASP will be reviewed and modified (if appropriate) if any of the following conditions occur.

- The addition to or the modification of the activities specified in Section 4.0, Scope of Work.
- New information becomes available through the course of the investigation and/or from outside sources.

All changes to this HASP will be requested through the Task Order Manager (TOM) to the TTNUS Health and Safety Manager (HSM). It is the responsibility of the TOM to notify all affected personnel of all changes to this HASP. Changes to the HASP will be documented using a Document Status Record provided in the beginning of this document.

1.1 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibility for site safety and health for TTNUS and subcontractor employees engaged in on-site activities. Personnel assigned to these positions will exercise the primary responsibility for all on-site health and safety. These persons will be the points of contact for any questions regarding

the safety and health procedures and the selected control measures that are to be implemented for on-site activities.

- The TTNUS TOM is responsible for the overall direction of health and safety for this project. This includes but is not limited to, the following duties
 - i. Prepares background review - Results from past investigation activities at NAS Whiting Field, Milton, Florida
 - ii. Defines the specific scope of work to be performed
 - iii. Determines the appropriate points of contact within NAS Whiting Field
 - iv. Obtains site access, not only to the base, but also to files and records that may have some bearing or pertinence pertaining to this project

- The Project Health and Safety Officer (PHSO) is responsible for developing this HASP in accordance with internal and external requirements. Specific responsibilities include:
 - i. Providing information regarding site contaminants and physical hazards associated with the site.
 - ii. Establishing air monitoring and decontamination procedures.
 - iii. Assigning personal protective equipment based on task and potential hazards.
 - iv. Determining emergency response procedures.
 - v. Stipulate training and appropriate medical surveillance requirements for TTNUS and subcontractor personnel.
 - vi. Identifying relevant standard work practices to minimize potential injuries and exposures associated with the project scope of work.
 - vii. Modifies this HASP, if/as necessary.

- The TTNUS Field Operations Leader (FOL) is responsible for implementation of the HASP with the assistance of an appointed Site Safety Officer (SSO). The FOL manages field activities, executes the work plan, and enforces safety procedures. as applicable to the work plan.

- The Site Health and Safety Officer (SHSO) supports site activities by advising the FOL on all aspects of health and safety on-site. These duties may include:
 - i. Coordinating all health and safety activities with the FOL.
 - ii. Selecting, applying, inspecting, and maintenance of personal protective equipment (PPE).
 - iii. Establishing work zones and control points in areas of operation.
 - iv. Implementing air monitoring program for on-site activities.

- v. Verifies training and medical clearance of on-site personnel status in relation to site activities.
 - vi. Implementing Hazard Communication and other associated health and safety programs, as they may apply to site activities.
 - vii. Coordinating emergency services.
 - viii. Providing site-specific training for all on-site personnel.
 - ix. Investigating all accidents and injuries (see Attachment I - Illness/Injury Procedure and Report Form)
 - x. Providing input to the PHSO regarding the need to modify this HASP, or applicable health and safety associated documents.
- Compliance with the requirements stipulated in this HASP are monitored by the SHSO and coordinated through the TTNUS CLEAN HSM and PHSO.

Note: In some cases one person may be designated responsibilities for more than one position. For example, at NAS Whiting Field, the FOL may also be responsible for the SHSO duties. This will be performed only as credentials, experience, and availability permits.

1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: NAS Whiting Field **Address:** 7151 Wasp Street
Milton, Florida 32570-6159

NAS Whiting Field (POC): Mr. Jim Holland **Phone Number:** (850) 623-7181 Ext. 149

U.S. Navy Remedial Project Manager: Ms. Beverly Washington (Code ES24)

Address: 2155 Eagle Drive **Phone Number:** (843) 820-5581
North Charleston, South Carolina 29406 **Fax Number:** (843) 820-7465
E-mail Address: washingtonb@efdsouth.navfac.navy.mil

Purpose of Site Visit: This field investigation will entail multiple tasks and activities (see Section 4.0), including installation of soil borings using DPT, soil and groundwater sampling, and installation of monitoring wells using Hollow Stem Auger and/or Mud Rotary drilling applications.

Proposed Dates of Work: April 2002 until completed

Project Team:

Tetra Tech NUS Personnel:	Discipline/Tasks Assigned:	Phone/Fax/E-mail No.
<u>Paul Calligan, P.G.</u>	<u>Task Order Manager (TOM)</u>	<u>(813) 806-0202</u> <u>Fax: (813) 806-4040</u> <u>calliganp@ttnus.com</u>
<u>Matthew M. Soltis, CIH, CSP</u>	<u>CLEAN Health and Safety Manager (HSM)</u>	<u>(412) 921-8912</u> <u>Fax: (412) 921-4040</u> <u>soltism@ttnus.com</u>
<u>Don Westerhoff, CSP</u>	<u>Project Health and Safety Officer (PHSO)</u>	<u>(412) 921-7281</u> <u>Fax: (412) 921-4040</u> <u>westerhoffd@ttnus.com</u>
<u>TBD</u>	<u>Field Operations Leader (FOL)</u>	<u>Fax: _____</u> <u>_____</u>
<u>TBD</u>	<u>Site Health and Safety Officer (SHSO)</u>	<u>Fax: _____</u> <u>_____</u>
<u>Tom Patton</u>	<u>Equipment Manager</u>	<u>(412) 859-4670</u> <u>Fax: (412) 859-0521</u> <u>pattont@ttnus.com</u>

Non-Tetra Tech NUS Personnel	Affiliation/Discipline/Tasks Assigned	Phone No.
<u>TBD</u>	<u>Analytical Laboratory</u>	<u>_____</u>

TBD	Surveyor (Geographical)	
TBD	Drilling Subcontractor	
FedEx	Sample/Parcel Delivery	1(800)463-3339

Project Regulatory Oversight/Support:

Florida Department of Environmental Protection (FDEP):

Point of Contact:	Mr. Jim Cason	Phone Number:	(904) 488-3935
Address:	Twin Towers Office Building	Fax Number:	
	2600 Blairstone Road 60604-3507	E-mail:	
	Tallahassee, Florida 32399-2400		

Hazard Assessments (for purposes of 29 CFR 1910.132) and HASP preparation conducted by:

Don Westerhoff, CSP

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section of the HASP is part of a preplanning effort to direct and guide field personnel in the event of an emergency. The first measure in accomplishing this objective is to define what constitutes an emergency.

An emergency as defined in 1910.120 is:

An occurrence or condition that can or has resulted in an uncontrolled release of a hazardous substance or potential safety hazard (i.e., fire, explosion, chemical exposure) associated with that release.

An incidental release (which is not an “emergency”) is defined in 1910.120 as:

The releases of a hazardous substance that can be absorbed, neutralized, or otherwise controlled and will not result in potential safety hazard (i.e., fire, explosion, chemical exposure) are not considered emergency responses.

Based on the above definitions, TTNUS will, include initial response measures for incidents such as:

- Initial fire-fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Provision of initial medical support for injury/illness requiring only first-aid level support
- Provision of site control and security measures, as necessary

Incidents and conditions that are above this level of participation will be considered emergencies. These events are considered beyond the capabilities of field personnel and available resources to safely provide emergency response. The emergency response agencies listed in this plan are capable of providing the most effective response and therefore will be designated as the primary responders in the event of an emergency. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time.

NAS Whiting Field Emergency Dispatch will be notified anytime outside response agencies are contacted. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(I)(1)(ii).

2.2 PRE-EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, injury or illness resulting from exposure to chemical, physical hazards, or fire are the most probable emergencies that could potentially be encountered during site activities. To minimize and eliminate these potential emergency situations, the SHSO and/or the FOL are responsible for pre-emergency planning activities, which include the following.:

- Coordinating response actions with NAS Whiting Field Emergency Services personnel to ensure that TTNUS emergency action activities are compatible with existing facility emergency response procedures. This will require the FOL and/or the SHSO to review these emergency actions with the appointed Emergency Response Providers, prior to the commencement of on-site activities.
- Establishing and maintaining information at the project staging area (Support Zone) for easy access in the event of an emergency. This information includes the following:
 - Chemical Inventory (for substances used on-site), with Material Safety Data Sheets (MSDS).
 - On-site personnel medical records (medical data sheets).
 - A logbook identifying personnel on-site each day.
 - Emergency notification phone numbers in all site vehicles
- Identifying a chain of command for emergency action. For this field effort, the FOL and/or the SHSO shall serve as Incident Coordinators in the event of an incident. In the event the release cannot be controlled, Incident Command will be passed to the responding emergency services agency.
- Informing site workers of the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible. This will be accomplished through site-specific training of this emergency action plan, HASP, and through daily briefings and through the use of task-specific Safe Work Permits (SWP).

2.3 EMERGENCY RECOGNITION AND PREVENTION

The primary focus of this section is the ability to recognize and control factors that could contribute to an emergency situation/condition. The FOL and/or the SHSO will preview all site work locations prior to committing personnel or resources. Their actions will be as follows:

- Identify, remove, and/or barricade physical hazards within the estimated work area. Ensure that approach paths and access and control points into the work area have been established to ensure that pedestrian and vehicle traffic and other installation activities are not impacted by site operations.
- Provide the necessary equipment to control potential emergencies (i.e., safety cans for flammable liquid storage, spill containment equipment, PPE, and emergency equipment such as portable fire extinguishers and first-aid kits). Ensure emergency equipment and resources are at the ready, should they be needed for incidental response measures.
- Evaluate operations to ensure that necessary measures are taken to control and/or minimize the impact of emergency situations/conditions. This includes actions such as, but not limited to,
 - Securing the necessary permits and clearances such as Utility Clearances provided by the Base Public Works (Note: Mr. Holland will serve as the liaison between the Base and Sunshine (the Florida One-Call System for Utility Locating and Clearance). When utility clearances are obtained, secure paper copies, ticket numbers, etc. All utility clearances are good for 14-days from the date of issue. If the work will not be completed in that time frame, extensions may be requested. All Utility Location and Excavation Clearances will be conducted in accordance with Attachment II of this HASP.
 - Ensure all personnel are adequately trained in the provisions of this HASP and this Emergency Action Plan.
- Complete site characterization for all predetermined work in contaminated areas to quantify and qualify the hazards associated with those areas. Areas will be demarcated and restricted to only authorized personnel, based on the results from this site characterization.

Field Crew shall:

- At the FOL and/or the SHSO's direction, remove or barricade physical hazards within the estimated work area identified by the FOL and/or the SHSO.
- Follow the direction provided in the HASP and SWPs issued.
- Follow the guidelines for control of emergency conditions.
- Report any potential emergency situation to the FOL and/or the SHSO.

2.3.1 Drilling Activities

The potential emergencies that could result during this activity are primarily physical in nature. They include being struck by the equipment, entanglement into rotating machinery, striking an underground utility, exposure to excessive noise levels, and associated traffic hazards. The control measures to be put in place to minimize hazards of this nature are presented in Sections 6.2.4 and 6.2.5.

2.3.2 Fire

There is limited potential for fire during this operation, predominantly with regard to fueling equipment and the use of decontamination solvents. Fire protection and prevention methods will be followed as specified in Section 2.9.2.

2.3.3 Chemical Exposure

Given the reported chemical concentrations of site contaminants and the proposed work activities associated with the scope of work, emergency situations involving potential exposures to chemical contaminants are unlikely to occur. Additionally, use of required control measures (such as air monitoring, personal protective equipment usage and decontamination efforts) will further reduce the potential for exposures to site contaminants.

2.4 SAFE DISTANCES AND PLACES OF REFUGE

2.4.1 Safe Place of Refuge Selection

The FOL and/or the SHSO shall identify a safe place of refuge (in the event of an emergency) on the SWP (See Attachment VI). This location will be selected and conveyed to the Field Crew as part of issuing the SWP at the beginning of each field task and at each location. Selection will be based on the following considerations:

- A location providing telephone communications and/or shelter.
- A location from which the field crews can provide site security restricting access to the emergency area, however, a point from which the field crew may direct emergency response personnel (i.e., intersection or gate, etc.).

In all cases this location should be positioned a sufficient (safe) distance from the operation that will not be impacted by the emergency. This distance is impacted by a number of conditions (i.e., tasks being conducted; chemical, physical, and toxicological properties; potential for fire and explosion; meteorological conditions; terrain). Based on the level of reported contaminants and the low risk of encountering any

significant emergency situations, it is not anticipated that emergency assembly points will need to be located significantly away from the planned work areas.

2.4.2 Critical Operations

There are no operations being conducted under this scope of work that are considered critical and would require an individual or individuals to man during an emergency. Therefore in the event of an emergency all personnel will cease all operations and report to the safe place of refuge.

2.5 DECONTAMINATION PROCEDURES/EMERGENCY MEDICAL TREATMENT

During an evacuation, decontamination procedures will be performed only if they are not anticipated to jeopardize the welfare of site workers. However, it is unlikely that an emergency would occur which would require workers to evacuate the site without first performing decontamination procedures. Decontamination of medical emergencies will proceed in the following manner.

2.5.1 Non-Life Threatening Medical Incident (Bruises, Cuts, Scrapes, Etc.)

The area of clothing or suit penetration will be isolated from the decontamination procedure by removing the protective garments or clothing surrounding the area of the injury and applying a light gauze wrap and plastic cover. Decontamination for unaffected areas will proceed as per Table 5-1 of this HASP.

2.5.2 Life Threatening

- Notify off-site response agencies.
- If it will not endanger the injured individual (i.e., spinal cord injury, etc.) remove any outer PPE. Removal may require the use of bandage scissors to remove the outer garments.
- If appropriately trained, begin life saving techniques as appropriate (Cardio-Pulmonary Resuscitation (CPR), cooling or warming regimens, etc.).
- Wrap the injured in a blanket for transport to the hospital.
- Engage Emergency Notification Sequence
- Follow instructions provided in Figure 2-1.

Note: One person from the field team will accompany the injured to the hospital with his/her medical data sheet, appropriate MSDSs (if applicable), a copy of this HASP, and the incident forms. This person will collect as much information as possible and transfer that information to the HSM and to WorkCare (see the Incident Response Protocol provided in Figure 2-1). All other personnel will follow site control/site security measures.

The SHSO will lead the investigation of the incident to gather as much information as possible. Attachment I, TTNUS Injury/Illness Procedure will be used as part of this task. This information must be communicated to the HSM within 24 hours of any injury or illness incident.

2.5.3 Emergency Medical Treatment

TTNUS and subcontractor personnel are only permitted to provide treatment to the level of their training. It should also be noted all first-aid shall be administered voluntarily.

Emergency medical treatment will be initiated under the following guarded restrictions:

- The FOL and/or the SHSO have been notified of the incident.

- Take the necessary precautions to prevent direct contact with the injured person's body fluids. This may be accomplished through the employment of the following measures:
 - Use surgeons gloves when handling cuts, abrasions, bites, punctures, etc. or any part of the injured person. The use of safety glasses and surgeons masks maybe necessary if there is the potential for uncontrolled spread of body fluids. The PHSO will be immediately notified in event that personnel providing emergency first-aid come into contact with body fluids or other potentially infectious tissues.

In order to engage these protective measures, the FOL shall ensure that these items are part of their first-aid kit.

2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Since TTNUS personnel will not always be working in close proximity with each other, hand signals, voice commands, air horns, and/or two-way radios may be needed to alert site personnel of an emergency.

If an incident occurs, site personnel will initiate the following procedures:

- Initiate incident alerting procedures (if needed) verbally, by air horn, or using two-way radios.
- Evacuate non-essential personnel.
- Initiate initial response procedures.
- Describe to the FOL (who will serve as the Incident Coordinator) what has occurred in as much detail as possible.

In the event that site personnel cannot control the incident through offensive and/or defensive measures, the FOL and/or the SHSO will undertake emergency notification procedure to secure additional outside assistance. Depending on the nature of the emergency, this may include in the following:

- Call 911, Santa Rosa County Dispatch to request emergency assistance at your location at NAS Whiting Field. They will notify the Main Gate of emergency services in route. Position someone at the Safe Place of Refuge Location to direct Emergency Services to the location of the emergency (See Table 2-1).

Note: All cellular phone calls are routed through one of two communications towers, either Santa Rosa Emergency Dispatch or Escambia County Emergency Dispatch. Request the Santa Rosa Emergency Dispatch. It will be necessary to inform the dispatch that you are at the NAS Whiting Field Facility.

- Give the emergency operator the location of the emergency and a brief description of what has occurred.
- Stay on the phone and follow the instructions given by the operator.
- The appropriate agency will be notified and dispatched.

If an “external” incident occurs (that is, one not initiated by field activities) the FOL shall:

- Initiate an evacuation (if needed) by voice commands, hand signals, air horns, or two-way radio.
- Call Navy On-Site Representative, Mr. Jim Holland at (850) 623-7181 Ext. 149.
- Direct field personnel to proceed to the appropriate assembly points (as directed by NAS Whiting Field Emergency Services or other designated Navy personnel).

2.7 EMERGENCY CONTACTS

Prior to performing work at the site, all personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an incident. A cellular phone or designated land-line phone shall be identified and made available during all on-site operations for the purpose of emergency notification. Table 2-1 provides a list of emergency contacts and their corresponding telephone numbers. This table must be posted on-site, where it is readily available to all site personnel. If field personnel are operating at a number of isolated locations, additional copies should be made available to the field crew.

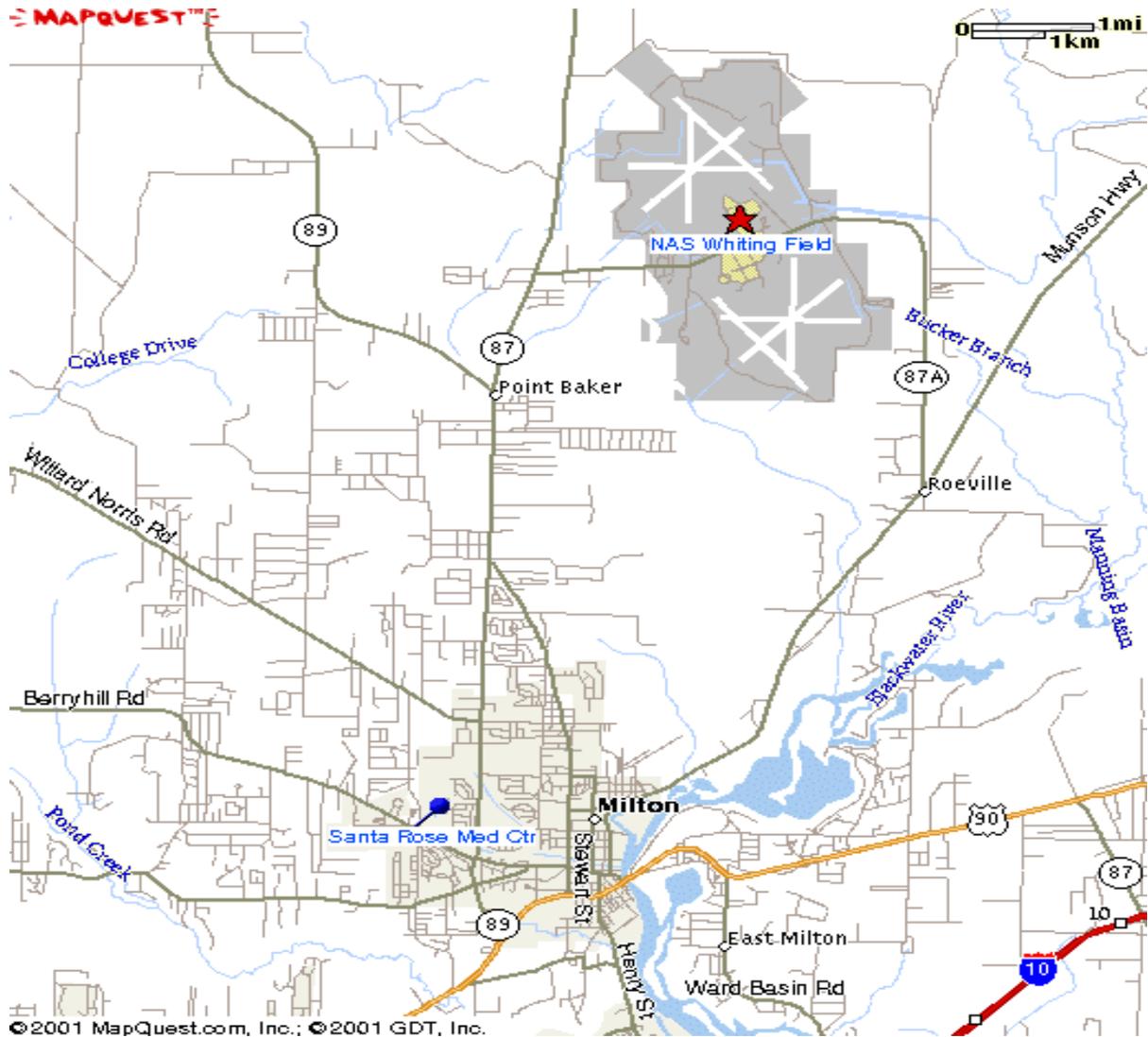
**TABLE 2-1
EMERGENCY REFERENCE
NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA**

CONTACT	PHONE NUMBER
EMERGENCY (Milton Police, Fire, and Ambulance Services)	911
Santa Rose Medical Center (Primary Hospital)	(850) 626-7762
West Florida Regional Medical Center (Alternate Hospital)	(850) 478-4460
Santa Rosa County Emergency Management	911 (850) 983-5360
Task Order Manager Paul Calligan, P.G.	(813) 806-0202
Navy On-site Representative at NAS Whiting Field Jim Holland	(850) 623-7181 ext. 149
Utilities Jim Holland	(850) 623-7181 ext. 149
NAS Whiting Field Security	
NAS Whiting Field Fire Department	
Chemtrec National Response Center	(800) 424-9300 (800) 424-8802
TTNUS Tallahassee Office	(850) 385-9899
TTNUS, Pittsburgh Office	(412) 921-7090
Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer Donald Westerhoff, CSP	(412) 921-7281
InfoTRAC (Information Clearinghouse for Hazardous Materials TTNUS Ships)	1 (800) 535-5053

* - Cellular communications will be routed through either Santa Rosa or Escambia County Dispatch. If Escambia County Dispatch receives your cell phone request for emergency services ask to be patched into Santa Rosa County Emergency Management Dispatch. It is imperative that you inform them that you are calling from the NAS Whiting Field facility. They will notify the Base that an ambulance is in route and be permitted access. 911 will work from any Base extension.

2.8 ROUTE TO HOSPITALS

Directions to Santa Rose Medical Center



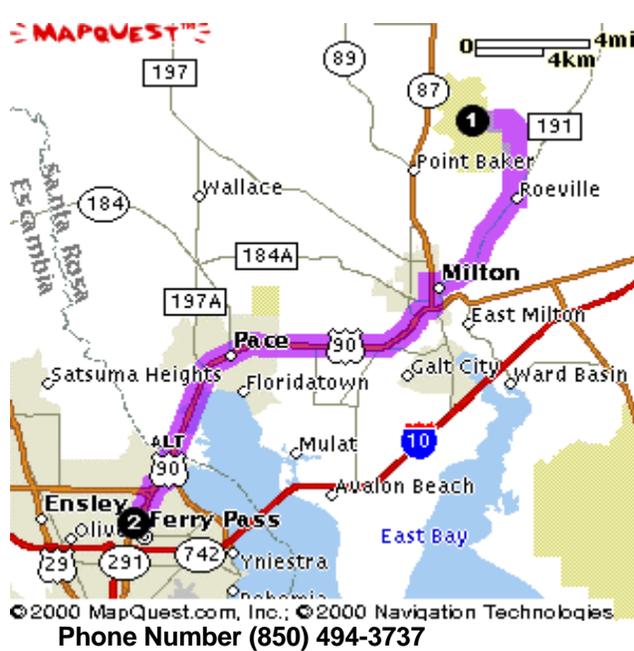
© 2001 MapQuest.com, Inc.; © 2001 GDT, Inc.
 Directions to Santa Rosa Medical Center (Primary Hospital)

Phone Number (850) 626-7762

Directions	Miles
1. Travel 1 mile west of the base on Highway 87A , turn left.	1.0
2. Drive 5.5 miles south on Highway 87/89 to Berry Hill Road , turn right.	5.5
3. Travel 1.7 miles and the hospital is on the right.	1.7

This hospital has been selected as the primary location due to its proximity to NAS Whiting Field and services offered.

Directions to West Florida Regional Medical Center (Alternate Hospital)



Directions	Miles
1. Start out going South on E GATE RD towards MUNSON HWY.	3.1
2. Turn SLIGHT RIGHT onto MUNSON HWY.	3.6
3. MUNSON HWY becomes BROAD ST.	0.5
4. Turn SLIGHT RIGHT onto OLIVER ST.	0.3
5. Turn LEFT onto FL-87 S.	0.8
6. Turn SLIGHT RIGHT onto US-90 W/FL-10 W/FL-89 N.	0.6
7. US-90 W/FL-10 W/FL-89 N becomes US-90 W/FL-10 W.	11.6
8. Stay straight to go onto US-90 ALT W/FL-10 W.	0.7
9. Turn SLIGHT LEFT onto FL-291 S.	1.5

When using any driving directions or map, it's a good idea to drive the route and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical service personnel. This information is listed on Medical Data Sheets (Attachment V) filed on-site. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

2.9 PERSONAL PROTECTION EQUIPMENT (PPE) AND EMERGENCY EQUIPMENT

A first aid kit, eye wash units (as necessary), and fire extinguishers will be maintained on-site at an easily accessible location and shall be immediately available for use in the event of an emergency. Based on the anticipated hazards, these emergency equipment items may be maintained near the work areas (i.e., the Exclusion Zones) of on-going operations. This will be at the discretion of the SHSO.

The FOL and/or the SHSO should ensure the First-Aid Kits are stocked with the necessary equipment. All first-aid kits purchased for the job-site shall be American National Standards Institute (ANSI) Z308.1 approved for industrial applications. The SHSO will determine the number of kits necessary based on the number of personnel and the number of remote operations being conducted under the scope of work at the same time.

PPE to be used in an emergency will be the same as that specified for the task that was involved in the injury. The anticipated levels of PPE are indicated below.

2.9.1 PPE Requirements - Incidental Spill of Investigative Derived Wastes (IDW)

- Poly vinyl chloride (PVC) Rain-Suits or Tyvek based on the potential for soiling work clothes during clean-up
- PVC or Neoprene Over-boots (Pant legs on the outside of the over-boots)
- Nitrile inner surgeons gloves with Nitrile outer gloves over top
- Hard hat as conditions or overhead hazards exist
- Safety Glasses
- Splash Shields as necessary

Spill equipment (identified in Section 10.0) will be maintained in the IDW storage and/or the resource deployment area to support rapid response.

2.9.2 Fire Fighting

Standard field attire will be used for incipient stage fire fighting which will be performed from a sufficient distance as not to endanger field personnel. Fire extinguishers will be maintained at the following locations:

- Support trailer (As applicable)
- On each piece of equipment in excess of 1 ton rating (i.e., trucks, DPT/drill rigs, etc.)
- At all locations which store, dispense or otherwise handle flammable or combustible liquids.

It will be the responsibility of the SHSO to ensure that enough fire extinguishers are available to support on-site operations in the vulnerable locations stated above.

2.10 INJURY/ILLNESS REPORTING

If any TTNUS personnel are injured or develop an illness as a result of working on site, the TTNUS “Injury/Illness Procedure” (Attachment I) must be followed. Following this procedure is necessary for documenting all of the information obtained at the time of the incident. Also, as soon as possible the Base Contact must be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical service personnel. This information is listed on Medical Data Sheets (see Attachment V) which are to be completed for each worker and filed on-site. If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel, and follow the protocol specified in Figure 2-1.

FIGURE 2-1 EMERGENCY RESPONSE PROTOCOL

The purpose of this protocol is to provide guidance for the medical management during injury situations.

In the event of a personnel injury or accident:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the injured person is a TTNUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. WorkCare physicians will monitor the care of the victim. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 and enter Extension 109, or follow the voice prompt after hours and on weekends and be prepared to provide:
 - Any known information about the nature of the injury.
 - As much of the exposure history as was feasible to determine in the time allowed.
 - Name and phone number of the medical facility to which the victim(s) has/have been taken.
 - Name(s) of the involved TTNUS employee(s).
 - Name and phone number of an informed site officer who will be responsible for further investigations.
 - Fax appropriate information to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) at 1-800-245-2730. This number will only be accessible from 0800 through 1700 Monday through Friday.

As data is gathered and the scenario becomes more clearly defined, this information should be forwarded to WorkCare.

WorkCare will compile the results of all data and provide a summary report of the incident. A copy of this report will be placed in each injured person's medical file in addition to being distributed to appropriately designated company officials.

Each involved worker will receive a letter describing the incident but deleting any personal or individual comments. A personalized letter describing the individual findings/results will accompany this generalized summary. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

**FIGURE 2-1 (continued)
POTENTIAL EXPOSURE REPORT**

Name: _____ Date of Exposure: _____
 Social Security No.: _____ Age: _____ Sex: _____
 Client Contact: _____ Phone No.: _____
 Company Name: _____

I. Exposing Agent

Name of Product or Chemicals (if known): _____

Characteristics (if the name is not known)

Solid Liquid Gas Fume Mist Vapor

II. Dose Determinants

What was individual doing? _____
 How long did individual work in area before signs/symptoms developed? _____
 Was protective gear being used? If yes, what was the PPE? _____
 Was there skin contact? _____
 Was the exposing agent inhaled? _____
 Were other persons exposed? If yes, did they experience symptoms? _____

III. Signs and Symptoms (check off appropriate symptoms)

Immediately With Exposure:

Burning of eyes, nose, or throat	Chest Tightness / Pressure
Tearing	Nausea / Vomiting
Headache	Dizziness
Cough	Weakness
Shortness of Breath	

Delayed Symptoms:

Weakness	Loss of Appetite
Nausea / Vomiting	Abdominal Pain
Shortness of Breath	Headache
Cough	Numbness / Tingling

IV. Present Status of Symptoms (check off appropriate symptoms)

Burning of eyes, nose, or throat	Nausea / Vomiting
Tearing	Dizziness
Headache	Weakness
Cough	Loss of Appetite
Shortness of Breath	Abdominal Pain
Chest Tightness / Pressure	Numbness / Tingling
Cyanosis	

Have symptoms: (please check off appropriate response and give duration of symptoms)
 Improved: _____ Worsened: _____ Remained Unchanged: _____

V. Treatment of Symptoms (check off appropriate response)

None: _____ Self-Medicated: _____ Physician Treated: _____

3.0 SITE BACKGROUND AND DESCRIPTION

3.1 SITE INFORMATION

NAS Whiting Field is located in Santa Rosa County, approximately 20 miles northeast of Pensacola, in Milton, Florida. The Air Station, which is divided into two areas, provides support and facilities for flight and academic training. The North Field is used for fixed wing training, while the South Field is used for helicopter flight instruction.

3.2 SITE HISTORY AND CURRENT OPERATIONS

The Air Station was commissioned in 1943 as a training facility and has since generated waste streams associated with the operation and maintenance of aircraft, pilot scenario training exercises, and facility maintenance activities. Prior to the establishment of hazardous waste management and recycling plans, most of these materials were disposed of on-site. Wastes were either placed in on-site disposal pits or in waste oil bowlers, which were often used for fire fighting training.

The industrial operations at NAS Whiting Field include the North Field, South Field, and Mid Field areas. The North Field of NAS Whiting provided Primary flight training until 1949. Jet training was then introduced and several types of fixed wing aircraft were used until 1983. Maintenance and repair of these aircraft included stripping, painting, washing, and engine upkeep. These activities generated wastes such as stripping compounds, cleaning solvents, paint wastes, alkaline cleaners, detergents, oil, and hydraulic fluids. In the 1970's, NAS Whiting Field began to perform general aircraft maintenance duties for Air Wing Five, a unit stationed at Whiting. The types of waste generated include waste oil, mineral spirits, methyl ethyl ketone (MEK), isopropyl alcohol, mixed paint thinners, and aircraft cleaning solution.

Line maintenance on transient aircraft and the daily upkeep and maintenance of several assigned aircraft has been performed at the Mid-Field Hanger since the 1940's. Operation and maintenance activities performed and the wastes generated at the Mid Field are similar to those generated at the North Field.

The South Field of NAS Whiting, provided aircraft flight training until the early 1970's. In 1972, fixed wing aircraft training was moved from the South Field to the North Field and helicopter training was initiated. Operation and maintenance activities performed on the helicopters were similar to those performed on fixed wing aircraft at the North Field. Wastes generated at the South Field were similar to those generated at the North Field.

In 1985, an initial site assessment was performed which indicated that thousands of gallons of waste including paints, paint thinners, solvents, waste oils, gasoline, hydraulic fluids, AVGAS, tank bottom sludges, transformer fluids containing polychlorinated biphenyls (PCBs), and paint stripping wastewater, were potentially dumped into on-site disposal areas. Additional wastes were reportedly released as a result of accidents or equipment failure. The assessment identified 16 disposal and/or spill areas located on the facility property.

3.3 INVESTIGATION AREAS

The sites to be investigated as identified in this SOW 0217 include:

- Former Underground Storage Tanks (UST) Site 1438/1439

3.3.1 Sites 1438/1439

Tanks 1438 and 1439 were installed in 1943. Each tank was of concrete construction and had the capacity to hold 218,384 gallons of AVGAS. The tanks were decommissioned in 1980, at which time they were filled with water. In 1985, Tank 1438, and the pumphouse were demolished and removed from the site; however, Tank 1439 was collapsed and abandoned in place. During demolition, free product was discovered in the excavation pit. A Site Assessment was performed and a Site Assessment Report (SAR) was submitted in August 1999. A Supplemental Assessment Report was submitted in December 2000. Soil samples indicated that soil contamination extended from the surface to at least a depth of 35 feet. Groundwater at the site is approximately 90 feet below grade. The fuel transmission pipelines running to both the north and south airfields were reportedly abandoned in place and filled with concrete. The status of the initial investigation has progressed to the Remedial Action Plan (RAP) phase. A closure assessment was conducted on the AVGAS pipeline in October 2000. During the closure assessment, an area of free product was detected just north of Site 1438/1439. A Closure Assessment Report was submitted to the FDEP and the Escambia County Health Department in April, 2001. The Closure Assessment Report recommended that a site assessment be conducted at the location where the free product was detected. A response letter was subsequently issued by the Department concurring with the recommendation to perform a site assessment.

4.0 SCOPE OF WORK

The following is a list of activities that are covered in this HASP for additional site assessment activities related to the AVGAS site located north of Site 1438/1439:

- Mobilization/demobilization
- Soil boring using DPT/MIP (Phase 1) and a mobile lab (Phase 2)
- Installation of approximately six permanent monitoring wells using Hollow Stem Auger (HAS) or Mud Rotary Drilling methods
- Soil and groundwater sampling – (Phase 1, 2, and 3)
- Decontamination of sampling and heavy equipment
- IDW management

The above listing represents a summarization of the tasks as they may apply to the scope and application of this HASP. For more detailed description of the associated tasks, refer to the Plan of Action (POA). Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this document. The TOM or a designated representative will submit all requested modifications to this document to the HSM.

4.1 MOBILIZATION/DEMOBILIZATION

This task includes, but not limited to, the following:

- The procurement and shipping of equipment, and materials for the field investigation.
- The review of planning documents (i.e., HASP, Sampling and Analysis Plan (SAP), Work Plan (WP)/ POA, Quality Assurance Plan, Applicable Standard Operating Procedures (SOPs), etc.).
- Site Reconnaissance to include site characterization, site preparation, the layout of sampling locations and to secure the necessary utility clearances and isolate physical hazards, where applicable. All utility clearances shall proceed in accordance with Attachment II, TTNUS, Inc. Utility Locating and Excavation Clearance Procedures. Utility clearances for NAS Whiting Field will require 10-day advance notification. Utility clearances are also required to be supported using Sunshine State (Florida One-Call Utility Locating Service) at 1(800) 432-4770. This service will be coordinated through

Mr. Jim Holland at NAS Whiting Field. Sunshine requires a 2-working day advance notification. Once obtained, the Utility Clearance ticket is good for a period of 14-days.

- Secure, construct, or equip decontamination facilities to support the field activities.
- Secure, construct, or equip IDW storage facilities to support the field activities.

4.2 DPT OPERATIONS

The first phase will involve the use of a DPT rig with a MIP to evaluate the extent of product saturated soil and determine if it is associated with a localized perched lens. By delineating the extent of the product saturated soil and the clay lens, steps can be taken to ensure that the lens is not breached during future assessment activities. In addition, the data can aid in determining if a source removal is warranted to address the product saturated soil. It is anticipated that approximately 20 soil borings to a depth of approximately 25 feet bls will be performed.

The second phase will involve the use of a DPT rig and a mobile lab to determine the horizontal and vertical extent of petroleum impacted soils. In addition, groundwater samples will be collected for mobile lab screening to determine if the groundwater has been impacted and aid in determining the optimum number and location of permanent monitoring wells. Refer to the POA or WP for additional details on activities conducted as part of Phase 2.

4.3 MONITORING WELL INSTALLATION

The third phase will involve the installation of approximately six monitoring wells to delineate the horizontal extent of petroleum impacted groundwater. The wells will be installed to a depth of approximately 95 feet bls. Wells will either be installed using Hollow-stem Augering or Mud Rotary Drilling techniques. Refer to the POA or WP for additional details on monitoring well installation activities conducted as part of phase 3.

4.4 MULTI-MEDIA SAMPLING

Analytical samples will be collected from representative media including subsurface soils and groundwater during various phases of this project. **Refer to the POA or WP for additional details on monitoring well installation activities conducted as part of phase 3.**

4.5 INVESTIGATION DERIVED WASTE (IDW) MANAGEMENT

Drums of IDW (soil cuttings and water) will be generated at Site 1438/1439 during each phase of the work. In order to profile the accumulated waste to determine disposal methods and options the following activities will be conducted:

- Characterization will be accomplished using the associated sample profiles.
- Drums will remain on-site until the results of the chemical analysis are completed.
- Quality Assurance/Quality Control (QA/QC) samples of the IDW are not required.
- The Navy will sign all waste manifests and Bills of Lading.

Labeling – All containers will be labeled to identify their contents. The labels will include the following information:

- Site
- Job Number
- Location [Solid Waste Management Unit (SWMU)]
- Date – To be completed upon filling the container or when no more material is to be added
- Drum # - Assign an inventory number to be added to a comprehensive log
- Contents – Description
- Volume – Final volume
- Contact – This person should be available on base. To this end an up-dated inventory should be provided at the close of each shift to this person.
- Emergency Number – Contact person provided above

All Satellite Storage locations will be structured as follows:

Investigative Derived Waste Storage

- 55 Gallon Drums (United Nations 1A2 configurations) – No more than 4 drums to a pallet. Labels and retaining ring bolt and nut assemblies affixed on the outside of each drum to facilitate easy access. A minimum of 4 feet must be maintained between each row of pallets. The decision to construct a bermed and lined area will be at the discretion of project management.

These Satellite Storage Areas must be identified by proper signage, which specifies points of contact in the event of an emergency, alternate contacts, and the identification of the stored material (i.e., Purge or decontamination waters, soil cuttings, etc.).

An Inventory Log will be maintained by the FOL regarding types of waste materials and estimated volumes generated. An updated Inventory List will be provided by the FOL to the designated Emergency Response Agency or Base Contact during days off and between shifts or phases of operations.

4.6 DECONTAMINATION

The equipment involved in the field activities for this investigation will be decontaminated prior to, during and after the sampling activities.

4.6.1 Sampling Equipment

All non-dedicated sampling equipment (i.e. trowels, bowls) will be decontaminated prior to the initiation of field sampling, between sample locations, and at the completion of the field activities. The following decontamination steps will be taken.

- Potable water rinse
- Alconox or Liquinox detergent wash
- Deionized (DI) water rinse
- Solvent rinse (Isopropanol)
- DI water rinse
- Air dry

All dedicated sampling and PPE will be rinse to remove gross contamination. Then pending the sampling results be disposed of accordingly.

4.6.2 Heavy Equipment

All non-dedicated heavy equipment (i.e. auger flights, split spoons, drive rods, etc.) will be decontaminated prior to use, between sample locations, and at the completion of the field activities. The following decontamination steps will be taken.

- Potable water rinse
- Alconox or Liquinox detergent wash
- Pressure Washer
- DI water rinse
- Solvent rinse (Isopropanol)
- DI water rinse
- Air dry

- Instrument scan – This will be performed after air drying to ensure all chemical solvents have been effectively removed. Positive results require re-rinsing and re-scan to ensure removal of the applicable chemical solvents.

The above listing represents an overview of the tasks associated with the scope of work and the application of this HASP. For more detailed description of the associated tasks, refer to the SAP. Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this document. The TOM or a designated representative will submit all requested modifications to this document to the HSM.

5.0 TASK-SPECIFIC SUMMARY OF HAZARDS AND ASSOCIATED CONTROL MEASURES

Table 5-1 of this section serves as the primary portion of this HASP and identifies the potential hazards, evaluation methods, and control measures for each planned tasks that will be performed as part of the scope of work. This table will be reviewed and revised when new or modified tasks are identified. The anticipated hazards, recommended control measures, air-monitoring recommendations, required PPE, and decontamination measures for each site task are discussed in Table 5-1.

The FOL/SHSO will use this table as the primary reference for supporting the task-specific SWP. SWP are the primary tool for accomplishing safety and health reviews (task-specific tailgate safety sessions) with field personnel prior to the initiation of any tasks. These permits are to be completed by the FOL/SHSO and reviewed with all field personnel at the beginning of each day's activities.

5.1 GENERAL SAFE WORK PRACTICES

In addition to the task-specific work practices identified on Table 5-1, the following general safe work practices are to be observed when conducting work on-site. These practices establish a pattern of general precautions and measures for reducing risks associated with hazardous site operations.

- Do not eat, drink, chew gum or tobacco, take medication, and/or smoke in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. A thorough shower and washing must be conducted as soon as possible, if excessive skin contamination occurs.
- Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Do not place monitoring equipment on potentially contaminated surfaces.
- Be familiar with, and adhere to all instructions in the site-specific HASP.
- Be aware of the location of the nearest telephone and all emergency telephone numbers. See Section 2.0, Table 2-1.
- Attend briefings on anticipated hazards, equipment requirements, SWPs, emergency procedures, and communication methods before going on site.
- Plan and delineate entrance, exit, and emergency escape routes. See Section 2.0.
- Rehearse unfamiliar operations, prior to implementation.
- Use the "buddy system". Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.

- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the Exclusion Zone). Non-essential vehicles and equipment should remain within the Support Zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report all injuries, illnesses, and unsafe conditions, practices, and equipment to the SHSO.
- Matches and lighters are restricted from entering in the Exclusion Zone or Contamination Reduction Zone (CRZ).
- Observe coworkers for signs of toxic exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

5.2 MUD ROTARY/HOLLOW STEM AUGER/DIRECT PUSH DRILLING SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working in or around HSA/DPT Drill Rig Operations.

5.2.1 Before Drilling

- Identify all underground utilities and buried structures before drilling. Use the Utility Locating and Excavation Clearance SOP provided in Attachment II.
- All drill rigs will be inspected by a Competent Person (the SHSO or designee), prior to the acceptance of the equipment at the site and prior to the use of the equipment. All repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment III. Inspection frequencies will be initially (prior to being put into use at the site), followed by once every 10-day shift or following repairs.
- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding rotating equipment.
- The Driller's helper will establish an equipment staging and lay-down plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects such as auger flights, and drive rods will be provided to avoid the collapse stacked equipment.

- All potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.

5.2.2 During Drilling

- Secure frayed or loose clothing, hair, and jewelry when working with rotating equipment.
- Personnel will minimize contact to the extent possible with contaminated tooling and environmental media.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the drill rig. This distance is typically the height of the mast plus five feet or a minimum of 25 feet, whichever is greater, to remove personnel involved in these activities from within physical hazard boundaries.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.
- In order to minimize contact with potentially contaminated tooling and media and to minimize lifting hazards, multiple personnel should move heavy tooling, as applicable and necessary.
- Only personnel absolutely essential to the work activity will be allowed in the Exclusion Zone. Site visitors will be escorted at all times.

5.2.3 After Drilling

- All equipment used within the Exclusion Zone will undergo a complete decontamination and evaluation by the SHSO to determined cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- All motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations all equipment will be shutdown and bonded to the fuel provider, where applicable.
- When not in use all drill rigs will be shutdown, emergency brakes set, and wheels chocked (All vehicles over one ton rated capacity).
- All areas subjected to subsurface investigative methods will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards.

In situations where these hazards cannot be removed, these areas will be barricaded to minimize the impact on field crews working in the area.

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES
NAS WHITING FIELD, MILTON, FLORIDA**

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SHSO dictate.)</i>	Decontamination Procedures
<p>Decontamination of Sampling and Heavy Equipment</p> <p>It is anticipated that this activity will take place at centralized location. Gross contamination will be removed to the extent possible at the site. Contaminated tooling then will be wrapped in polyethylene sheeting for transport to the centralized location for a full decontamination and evaluation.</p>	<p>Chemical hazards:</p> <p>1) Historical information indicates the following compounds of concern</p> <p>Sites 1438/1439 – AVGas (Aviation Gasoline)</p> <p>Previous analytical data identified the following components of this contaminant of concern within the soils:</p> <ul style="list-style-type: none"> - Benzene 264 ug/m³ - Toluene 264 ug/m³ - Ethylbenzene 5,480 ug/m³ - Xylene 7.090 ug/m³ <p>Based on the reported concentrations these contaminants do not pose a significant occupational exposure threat.</p> <p>Further information on these contaminants are presented in Section 6.1 and Table 6-1.</p> <p>2) Decontamination fluids - Liquinox (detergent); isopropanol (decontamination solvent)</p> <p>Physical hazards:</p> <p>3) Lifting (strain/muscle pulls)</p> <p>4) Noise in excess of 85 dBA</p> <p>5) Flying projectiles</p> <p>6) Falling objects/Struck by</p> <p>7) Slips, trips, and falls</p> <p>Natural hazards:</p> <p>8) Inclement weather</p>	<p>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Control potential non-occupational exposures through good work hygiene practices (i.e., avoid hand to mouth contact; wash hands and face before breaks and lunch; minimize contact with contaminated media). Obtain manufacturer's MSDS for any decontamination fluids used on-site. Solvents may only be used in well-ventilated areas, such as outdoors. Use appropriate PPE as identified on MSDS or within this HASP. All chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication Program provided in Section 5.0 of the TtNUS Health and Safety Guidance Manual.</p> <p>3) Use multiple persons where necessary for lifting and handling heavy equipment such as auger flights for decontamination purposes.</p> <ul style="list-style-type: none"> - Employ proper lifting techniques as described in Table 5-1, Mobilization/Demobilization. <p>4) Wear hearing protection when operating the pressure washer. Sound pressure levels measured during the operation of similar pieces of equipment indicate a range of 87 to 93 dBA.</p> <p>5) Flying projectiles - Use eye and face protective equipment when operating the pressure washer and/or steam cleaner, due to flying projectiles. All other personnel must be restricted from the area. In addition to minimize hazards (flying projectiles, water lacerations and burns) associated with this operation, the following controls will be implemented</p> <ul style="list-style-type: none"> - A Fan Tip 25° or greater will be used on pressurized systems over 3,000 psi. This will reduce the possibility of water lacerations or punctures. - Conduct visual evaluations of hoses and fittings for structural defects. - Construct deflection screens as necessary to control overspray and to guard against dispersion of contaminants driven off by the spray. <p>6) Falling objects/Struck by – Ensure wash and drying racks are suitable construction to support heavier items such as push rod flights and will secure them against falling during this process.</p> <p>7) Slips, trips, and falls - The decontamination pad should be constructed to contain wash waters generated during decontamination procedures. Temporary decontamination pads are usually 10-30 mil polyethylene or polyvinyl chloride tarp construction. Although these items when used as a liner offer containment, they also present a slipping hazard. When these temporary liners are used, it is recommended that a light coating of sand be spread over the walking surface to provide traction.</p> <ul style="list-style-type: none"> - In addition, adequate slope should be provided to the pad to permit drainage away from the object being cleaned. The collection point for wash waters should be of adequate distance that the decontamination workers do not have to walk through the wash waters while completing their tasks. - Hoses should be gathered when not in use to eliminate potential tripping hazards. <p>8) Suspend or terminate operations until directed otherwise by SHSO.</p>	<p>Use visual observation and real-time monitoring instrumentation (PID) to ensure all equipment has been properly cleaned of contamination and dried.</p> <p>Monitoring instrumentation will be used to determine if all of the decontamination solvent (isopropanol) has been removed through the rinse process. Any positive indication/results greater than background require the article that has been decontaminated to be re-rinsed and scanned again. If necessary this process should be repeated until no measurable indication of the decontamination solvent exists.</p> <p>Monitoring of the decontamination station for purposes of worker safety is not anticipated to be performed based on anticipated concentrations. Should concerns of elevated contaminant concentrations at this station occur, previous provided action levels shall be used, as well as, the protective measures used in response to achieving those action levels.</p>	<p>For Heavy Equipment</p> <p>This applies to pressure washing and/or steam cleaning operations and soap/water wash and rinse procedures.</p> <p>Level D Minimum requirements:</p> <ul style="list-style-type: none"> - Standard field attire (Long sleeve shirt; long pants) - Safety shoes (Steel toe/shank) - Chemical resistant boot covers - Neoprene outer gloves over nitrile inner gloves - Safety glasses underneath a splash shield - Hearing protection (plugs or muffs) - PVC Rain suit or coveralls - Impermeable aprons may be used instead of coveralls if they offer adequate protection against overspray and back splash. <p>For sampling equipment (trowels, bailers, etc.), the following PPE is required</p> <p>Note: Consult MSDS for PPE guidance. Otherwise, observe the following.</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"> - Standard field attire (Long sleeve shirt; long pants) - Safety shoes (Steel toe/shank) - Neoprene outer gloves over nitrile inner gloves - Safety glasses - Impermeable (butyl or neoprene) apron <p>In the event of overspray of chemical decontamination fluids cannot be controlled using aprons, employ PVC Rainsuits or PE or PVC coated Tyvek as necessary.</p> <p>Note: The Safe Work Permit(s) for this task (See Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination in support of this activity will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable).</p> <p>The sequential procedure is as follows:</p> <p>Stage 1: Equipment drop, remove outer protective wrapping; personnel will wipe down the outer shell and pass hand equipment through as necessary.</p> <p>Stage 2: Soap/water wash and rinse of outer boots and gloves</p> <p>Stage 3: Soap/water wash and rinse of the outer splash suit, as applicable</p> <p>Stage 4: Disposable PPE will be removed and bagged.</p> <p>Stage 5: Wash face and hands</p> <p>The FOL or the SHSO will be responsible for evaluating equipment arriving on-site, leaving the site, and between locations. No equipment will be authorized access, exit, or movement to another location without this evaluation.</p>

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES
NAS WHITING FIELD, MILTON, FLORIDA**

Task/Operation/Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Types and Action Levels	Personal Protective Equipment (Items in italics are deemed optional as conditions or the FOL or SHSO dictate.)	Decontamination Procedures
<p>Mobilization/Demobilization</p> <p>This activity includes, but not limited to:</p> <ul style="list-style-type: none"> - Equipment Preparation and Evaluation - Resource acquisition and unpacking of supplies - Site clearance and preparation – Utility clearances, etc. - Establish and construct access routes to sample/work locations - Construct decontamination and IDW operation and storage facilities, as applicable. 	<p>Chemical hazards:</p> <p>1) Site contaminants are not anticipated to be encountered during this activity. However, chemical hazards may be associated with chemicals that are brought on-site.</p> <p>Physical hazards:</p> <p>2) Lifting (strain/muscle pulls)</p> <p>3) Cuts and lacerations</p> <p>4) Pinches and compressions/Struck by</p> <p>5) Slips, trips, and falls</p> <p>6) Heavy equipment hazards (swinging booms, hydraulic lines, etc.)</p> <p>7) Vehicular and foot traffic</p> <p>Natural hazards:</p> <p>8) Ambient temperature extremes (heat stress)</p> <p>9) Insect and animal bites and poisonous plants</p> <p>10) Inclement weather</p>	<p>Chemical hazards:</p> <p>1) The on-site Hazard Communication Program (Section 5.0 TtNUS Health and Safety Guidance Manual) will be followed. This effort shall include</p> <ul style="list-style-type: none"> - Accurate Chemical Inventory List (Entries will match chemicals brought on-site, as the names appear on the MSDS and the label) This list will also contain quantities and storage locations. - MSDS's will be maintained in a central location available to all personnel.. - All containers will have labels specifying the following information: <ul style="list-style-type: none"> a) Chemical Identity (As it appears on the label, MSDS, and Chemical Inventory List) b) Appropriate Warning (i.e., Eye and skin irritation, flammable, etc.) c) Manufacturer's Name Address and Phone Number <p>It will be the FOL and/or the SSO's responsibility to ensure this is completed. All personnel will be required to review the appropriate MSDS's, prior to the use of a specified chemical substance. This direction should also be communicated on the Safe Work Permit completed for this task. Any specific provisions recommended by the MSDS shall be in place (i.e., eye wash, fire extinguisher, specified PPE, etc.) prior to using the chemical substance.</p> <p>Physical hazards:</p> <p>2) Lifting Hazards – During mobilization/demobilization personnel are required to handle equipment, supplies, and resources in preparation for site activities. This hazard becomes more predominant in the early morning hours (prior to muscles becoming limber) and later in the day (as a result of fatigue). The following provisions shall be instituted in order to minimize hazards of this nature:</p> <ul style="list-style-type: none"> - Use machinery or multiple personnel for heavy lifts. - Lift with your legs, not your back, bend your knees move as close to the load as possible, and ensure good hand holds are obtainable. - Minimize the horizontal distance to the center of the lift to your center of gravity. - Minimize turning and twisting when lifting as the lower back is especially vulnerable at this time. Ensure there is adequate room to lift and maneuver the load. Ensure the area of the lift is free of work place clutter, slippery surfaces, etc. - Break lifts into steps if the vertical distance (from the start point to the placement of the lift) is excessive. - Plan your lifts – Place heavy items on shelves between the waist and chest; lighter items on higher shelves. - Periods of high frequency lifts or extended duration lifts should provide sufficient breaks to guard against fatigue and injury. <p>3) Cuts and lacerations – To prevent cuts and lacerations associated with unpacking or packing equipment and supplies, during site preparation (clearing access routes), the following provisions are required:</p> <ul style="list-style-type: none"> - Always cut away from yourself and others, then, if a knife slips, you will not impale yourself or others. - Do not place items to be cut in your hand or on your knee. - Change blades as necessary to maintain a sharp cutting edge. Many accidents result from struggling with dull cutting attachments. <p>If hand tools (brush hooks, machetes, etc.) are used to gain access to sample locations, the following precautions are recommended:</p> <ul style="list-style-type: none"> - Ensure handles are of good construction (no cracks, splinters, loose heads/cutting apparatus). - Ensure all cutting tools are maintained. Blades shall be sharp without nicks and gouges in the blade. - All hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals when not in use and when carrying these items over rough or slippery terrain. <p>4) Pinches/Compressions/Struck By - Do not modify tooling without manufacturer's expressed permission.</p> <ul style="list-style-type: none"> - Keep any machine guarding in place, avoid moving parts. - Use tools or equipment where necessary to avoid placing hands in areas vulnerable to pinch points. - Adjust machine guarding as necessary to minimize distance between guards and point of operation. - When staging equipment, ensure all stacked loads, shelving, are adequately secure to avoid creating a hazard from falling objects. <p>5) Slips, trips, and falls - Preview work locations for unstable/uneven terrain.</p> <ul style="list-style-type: none"> - Cover, guard and barricade all open pits, ditches, and openings to subsurface structures, as necessary. - The FOL and the SHSO during site surveys and site preparation should identify these potential hazards. - All activities conducted greater than 6-feet above ground surface shall employ acceptable engineered fall protection (i.e. handrails and platforms) or accepted fall protection harnesses. <p>6) Heavy Equipment Hazards - All equipment will be</p> <ul style="list-style-type: none"> - Inspected in accordance with OSHA and manufacturer's design. - All equipment inspection will be documented on a Equipment Inspection Checklist as provided in provided in Attachment III. - Operated by knowledgeable operators and ground crew. <p>7) Vehicular and Foot Traffic Hazards - As part of site preparation activities and zone construction, when preparing traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> - All self-propelled equipment shall be equipped with movement warning systems. - The FOL and/or the SHSO as a precautionary measure to remove or demarcate physical hazards shall preview traffic routes (foot and vehicular) and work areas before the commitment of personnel and resources. <p>Natural hazards:</p> <p>8) Ambient Temperature Extremes - Wear appropriate clothing for weather conditions. Additional information regarding heat and cold stress is provided in Section 4.0 of the TtNUS Health and Safety Guidance Manual and Section 6.2.6 of this HASP.</p> <p>Care should be exercised when working outdoors due to harmful effects of the sun. To reduce the potential for sunburn and melanoma the following measures should be employed</p> <ul style="list-style-type: none"> - Wear a hat that shades the face, neck, and ears. - Apply sunscreen with a SPF of 15 or higher liberally on any exposed skin at least 15 minutes before going outside, then at least every two hours, more if you are sweating a lot. - Plan/provide suitable equipment to offer shade to avoid the midday sun since the sun's ultraviolet rays are most intense between 10 A.M. and 4 P.M. and can damage your skin even on hazy days. - Wear wrap-around sunglasses to protect the eyes and delicate skin around them. <p>9) Insect/Animal Bites and Stings and Poisonous Plants - To combat the potential impact of natural hazards, the following actions are recommended</p> <ul style="list-style-type: none"> - Avoid nesting areas – Activities are to take place within light industrial areas. Therefore, this hazard is not considered significant. However, mosquitoes, ticks, and fire ants are still anticipated to be problematic. See Section 6.3 of this HASP as well as Section 4.0 of the Health and Safety Guidance Manual. - Wear light color clothes. This will allow easier detection of ticks and insects crawling on your body. It will also assist in heat stress control. - Tape pant legs to work boots to block direct access. - Use repellents – Permethrin should be applied liberally to the clothing, but not the skin as it may cause irritation. Concentrate on areas where ticks and other insects may access your body such as pant cuffs, shirt to pants, and collars. <p>10) Inclement Weather – In the event of electrical storms, high winds or other inclement weather, suspend or terminate operations until directed otherwise by SHSO.</p>	<p>Visual observation of work practices by the FOL and/or the SHSO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, cutting practices, etc.).</p>	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe/shank) - <i>Safety glasses (when potential eye hazards exist)</i> - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Reflective vest for high traffic areas</i> - <i>Hearing protection for high noise areas (As directed on an operation by operation scenario or at the direction of the FOL and/or the SHSO).</i> <p>As site conditions may change, the following equipment will be maintained during all on-site activities as prescribed in Section 2.0 of this HASP</p> <ul style="list-style-type: none"> - Fire Extinguishers - First-aid kit <p>Note: <i>The FOL and/or the SHSO shall determine the number of fire extinguishers and first-aid kits to be made available based on the number of remote or separated operations to be conducted at any given time.</i></p>	<p>Not required.</p> <p>Good personal hygiene practices should be employed prior to lunch breaks or other periods when hand to mouth contact occurs. This will minimize potential ingestion exposures.</p>

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES
NAS WHITING FIELD, MILTON, FLORIDA**

Task/Operation/ Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment (Items in italics are deemed optional as conditions or the FOL or SHSO dictate.)	Decontamination Procedures
<p>Multi-media sampling, including</p> <ul style="list-style-type: none"> - Ground water – Peristaltic pumps - Subsurface soils – during DPT activities as well as well installation using mechanized support including Split spoon sampling (HSA), MacroCore Sampler (DPT) <p>Protective measures as recommended here shall also apply to aquifer development.</p>	<p>Chemical hazards: 1) Historical information indicates the following compounds of concern</p> <p>Sites 1438/1439 – AVGas (Aviation Gasoline)</p> <p>Previous analytical data identified the following components of this contaminant of concern within the soils:</p> <ul style="list-style-type: none"> - Benzene 264 ug/m³ - Toluene 264 ug/m³ - Ethylbenzene 5,480 ug/m³ - Xylene 7.090 ug/m³ <p>Based on the reported concentrations these contaminants do not pose a significant occupational exposure threat.</p> <p>Further information on these contaminants and/or components of these contaminants are presented in Section 6.1 and Table 6-1.</p> <p>2) Transfer of contamination into clean areas.</p> <p>Physical hazards:</p> <p>3) Slip, trip, and fall hazards</p> <p>4) Strain/muscle pulls from manual lifting</p> <p>5) Cuts and Lacerations</p> <p>6) Ambient temperature extremes (heat stress)</p> <p>7) Site characterization</p> <p>Natural hazards:</p> <p>8) Animal and insect bites and encounters</p> <p>9) Inclement weather</p>	<p>Chemical hazards: 1) Safe work practices will be used as the first line of defense. As a general rule, avoiding contact with contaminated media (air, water, soils, etc.) will be used as a universal control measure. Control measure to minimize potential exposures include good work and personal hygiene practices. These include avoiding hand-to-mouth contact, washing hands and face (or using hygienic wipes) prior to breaks or lunch or other hand to mouth activities. Real time monitoring instruments and PPE will be used to support protective measures. All samples will be scanned with a PID. Positive readings noted in these scans will require the SHSO to monitor high-risk worker's breathing zone areas to evaluate the possible inhalation exposure potential. High risk employees in this task are the driller, driller helper, and the sampler. Although unlikely to be present, airborne dusts/particulates will be avoided or otherwise controlled through the use of area wetting methods since site contaminants may be bound to particulates.</p> <p>2) Transfer of Contamination into Clean Areas or onto Persons - Restrict the cross use of equipment and supplies between locations and activities without first going through a suitable decontamination. Work practices including</p> <ul style="list-style-type: none"> - A rigid decontamination procedure will be employed for all equipment between locations and between clean and potentially dirty work. This provision will insure materials are not carried and deposited in unaffected areas. - Polyethylene sheeting shall be employed to place contaminated tooling for transport to the central decontamination unit, as applicable. - Always have the spill kit at the ready - All of the drilling systems referenced here operate using hydraulics or hydraulic assisted operating systems. As these systems can leak and at times rupture rapid containment is the best control measure for controlling environmental contamination. <p>3) Slip, Trip, and Fall Hazards – These hazards shall be minimized by adherence to the practices indicated in Section 6.2.1 of this HASP. These include</p> <ul style="list-style-type: none"> - Maintain proper housekeeping in all work areas. - Preview and inspect work areas to identify and eliminate slip, trip, or fall hazards. - Activities to be conducted from more than 6-feet above floor or ground level will require fall protection training and the use of 100% fall protection equipment. - Cover, guard, barricade, and/or place warning postings over/at holes or openings that personnel may fall or step into. - Use multiple persons and pack small loads to remote locations. <p>4) Strain/Muscle Pulls from Manual Lifting - Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques (See Lifting Mobilization/Demobilization, Page 1 of 6, Table 5-1).</p> <p>5) Cuts and Lacerations – Employ the following measures to reduce and/or eliminate the potential for cuts and lacerations</p> <ul style="list-style-type: none"> - Obtain and use the knife and acetate tube retention tub recommended by Geoprobe (Geoprobe Sampling Kit) to prevent potential cuts and lacerations when accessing samples within MacroCore acetate liners. These items have been engineered to allow sample acquisition without putting the sampler at risk. - Select and secure the most favorable route to monitoring wells and sampling locations. - Previewing pathways - Where possible, remove or demarcate the physical hazards. - Inspect all cutting equipment to be used to clear access routes for defects. - When cutting items - always use a sharp knife and always cut away from your body. Do not place items to be cut in your opposite hand or on your knee. - Carry all glassware and items that present a potential for cuts, lacerations, or impalement such as machetes or brush hooks in protective packaging or sheathed to avoid breakage or exposure in the event of a slip, trip, and/or fall. <p>6) Ambient Temperature Extremes (Heat Stress) - Wear appropriate clothing for weather conditions. Provide acceptable shelter, where possible, and liquids for field crews. Additional information regarding heat/cold stress is provided in Section 4.0 of the Health and Safety Guidance Manual. Care should be exercised when working outdoors due to harmful effects of the sun. To reduce the potential for sunburn and melanoma the following measures should be employed</p> <ul style="list-style-type: none"> - Wear a hat that shades the face, neck, and ears. - Apply sunscreen with a SPF of 15 or higher liberally on any exposed skin at least 15 minutes before going outside, then at least every two hours, more if you are sweating alot. - Plan/provide suitable equipment to offer shade to avoid the midday sun since the sun's ultraviolet rays are most intense between 10 A.M. and 4 P.M. and can damage your skin even on hazy days. - Wear wrap-around sunglasses to protect the eyes and delicate skin around them. <p>7) Site Characterization - Work areas will be surveyed prior to committing personnel or resources. The survey will be conducted by the FOL and/or the SHSO. The purpose is to identify physical and natural hazards that may impact the proposed work area. These hazards are to be identified, barricaded, or eliminated to the extent possible to minimize potential effect to field crew.</p> <p>8) Animal and Insect Bites and Encounters – This is not considered to be a predominant hazard as the activities are to be conducted in a light industrial area regularly maintained. However, as hazards of this nature cannot be eliminated the following is presented for informational purposes</p> <ul style="list-style-type: none"> - Avoid nesting – Preview routes, avoid nests, if at all possible. Check existing well casings for spider and bee nests. - Wear light color clothes. This will allow easier detection of ticks and insects crawling on your body. It will also assist in heat stress control. - Tape pant legs to work boots to block direct access. - Use repellents – Permethrin should be applied liberally to the clothing, but not the skin as it may cause irritation. Concentrate on areas where ticks and other insects may access your body such as pant cuffs, shirt to pants, and collars. - Upon exiting the high brush and wooded areas perform a close body inspection to remove any ticks or other insects that have attached to your clothing or skin. - If you leave your work boots in the trailer during days off, always shake them out prior to putting them on. The purpose is to remove any insects/spiders who may have set up house. <p>9) Suspend or terminate operations until directed otherwise by the SSO.</p>	<p>Monitoring shall be conducted to qualify and quantify estimated airborne concentrations of AVGas and associated constituents in support of the prescribed worker protection levels.</p> <p>Action level – <10 ppm in the high risk worker's breathing zone; continue to work, continue to monitor.</p> <p>Sustained readings (> 1 minute in duration) >10 ppm in worker breathing zone - concentration in excess of this action level require personnel to stop work, notify PHSO.</p> <p>Monitoring shall be conducted at the prescribed depths as indicated on the boring logs at the source (borehole) and drillers/drillers helper/samplers breathing zone. At a minimum breathing zone measurements will be conducted at the following frequencies</p> <ul style="list-style-type: none"> - Initially, at each sampling interval, with a minimum breathing zone measurement every 4-feet. - Changes in lithological formation. - Indications of contaminant presence (staining, olfactory sensitization) <p>Monitoring will be conducted upon initially opening the well when groundwater sampling, however, after that it is not required in support of this task.</p>	<p>Where possible, when sampling always position yourself upwind of the operating drill rig or discharge container to avoid airborne emissions.</p> <p>Level D protection will be utilized for the following sampling activities</p> <ul style="list-style-type: none"> - Ground water and subsurface soils <p>Sampling Personnel</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Safety shoes (steel toe/shank) - Safety glasses - Surgical style gloves – Nitrile (double-layered, if necessary) - Tyvek coveralls and disposable boot covers, if surface contamination is present or if the potential for soiling work attire exists. <p>Upgrades to Level C protection are not anticipated.</p> <p>Note: The Safe Work Permit(s) for this task (See Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination Sampling groundwater and subsurface soils the following provisions will apply</p> <ul style="list-style-type: none"> - Upon completion of the sampling dedicated trowels, tubing, etc. will be bagged for transport back to the central decontamination area. - PPE (gloves) will be removed and also bagged for disposal. - Handi-Wipes or similar product will be used to clean hands, prior to moving to the next location. <p>Equipment Decontamination All equipment used in remote sampling locations will be brought back to the central decontamination area for decontamination and re-use or disposal.</p> <p>Decontamination of equipment (sampling and hand tools) will proceed as indicated in the Work Plan and in Section 4.6.1 and 4.6.2 of this HASP.</p>

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES
NAS WHITING FIELD, MILTON, FLORIDA**

Task/Operation/ Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)</i>	Decontamination Procedures
<p>This Table entry includes soil boring activities conducted under Phase 1 and 2 (DPT with MIP and Mobile lab) as well as soil boring and monitoring well installation activities using HSA and/or Mud Rotary drilling methods performed as part of Phase 3.</p> <p>All tasks have similar hazards and site contaminants are consistent since they will be performed at the same site.</p>	<p>Chemical hazards: 1) Historical information indicates the following compounds of concern</p> <p>Sites 1438/1439 – AVGas (Aviation Gasoline)</p> <p>Previous analytical data identified the following components of this contaminant of concern within the soils:</p> <ul style="list-style-type: none"> - Benzene 264 ug/m³ - Toluene 264 ug/m³ - Ethylbenzene 5,480 ug/m³ - Xylene 7,090 ug/m³ <p>Further information on these contaminants and/or components of these contaminants are presented in Section 6.1 and Table 6-1.</p> <p>2) Transfer of contamination into clean areas or onto persons.</p> <p>Physical hazards:</p> <p>3) Heavy equipment hazards (pinch/compressions points, rotating equipment, hydraulic lines, etc.)</p> <p>4) Noise in excess of 85 dBA</p> <p>5) Energized systems (contact with underground or overhead utilities)</p> <p>6) Lifting (strain/muscle pulls)</p> <p>7) Slips, trips, and falls</p> <p>8) Vehicular and foot traffic</p> <p>9) Flying projectiles</p> <p>Natural hazards:</p> <p>10) Inclement weather</p>	<p>Chemical hazards:</p> <p>1) Safe work practices will be used as the first line of defense. As a general rule, avoiding contact with contaminated media (air, water, soils, etc.) will be used as a universal control measure. Control measures to minimize potential exposures include good work and personal hygiene practices. These include avoiding hand-to-mouth contact, washing hands and face (or using hygienic wipes) prior to breaks or lunch or other hand to mouth activities. Real time monitoring instruments and PPE will be used to support protective measures. All samples will be scanned with a PID. Positive readings noted in these scans will require the SHSO to monitor high-risk worker's breathing zone areas to evaluate the possible inhalation exposure potential. High risk employees in this task are the driller, driller helper, and the sampler. Although unlikely to be present, airborne dusts/particulates will be avoided or otherwise controlled through the use of area wetting methods since site contaminants may be bound to particulates.</p> <p>2) Transfer of Contamination into Clean Areas or onto Persons - Restrict the cross use of equipment and supplies between locations and activities without first going through a suitable decontamination. Work practice include:</p> <ul style="list-style-type: none"> - A rigid decontamination procedure for all equipment between locations and between clean and potentially dirty work. This provision will ensure materials are not transferred to unaffected areas. - Poly ethylene sheeting shall be used to place contaminated tooling for transport to the central decontamination unit as applicable. - Always have the spill kit accessible - All of the drilling systems referenced here operate using hydraulics or hydraulic assisted operating systems. As these systems can leak and at times rupture, rapid containment is the best control measure. <p>Physical hazards:</p> <p>3) Heavy Equipment Hazards - All equipment will be:</p> <ul style="list-style-type: none"> - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600.601.602), and manufacturer's design, as applicable. See the Equipment Inspection Checklist found in Attachment III of this HASP. - Operated and supported by qualified operators and ground crew. - Used within safe work zones, with routes of approach clearly demarcated. All personnel not directly supporting this operation will remain a distance of at least the height of the mast + 5-feet but no less than 25-feet from the rig. See Section 9.1 for initial exclusion zone boundaries. <p>In addition to equipment considerations, the following safe operating procedures will be incorporated:</p> <ul style="list-style-type: none"> - Only manufacturer-approved equipment may be used in conjunction with equipment repair procedures (e.g., auger flight connectors, pressure fittings, etc.). - Work areas will be kept clear of clutter. - All self-propelled equipment shall be equipped with movement warning systems. - All personnel will be instructed in the location and operation of emergency shut-off device(s). These devices will be tested initially (and then periodically) to ensure proper operation. - Areas will be inspected prior to the movement of the drill/DPT rig and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SHSO. - The drill rig and support vehicles will be moved no closer than 5-feet to unsupported side-walls of excavations and embankments. - See additional safe work procedures for drilling in Section 5.2 of this HASP. <p>4) Noise in Excess of 85 dBA - Hearing protection will be used during all subsurface activities using the drilling/direct push rig or when noise levels are > 85 dBA. (during operation). As a general rule of thumb</p> <p><i>Excessive noise levels (>80dBA) are being approach when you have to raise your voice to talk to someone within 2 feet of your location. In these situations always employ hearing protection.</i></p> <p>Previous accumulated data indicates an average 8-hour exposure working behind a:</p> <ul style="list-style-type: none"> - Hollow Stem Auger Rig -- 87 to 92 dBA - DPT -- 90-102 dBA <p>Controlling this hazard shall be accomplished employing two separate approaches as follows:</p> <ul style="list-style-type: none"> - Boundaries will be established to limit the affect of the noise hazard. Typically, the height of the mast + 5 feet or a minimum of 25 feet is normal. At this distance and magnitude hearing protection is not required. - Hearing protection <p>5) Energized Systems - All drilling activities will proceed in accordance with the Utility Locating and Excavation Clearance SOP in Attachment II of this HASP. All utility clearances will be obtained, in writing, and locations identified and marked, prior to activities. If it is not obtainable/unknown or you location infringes within 3-feet of an underground utility advancement must proceed by hand until past the utility. Hand-dug holes should represent the same diameter of the mechanized tooling. Overhead clearances shall be maintained at a minimum distance of 20-Feet from overhead power lines.</p> <p>6) Lifting Hazards - Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques as described in mobilization/demobilization.</p> <p>7) Slips, Trips, and Falls - Preview work locations for unstable/uneven terrain/Raised Platforms/Excavations.</p> <ul style="list-style-type: none"> - Cover, guard and barricade all open pits, ditches, and openings of subsurface structures, as necessary. - Ruts, roots, and other tripping hazards should be eliminated approaching points of operation to minimize trips and falls when approaching rotating/operating equipment. - Maintain a clutter free work area. - As part of site control efforts construct fences or other means of demarcation (i.e. signs and postings) to control and isolate traffic into the exclusion zone. Means of demarcation shall also be constructed isolating resource and/or staging areas. - Raised work platforms greater than 4-feet above ground surface require the use of a handrail and applicable toe-boards meeting specifications as defined in 29 CFR 1910.23. <p>8) Vehicular and Foot Traffic Hazards - Use traffic-warning signs, flag persons, and high visibility vests as determined by the SHSO when working along traffic thoroughfares. In addition, use physical barricades when working within normal traffic flow patterns/traffic lanes.</p> <p>9) Flying Projectiles –</p> <ul style="list-style-type: none"> - Cover or guard all high-pressure operating systems to deflect flying or pressurized media in the event of a leak. - A particularly dangerous aspect of the Drill rigs is that they have cable assisted lifting devices attached to a hoist. Failure of these items have resulted in fatalities within the drilling industry. To control these hazards the following provisions shall apply: <ul style="list-style-type: none"> a. Complete Equipment Inspection Checklist – Pay close attention to the cable (size and condition), hooks (condition and size compared to that of the cable), and clamps (never saddle a dead horse – The base of the clamp should not be on the dead end of the cable, but the U-shaped should). b. Monitoring operating pressure to restrict over pressurizing the lifting system. c. Remove unnecessary personnel from within the release boundary should the lifting system become compromised. <p>Natural hazards:</p> <p>10) Inclement Weather – To minimize hazards of this nature, the following provisions shall be used:</p> <ul style="list-style-type: none"> - Wear appropriate clothing for weather conditions. - Provide replacement liquids for field crews as relief from excessive ambient temperatures. - Electrical storms/high winds - Suspend or terminate operations until directed otherwise by SHSO. <p>Follow the provisions as specified in Section 4.0 of the Tetra Tech NUS, Inc. Health and Safety Guidance Manual regarding the identification and evaluation of heat/cold stress related conditions.</p>	<p>Monitoring shall be conducted to qualify and quantify estimated airborne concentrations of AVGas and associated constituents in support of the prescribed worker protection levels.</p> <p>Action level –</p> <p><10 ppm in the high risk worker's breathing zone; continue to work, continue to monitor.</p> <p>Sustained readings (> 1 minute in duration) >10 ppm in worker breathings zone - concentration in excess of this action level require personnel to stop work, notify PHSO.</p> <p>Monitoring shall be conducted at the prescribed depths as indicated on the boring logs at the source (borehole) and drillers/drillers helper/samplers breathing zone. At a minimum breathing zone measurements will be conducted at the following frequencies</p> <ul style="list-style-type: none"> - Initially, at each sampling interval, with a minimum breathing zone measurement every 4-feet. - Changes in lithological formation. - Indications of contaminant presence (staining, olfactory sensitization) <p>Monitoring for excessive noise levels will not be accomplished in support of this scope of work. Sufficient data exists to select the types of hearing protection required and suitable control measures.</p>	<p>All drilling operations will be initiated in Level D protection, including the following articles:</p> <p>Sampler/Oversight Personnel</p> <ul style="list-style-type: none"> - Standard field dress (long pants, Sleeved shirts) - Steel toe safety shoes or work boots - Hard hat - Safety Glasses - Layered nitrile surgeon style gloves for sampling - Impermeable boot covers - <i>Tyvek or washable cotton coveralls</i> - <i>Reflective vest for traffic areas</i> <p>Driller and Driller Helper</p> <ul style="list-style-type: none"> - Standard field attire including sleeved shirt and long pants - Safety shoes (Steel toe/shank) - Safety glasses - Neoprene outer gloves; Nitrile inner gloves - Hearing protection - Hard hat - Impermeable boot covers - <i>Impermeable outer garments such as PVC Rain-suit or Saranex®, PE coated Tyvek® due to contact with contaminated tooling. An impermeable apron is an acceptable alternative and may also be used when conditions of heat stress are prevalent.</i> <p>As site conditions may change, the following equipment will be maintained during all on-site activities</p> <ul style="list-style-type: none"> - Fire Extinguishers - First-aid Kit <p>Note: The Safe Work Permit(s) for this task (Attachment VI) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable)</p> <p>For HSS/Mud Rotary, DPT Operations:</p> <p>The sequential procedure is as follows:</p> <p>Stage 1: Equipment drop, remove outer protective wrapping; Decontamination personnel will wipe down the outer shell and pass hand equipment through as necessary.</p> <p>Stage 2: Soap/water wash and rinse of outer boots and gloves</p> <p>Stage 3: Soap/water wash and rinse of the outer splash suit, as applicable.</p> <p>Stage 4: Disposable PPE will be removed and bagged.</p> <p>Stage 5: Wash face and hands or use hygienic wipes to remove associated contaminants.</p> <p>Note: For remote locations away from the centralized decontamination unit, hygienic wipes may be used for cleaning hands and face, as well as bagging all items for transport back to the centralized decontamination unit.</p> <p>Stage 6: Depending on ambient conditions, levels of PPE, or signs and symptoms of heat/cold stress you may be required to report for medical evaluation. This evaluation consists of pulse, breathing rate, oral temperature, and body weight. This medical screening will be performed when ambient conditions dictate and during periods of acclimatization.</p> <p>Heavy/Sampling Equipment Decontamination - All heavy and sampling equipment decontamination will proceed in accordance with the directives provided in Table 5-1 for that task. Heavy equipment will have the wheels and tires cleaned along with any loose debris removed, prior to transporting to the central decontamination area. Roadways shall be cleared of any debris resulting from the onsite activity. Portable pieces will be wrapped in polyethylene sheeting for transport to a centrally located decontamination facility.</p> <p>The FOL or the SHSO will be responsible for evaluating equipment arriving on-site, leaving the site, and between locations. No equipment will be authorized access, exit, or movement to another location without this evaluation.</p>

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES
NAS WHITING FIELD, MILTON, FLORIDA**

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type And Action Levels	Personal Protective Equipment <i>(Items In Italics Are Deemed Optional As Conditions Or The FOL Or the SHSO Dictate.)</i>	Decontamination Procedures
<p>IDW Management and Handling</p> <p>This activity includes the following tasks:</p> <ul style="list-style-type: none"> - Containerization - Labeling - Staging - Monitoring <p>of IDW generated in support of site activities.</p>	<p>Chemical hazards: The only anticipated hazard associated with IDW management is the potential for a spill. In situations such as that the spill containment program identified in Section 10.0 of this HASP will be employed.</p> <p>Physical hazards:</p> <ol style="list-style-type: none"> 1) Strains and sprains 2) Back injuries 3) Compressions 4) Loading bulk transport containers 	<p>Chemical hazards: It is not anticipated that chemical hazards will be significant during this operation, as the IDW will be in sealed containers. It is anticipated that the IDW will represent a limited chemical hazard, if the container is breached. Control measures in this case will represent PPE and good work hygiene practices to control potential exposures during the implementation of the Spill Containment Program (See Section 10.0 of this HASP).</p> <p>Physical hazards:</p> <p>1 & 2) Strains and sprains (lifting hazards)/Back Injuries – The predominant hazard associated with this activity is the movement of full or partially full 55-gallon drums of soils and/or water. To minimize hazards of this nature the following provisions shall be incorporated as applicable:</p> <ul style="list-style-type: none"> - Use machinery (preferred method) or multiple personnel for heavy lifts. Whenever possible, a drum dolly with pneumatic tires should be available to move drums. - Use proper lifting techniques <ol style="list-style-type: none"> a. Lift with your legs, not your back, bend your knees move as close to the load as possible, and ensure good hand holds are available. b. Minimize the horizontal distance to the center of the lift to your center of gravity. c. Minimize turning and twisting when lifting as the lower back is especially vulnerable at this time. <p>In determining whether you can lift or move an item several factors must be considered, these are as follows:</p> <ul style="list-style-type: none"> - Area available to maneuver the lift. - Area of the lift – Work place clutter, slippery surfaces, rough terrain - Overall physical condition <p>3) Compressions – Another hazard frequently associated with this task is the compression of hands and fingers when placing the containers on pallets. This typically occurs when rolling and lowering the container in its place. To combat this hazard, the following provision shall be employed:</p> <p>Material handling devices shall be used for moving drums within the satellite storage area. This includes drum dollies with pneumatic tires, drum grapplers, etc. to handle drums of IDW. These pieces of equipment are engineered to allow placement of these containers while removing hands from the point of operation.</p> <p>Reminder: The drums you are attempting to move, lift and/or relocate weigh on the average of</p> <ul style="list-style-type: none"> - 55-Gallon container of purge or decontamination waters = 485 lbs. (including the container) - 55-Gallon container of soils (moist) = 687 lbs. (including the container) <p>Satellite Storage Area – Emphasis has been placed on the physical surroundings and how they can influence the potential hazards associated with material handling aspects of this task. To further reduce material handling hazards, support spill containment and control, and sampling when necessary, the IDW storage area should be structured as follows:</p> <ul style="list-style-type: none"> - 4-drums to a pallet with retaining ring bolt and label on the outside for easy access/reference. - Maintain a minimum of 4-feet between each row of pallets. This is the minimum distance necessary to wheel drums on a drum dolly. - If the site is not secured, the satellite storage area shall be fenced and signs placed indicating the following: <ol style="list-style-type: none"> a. Primary Point of Contact (Preferably someone identified as the Emergency Response Contact. As a reminder, make sure they know they been identified as the Primary Point of Contact). b. Phone Number c. Emergency Contact (If different from the Primary) - Locate this area as close as possible to the site exit where the hauler will enter to pick the material up. - Provide an adequate area for trucks to enter and exit in a singular direction. This will minimize U-turns and backing up, activities typically associated with accidents. - Provide a Drum/Container Inventory to the Primary Point of Contact and to Emergency Services, if they deem it necessary. The inventory should contain: <ol style="list-style-type: none"> a. Each drum shall be assigned a unique identification number. This number shall be placed on the label and drum shell using a paint marker (Note: Do not paint the number on the lid as these have a tendency to get exchanged from time to time.) b. Types of waste materials (Subsurface soils, drill cuttings; purge/development waters, etc.) This will assist in the future should it be necessary to sample these containers. c. Volumes (Full or level associated with the container after completion of the project location) d. Where it was derived from (IDW should be separated by Area and media) e. Dates (For all filled containers and at the completion of work for that Area) f. Contact – For more information <p>Note: All drums should be labeled with the same information.</p>	<p>None Required, unless spill containment provisions are invoked. Then monitoring will proceed as described in the activity associated with the task when the materials were generated such as Soil boring or test pitting activities.</p>	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe/shank) - Leather or canvas work gloves - <i>Safety glasses (When utilizing cables or slings to move the containers)</i> - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> <p>PPE changes may be made with the implementation of the Spill Containment Program. This represents the only anticipated modification to this level of protection.</p>	<p>Not required, unless the implementation of the Spill Containment Program is required due to a spill and/or release. At that point the decontamination procedures for those activities such as soil borings and/or well installation. The reference reflects the tasks conducted when the materials were generated.</p>

6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards associated with the sites to be investigated and the activities that are to be conducted as part of the scope of work. Section 6.1 provides general information regarding predominant contaminants that may be present at the site.

6.1 CHEMICAL HAZARDS

The potential health hazards associated with work to be conducted at NAS Whiting Field include inhalation, ingestion, and dermal contact of various contaminants that may be present in shallow and deep soils, and groundwater. Based on the site histories and prior sampling efforts, the types of contaminants anticipated include petroleum products and associated compounds. The following have been identified as the primary contaminants:

- Site 1438/1439 - AVGAS
Compositional make-up:
 - >90% naphtha (petroleum) (64741-66-8)
 - Toluene (108-88-3) up to 10%
 - Lead additives up to 0.14%
 - Benzene (71-43-2) up to 0.1%
 - Hexane (110-54-3) up to 3%
 - 1,2,4-Trimethylbenzene (95-63-6) up to 2%

General Toxicity - Aviation fuels are considered to be a moderate skin, eye, and pulmonary irritants when present in sufficient concentrations. Given the outdoor open air setting where this task will take place, this is not anticipated. Generally, the most toxic response is aspiration pneumonitis. Excessive exposure to the skin may cause defatting and dermatitis.

Additional information is provided in Table 6-1 regarding the physical, chemical, and toxicological properties of these substances.

6.2 PHYSICAL HAZARDS

In addition to the chemical hazards discussed above, the following physical hazards may be present during the performance of the site activities.

- Slips, trips, and falls
- Lifting (strain/muscle pulls)
- Noise in excess of 85 decibels on the A-weighted scale (dBA)
- Heavy equipment hazards (pinch/compression points, rotating equipment, etc.).
- Energized systems (contact with underground or overhead utilities)
- Heat Stress (Ambient temperature extremes)

These physical hazards are discussed in Table 5-1 as applicable to each site task. Further, many of these hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual. Specific discussions on some of these hazards are presented below.

6.2.1 Slip, Trip and Fall Hazards

Various potential slip, trip and fall hazards may be encountered during the performance of planned site activities. This is considered a minimal to moderate hazard associated with the DPT and well installation activities. These hazards are associated with working outdoors where uneven or wet terrain may be encountered. To minimize the potential for worker injury from these hazards, the following requirements must be observed:

- Maintain proper housekeeping in all work areas. Stage drill tooling and equipment, wrap up hoses at the decontamination area when not in use, construct the decontamination pad to drain to one end to avoid standing water.
- Preview and inspect work areas to identify and eliminate slip, trip, or fall hazards. In outdoor locations, pay particular attention to sink holes or other depressions that may be encountered. Ensure steps leading to the trailer have non-skid coatings on the tread areas. When constructing temporary decontamination facilities, care should be taken when using polyethylene sheeting or tarps to contain wash waters. These surfaces can become extremely slippery. Where necessary, apply a light coating of sand to provide necessary traction.
- Any work that is to be done on structures that are more than 6 feet above floor or ground level will require fall protection training and the use of 100% fall protection equipment.
- Cover, guard, barricade, and or place warning postings over/at holes or openings that personnel may fall into or step into. All stairs leading to elevated structures (such as a trailer or elevated work

platform greater than 4 feet shall be protected by handrails in accordance with applicable OSHA standard (1910.23).

- Use footwear with adequate traction.
- Prepare work areas by removing tripping hazards (ruts, roots, debris). This is especially critical concerning approach pathways leading to or around rotating equipment. A fall into the rotating auger flights/apparatus could be life threatening.

TTNUS recorded 3 incidents (slip and fall) of this nature during the year 2000.

6.2.2 Strains/Muscle Pulls

This hazard potential is greatest during mobilization/demobilization activities or when handling sampling coolers when most of the physical lifting is accomplished. Other activities which present this hazard include handling heavy auger flights and bags of Portland cement (~94 pounds) and bags of sand during well installation and construction.

Worker injuries resulting from improper manual material handling activities are easily prevented through observation of proper lifting and carrying methods. These types of injuries are not limited to merely the factor of the weight of the load. Other considerations include

- How many lifts will be involved (i.e., repetitive lifting of even small loads),
- The size, shape, and/or configuration of the load to be lifted,
- Whether or not the load will need to be lifted to another height or carried to another location,
- The area available to maneuver the lift.

All workers involved with these types of activities are to be instructed by the SHSO in the following manner:

- First estimate the weight and configuration of the load. This means determine if it is too bulky or hard to safely grasp/lift/control alone. If so, either use a mechanical lifting device or obtain help from another employee to lift the load (Note: The use of mechanical lifting devices is **always** preferable over manual lifting).
- Bend at the knees (not at the waist) when attempting a lift.

- Ensure that a firm hold is obtained, and keep the load as close to the body as possible.
- Lift the load using your legs, and not the back.
- Avoid turning or twisting while holding a load.
- If the load is to be moved, preview the path of travel first to identify and eliminate any tripping hazards.
- Do not attempt to carry loads that obstruct the line of sight.
- When setting a load down, again use the leg muscles and do not bend at the waist.
- Take rest breaks as necessary to prevent fatigue and injury.

You are most vulnerable to hazards of this nature early in the day prior to limbering and stretching and late in the day due to fatigue. Additional care should be exercised during these periods.

6.2.3 Noise in Excess of 85 dBA

Worker exposure to noise that can approach hazardous levels is a common potential hazard on most project work sites. All workers who must work in areas or who must perform operations where noise levels can approach an 8 hour time weighted average of 85 dBA must have received hearing conservation training within the past 12 month period (this is normally provided as part of the 8 hour refresher training). If personnel have not had this training within the last twelve months they will be provided such training by the SHSO at the project site prior to participating in high noise level activities. On this project, high noise levels may be encountered when working near the DPT/drill rig, and during decontamination operations when using a pressure washer,

As a general rule-of-thumb to prevent worker exposure to high noise levels, workers will be informed to observe the following:

If ambient noise levels are loud enough that they have to raise their voice in order to communicate with another person who is less than 2 feet away, hearing protection will be required.

Also, if any existing base operations are posted as high noise areas or that hearing protection is required in that area, then hearing protection will be used.

Site boundaries for Exclusion Zone demarcation have included sufficient distances to accommodate potential noise hazards associated with the identified operations. This information is provided in Section 9.1.

Hearing protection will be the primary control measure for personnel who must work within the vicinity of excessive noise levels. Those activities anticipated to have excessive noise levels have been identified in Table 5-1.

6.2.4 Exposure to Pinch or Compression Points and/or Entanglement or Contact With Moving or Rotating Equipment/Machinery

Moving and operating machinery present potential hazards of entanglement, caught in or between, and/or to be struck by machines or machine parts. Hazards of this nature are considered a predominant hazard associated with drilling operations and is a significant hazard associated with HSA/Mud Rotary drilling activities. Many of the recorded fatalities within the drilling industry have been associated with entanglement within the spinning augers. The factors associated with this hazard include snag points on the rotating apparatus, as well as the existence of loose clothing, jewelry and long hair. This hazard is often compounded by inoperable emergency stop devices. Recognition and control shall focus on identification to minimize these risks. The following measures shall be instituted

- All equipment that is to be operated must first be closely inspected to ensure that adequate machine guarding is in place.
- No maintenance or other activities are to be performed on operating machines. Also, employees whose duties places them in proximity to moving machinery items are to avoid wearing jewelry, or have long (unrestricted) hair, or loose fitting clothing that could become entangled in rotating equipment.
- Also, the use of home-made or jury-rigged machine parts is strictly prohibited. All equipment parts must be manufacturer-provided or approved.

In addition, to further minimize hazards of this nature and as this activity shall take place within a light industrial area, the following additional precautions shall be employed:

Traffic Patterns in and around the drilling area – Traffic for heavy equipment and pedestrians shall be separated by flow patterns. All heavy equipment (drill rigs and support vehicles) shall be routed in a singular direction to minimize backing, U-turns, and other maneuvers that could result in an accident. A

demarcation area shall be established in plain view, so all personnel recognize the boundary of potential physical hazards. Boundaries established to control hazards of this nature are as follows:

- HSA / Mud Rotary Drilling Operation – Establish an Exclusion Zone equal to the height of the mast plus five feet. Non-essential personnel will be restricted from being within this area.

The positioning of drill rig and support vehicles will utilize a ground spotter. Flag persons, barriers, and high visibility vests will be used in areas where operations may impede or impact vehicle and/or pedestrian traffic, to provide visual recognition and control of the work zone.

6.2.5 Contact with Energized Sources, Including Operating Processes and Utilities (Aboveground and Underground)

Contact with energized sources can result in severe injury and even death. There are two areas of concern with this potential hazard: contact with energized processing equipment and contact with energized utilities including underground utilities (including electrical transmission lines, gas lines, water lines, etc.) and overhead utilities (i.e., power lines).

To protect against the first concern, contact with energized processing equipment, any work on or near these types of items will be required to follow the Company Safe Work Practice on the Control of Hazardous Energy Sources (Lockout/Tag out).

Contact with Energized Systems – Much of the work to be done at NAS Whiting Field will be within light industrial areas that are serviced by underground and overhead energy sources. Preliminary efforts to control hazards of this nature will include:

- Use and application of Attachment II, SOP for Utility Locating and Excavation Clearance. This procedure provides step by step instructions for clearance of underground utilities, as well as, avoidance techniques, and required documentation.
- Establishing a suitable clearance distance (20 feet) from overhead utilities will be the primary method to control hazards conveyed through contact with these power sources.

Of primary concern associated with this hazard is electrocution. Electricity seeks the path of least resistance to complete the circuit and go to ground. In the evaluation of this hazard, the Driller, often presents this pathway (through contact with the controls and standing on the ground). In areas prone to

this hazard, the Driller must use a non-conductive material such as wood or rubber matting as a work platform to break this link when and where contact could possibly occur.

Historical information on this site indicates that fuel transmission lines to the north and south field have been abandoned in place and filled with concrete. However, supply lines to the former tanks, fueling ports along those lines were not discussed. If a line still exists containing fuel and it is accidentally damaged, it could result in the release of fuel contamination into the environment, as well as potential fire hazards and hazards associated with pressurized releases. To avoid hazards of this nature, ensure that:

- The valves of fuel lines identified in the close proximity have been closed and/or secured. If the valves are not secured (locked out/tagged out, valve handles removed, etc.) the FOL must contact Mr. Holland to facilitate this control measure before proceeding.
- Pressure gauges associated with the identified fuel transmission lines within the area show no pressure within the system.
- Avoidance measures have been taken to avoid striking the lines. This may include utility clearance, hand-digging pilot holes, magnetic detection (remember that fuel line construction is often stainless steel which will not provide a magnetic signature or response. In these cases a tone or signal may need to be applied to the lines in order to enhance detection).

Implementation of these control measures should minimize hazards associated with this activity and thereby eliminate the potential for an emergency situation.

Utility Locating Procedures

- 1) Contact Mr. Jim Holland regarding points that are to be cleared. Provide necessary drawings. Where possible mark the locations on the ground using white paint/flagging.
- 2) Mr. Holland will request utility clearance through Sunshine (Florida One-Call System) at 1(800) 432-4770 and appropriate personnel within the Public Works Department at NAS Whiting Field.
- 3) 10 Working Days advance notification is required. Sunshine will require at least 2-days advanced notification.
- 4) All utility clearances are good for 14 days from the day of issue. In situation where the completion of subsurface activities will not be completed in this time frame, extensions maybe obtained.

- 5) Copies of the ticket and clearance should be obtained prior to the commencement of subsurface activities.

If a utility is struck, contact emergency numbers provided in Table 2-1.

6.2.6 Heat Stress

Given the geographic location of the site and the planned work schedule, overexposure to ambient temperature extremes, heat stress may exist during performance of this work depending on the project schedule. Work performed when ambient temperatures exceed 70°F may result in varying levels of heat stress (heat rash, heat cramps, heat exhaustion, and/or heat stroke) depending on variables such as wind speed, humidity, and sunlight, as well as physiological factors such as metabolic rate and skin moisture content. Additionally, work load and level of protective equipment will affect the degree of exposure. Site personnel will be encouraged to drink plenty of fluids to replace those lost through perspiration.

Heat stress recognition, evaluation and control are discussed in greater detail in Section 4.0 of the TTNUS Health and Safety Guidance Manual. Additionally, information on the associated control measures for these hazards are discussed in Table 5-1 of this HASP.

6.3 NATURAL HAZARDS

As most of the work to be conducted will occur in areas that are improved or maintained, the potential to encounter natural hazards is not considered to be significant. The following information is provided as a precaution to help recognize and avoid these types of hazards.

Insect/animal bites and stings, poisonous plants, and inclement weather are natural hazards that may be present given the location of activities to be conducted. In general, avoidance of areas of known infestation or growth will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows:

6.3.1 Insect Bites and Stings

Insect/animal bites and stings maybe difficult to control. At NAS Whiting Field climatic and environmental setting may directly effect populations and levels of infestation. However, in an effort to minimize this hazard the following control measures will be implemented where possible.

- Commercially available bug sprays and repellents will be used whenever possible – Pesticides analytical screening includes chlordane, endrin, lindane, methoxychlor, toxaphene and heptachlor. Commercially available repellants may be used providing they don't contain substances which appear on the analytical list for pesticide analysis. Products such as N,N-diethyl-meta-toluamide (DEET) should not be applied directly to the skin due to potential irritation. This product, when permitted for use, should be applied over clothing articles.
- Where possible, loose-fitting and light-colored clothing with long sleeves should be worn. This will also aid in insect control by providing a barrier between the field person and the insects and will aid in visual recognition of crawling insects against the lighter background. Pant legs should be secured to the work-boots using duct tape to prevent access by ticks. Mosquito nets are also recommended for use when commercially available repellents are not permitted.
- Clothing/limited body checks for ticks and other crawling insects should be conducted upon exiting heavily vegetated areas. Workers should perform a more detailed check of themselves when showering in the evening. Ticks prefer moist areas of the body and will migrate to those locations.
- The FOL/SHSO will preview all access routes and work areas in an effort to identify physical hazards including nesting areas in and around the work sites. These areas will be flagged and communicated to all site personnel.
- The FOL/SHSO should attempt to determine if site personnel are allergic to bee and other insect stings and bites (using completed Medical Data Sheets). Field crew members who are allergic to bites should have access to an emergency kit containing antihistamine or whatever method of response is recommended by their Health Care Provider.

Any allergies (insect bites, bee stings, etc.) must be reported on the Medical Data Sheet (Attachment V) and to the SHSO.

Tick and Mosquito Transmitted Illnesses and Diseases

Ticks and mosquitoes have been identified in the transmission of diseases including Lyme's disease and malaria. Warm months (Spring through early Fall) are the most predominant time for this hazard. Information concerning Lyme's Disease including recognition, evaluation, tick removal, and control is provided in Section 4.0 of the Health and Safety Guidance Manual.

Malaria may occur when a mosquito or other infected insect sucks blood from an infected person, and the insect becomes the carrier to infect other hosts. The parasite reproduces within the mosquito, and is then

passed on to another person through the biting action. Acute symptoms include chills accompanied by fever and general flu like symptoms. This generally terminates in a sweating stage. These symptoms may recur every 48 to 72 hours.

Fire Ants

Fire ants present a unique situation when working outdoors in Florida. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The bite injects a venom that causes an extreme burning sensation. Pustules from which can become infected, if scratched. Allergic reactions of people sensitive to the venom include dizziness, swelling, shock and in extreme cases unconsciousness and death. People exhibiting such symptoms should see a physician.

6.3.2 Snakes and Other Wild Animals

Indigenous animals including snakes (poisonous and non-poisonous varieties), raccoons, and other animals native to the region may be present at the site. These animals may be encountered if work locations encroach on nesting or territories claimed by these animals.

To avoid the obvious hazards conveyed as part of a direct encounter, the following actions will be taken to minimize impact on the field crews and/or operations.

- The FOL/SHSO will preview access routes and work locations for nesting areas or signs of animal activities (tracks, foraging areas, etc.).
- All identified suspect areas will be communicated to the field crews. Snake chaps will be required as a precaution in areas potentially inhabited by snakes.

This is not anticipated to be a significant hazard as most of the work is taking place within light industrial areas. Although this is not considered a predominant hazard, various species will exit from dens along waterways to sun themselves along rocks and concrete structures. It is during these periods when encounters may occur.

Snake Bites

All initial efforts will be directed to avoid, where possible, nesting and territorial areas. However, should field personnel come in contact with these animals and receive a bite, the following actions are necessary.

- Obtain a detailed description of the snake. This and the bite mark will enable medical personnel administering medical aid to provide prompt and correct antidotes, as necessary. Within northern

Florida predominant species include the Rattle snake, copperhead, cottonmouth, and to a lesser degree the Massasauga Rattle snake. Of these the most predominant along waterways are the copperhead and cottonmouth.

- Immobilize the bite victim to the extent possible. Physical exertion will mobilize the toxins (if poisonous varieties) from the bite point systemically through the body.
- Apply a pressure wrap (for extremities), just above and over the bite area. With a couple wraps of the pressure wrap in place over the bite area, apply a splint, and continue the application of the pressure wrap. The purpose for the splint is to restrict the movement of the extremity, this along with the pressure wrap will aid in restricting the toxins from leaving the site of the bite.
- Seek medical attention immediately.

6.3.3 Inclement Weather

Project tasks under this Scope of Work will be performed outdoors. As a result, inclement weather may be encountered. In the event that adverse weather conditions arise (electrical storms, hurricanes, etc.), the FOL and/or the SHSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

**TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL INFORMATION
NAS WHITING FIELD, MILTON, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Fuel Product Identified as the Primary Contaminants							
AVGas (Aviation Gasoline) Composition Naphtha (petroleum), light alkylation; 64741-66-8 (>90%) Toluene; 108-88-3(up to 10%) Benzene; 71-43-2 (up to 0.1%) Hexane; 110-54-3 (0-3%) 1,2,4-Trimethylbenzene; 95-63-6 (0-2%) Organic lead additives (up to 0.14%)	See component list	PID (10.6 eV Lamp Strength) Correction factor = 0.6 FID = N/A LEL Meter = 0.85	Air sample using charcoal tube. Sampling and analytical protocol shall proceed in accordance with NIOSH Method #1501. See also OSHA CSI Method application	Manufacturer's Recommendation – 100 ppm (300 mg/m ³) for 8-Hour work day. No regulatory or advisory limits have been set.	Petroleum odor threshold ~ 800 ppm Rating - Poor to Adequate Recommended Air Purifying cartridges: Organic vapor Recommended gloves: NitrilSolve 727 (>480 minutes) or Neporene 6780 (287 minutes)	Characteristics vary by fuel blending, grade, and manufacturer (e.g., impurities and additives) Boiling Pt: 158°F, ~70°C Melting Pt: -72° F; -58°C Molecular Weight: ~86-170 Flash Pt: -50°F, -45°C LEL: 1.4% UEL: 7.6% Autoignition Temp.: 824°F; 439°C Vapor Density: ~4 Vapor Pressure: 5.5 to 7.0 psi SG: 0.71 @ 60° F; 15.6°C PH: ~7.0 Solubility in water: Negligible (<0.1%) @ 77°F; 25°C Viscosity: 0.6 cST @ 77°F; 25°C Appearance and Odor: Clear green liquid with gasoline hydrocarbon odor Avoid contact with heat, sparks and flame	AVGas is irritating to the eyes, skin, respiratory tract, and CNS (This through direct contact or reaching concentrations >1000 ppm). Direct contact may result in mild irritation with a possible drying and defatting of the skin. Ingestion may result in gastrointestinal irritation, nausea, and vomiting and may be harmful or even fatal. Inhalation of vapors or mists of AVGas may result in headache, nausea, confusion, narcotic effect, and drowsiness. Acute exposures to extreme airborne concentration can result in death. Chronic inhalation of aviation gas vapors may produce symptoms such as fatigue, anxiety, mood changes, liver and kidney damage, and memory difficulties in exposed workers. Repeated exposures to the skin may cause skin cancer. This product does contain components which have demonstrated carcinogenic capabilities.

**TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL INFORMATION
NAS WHITING FIELD, MILTON, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Volatile Organic Constituents of the Primary Contaminants							
Benzene	71-43-2	PID: I.P 9.24 eV, 100% response with PID and 10.2 eV lamp. FID: 150% relative response ratio with FID.	Air sample using charcoal tube; carbon disulfide desorption; Sampling and analytical protocol in accordance with OSHA 07 or NIOSH Method #1500.	OSHA: 1 ppm ACGIH: 10 ppm NIOSH: 0.1 ppm IDLH: 500 ppm	Inadequate - Odor threshold 34-199 ppm. OSHA accepts the use of air-purifying respirators with organic vapor cartridge up to 10 ppm despite the inadequate warning properties providing cartridges are changed at the beginning of each shift. Recommended gloves: Butyl/neoprene blend - >8.00 hrs; Silver shield as a liner - >8.00 hrs; Viton - >8.00 hrs	Boiling Pt: 176°F; 80°C Melting Pt: 42°F; 5.5°C Solubility: 0.07% Flash Pt: 12°F; -11°C LEL/LFL: 1.3% UEL/UFL: 7.9% Vapor Density: 2.77 Vapor Pressure: 75 mmHg Specific Gravity: 0.88 Incompatibilities: Strong oxidizers, fluorides, perchlorates, and acids Appearance and Odor: Colorless to a light yellow liquid with an aromatic odor	Overexposure may result in irritation to the eyes, nose, throat, and respiratory system. CNS effects include giddiness, lightheadedness, headaches, staggered gait, fatigue, and lassitude and depression. Additional effects may include nausea. Long duration exposures may result in respiratory collapse. Regulated as an OSHA carcinogen. May cause damage to the blood forming organs and may cause a form of cancer called leukemia.
Ethylbenzene	100-41-4	PID: I.P 8.76, High response with PID and 10.2 eV lamp. FID: 100% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with OSHA Method #07 or NIOSH Method #1501 Aromatic Hydrocarbon.	ACGIH & NIOSH: 100 ppm; 125 ppm STEL OSHA: 100 ppm IDLH: 800 ppm	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm. Recommended gloves: Neoprene or nitrile w/ silver shield when potential for saturation; Teflon >3.00 hrs	Boiling Pt: 277°F; 136°C Melting Pt: -139°F; -95°C Solubility: 0.01% Flash Pt: 55°F; 13°C LEL/LFL: 1.0% UEL/UFL: 6.7% Vapor Density: 3.66 Vapor Pressure: 10 mmHg @ 79°F; 26° C Specific Gravity: 0.87 Incompatibilities: Strong oxidizers Appearance and odor: Colorless liquid with an aromatic odor. Odor Threshold of 0.092-0.60.	Regulated primarily because of its potential to irritate the eyes and respiratory system. In addition, effects of overexposure may include headaches, narcotic effects, CNS changes (i.e., coordination impairment, impaired reflexes, tremoring) difficulty in breathing, possible chemical pneumonia, and potentially respiratory failure or coma.
Toluene	108-88-3	PID: I.P 8.82 eV, High response with PID and 10.2 eV lamp. FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption. Sampling and analytical protocol shall proceed in accordance with OSHA Method #07, or NIOSH Method #1500.	OSHA: 200 ppm 300 ppm (Ceiling) ACGIH: 50 ppm (skin) NIOSH: 100 ppm 150 ppm STEL IDLH: 500 ppm	Adequate - Odor threshold 1.6 ppm is considered good. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm. Recommended gloves: Teflon >15.00 hrs; Viton >16.00 hrs; silver shield >6,00 hrs; supported nitrile (Useable time limit 0.5 hr, complete submersion for the nitrile selection); PV alcohol >25.00 hrs	Boiling Pt: 232°F; 111°C Melting Pt: -139°F; -95°C Solubility: 0.05% (61°F;16°C) Flash Pt: 40°F; 4°C LEL/LFL: 1.2% UEL/UFL: 7.1% Vapor Density: 3.14 Vapor Pressure: 20 mmHg @ 65°F; 18° C Specific Gravity: 0.87 Incompatibilities: Strong oxidizers Appearance and odor: Colorless liquid with a sweet pungent aromatic odor.	Overexposure to this substance may result in mild to moderate irritation at all points of contact, and CNS changes including euphoria, confusion, nervousness, and possibly paresthesia characterized by an abnormal burning sensation, pricking, or numbness. At 200-500 ppm exposure has resulted in headaches, nausea, eye irritation, loss of appetite, bad taste, impair coordination, fatigue, and weariness. Chronically, toluene overexposure may result in dermatitis, liver, and kidney damage.

**TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL INFORMATION
NAS WHITING FIELD, MILTON, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Volatile Organic Constituents of the Primary Contaminants							
Xylene All isomers o-,m-, p-	1330-20-7	PID: I.P. 8.56 eV, High response with PID and 10.2 eV lamp. FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol shall proceed in accordance with OSHA 07, or NIOSH Method 1500.	ACGIH, & NIOSH: 100 ppm, 150 ppm STEL OSHA: 100 ppm IDLH: 900 ppm	Adequate - Odor thresholds for the following isomers: 0.6 m-; 5.4 p-; 20 o- ppm. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm concentrations. Recommended gloves: PV Alcohol >12.67 hrs; Viton >8.00 hrs; CPE >1.00 hr; Butyl 0.87 hrs; Nitrile is acceptable for limited operations and contact (>0.20 hrs)	Boiling Pt: 269-281°F; 132-138°C Melting Pt: -13o/-54m/56p°F; -25o/-48m/13p °C Solubility: 0.02 % Flash Pt: 81-90°F;27-32°C LEL/LFL: 0.9% UEL/UFL: 7.0% Vapor Density: 3.66 Vapor Pressure: 7-9 mmHg @ 70°F; 21° C Specific Gravity: 0.86-0.88 Incompatibilities: Strong oxidizers and strong acids Appearance and odor: Colorless liquid with an aromatic odor.	Effects may of overexposure include irritation at all points of contact, CNS changes (i.e. dizziness, excitement, drowsiness, incoherent, staggering gait), difficulty in breathing, pulmonary edema, and possibly respiratory failure. Chronic effects may include dermatitis and cornea vacuolization.

**TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL INFORMATION
NAS WHITING FIELD, MILTON, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
<i>Polyaromatic Hydrocarbon Constituents of the Identified Contaminants</i>							
Naphthalene	91-20-3	PID: I.P. 8.12 eV, relative response ratio unknown. No information was found as to the relative response for FID, however it is certain it is detectable at a high response.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with OSHA Method #35 or NIOSH Method #1501.	OSHA; NIOSH; ACGIH: 10 ppm NIOSH; ACGIH: have established a STEL of 15 ppm. IDLH: 250 ppm	Odor Threshold 0.038 ppm, Adequate - Use an air purifying respirator with organic vapors and dust/mists cartridges for concentrations up to 250 ppm. Recommended glove: Nitrile >6.00 hrs; Neoprene >6.00 hrs	Boiling Pt: 424°F; 218°C Melting Pt: 176°F; 80°C Solubility: 0.003% Flash Pt: 174°F; 79°C LEL/LFL: 0.9% UEL/UFL: 5.9% Vapor Density: Not available Vapor Pressure: 1 mmHg Specific Gravity: 1.15 Incompatibilities: Strong oxidizers, chromic anhydride Appearance and odor: Colorless to brown solid with and odor of mothballs	Overexposure to this substance may result in irritation to the eyes, headache, confusion, excitement, nausea, vomiting, abdominal pain, irritation of the bladder, profuse sweating, jaundice, blood in the urine, renal (kidney shutdown), and dermatitis. Prolonged or chronic exposure may further cause optical neuritis, and corneal damage. Target organs are listed as eyes, blood, liver, kidneys, skin, red blood cells, and central nervous system.

7.0 HAZARD MONITORING

Direct reading instruments will be used as a general screening device at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions.

This section provides direction and protocol for real time air monitoring. The monitoring of hazardous conditions has a single primary objective.

- Qualify and quantify potential hazards (chemical, physical, and biological) that, may impact the work force.

7.1 HAZARD MONITORING APPROACH

The tasks identified in Table 7-1 are to be conducted as part of the scope of work at NAS Whiting Field. It is hazards associated with these tasks, that may be monitored for the purpose of quantification/qualification of those hazards. It should be noted that in some cases hazard monitoring will not be required, as sufficient information exists to quantify and qualify the hazards associated with that particular operation. This is the case as it applies to the excessive noise levels associated with soil boring/well installation.

Table 7-1 Hazard Monitoring Approach

Task to be Conducted	Potential Hazard(s)	Hazard Monitoring Instrumentation(s)	Action Levels	Response measures
DPT Soil boring and Monitoring Well Installation using HAS/Mud Rotary Techniques.	Volatile gas/vapor emissions above the recommended Threshold Limit Values/Time Weighted Averages (TLV-TWA) Noise	Volatile gas/vapor emissions will be monitored using a PID w/10.6eV lamp strength. Noise - Not required	<ol style="list-style-type: none"> 1. Calibrate to 100 ppm isobutylene in air, pre and post use (daily). 2. Establish background levels in a clean zone unaffected by site contaminants. 3. Monitoring frequency per boring logs (Initial source, then based on results at least every 4-feet, High risk employees (Driller and driller's helper, sampler workers breathing zone) <ul style="list-style-type: none"> - 0-10 ppm in the workers breathing zone. - >10 ppm in the worker's breathing zone (This is not anticipated) <p>Note: The above action levels incorporates the correction factor of 0.49 for the mixture of reported soil contaminants. Noise – Monitoring not required</p>	<ol style="list-style-type: none"> 1. Pre-/post use each day. Record results on Table 7-2. 2. Pre-use each day. Record background readings on Table 7-2 or equivalent (i.e. Boring Log). 3. Response to results obtained within the high risk employees breathing zones <ul style="list-style-type: none"> - Continue to work, continue to monitor. - Temporarily suspend operations; Contact the PHSO (This is not anticipated based on reported concentrations). <p>Noise monitoring not required.</p>
Multi-Media sampling including <ol style="list-style-type: none"> 1. Subsurface soils 2. Groundwater 	Volatile gas/vapor emissions above the recommended Threshold Limit Values/Time Weighted Averages (TLV-TWA)	Volatile gas/vapor emissions monitored with a PID w/10.6eV Lamp strength. <ol style="list-style-type: none"> 1. Per Soil boring listed above. 2. Monitor the head space, when opening the monitoring well. 	<ol style="list-style-type: none"> 1. Establish background levels 2. Record head space reading on sample logsheet. 	<ol style="list-style-type: none"> 1. Pre-use each day 2. Monitor from an up wind location to avoid exposure to potential off gas emissions when the well is opened.

7.2 ASSOCIATED HAZARDS

Hazards associated with these tasks for which monitoring currently will not be employed, include:

- Noise – Information obtained from previous monitoring efforts indicate excessive noise levels, depending on the type of rig.
 - Monitoring well installation using HSA or Mud Rotary Applications – Based on the type of drill rig operate between 89 – 96 dBA.
 - DPT range from 90 to 102 dBA-TWA
 - Generators – When generators are used as portable power sources for well development or sampling, the generator should be placed a sufficient distance from the operation to eliminate the noise hazard. The generators emit approximately 82 to 88 dBA.
 - Steam Cleaners and pressure washers – Previous data indicate that these machines emit from 94 to 102 dBA.

Based on the above noted noise levels hearing protection will be required when working within the defined Exclusion Zone boundary (See Section 9.1). All hearing protection employed must meet a minimum Noise Reduction Rating of 25dB.

- Heat Stress Monitoring – Given the location of these sites the potential for heat stress exists. Currently, no plans exist to conduct heat stress monitoring in support of planned activities. This decision was based on the tasks to be conducted and the level of protection to be employed. Section 4.0 of the TTNUS Health and Safety Guidance Manual for additional information on heat stress recognition, evaluation, and control.

Any heat stress monitoring performed will be proceed in accordance with that information. Results of this monitoring will be recorded on Figure 7-2 Heat/Cold Stress – Pre-/Post Evaluation Record.

7.3 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the TTNUS Equipment Manager or commercial provider. Operational checks and field calibration will be performed on all instruments each day, prior to and after their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the photoionization detector (PID) must be

field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer SOP (copies of which can be found in the Health & Safety Guidance Manual which will be maintained on site for reference). All calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that all of the information specified in Figure 7-1 is recorded. This required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number
- Any relevant instrument settings and resultant readings (before and after) calibration
- Identification of the calibration standard (lot no., source concentration, supplier)
- Any relevant comments or remarks

Figure 7-2

Heat/Cold Stress Monitoring – Pre-/Post Evaluation Record

Site Name: _____

Tetra Tech NUS, Inc. Personnel: _____

CTO: _____

Subcontractor Personnel: _____

SWMU/Location: _____

Name	Age	Level of Protection	Work Activity Level – Light, medium, heavy	Environmental Conditions		Oral Temperature		Pulse Rate		Body Weight (Heat Stress only)		Time	
				Temperature	Humidity	Pre-	Post-	Pre-	Post-	Pre-	Post-	Time In	Time Out

Comments: _____

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section specifies health and safety training and medical surveillance requirements for both TTNUS and subcontractor personnel participating in on site activities.

8.1.1 Requirements for All Field Personnel

All TTNUS and subcontractor personnel who will engage in field associated activities as described in this HASP must have:

- Completed 40 hours of introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e).
- Completed 8-Hour Refresher Training, if the identified persons had introductory training more than 12 months prior to site work.
- Completed 8-hour Supervisory training in accordance with 29 CFR 1910.120(e)(4), if their assigned function will involve the supervision of subordinate personnel.

Documentation of introductory training or equivalent work experience, supervisory, and refresher training, as well as, site-specific training will be maintained at the site. Copies of certificates or other official documentation will be used to fulfill this requirement and to track site personnel's training status. The SSO shall be responsible for insuring training qualifications through review of training documentation and for monitoring the status of on-site personnel to ensure during the course of this project site personnel do not cycle outside of their training compliance status. All documentation supporting training compliance and status shall be maintained at the project site and be made available, upon request.

Subcontractors may submit a letter similar to the one provided in Figure 8-1 along with copies of training certificates as proof of training.

8.2 SITE-SPECIFIC TRAINING

TTNUS will provide site-specific training to all TTNUS employees and subcontractor personnel who will perform work on this project.

Figure 8-2 will be used to document the provision and content of the project-specific and associated training. All site personnel will be required to sign this form prior to commencement of site activities. This training documentation will be employed to identify personnel who through record review and attendance of the site-specific training are cleared for participation in site activities. This document shall be posted to maintain an active list of all cleared site personnel.

TTNUS will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting will be held daily to discuss operations planned for that day. At the end of the workday, a short meeting may be held to discuss the operations completed and any problems encountered. This activity will be supported through the use of a SWP System (See Section 10.10) and documented in the Project Logbook.

8.3 MEDICAL SURVEILLANCE

8.3.1 Medical Surveillance Requirements for Tetra Tech NUS and Subcontractor Personnel

All TTNUS and subcontractor personnel participating in project field activities will have had a physical examination. All physical examinations shall meet the minimum requirements of paragraph (f) of OSHA 29 CFR 1910.120. The physical examinations will be performed to ensure all personnel are medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained at the job site and made available, as necessary. Subcontractor personnel may use an alternative documentation for this purpose. The "Subcontractor Medical Approval Form" (Figure 8-3) can be used to satisfy this requirement, or a letter from an officer of the company (Figure 8-4).

The SSO shall be responsible for insuring all personnel participating in this project provide documentation regarding their medical qualifications. All personnel associated with this project will maintain a current status regarding medical surveillance as determined by 29 CFR 1910.120 (f) or the prescribed interval as determined by the Licensed Occupational Health Care Provider. All documentation supporting medical surveillance compliance and status shall be made available, upon request.

8.3.2 Requirements for All Field Personnel

Each field team member, including subcontractors and visitors, entering the Exclusion Zone(s) shall be required to complete and submit a copy of the Medical Data Sheet also supplied to eligible subcontractors as part of the Bid Specifications Package and is available in Attachment V of this HASP. This shall be provided to the SHSO, prior to participating in site activities. The purpose of this document is to provide

site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

8.4 SUBCONTRACTOR EXCEPTION

If through the execution of their contract elements the subcontractor will not enter the Exclusion Zone and there is no potential for exposure to site contaminants, subcontractor personnel may be exempt from the training and medical surveillance requirements with the exception of Section 8.2. Examples of subcontractors who may qualify as exempt from training and medical surveillance requirements may include surveyors who perform surveying activities in site perimeter areas or areas where there is no potential for exposure to site contaminants and support or restoration services. **Use of this Subcontractor Exception is strictly limited to the authority of the TTNUS HSM.**

8.5 SITE VISITORS

Site visitor qualifications for access to the site while engaged in planned activities is addressed in Section 9.8 of this document. Site visitors must be escorted at all times when in/near any **TTNUS** work site. Ensuring that proper escorting is accomplished is the FOL's responsibility. See section 9.5 for more information regarding site visitors.

FIGURE 8-1

TRAINING LETTER

The following statements must be typed on company letterhead, signed by an officer of the company and accompanied by copies of personnel training certificates:

LOGO
XYZ CORPORATION
555 E. 5th Street
Nowheresville, Kansas 55555

Month, day, year

Mr. Paul Calligan
Task Order Manager
Tetra Tech NUS, Inc.
1311 Executive Center Drive, Suite 220
Tallahassee, Florida 32301

Subject: HAZWOPER Training for NAS Whiting Field, Milton, Florida

Dear Mr. Calligan:

As an officer of XYZ Corporation, I hereby state that I am aware of the potential hazardous nature of the subject project. I also understand that it is our responsibility to comply with all applicable occupational safety and health regulations, including those stipulated in Title 29 of the Code of Federal Regulations (CFR), Parts 1900 through 1910 and Part 1926.

I also understand that Title 29 CFR 1910.120, entitled "Hazardous Waste Operations and Emergency Response," requires an appropriate level of training for certain employees engaged in hazardous waste operations. In this regard, I hereby state that the following employees have had 40 hours of introductory hazardous waste site training or equivalent work experience as requested by 29 CFR 1910.120(e) and have had 8 hours of refresher training as applicable and as required by 29 CFR 1910.120(e)(8) and that site supervisory personnel have had training in accordance with 29 CFR 1910.120(e)(4).

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555.

Sincerely,

(Name and Title of Company Officer)

**FIGURE 8-3
SUBCONTRACTOR MEDICAL APPROVAL FORM**

For employees of _____
Company Name

Participant Name: _____ Date of Exam: _____

Part A

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f), and was found to be medically -

 qualified to perform work at the NAS Whiting Field, Milton, Florida work site
 Not qualified to perform work at the NAS Whiting Field, Milton, Florida work site
and,

2. Undergone a physical examination in accordance with OSHA 29 CFR 1910.134(b)(10) and was found to be medically -

 Qualified to wear respiratory protection
 Not qualified to wear respiratory protection

My evaluation has been based on the following information, as provided to me by the employer.

- A copy of OSHA Standard 29 CFR 1910.120 and appendices.
- A description of the employee's duties as they relate to the employee's exposures.
- A list of known/suspected contaminants and their concentrations (if known).
- A description of any personal protective equipment used or to be used.
- Information from previous medical examinations of the employee that is not readily available to the examining physician.

Part B

I, _____, have examined _____
Physician's Name (print) Participant's Name (print)

And have determined the following information:

**FIGURE 8-3
SUBCONTRACTOR MEDICAL APPROVAL FORM
PAGE TWO**

1. Results of the medical examination and tests (excluding finding or diagnoses unrelated to occupational exposure):

2. Any detected medical conditions that would place the employee at increased risk of material impairment of the employee's health:

3. Recommended limitations upon the employee's assigned work:

I have informed this participant of the results of this medical examination and any medical conditions that require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the NAS Whiting Field, Milton, Florida work site, this participant

- May
- May not

Perform his/her assigned task.

Physician's Signature _____

Address _____

Phone Number _____

NOTE: Copies of test results are maintained and available at:

Address

FIGURE 8-4

MEDICAL SURVEILLANCE LETTER

The following statements must be typed on company letterhead and signed by an officer of the company:

LOGO
XYZ CORPORATION
555 E. 5th Street
Nowheresville, Kansas 55555

Month, day, year

Mr. Paul Calligan
Task Order Manager
Tetra Tech NUS, Inc.
1311 Executive Center Drive, Suite 220
Tallahassee, Florida 32301

Subject: Medical Surveillance for NAS Whiting Field, Milton, Florida

Dear Mr. Calligan:

As an officer of XYZ Corporation, I hereby state that the persons listed below participate in a medical surveillance program meeting the requirements contained in paragraph (f) of Title 29 of the Code of Federal Regulations (CFR), Part 1910.120, entitled "Hazardous Waste Operations and Emergency Response: Final Rule." I further state that the persons listed below have had physical examinations under this program within the past 12 months and that they have been cleared, by a licensed physician, to perform hazardous waste site work and to wear positive- and negative-pressure respiratory protection. I also state that, to my knowledge, no person listed below has any medical restriction that would preclude him/her from working at the NAS Whiting Field, Milton, Florida site.

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555.

Sincerely,

(Name and Title of Company Officer)

9.0 SITE CONTROL

This section outlines the means by which **TTNUS** will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is anticipated that a three-zone approach will be used during work at this site: Exclusion Zone, CRZ, and Support Zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize potentials for the spread of contaminants and to protect individuals who are not cleared to enter the work areas.

9.1 EXCLUSION ZONE

The Exclusion Zone will be considered those areas of the site of known or suspected contamination. It is not anticipated that significant amounts of surface contamination are in the proposed work areas of this site. It is anticipated that this will remain so until/unless contaminants are brought to the surface by intrusive activities such as drilling and/or direct push operations. Furthermore, once such activities have been completed and surface contamination has been removed, the potential for exposure is again diminished and the area can then be reclassified as part of the CRZ or Support Zone. Therefore, the Exclusion Zones for this project will be limited to those areas if the site where active work is being performed plus so many feet surrounding the point of operation. All Exclusion Zones will be delineated in some manner. This manner may include using barrier tape, cones and /or drive poles, and postings to inform and direct facility personnel.

9.1.1 Exclusion Zone Clearance

Exclusion Zone boundaries are as follows:

HSA / Mud Rotary Drilling Operations – The Exclusion Zone boundary for this operation will be set at the height of the mast plus five feet. It is determined at this distance, non-essential personnel will be removed from potential physical hazards associated with this operation. This determination would include catastrophic failure of the boom and associated cables. In addition it has been determined that at this distance (typical mast height 35 feet plus 5 feet = 40 feet) will remove personnel from areas impacted by noise levels associated with these types of rigs.

DPT operations – The height of the fully extended mast plus five feet or 25 feet, whichever is greater. This boundary demarcation has been selected based on removal of personnel from hazards associated with this operation. In this case our primary concern is physical hazards pressurized lines and systems

and noise. By establishing the line at 25 feet will provide a sufficient distance for protection from flying projectiles associated with pressurized systems as well as reducing the intensity of the noise levels resulting from the advancing tool.

Groundwater sampling – 10 feet surrounding the well and discharge receptacle container.

Soil sampling – 5 feet surrounding the point of operation.

Decontamination – Using pressure washers/steam cleaners 25 feet surrounding the point of operation or 15 feet surrounding a constructed pad.

9.2 CONTAMINATION REDUCTION ZONE (CRZ)

The CRZ will be split to represent two separate functions. The first function will be a control/supply point for supporting Exclusion Zone activities. The second function, which may take place a sufficient distance from the Exclusion Zone, is the decontamination of personnel and heavy equipment.

In order to move from the Exclusion Zone to a separate location the following activities will be used:

- As samplers move from location to location during sampling activities, dedicated sampling devices and PPE will be removed, separated, and bagged. Personnel will use hygienic wipes, such as Handy Wipes, as necessary to clean hands and face until they can access soap and water.
- Muddy over-boots and gloves may be required to go through a gross contamination wash at the Exclusion Zone or be bagged until they can be cleaned at a central decontamination location.
- Potentially contaminated tooling will be wrapped, when necessary, for transport to the decontamination area.
- Upon completion of the assigned tasks all personnel will move through the central decontamination area to clean reusable PPE and field equipment.

9.3 SUPPORT ZONE

The Support Zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. In all cases, the Support Zones will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

9.4 SAFE WORK PERMITS (SWP)

All Exclusion Zone work conducted in support of this project will be performed using SWP to guide and direct field crews on a task by task basis. An example of the SWP to be used is provided in Figure 9-1. Partially completed Permits for the work to be performed are included in Attachment IV. The daily meetings conducted at the site will further support these work permits. This effort will ensure all site-specific considerations and changing conditions are incorporated into the planning effort, as well as, give personnel an opportunity to ask questions and make suggestions. All permits will require the signature of the FOL or SHSO.

Use of these permits will provide the communication line for reviewing protective measures and hazards associated with each operation. This HASP will be used as the primary reference for selecting levels of protection and control measures. The work permit will take precedence over the HASP when more conservative measures are required based on specific site conditions.

Upon completion of the tasks for which the permit was assigned, the permit shall be turned into the FOL and/or the SHSO.

**FIGURE 9-1
SAFE WORK PERMIT**

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): _____
- II. Required Monitoring Instruments: _____
- III. Field Crew: _____
- IV. On-site Inspection conducted Yes No Initials of Inspector _____

TTNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

- V. Protective equipment required
 - Level D Level B
 - Level C Level A
 - Detailed on Reverse
- Respiratory equipment required
 - Full face APR
 - Half face APR
 - SAR
 - Skid Rig
- Escape Pack
- SCBA
- Bottle Trailer
- None

Modifications/Exceptions: _____

VI. Chemicals of Concern	Action Level(s)	Response Measures
_____	_____	_____
_____	_____	_____
_____	_____	_____

- VII. Additional Safety Equipment/Procedures
 - Hard-hat Yes No
 - Safety Glasses Yes No
 - Chemical/splash goggles..... Yes No
 - Splash Shield..... Yes No
 - Splash suits/coveralls Yes No
 - Steel toe Work shoes or boots Yes No
 - Hearing Protection (Plugs/Muffs) Yes No
 - Safety belt/harness Yes No
 - Radio..... Yes No
 - Barricades..... Yes No
 - Gloves (Type - Work)..... Yes No
 - Work/rest regimen Yes No

Modifications/Exceptions _____

- VIII. Procedure review with permit acceptors Yes NA
 - Safety shower/eyewash (Location & Use)
 - Procedure for safe job completion.....
 - Contractor tools/equipment/PPE inspected.....
 - Emergency alarms.....
 - Evacuation routes.....
 - Assembly points.....

- IX. Site Preparation Yes No NA
 - Utility Locating and Excavation Clearance completed.....
 - Vehicle and Foot Traffic Routes Cleared and Established
 - Physical Hazards Barricaded and Isolated.....
 - Emergency Equipment Staged.....

- X. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

XI. Special instructions, precautions: _____

Permit Issued by: _____ Permit Accepted by: _____

9.5 SITE VISITORS

Site visitors for the purpose of this document are identified as representing the following groups of individuals:

- Personnel invited to observe or participate in operations by TTNUS
- Regulatory personnel (Department of Defense (DOD), OSHA, Environmental Protection Agency (EPA), FDEP, etc.)
- Southern Division Navy Personnel
- Other authorized visitors

It is not anticipated that this operation will result in a large number of site visitors. However, as some visitors can reasonably be expected, the following requirements will be enforced:

- All site visitors will be routed to the FOL, who will sign them in to the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), who they represent, and purpose for the visit.
- All site visitors will be required to produce the necessary information supporting clearance onto the site. This includes information attesting to applicable training (40-hours of HAZWOPER training required for all Southern Division Navy personnel) and medical surveillance, as stipulated in Section 8.0 of this document, if they wish to enter operational zones during on-going activities. In addition, to enter the site's operational zones during planned activities, all visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this document.

NOTE: All site visitors will be escorted while at the site at all times.

Following this, the site visitor will be permitted to enter the site and applicable operational areas. All visitors are required to observe the protective equipment and site restrictions in effect at the area of their visit. Any and all visitors not meeting the requirements as stipulated in this plan for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause all on-site activities to be terminated until that visitor can be removed. Removal of unauthorized visitors will be accomplished with support from the Base Contact, if necessary. At a minimum, the Navy On-site Representative will be notified of any unauthorized visitors.

9.5.1 Base Pass and Security

TTNUS visitor and subcontractor access will be facilitated through the following mechanism:

All persons requesting access to NAS Whiting Field will be required to submit the following information to the TOM, who will in turn pass the information to the NAS Whiting Field Point of Contact:

- Name: First, Middle, and Last
- Date of Birth
- Place of Birth
- Social Security Number
- Driver License Number

Mr. Jim Holland, will notify the Base Access and Security personnel regarding the TTNUS personnel that will be working at the base. Upon arrival visitor and/or subcontractor access to NAS Whiting Field will be facilitated through Base Pass and Security (near Main Gate).

If necessary, One-Day Visitor Passes or Contractor Decals will be issued at Base Pass and Security. The following information is required:

- Current Valid Vehicle Registration or Rental Agreement
- Valid Proof of Insurance or Rental Agreement
- Current Valid Drivers License

Failure to have these items available for review will result in denied access to NAS Whiting Field.

9.6 SITE SECURITY

Site security will be accomplished using TTNUS field personnel. TTNUS will retain complete control over active operational areas. As these activities will take place at a United States Navy facility the first line of security will take place at the Main Gate. The second line of security will take place at the Exclusion Zone using Exclusion Zone barriers, signs, and other indicators to restrict direct the general public. The final line of security will take place at the work site referring interested parties to the FOL or designee. The FOL will serve as a focal point for all non-project interested parties, and serve as the final line of security and the primary enforcement contact.

9.7 SITE MAP

Once the areas of contamination, access routes, topography, and dispersion routes are determined, a site map will be generated and adjusted as site conditions change. When possible, these maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points.

9.8 BUDDY SYSTEM

Personnel engaged in on site activities will practice the "buddy system" to ensure the safety of all personnel involved in this operation.

9.9 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

TTNUS and subcontractor personnel will provide MSDSs for all chemicals brought on site. The contents of these documents will be reviewed by the SHSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of all chemicals used on site will be developed using the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request.

9.10 COMMUNICATION

Based on the defined scope of work it is anticipated that personnel will be working in proximity to one another during field activities, a supported means of communication between field crews members such as hand held radios, will not be necessary. External communication will be accomplished by using the telephones at predetermined and approved locations or through cellular phones.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that quantities of bulk potentially hazardous materials (greater than 55-gallons per container) will be handled during the site activities conducted as part of this scope of work. Significant quantities of waste water (decontamination, purge and development) and soil cuttings to be collectively referred to as IDW may be generated, as part of site activities. It is not anticipated, however, that spillage of these materials would constitute a significant danger to human health or the environment.

All purge and development waters and soils will be profiled based on the information derived from the sampling data. This information will be used to determine the most appropriate disposal measures. Once characterized they can be removed from the staging area and disposed of in accordance with Federal, State and local regulations.

10.1.1 IDW Management

This task includes the containerization, labeling, staging, monitoring, and final deposition of investigative derived wastes. It is anticipated that this investigation will generate five types of potentially contaminated residues or investigative derived wastes. IDW will be handled as described below:

PPE, tubing, and DPT Sample Liners – All PPE, limited amounts of tubing, and DPT sample liners will be decontaminated and double bagged and placed in the trash receptacles (dumpsters – provided service in support of this operation) at the facility.

Wastes Cuttings (Soil and Sludge Cores) from DPT and Manual Coring Activities – For each boring, the additional cuttings will be collected and drummed. Disposal will be determined through sampling and analytical evaluation.

Decontamination Fluids – Fluids generated during the decontamination process will be collected and containerized. Disposal will be determined through sampling and analytical evaluation.

Once characterized they can be removed from the staging area and disposed of in accordance with Federal, State and local regulations.

Containerization/Labeling/Staging

For all materials that are containerized, staged, or used as a temporary means for transport will be properly labeled. These activities are to be conducted as follows:

Containerization – Contaminated materials generated (soils and groundwater) shall be collected and containerized in 55-gallon drums and staged in a centralized location.

Labeling – All containers will be labeled as to their contents. The labels will include the following information:

Drums -

- Site
- Job Number
- Location (Area)
- Date – To be completed upon filling the container or when no more material is to be added
- Drum # - Assign an inventory number to be added to a comprehensive log
- Contents – Description
- Volume – Final volume
- Contact – (At TTNUS) This person should be available should inquiries arise.
- Emergency Number – Emergency Services Number and Contact person should be provided during off days or shifts. This can be the local Fire Dept. or Base Contact. To this end an up-dated inventory should be provided at the close of each shift to this person.

10.1.2 Waste Storage

The area will be identified as a Satellite Storage Area with proper signage, points of contact in the event of an emergency, alternate contacts, and identification of stored material (i.e., soil cuttings, etc.).

An Inventory Log will be maintained by the FOL regarding types of waste materials and estimated volumes generated. An updated Inventory List will be provided by the FOL to the designated Emergency Response Agency during days off and between shifts or phases of operations.

Staging – All drums will be staged on pallets (4 to a pallet) with lid retention ring bolt accessible on the outside, as well as, the label. Pallet rows will maintain a minimum of 4-feet between rows for access and monitoring for leaks.

Materials Handling

To minimize the hazards associated with moving drums and containers (i.e., lifting, pinch and compression points) material handling will be supported in the following manner:

- If possible, a drum cart with pneumatic tires will be used, if drums are used for waste storage that must be manually moved or positioned. This cart will be used to relocate drums within the staging and satellite storage location.

Other means of material handling are acceptable and may be presented to the SHSO for evaluation based on their ability to minimize or eliminate material handling hazards.

10.1.3 Resource Storage – Limited fuel and Lubricant Storage

This spill containment and control plan will apply to all resource storage areas. Currently, possible storage areas include:

- Gasoline for the steam cleaner and/or pressure washer (Estimated volume = 5-gallons)
- Isopropanol (Decontamination Solvent, Estimated Volume = 4-gallons)
- Miscellaneous oils and lubricants (Consumer commodity levels)

The first step in spill control and containment will be prevention

Flammable Storage [i.e., fuels, decontamination solvents (Isopropanol), and Petroleum/oil/lubricants (POL)] will require proper dispensing containers and necessary storage for cumulative volumes in excess of 25 gallons. Storage and dispensing will comply with the following requirements:

- All fuels, which will be stored and dispensed from portable containers, will utilize safety cans.
- All portable hand held storage containers will be labeled per Hazard Communication requirements.
- All dispensing locations will be supported by a Fire Extinguisher.

10.2 PERSONNEL TRAINING AND SPILL PREVENTION

All personnel will be instructed in the procedures for incipient spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and the SHSO will serve as the Spill Response Coordinators for this operation, should the need arise.

10.3 LEAK AND SPILL DETECTION

To establish an early detection of potential spills or leaks, a periodic walk-around by personnel staging or disposing of containers will be conducted at least once each day during working hours, to visually determine that containers are not leaking. Any leaks identified will be collected and contained using absorbents such as Oil-dry, vermiculite, or sand, stored at the staging area in an appropriate replacement vessel or container conspicuously marked. This material too, will be containerized for disposal pending analyses. All inspections will be documented in the Project Logbook.

10.4 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

The following represents examples of the types of equipment that should be maintained at the staging areas at all times for the purpose of supporting this Spill Containment/Control Plan.

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)
- Extra Drums (55-gallon U.N. 1A2) should the need to transfer material from leaking containers arise.
- Necessary means for transferring liquids from leaking containers (i.e., pumps, tubing, buckets, etc.)
- Drum Repair Kit
- Shovels, rakes, and brooms
- Container labels
- PPE
 - Nitrile outer gloves
 - Splash Shield
 - Impermeable over-boots
 - Rain suit or impermeable apron

10.5 SPILL CONTAINMENT/CONTROL RESPONSE PLAN

This section describes the procedures the TTNUS field personnel will employ upon the detection of a spill or leak.

- Notify the SHSO or FOL immediately upon detection of a leak or spill.
- The FOL or the SHSO shall assess the leak and make a determination as to whether the response measure required is within the capabilities of the field crew or whether it is necessary to notify designated emergency response units.

Within the capabilities of the Field Crew:

- Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
- Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
- Recontainerize spills, including 2 inch of top cover (if over soils) impacted by the spill. Await test results for treatment or disposal options.

Outside of the Capabilities of the Field Crew/Notify Emergency Response Units:

- Activate emergency alerting procedures for that area to remove all non-essential personnel.
- Take defensive measures such as
 - Spread the absorbent material in the area of the spill, covering it completely.
 - Raising the leak to the highest point in the vessel.
- Establish site security, direct emergency crews to the area of the leak.

It is not anticipated that a spill would occur that the field crew cannot handle. Should this occur, notification of the appropriate Emergency Response agencies will be carried out by the FOL or SHSO in accordance with the procedures specified in Section 2.0 of this HASP.

11.0 CONFINED SPACE ENTRY

It is not anticipated, under the proposed scope of work, that confined space and permit-required confined space activities will be conducted. **Therefore, personnel under the provisions of this HASP are not allowed, under any circumstances, to enter confined spaces.**

A confined space means a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is a confined space that:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential to engulf an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section, or
- Contains any other recognized, serious, safety or health hazard.

For further information on confined space, consult the Health and Safety Guidance Manual or call the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed.

12.0 MATERIALS AND DOCUMENTATION

The TTNUS FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- MSDSs for all chemicals brought on-site, including decontamination solution(s), fuels, sample preservations, calibration gases, etc.
- A full size OSHA Job Safety and Health Poster (See Attachment XI)
- Training/Medical Surveillance Documentation Form (blank)
- Emergency Reference Form (Section 2.0, extra copies for posting)

12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting these documents is not feasible, (such as no office trailer), these documents should be separated and immediately accessible.

Chemical Inventory Listing (posted) - This list represents all chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc.. This list should be posted in a central area. Copies are to be provided to the Base Contact upon request.

Material Safety Data Sheets (MSDS) (maintained) - The MSDSs should also be in a central area accessible to all site personnel. These documents should match all the listings on the chemical inventory list for all substances employed on site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.

The OSHA Job Safety & Health Protection Poster (posted) - this poster, as directed by 29 CFR 1903.2 (a)(1), should be conspicuously posted in places where notices to employees are normally posted. Each FOL shall ensure that this poster is not defaced, altered, or covered by other material.

Site Clearance (maintained) - This list is found within the training section of the HASP (See Figure 8-2). This list identifies all site personnel, dates of training (including site-specific training), and medical surveillance. The lists indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities. In addition, **ALL** TTNUS personnel will be required to be indicated on a Site Clearance Letter attesting to the training and medical surveillance status.

Emergency Phone Numbers and Directions to the Hospital(s) (posted) - This list of numbers and directions will be maintained at all phone communications points and in each site vehicle.

Medical Data Sheets/Cards (maintained) - Medical Data Sheets will be filled out by on site personnel and filed in a central location. The Medical Data Sheet (Attachment V) will accompany any injury or illness requiring medical attention to the medical facility.

Personnel Monitoring (maintained) - All results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.

Placards and Labels (maintained) - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable Hazard Communication 29 CFR 1910.1200(f) labels.

The purpose, as stated above, is to allow site personnel quick access to this information. Variations concerning location and methods of presentation are acceptable, providing the objection is accomplished.

13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
AVGAS	Aviation Gasoline
bls	below land surface
CPR	Cardio-Pulmonary Resuscitation
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-term Environmental Action - Navy
CTO	Contract Task Order
CRZ	Contamination Reduction Zone
dBA	Decibel A-weighted scale
DEET	N,N-diethyl-meta-toluamide
DI	Deionized
DPT	Direct Push Technology
DOD	Department of Defense
EPA	Environmental Protection Agency
eV	electron Volts
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
FOL	Field Operations Leader
GC	Gas Chromatograph
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSA	Hollow Stem Auger
HSM	Health and Safety Manager
IDW	Investigative-Derived Wastes
µg/L	micrograms per liter
µg/kg	micrograms per kilograms
MEK	methyl ethyl ketone
MIP	Membrane Interface Probe
MSDS	Material Safety Data Sheets
N/A	Not Available
NAS	Naval Air Station
NIOSH	National Institute for Occupational Safety and Health

NTP	National Toxicity Program
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PCBs	polychlorinated biphenyls
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PHSO	Project Health and Safety Officer
POA	Plan of Action
POL	Petroleum/oil/lubricants
ppm	Parts per million
PPE	Personal Protective Equipment
PVC	poly vinyl chloride
QA/QC	Quality Assurance/Quality Control
RAP	Remedial Action Plan
SAP	Sampling and Analyses Plan
SAR	Site Assessment Report
SOPs	Standard Operating Procedures
SOW	Statement of Work
SHSO	Site Health and Safety Officer
SSO	Site Safety Officer
SWP	Safe Work Permit
SWMU	Solid Waste Management Unit
TBD	To be determined
TOM	Task Order Manager
TTNUS	Tetra Tech NUS, Inc.
UST	Underground Storage Tank
WP	Work Plan

ATTACHMENT I

**INJURY/ILLNESS PROCEDURE
AND REPORT FORM**

**TETRA TECH NUS, INC.****INJURY/ILLNESS PROCEDURE
WORKER'S COMPENSATION PROGRAM**

**WHAT YOU SHOULD DO IF YOU ARE INJURED OR DEVELOP AN ILLNESS
AS A RESULT OF YOUR EMPLOYMENT:**

- If injury is minor, obtain appropriate first aid treatment.
- If injury or illness is severe or life threatening, obtain professional medical treatment at the nearest hospital emergency room.
- If incident involves a chemical exposure on a project work site, follow instructions in the Health & Safety Plan.
- Immediately report any injury or illness to your supervisor or office manager. In addition, you must contact your Human Resources representative, Marilyn Diethorn at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours. You will be required to complete an Injury/Illness Report (attached). You may also be required to participate in a more detailed investigation from the Health Sciences Department.
- If further medical treatment is needed, The Hartford Network Referral Unit will furnish a list of network providers customized to the location of the injured employee. These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work. Please call Marilyn Diethorn at (412) 921-8475 for the number of the Referral Unit.

ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:

Contact your local human resources representative, corporate health and safety coordinator, or Corporate Administration in Pasadena, California, at (626) 351-4664.

Worker's compensation is a state-mandated program that provides medical and disability benefits to employees who become disabled due to job related injury or illness. Tetra Tech, Inc. and its subsidiaries (Tetra Tech or Company) pay premiums on behalf of their employees. The type of injuries or illnesses covered and the amount of benefits paid are regulated by the state worker's compensation boards and vary from state to state. Corporate Administration in Pasadena is responsible for administering the Company's worker's compensation program. The following is a general explanation of worker's compensation provided in the event that you become injured or develop an illness as a result of your employment with Tetra Tech or any of its subsidiaries. Please be aware that the term used for worker's compensation varies from state to state.

WHO IS COVERED:

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits.



case no. _____

All employees must follow the above injury/illness reporting procedures. Consultants, independent contractors, and employees of subcontractors are not covered by Tetra Tech's Worker's Compensation plan.

WHAT IS COVERED:

If you are injured or develop an illness caused by your employment, worker's compensation benefits are available to you subject to the laws of the state you work in. Injuries do not have to be serious; even injuries treated by first aid practices are covered and must be reported. Please note that if you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.



case no. _____

**TETRA TECH NUS, INC.
INJURY/ILLNESS PROCEDURE
WORKER'S COMPENSATION PROGRAM**

To: Corporate Health and Safety Manager
Human Resource Administrator

Prepared by: _____

Position: _____

Project Name: _____

Office: _____

Project No. _____

Telephone: _____

Information Regarding Injured or Ill Employee:

Name: _____

Office: _____

Home address: _____

Gender: M F No. of dependents: _____

Home telephone: _____

Marital status: _____

Occupation (regular job title): _____

Date of birth: _____

Department: _____

Social Security No.: _____

Date of Accident: _____

Time of Accident: _____

Location of Accident Was place of accident or exposure on employer's premises Yes No

Street address: _____

City, state, and zip code: _____

County: _____

Narrative Description of How Accident Occurred: (Be specific. Explain what the employee was doing and how the accident occurred.)



**TETRA TECH, INC.
INJURY/ILLNESS REPORT**

Did employee die? Yes No

Was employee performing regular job duties? Yes No

Was safety equipment provided? Yes No

Was safety equipment used? Yes No

Note: Attach any police reports or related diagrams to this accident report.

Witness(es):

Name:

Address:

Telephone:

Describe the Illness or Injury and Part of Body Affected:

Name the Object or Substance which Directly Injured the Employee:

Medical Treatment Required:

No Yes First Aid Only

Physician's Name: _____

Address: _____

Hospital or Office Name: _____

Address: _____

Telephone No.: _____

Lost Work Days:

No. of Lost Work Days _____

Last Date Worked _____

Time Employee Left Work _____

Date Employee Returned to Work _____

No. of Restricted Work Days _____

None

Corrective Action(s) Taken by Unit Reporting the Accident:

Corrective Action Still to be Taken (by whom and when):

Name of Tetra Tech employee the Injury or Illness was first reported to: _____

Date of Report: _____ **Time of Report:** _____

	Printed Name	Signature	Telephone No.	Date
Project or Office Manager				
Site Safety Coordinator				
Injured Employee				

To be completed by Human Resources:

Date of hire:

Hire date in current job:

Wage information: \$ _____ per _____ (hour, day, week, or month)

Position at time of hire:

Shift hours:

State in which employee was hired:

Status: Full-time Part-time **Hours per week:** _____ **Days per week:** _____

Temporary job end date:

To be completed during report to workers' compensation insurance carrier:

Date reported:

Reported by:

TeleClaim phone number:

TeleClaim account number:

Location code:

Confirmation number:

Name of contact:

Field office of claims adjuster:

ATTACHMENT II

**STANDARD OPERATING PROCEDURE
FOR
UTILITY LOCATING AND
EXCAVATION CLEARANCE**



STANDARD OPERATING PROCEDURES

TETRA TECH NUS, INC.

Number	HS-1.0	Page	1 of 11
Effective	03/00	Date	Revision
			1
Applicability	Tetra Tech NUS, Inc.		
Prepared	Health & Safety		
Approved	D. Senovich <i>ds</i>		

Subject
UTILITY LOCATING AND EXCAVATION CLEARANCE

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1.0 PURPOSE

Utilities such as electric service lines, natural or propane gas lines, water and sewage lines, telecommunications, and steam lines are very often in the immediate vicinity of work locations. Contact with underground or overhead utilities can have serious consequences including employee injury/fatality, property and equipment damage, substantial financial impacts, and loss of utility service to users.

The purpose of this procedure is to provide minimum requirements and technical guidelines regarding the appropriate procedures to be followed when performing subsurface and overhead utility locating services. It is the policy of Tetra Tech NUS, Inc. (TtNUS) to provide a safe and healthful work environment for the protection of our employees. The purpose of this Standard Operating Procedure (SOP) is to aid in achieving the objectives of the TtNUS Utility Locating and Clearance Policy. The TtNUS Utility Locating and Clearance Policy must be reviewed by anyone potentially involved with underground or overhead utility services.

2.0 SCOPE

This procedure applies to all TtNUS field activities where there may be potential contact with underground or overhead utilities. This procedure provides a description of the principles of operation, instrumentation, applicability, and implementability of typical methods used to determine the presence or absence of utility services. This procedure is intended to assist with work planning and scheduling, resource planning, field implementation, and subcontractor procurement. Utility locating and excavation clearance requires site-specific information prior to the development of detailed operating procedures. This guidance is not intended to provide a detailed description of methodology and instrument operation. Specialized expertise during both planning and execution of several of the geophysical methods may also be required.

3.0 GLOSSARY

Electromagnetic Induction (EMI) Survey - A geophysical exploration method whereby electromagnetic fields are induced in the ground and the resultant secondary electromagnetic fields are detected as a measure of ground conductivity.

Magnetometer - A device used for precise and sensitive measurements of magnetic fields.

Magnetic Survey - A geophysical survey method that depends on detection of magnetic anomalies caused by the presence of buried ferromagnetic objects.

Metal Detection - A geophysical survey method that is based on electromagnetic coupling caused by underground conductive objects.

Vertical Gradiometer - A magnetometer equipped with two sensors that are vertically separated by a fixed distance. It is best suited to map near surface features and is less susceptible to deep geologic features.

Ground Penetrating Radar - Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture.

4.0 RESPONSIBILITIES

Project Manager (PM)/Task Order Manager (TOM) - Responsible for ensuring that all field activities are conducted in accordance with this procedure and the TtNUS Utility Locating and Clearance Policy.

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Site Manager (SM)/Field Operations Leader (FOL) - Responsible for the onsite verification that all field activities are performed in compliance with approved SOPs or as otherwise directed by the approved project plan(s).

Site Health & Safety Officer (SHSO) - Responsible to provide technical assistance and verify full compliance with this SOP and the TtNUS Utility Locating and Clearance Policy. The SHSO is also responsible for reporting any deficiencies to the Corporate Health and Safety Manager (HSM) and to the PM/TOM.

Health & Safety Manager (HSM) - Responsible for preparing, implementing, and modifying corporate health and safety policy.

Site Personnel - Responsible for understanding and implementing this SOP and the TtNUS Utility Locating and Clearance Policy.

5.0 PROCEDURES

This procedure addresses the requirements and technical procedures that must be performed to minimize the potential for contact with underground and overhead utility services. These procedures are addressed individually from a buried and overhead standpoint.

5.1 Buried Utilities

Buried utilities present a heightened concern because their location is not typically obvious by visual observation, and it is common that their presence and/or location is unknown or incorrectly known on client properties. The following procedure must be followed prior to beginning any excavation that might potentially be in the vicinity of underground utility services. In addition, the Utility Clearance Form (Attachment 3) must be completed for every location or cluster of locations where intrusive activities will occur.

Where the positive identification and de-energizing of underground utilities cannot be obtained and confirmed using the following steps, the PM/TOM is responsible for arranging for the procurement of a qualified, experienced, utility locating subcontractor who will accomplish the utility location and demarcation duties specified herein.

1. A comprehensive review must be made of any available property maps, blue lines, or as-builts prior to site activities. Interviews with local personnel familiar with the area should be performed to provide additional information concerning the location of potential underground utilities. Information regarding utility locations shall be added to project maps upon completion of this exercise.
2. A visual site inspection must be performed to compare the site plan information to actual field conditions. Any findings must be documented and the site plan/maps revised. The area(s) of proposed excavation or other subsurface activities must be marked at the site in white paint or pin flags to identify those locations of the proposed intrusive activities. The site inspection should focus on locating surface indications of potential underground utilities. Items of interest include the presence of nearby area lights, telephone service, drainage grates, fire hydrants, electrical service vaults/panels, asphalt/concrete scars and patches, and topographical depressions. Note the location of any emergency shut off switches. Any additional information regarding utility locations shall be added to project maps upon completion of this exercise and returned to the PM/TOM.

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3. If the planned work is to be conducted on private property (e.g., military installations, manufacturing facilities, etc.) the FOL must identify and contact appropriate facility personnel (e.g., public works or facility engineering) before any intrusive work begins to inquire about (and comply with) property owner requirements. It is important to note that private property owners may require several days to several weeks advance notice prior to locating utilities.
4. If the work location is on public property, the state agency that performs utility clearances must be notified (see Attachment 1). State "one-call" services must be notified prior to commencing fieldwork per their requirements. Most one-call services require, by law, 48- to 72-hour advance notice prior to beginning any excavation. Such services typically assign a "ticket" number to the particular site. This ticket number must be recorded for future reference and is valid for a specific period of time, but may be extended by contacting the service again. The utility service will notify utility representatives who then mark their respective lines within the specified time frame. It should be noted that most military installations own their own utilities but may lease service and maintenance from area providers. Given this situation, "one call" systems may still be required to provide location services on military installations.
5. Utilities must be identified and their locations plainly marked using pin flags, spray paint, or other accepted means. The location of all utilities must be noted on a field sketch for future inclusion on project maps. Utility locations are to be identified using the following industry-standard color code scheme, unless the property owner or utility locator service uses a different color code:

white	excavation/subsurface investigation location
red	electrical
yellow	gas, oil, steam
orange	telephone, communications
blue	water, irrigation, slurry
green	sewer, drain

6. Where utility locations are not confirmed with a high degree of confidence through drawings, schematics, location services, etc., the work area must be thoroughly investigated prior to beginning the excavation. In these situations, utilities must be identified using such methods as passive and intrusive surveys, physical probing, or hand augering. Each method has advantages and disadvantages including complexity, applicability, and price. It also should be noted that in many states, initial excavation is required by hand to a specified depth.
7. At each location where trenching or excavating will occur using a backhoe or other heavy equipment, and where utility identifications and locations cannot be confirmed prior to groundbreaking, the soil must be probed with a hand auger or pole (tile probe) made of non-conductive material. If these efforts are not successful in clearing the excavation area of suspect utilities, hand shoveling must be performed for the perimeter of the intended excavation.
8. All utilities uncovered or undermined during excavation must be structurally supported to prevent potential damage. Unless necessary as an emergency corrective measure, TINUS shall not make any repairs or modifications to existing utility lines without prior permission of the utility owner, property owner, and Corporate HSM. All repairs require that the line be locked-out/tagged-out prior to work.

5.2 Overhead Power Lines

If it is necessary to work within the minimum clearance distance of an overhead power line, the overhead line must be de-energized and grounded, or re-routed by the utility company or a registered electrician. If protective measures such as guarding, isolating, or insulating are provided, these precautions must be adequate to prevent employees from contacting such lines directly with any part of their body or indirectly

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though conductive materials, tools, or equipment.

The following table provides the required minimum clearances for working in proximity to overhead power lines.

<u>Nominal Voltage</u>	<u>Minimum Clearance</u>
0 -50 kV	10 feet, or one mast length; whichever is greater
50+ kV	10 feet plus 4 inches for every 10 kV over 50 kV or 1.5 mast lengths; whichever is greater

6.0 UNDERGROUND LOCATING TECHNIQUES

6.1 Geophysical Methods

Geophysical methods include electromagnetic induction, magnetics, and ground penetrating radar. Additional details concerning the design and implementation of electromagnetic induction, magnetics, and ground penetrating radar surveys can be found in one or more of the TINUS SOPs included in the References (Section 8.0).

Electromagnetic Induction

Electromagnetic Induction (EMI) line locators operate either by locating a background signal or by locating a signal introduced into the utility line using a transmitter. A utility line acts like a radio antenna, producing electrons, which can be picked up with a radiofrequency receiver. Electrical current carrying conductors have a 60HZ signal associated with them. This signal occurs in all power lines regardless of voltage. Utilities in close proximity to power lines or used as grounds may also have a 60HZ signal, which can be picked up with an EM receiver. A typical example of this type of geophysical equipment is an EM-81.

EMI locators specifically designed for utility locating use a special signal that is either indirectly induced onto a utility line by placing the transmitter above the line or directly induced using an induction clamp. The clamp induces a signal on the specific utility and is the preferred method of tracing since there is little chance of the resulting signals being interfered with. A good example of this type of equipment is the Schonstedt® MAC-51B locator. The MAC-51B performs inductively traced surveys, simple magnetic locating, and traced nonmetallic surveys.

When access can be gained inside a conduit to be traced, a flexible insulated trace wire can be used. This is very useful for non-metallic conduits but is limited by the availability of gaining access inside the pipe.

Magnetics

Magnetic locators operate by detecting the relative amounts of buried ferrous metal. They are incapable of locating or identifying nonferrous utility lines but can be very useful for locating underground storage tanks (UST's), steel utility lines, and buried electrical lines. A typical example of this type of equipment is the Schonstedt® GA-52Cx locator. The GA-52Cx is capable of locating 4-inch steel pipe up to 8 feet deep.

Non-ferrous lines are often located by using a typical plumbing tool (snake) fed through the line. A signal is then introduced to the snake that is then traced.

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Ground Penetrating Radar

Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture. In general, an object which is harder than the surrounding soil will reflect a stronger signal. Utilities, tunnels, UST's, and footings will reflect a stronger signal than the surrounding soil. Although this surface detection method may determine the location of a utility, this method does not specifically identify utilities (i.e., water vs. gas, electrical vs. telephone); hence, verification may be necessary using other methods. This method is somewhat limited when used in areas with clay soil types or with a high water table.

6.2 Passive Detection Surveys

Acoustic Surveys

Acoustic location methods are generally most applicable to waterlines or gas lines. A highly sensitive Acoustic Receiver listens for background sounds of water flowing (at joints, leaks, etc.) or to sounds introduced into the water main using a transducer. Acoustics may also be applicable to determine the location of plastic gas lines.

Thermal Imaging

Thermal (i.e., infrared) imaging is a passive method for detecting the heat emitted by an object. Electronics in the infrared camera convert subtle heat differentials into a visual image on the viewfinder or a monitor. The operator does not look for an exact temperature; rather they look for heat anomalies (either elevated or suppressed temperatures) characteristic of a potential utility line.

The thermal fingerprint of underground utilities results from differences in temperature between the atmosphere and the fluid present in a pipe or the heat generated by electrical resistance. In addition, infrared scanners may be capable of detecting differences in the compaction, temperature and moisture content of underground utility trenches. High-performance thermal imagery can detect temperature differences to hundredths of a degree.

6.3 Intrusive Detection Surveys

Vacuum Excavation

Vacuum excavation is used to physically expose utility services. The process involves removing the surface material over approximately a 1' x 1' area at the site location. The air-vacuum process proceeds with the simultaneous action of compressed air-jets to loosen soil and vacuum extraction of the resulting debris. This process ensures the integrity of the utility line during the excavation process, as no hammers, blades, or heavy mechanical equipment comes into contact with the utility line, eliminating the risk of damage to utilities. The process continues until the utility is uncovered. Vacuum excavation can be used at the proposed site location to excavate below the "utility window" which is usually 8 feet.

Hand-auger Surveys

When the identification and location of underground utilities cannot be positively confirmed through document reviews and/or other methods, borings must be hand-augered for all locations where there is a potential to impact buried utilities. The minimum hand-auger depth that must be reached is to be determined considering the geographical location of the work site. This approach recognizes that the

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placement of buried utilities is influenced by frost line depths that vary by geographical region. Attachment 2 presents frost line depths for the regions of the contiguous United States. At a minimum, hand-auger depths must be at least to the frost line depth plus two (2) feet, but never less than 4 feet below ground surface (bgs). For augering, the hole must be reamed by hand to at least the diameter of the drill rig auger or bit prior to drilling. For soil gas surveys, the survey probe shall be placed as close as possible to the cleared hand-auger. It is important to note that a post-hole digger must not be used in place of a hand-auger.

Tile Probe Surveys

For some soil types, site conditions, and excavation requirements, tile probes may be used instead of or in addition to hand-augers. Tile probes must be performed to the same depth requirements as hand-augers. Depending upon the site conditions and intended probe usage, tile probes should be made of non-conductive material such as fiberglass.

7.0 INTRUSIVE ACTIVITIES SUMMARY

The following list summarizes the activities that must be performed prior to beginning subsurface activities:

1. Map and mark all subsurface locations and excavation boundaries using white paint or markers specified by the client or property owner.
2. Notify the property owner and/or client that the locations are marked. At this point, drawings of locations or excavation boundaries shall be provided to the property owner and/or client so they may initiate (if applicable) utility clearance.

Note: Drawings with confirmed locations should be provided to the property owner and/or client as soon as possible to reduce potential time delays.

3. Notify "One Call" service. If possible, arrange for an appointment to show the One Call representative the subsurface locations or excavation boundaries in person. This will provide a better location designation to the utilities they represent. You should have additional drawings should you need to provide plot plans to the One Call service.
4. Complete Attachment 3, Utility Clearance Form. This form should be completed for each excavation location. In situations where multiple subsurface locations exist within the close proximity of one another, one form may be used for multiple locations provided those locations are noted on the Utility Clearance Form. Upon completion, the Utility Clearance Form and revised/annotated utility location map becomes part of the project file.

8.0 REFERENCES

TINUS Utility Locating and Clearance Policy
 TINUS SOP GH-3.1; Resistivity and Electromagnetic Induction
 TINUS SOP GH-3.2; Magnetic and Metal Detection Surveys
 TINUS SOP GH-3.4; Ground-penetrating Radar Surveys

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**ATTACHMENT 1
LISTING OF UNDERGROUND UTILITY CLEARANCE RESOURCES**

ALABAMA Alabama Line Location (800) 292-8525 Tucson Blue Stake Center (800) 782-5348	Maine Dig Safe - Maine (800) 225-4977
Alaska Locate Call Center of Alaska Inc. (800) 478-3121	Maryland Miss Utility (800) 257-777
Arizona Arizona Blue Stake Inc. (800) 782-5348	Massachusetts Dig Safe - Massachusetts (800) 322-4844
Arkansas Arkansas One Call System Inc. (800) 482-8998	Michigan Miss Dig System (800) 482-7171
California Underground Service Alert North (800) 227-2800 Underground Service Alert South (800) 227-2800	Minnesota Gopher State One Call (800) 252-1168
Colorado Utility Notification Center of Colorado (800) 922-1987	Mississippi Mississippi One-Call System Inc. (800) 227-6477
Connecticut Call Before You Dig (800) 922-4455	Missouri Missouri One Call System Inc. (800) 344-7483
Delaware Miss Utility of Delmarva (800) 282-8555	Montana Utilities Underground Location Center (800) 424-5555
District of Columbia Miss Utility (800) 257-7777	Montana One Call Center (800) 551-8344
Florida Call Sunshine (800) 432-4770	Nebraska Diggers Hotline of Nebraska (800) 331-5666
Georgia Utilities Protection Center Inc. (800) 282-7411	Nevada Underground Service Alert North (800) 227-2800
Idaho Palouse Empire Underground Coordinating Council (800) 882-1974	New Hampshire Dig Safe - New Hampshire (800) 225-4977
Utilities Underground Location Center (800) 424-5555	New Jersey New Jersey One Call (800) 272-1000
Kootenai Country Utility Coordinating Council (800) 428-4950	New Mexico New Mexico One Call System Inc. (800) 321-ALERT
Shoshone County One Call (800) 398-3285	Las Cruces-Dona Utility Council (505) 526-0400
Dig Line (800) 342-1585	New York Underground Facilities Protection Organization (800) 962-7962
One Call Concepts (800) 626-4950	New York City: Long Island One Call Center (800) 272-4480
Illinois Julie Inc. (800) 882-0123	North Carolina The North Carolina One-Call Center Inc. (800) 632-4949
Digger (Chicago Utility Alert Network) (312) 744-7000	North Dakota Utilities Underground Location Center (800) 795-0555
Indiana Indiana Underground Plant Protection Services (800) 382-5544	Ohio Ohio Utilities Protection Service (800) 362-2764
Iowa Underground Plant Location Service Inc. (800) 292-8989	Oil & Gas Producers Underground Protection Service (800) 925-0988
Kansas Kansas One-Call Center (800) 344-7233	Oklahoma Call Okla (800) 522-6543
Kentucky Kentucky Underground Protection Inc. (800) 752-6007	
Louisiana Louisiana One Call (800) 272-3020	

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Oregon
Utilities Underground Location Center
(800) 424-5555
Douglas Utilities Coordinating Council
(503) 673-6676
Josephine Utilities Coordinating Council
(503) 476-6676
Rogue Basin Utility Coordinating Council
(503) 779-6676
Utilities Notification Center
(800) 332-2344

Pennsylvania
Pennsylvania One Call System Inc.
(800) 242-1776

Rhode Island
Dig Safe -- Rhode Island (800) 225-4977

South Carolina
Palmetto Utility Protection Service Inc.
(800) 922-0983

South Dakota
South Dakota One Call (800) 781-7474

Tennessee
Tennessee One-Call System (800) 351-1111

Texas
Texas One Call System (800) 245-4545
Texas Excavation Safety System (800) 344-8377
Lone Star Notification Center (800) 668-8344

Utah
Blue Stakes Location Center (800) 662-4111

Vermont
Dig Safe -- Vermont (800) 225-4977

Virginia
Miss Utility of Virginia (800) 552-7001
Miss Utility (800) 257-7777
Miss Utility of Delmarva (800) 441-8355

Washington
Utilities Underground Location Center
(800) 424-5555
Grays Harbor & Pacific County
Utility Coordinating Council
(206) 535-3550
Utilities County of Cowlitz County
(360) 425-2506
Chelan-Douglas Utilities Coordinating Council
(509) 663-6111
Upper Yakima County
Underground Utilities Council
(800) 553-4344
Inland Empire Utility Coordinating Council
(509) 456-8000
Palouse Empire Utilities Coordinating Council
(800) 822-1974
Utilities Notification Center (800) 332-2344

West Virginia
Miss Utility of West Virginia Inc. (800) 245-4848

Wisconsin
Diggers Hotline Inc. (800) 242-8511

Wyoming
West Park Utility Coordinating Council
(307) 587-4800
Call-In Dig-In Safety Council (800) 300-9811
Fremont County Utility Coordinating Council
(800) 489-8023
Central Wyoming Utilities Coordinating Council
(800) 759-8035
Southwest Wyoming One Call (307) 362-8888
Carbon County Utility
Utility Coordinating Council (307) 324-6666
Albany County Utility Coordinating Council
(307) 742-3615
Southeast Wyoming Utilities Coordinating Council
(307) 638-6868
Wyoming One-Call
(800) 348-1030
Utilities Underground Location Center
(800) 454-5555
Converse County Utility Coordination Council
(800) 562-5561

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**ATTACHMENT 3
UTILITY CLEARANCE FORM**

Client: _____ Project Name: _____
 Project No.: _____ Completed By: _____
 Location Name: _____ Work Date: _____
 Excavation Method/Overhead Equipment: _____

1. **Underground Utilities** Circle One
- a) Review of existing maps? yes no N/A
 - b) Interview local personnel? yes no N/A
 - c) Site visit and inspection? yes no N/A
 - d) Excavation areas marked in the field? yes no N/A
 - e) Utilities located in the field? yes no N/A
 - f) Located utilities marked/added to site maps? yes no N/A
 - g) Client contact notified yes no N/A
 Name _____ Telephone: _____ Date: _____
 - g) State One-Call agency called? yes no N/A
 Caller: _____
 Ticket Number: _____ Date: _____
 - N/A h) Geophysical survey performed? yes no
 Survey performed by: _____
 Method: _____ Date: _____
 - i) Hand augering performed? yes no N/A
 Augering completed by: _____
 Total depth: _____ feet Date: _____
 - j) Trench/excavation probed? yes no N/A
 Probing completed by: _____
 Depth/frequency: _____ Date: _____

2. **Overhead Utilities** Present Absent
- a) Determination of nominal voltage yes no N/A
 - b) Marked on site maps yes no N/A
 - c) Necessary to lockout/insulate/re-route yes no N/A
 - d) Document procedures used to lockout/insulate/re-route yes no N/A
 - e) Minimum acceptable clearance (SOP Section 5.2): _____

3. **Notes:**

Approval:

 Site Manager/Field Operations Leader

 Date

c: PM/Project File
 Program File

ATTACHMENT III

EQUIPMENT INSPECTION CHECKLISTS

	Good	Needs Repaired	N/A
- Number of U-Type (Crosby) Clips (5/16 - 5/8 = 3 clips minimum) (3/4 - 1 inch = 4 clips minimum) (1 1/8 - 1 3/8 inch = 5 clips minimum)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> Kinks, bends - Flattened to > 50% diameter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> Hemp/Fiber rope (Cathead/Split Spoon Hammer)			
- Minimum 3/4; maximum 1 inch rope diameter (Inspect for physical damage)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Rope to hammer is securely fastened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Safety Guards:

	Yes	No
Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
Hot pipes and surfaces exposed to accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
All emergency shut offs have been identified and communicated to the field crew? _____	<input type="checkbox"/>	<input type="checkbox"/>
Are any structural members bent, rusted, or otherwise show signs of damage? _____	<input type="checkbox"/>	<input type="checkbox"/>
Are fueling cans used with this equipment approved type safety cans? _____	<input type="checkbox"/>	<input type="checkbox"/>
Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? _____	<input type="checkbox"/>	<input type="checkbox"/>

Cleanliness:

Overall condition (was the decontamination performed prior to arrival on-site considered acceptable)? _____

Where was this equipment used prior to its arrival on site? _____

Site Contaminants of concern at the previous site? _____

Inside debris (coffee cups, soda cans, tools and equipment) blocking free access to foot controls? _____

Flammable solvents stored in the operators cab? _____

Operator Qualifications (as applicable for all heavy equipment):

Does the operator have proper licensing where applicable, (e.g., CDL)? _____

Does the operator, understand the equipment's operating instructions? _____

Is the operator experienced with this equipment? _____

Is the operator 21 years of age or more? _____

ADDITIONAL INSPECTION REQUIRED PRIOR TO USE ON-SITE

	Yes	No
Does equipment emit noise levels above 90 decibels?	<input type="checkbox"/>	<input type="checkbox"/>
If so, has an 8-hour noise dosimetry test been performed?	<input type="checkbox"/>	<input type="checkbox"/>
Results of noise dosimetry: _____		
Defects and repairs needed: _____		
General Safety Condition: _____		
Operator or mechanic signature: _____		

Site Safety Officer Signature: _____

Approved for Use: Yes No

ATTACHMENT IV

SAFE WORK PERMITS

**SAFE WORK PERMIT
DECONTAMINATION ACTIVITIES
NAS WHITING FIELD, MILTON, FLORIDA**

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

I. Work limited to the following (description, area, equipment used): Decontamination of heavy and sampling equipment (i.e., drill/DPT rigs and auger flights, drive rods, etc.). Pressure washers or steam cleaning units will be used to decontaminate heavy equipment. Decontamination of sampling equipment (i.e., MacroCore Samplers, reusable stainless steel trowels, etc.). Brushes and spray bottles will be used to decontaminate small sampling equipment.

II. Required Monitoring Instrument(s): PID with 10.6eV lamp [Note: This instrument will be used to determine if all of the chemical solvent (isopropanol) has been removed. It will not be used for purposes of monitoring exposure.]

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____

TINUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. Protective equipment required

Level D Level B
Level C Level A
Detailed on Reverse

Respiratory equipment required

Full face APR Escape Pack
Half face APR SCBA
SKA-PAC SAR Bottle Trailer
Skid Rig None

Modifications/Exceptions: None anticipated

VI. Chemicals of Concern

Action Level(s)

Response Measures

Decontamination Solvents

Per MSDS

Note: COPC are not considered to be present in sufficient concentrations to present an occupational exposure threat to the decontamination workers.

VII. Additional Safety Equipment/Procedures

Hard-hat.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Barricades..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type - Nitrile or Neoprene) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe Work shoes or boots.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical Resistant Boot Covers.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Impermeable apron..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: Impermeable aprons are preferred protection against soiling work clothes when lifting auger flights because of the need to carry close to the body. This is also the preferred protection during decontamination operations in the control of heat stress providing it offers adequate protection against splashes and over spray. If it (impermeable apron) does not offer adequate protection, PVC rain suits or PE or PVC coated Tyvek should be employed. Chemical resistant boot covers if excessive liquids are generated or to protect footwear. Hearing protection is required when operating the steam cleaner or pressure washer.

VIII. Procedure review with permit acceptors

Yes NA

Yes NA

Safety shower/eyewash (Location & Use).....	<input type="checkbox"/> <input type="checkbox"/>	Emergency alarms.....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Procedure for safe job completion.....	<input type="checkbox"/> <input type="checkbox"/>	Evacuation routes.....	<input type="checkbox"/> <input type="checkbox"/>
Contractor tools/equipment/PPE inspected.....	<input checked="" type="checkbox"/> <input type="checkbox"/>	Assembly points ().....	<input type="checkbox"/> <input type="checkbox"/>

IX. Site Preparation

Yes No NA

Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Vehicle and Foot Traffic Routes Cleared and Established.....	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Physical Hazards Barricaded and Isolated.....	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Emergency Equipment Staged.....	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

X. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

XI. Special Instructions, precautions: Review MSDSs for decontamination solvents prior to use. To minimize the potential for exposure to site contaminants personnel will use PPE and prevent contact with potentially contaminated equipment. For pressure washers or steam cleaners in excess of 3,000 psi a fan tip of 25° or greater will be used to control potential for water cuts or lacerations. All hoses and fittings will be inspected to insure structural integrity prior to use. Decontamination Pad construction - sloped a sufficient degree to allow collection at a sump away from the work area; the temporary pad constructed of 10-30 mil polyethylene sheeting should be covered in a light coating of sand if the surface becomes too slippery. Hoses should be rolled up when not in use to eliminate potential tripping hazards. Site control boundary demarcation for this operation is set at 35 feet surrounding the point of operation.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
MULTI-MEDIA SAMPLING ACTIVITIES
NAS WHITING FIELD, MILTON, FLORIDA**

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Multi media sampling including soils (subsurface) and groundwater sampling. Sampling will be accomplished through various methods including but not limited to: HSA Drill rig (split spoon), DPT (MacroCore Sampler); Groundwater (Low flow purge and sample using peristaltic pump and dedicated tubing).
- II. Required Monitoring Instrument(s): PID with an 10.6 eV Lamp Strength (See Table 5-1)
- III. Field Crew: _____
- IV. On-site inspection conducted Yes No Initials of Inspector _____

TINUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

- | | | | |
|---|----------------------------------|--|--|
| V. Protective equipment required | | Respiratory equipment required | |
| Level D <input checked="" type="checkbox"/> | Level B <input type="checkbox"/> | Full face APR <input type="checkbox"/> | Escape Pack <input type="checkbox"/> |
| Level C <input type="checkbox"/> | Level A <input type="checkbox"/> | Half face APR <input type="checkbox"/> | SCBA <input type="checkbox"/> |
| Detailed on Reverse | | SKA-PAC SAR <input type="checkbox"/> | Bottle Trailer <input type="checkbox"/> |
| | | Skid Rig <input type="checkbox"/> | None <input checked="" type="checkbox"/> |

Modifications/Exceptions: Minimum requirement are stated below. Ascension to higher level of protection is not anticipated based on reported concentrations. If monitoring indicates the action levels specified below are achieved, notify the PHSO.

VI. Chemicals of Concern	Action Level(s)	Response Measures
*BTEX compounds	0-10ppm	Continue to work; Continue to Monitor
*BTEX compounds	>10ppm in the Identified Workers Breathing Zone	Cease operations. Notify PHSO

- VII. Additional Safety Equipment/Procedures
- | | | | |
|--------------------------------|---|---------------------------------------|---|
| Hard-hat | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash suits/coveralls | <input type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type - Nitrile Surgeon style) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical Resistant Boot Covers | <input type="checkbox"/> Yes <input type="checkbox"/> No | Impermeable apron | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

Modifications/Exceptions: Impermeable aprons may be used when handling split spoons or MacroCore Samplers to prevent soiling of work clothes, if it is determined to be necessary. Nitrile or neoprene outer gloves for breaking open spoons and/or samplers. When DPT is employed utilizing the MacroCore Sampler and acetate liners, a Geoprobe Sampling Kit and Cut resistant gloves will be required for cutting open the acetate liners. Chemical resistant boot covers when working around the rig amidst the spoils. Hard hat and hearing protection must be worn when working within the established exclusion zone of the HSA Drill or DPT rig. Reflective vests will be employed when working along designated traffic thoroughfares.

- | | | | | |
|--|--------------------------|--------------------------|-------------------|-------------------------------------|
| VIII. Procedure review with permit acceptors | Yes | NA | Yes | NA |
| Safety shower/eyewash (Location & Use) | <input type="checkbox"/> | <input type="checkbox"/> | Emergency alarms | <input checked="" type="checkbox"/> |
| Procedure for safe job completion | <input type="checkbox"/> | <input type="checkbox"/> | Evacuation routes | <input type="checkbox"/> |
| Contractor tools/equipment/PPE inspected | <input type="checkbox"/> | <input type="checkbox"/> | Assembly points | <input type="checkbox"/> |

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| IX. Site Preparation | Yes | No | NA |
| Utility Locating and Excavation Clearance completed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- X. Additional Permits required (Hot work, confined space entry, excavation etc.) Yes No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

XI. Special instructions, precautions: The FOL and/or the SHSO shall preview all work areas for physical hazards where sampling is to be conducted. Physical hazards will be removed, barricaded, or indicated to exist to the field crew prior to committing personnel or resources. Personal decontamination for this task shall include efforts at remote locations such as bagging contaminated PPE and reusable sampling tools and using hygienic wipes for hands and face until persons can reach the structured decontamination unit. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather. Employ proper lifting techniques as described on Table 5-1 for mobilization/demobilization. For remote locations pack glassware in hard sided containers to prevent falls breakage of glassware and possible lacerations.

* - General Contaminant Classifications based on components detected in the soils. The action levels have been established based on component % concentration (as a mixture) as reported from previous sample results.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
MONITORING WELL INSTALLATION/SOIL BORING ACTIVITIES
NAS WHITING FIELD, MILTON, FLORIDA**

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Soil boring and monitoring well installation using Hollow Stem Auger and or Mud Rotary Drilling methods. Possible direct push application methods including MacroCore Sampling and Dual Tube Systems for well installation may be used as well.
- II. Required Monitoring Instruments: PID with a 10.6eV Lamp strength
- III. Field Crew: _____
- IV. On-site Inspection conducted Yes No Initials of Inspector _____

TINUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

- | | | | |
|---|----------------------------------|--|--|
| V. Protective equipment required | | Respiratory equipment required | |
| Level D <input checked="" type="checkbox"/> | Level B <input type="checkbox"/> | Full face APR <input type="checkbox"/> | Escape Pack <input type="checkbox"/> |
| Level C <input type="checkbox"/> | Level A <input type="checkbox"/> | Half face APR <input type="checkbox"/> | SCBA <input type="checkbox"/> |
| Detailed on Reverse | | SAR <input type="checkbox"/> | Bottle Trailer <input type="checkbox"/> |
| | | Skid Rig <input type="checkbox"/> | None <input checked="" type="checkbox"/> |

Modifications/Exceptions: Modification to the selected level of protection is not anticipated based on previous reported contaminant concentrations. Ascension over the established action levels requires notification of the PHSO to determine the most appropriate option.

VI. Chemicals of Concern	Action Level(s)	Response Measures
*BTEX compounds	0-10ppm	Continue to work; Continue to Monitor
*BTEX compounds	>10ppm in the Identified Workers Breathing Zone	Cease operations, Notify PHSO

VII. Additional Safety Equipment/Procedures

- | | | | |
|--------------------------------------|---|--|---|
| Hard-hat..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs)..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash suits/coveralls | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Gloves (Type - Nitrile or Neoprene)..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical Resistant Boot Covers | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Impermeable apron | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall if there is a potential for soiling work clothes. PVC or PE coated Tyvek, if saturation or work clothes may occur. It is recommended that the Driller and the Driller's helper wear impermeable aprons to prevent soiling of work clothes when handling auger flights close and/or against the body. This measure can be used in place of the Tyvek or PE or PVC coated Tyvek providing it offers the same level of protection. Once the task is complete remove disposable PPE and double bag for disposal. All reusable PPE will go through a soap and water wash and rinse.

- | | | | | | |
|--|--------------------------|--------------------------|---------------------------|---|-----------------------------|
| VIII. Procedure review with permit acceptors | Yes | NA | Emergency alarms..... | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> NA |
| Safety shower/eyewash (Location & Use) | <input type="checkbox"/> | <input type="checkbox"/> | Evacuation routes | <input type="checkbox"/> | <input type="checkbox"/> |
| Procedure for safe job completion..... | <input type="checkbox"/> | <input type="checkbox"/> | Assembly points () | <input type="checkbox"/> | <input type="checkbox"/> |
| Contractor tools/equipment/PPE Inspected | <input type="checkbox"/> | <input type="checkbox"/> | | | |

IX. Site Preparation

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| Utility Locating and Excavation Clearance completed..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- X. Additional Permits required (Utility Locating and Excavation Clearance - Attachment IV)..... Yes No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

XI. Special instructions, precautions: Follow the safe work practices for drilling specified in Section 5.2 of this HASP.

Use proper lifting techniques defined in Table 5-1 for mobilization/demobilization. Complete an Equipment Inspection Checklist for the HAS/Mud Rotary and Direct Push Rig upon arrival to the site, and then every 10 day shift thereafter or after major repairs. Test all emergency stop devices initially then periodically to insure operational status. Decontamination of equipment will consist of soap and water wash and rinse with the use of a pressure washer until visibly clean. If a centralized decontamination unit is employed wrap all equipment in polyethylene sheeting for transport to this location. Personnel decontamination will consist of disposing of single use PPE and washing hands and face prior to breaks or meals. The greatest potential for exposure may occur only through mechanical dispersion (inhalation) or hand to mouth contact (ingestion) through poor work hygiene practices. Minimization of these hazards can control potential exposures. Utility clearance will proceed all subsurface installations employing clearance services and hand dug pilot holes in accordance with Attachment II of this HASP. Site control boundaries shall be established at the height of the mast + 5-feet for HSA Mud Rotary drilling and a minimum of 25-feet from a DPT rig. This distance will remove persons from within the boundaries potentially impacted by physical hazards associated with this operation. All operation will be temporarily suspended during approaching electrical storms and/or high winds.

* - General Contaminant Classifications based on components detected in the soils. The action levels have been established based on component % concentration (as a mixture) as reported from previous sample results.

Permit Issued by: _____ Permit Accepted by: _____

ATTACHMENT V
MEDICAL DATA SHEET

MEDICAL DATA SHEET

This Medical Data Sheet must be completed by all on-site personnel and kept in a central location during the execution of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project NAS WHITING FIELD, MILTON, FLORIDA CTO 0200: SOW 0217

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals _____

What medications are you presently using? _____

Do you have any medical restrictions? _____

Last Tetanus Shot or Booster: _____

Name, Address, and Phone Number of personal physician: _____

I am the individual described above. I have read and understand this HASP.

Signature

Date