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HEALTH AND SAFETY PLAN AND SITE ASSESSMENT NAS CECIL FIELD FL
4/1/2003
TETRA TECHNUS INC

Health and Safety Plan
for
Site Assessment,
Naval Air Station Cecil Field
Jacksonville, Florida



Southern Division
Naval Facilities Engineering Command
Contract No. N62467-94-D-0888
Contract Task Order 0248

April 2003

**HEALTH AND SAFETY PLAN
for
SITE ASSESSMENT**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

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

**Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406**

**Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Pittsburgh, Pennsylvania 15222**

**CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0248**

**REVISION 1
APRIL 2003**

**PREPARED UNDER THE
SUPERVISION OF:**



**PAUL CALLIGAN, PG
TASK ORDER MANAGER
TETRA TECH NUS, INC.
TAMPA, FLORIDA**

APPROVED FOR SUBMITTAL BY:



**MATTHEW M. SOLTIS, CIH, CSP
CLEAN HEALTH & SAFETY MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been developed to provide practices and procedures for Tetra Tech NUS, Inc. (TtNUS) and subcontractor personnel engaged in investigatory activities at the Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. This HASP is part of an overall effort conducted under Comprehensive Long-Term Environmental Action Navy (CLEAN) III administered through the U.S. Navy Southern Division Naval Facilities Engineering Command (NAVFAC), as defined under Contract Number N62467-94-D-0888. In addition to the HASP, a copy of the TtNUS Environmental Health and Safety Guidance Manual must be present at the site during the performance of site activities. The Guidance Manual provides detailed information pertaining to the HASP, as well as TtNUS Standard Operating Procedures (SOP's). Both documents must be present at the site to comply with the requirements stipulated in the Occupational Safety and Health Administration (OSHA) standard 29 Code of Federal Regulations (CFR) 1910.120.

This HASP has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work and site. The HASP will be modified if new information becomes available. Changes to the HASP will be made by the Project Health & Safety Officer (PHSO) and approved by the TtNUS Health and Safety Manager (HSM) and the Task Order Manager (TOM). The TOM will notify affected personnel of changes.

The elements of this HASP are in compliance with the requirements established by OSHA 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response" (HAZWOPER), and sections of 29 CFR 1926, "Safety and Health Regulations for Construction". The information contained in this plan, as well as policies on conducting onsite operations, have been obtained from the TtNUS Health and Safety Program.

1.1 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibility for site safety and health for TtNUS and subcontractor employees engaged in onsite activities. Personnel assigned to these positions will exercise the primary responsibility for onsite health and safety. These persons will be the primary points of contact for any questions regarding the safety and health procedures and the selected control measures that are to be implemented for onsite activities.

- The TtNUS TOM is responsible for the overall direction of health and safety for this project.

- The PHSO is responsible for developing this HASP in accordance with applicable OSHA regulations. 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 (PPE) based on task and potential hazards.
 - iv. Determining emergency response procedures and emergency contacts.
 - v. Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
 - vi. Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
 - vii. Modify this HASP, as it becomes 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 (WP), and enforces safety procedures as applicable to the WP.

- The SSO supports site activities by advising the FOL on aspects of health and safety on-site. These duties may include:
 - i. Coordinates health and safety activities with the FOL.
 - ii. Selects, applies, inspects, and maintains PPE.
 - iii. Establishes work zones and control points in areas of operation.
 - iv. Implements air monitoring program for onsite activities.
 - v. Verifies training and medical clearance of onsite personnel status in relation to site activities.
 - vi. Implements Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities.
 - vii. Coordinates emergency services.
 - viii. Provides site-specific training for onsite personnel.
 - ix. Investigates accidents and injuries (see Attachment I - Illness/Injury Procedure and Report Form)
 - x. Provides input to the PHSO regarding the need to modify, this HASP, or applicable health and safety associated documents as per site-specific requirements.

- Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the TtNUS CLEAN HSM.

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

1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Air Station - Cecil Field
Jacksonville, Florida

Site Contact: Mr. Dave Kruzicki

SouthDiv Engineer in Charge: Mr. Brian Kizer
Phone Number: (843) 820-5896

Phone Number: (904) 778-5620 Ext. 114

TtNUS Personnel	Discipline/Tasks Assigned	Phone Number
<u>Paul Calligan, PG</u>	<u>Task Order Manager (TOM)</u>	<u>(813) 806-0202</u>
<u>Mervin Dale</u>	<u>Field Operations Leader (FOL)</u>	<u>(904) 281-0400</u>
<u>TBD</u>	<u>Site Safety Officer (SSO)</u>	<u></u>
<u>TBD</u>	<u>Field Geologist</u>	<u></u>
<u>Matthew M. Soltis, CIH, CSP</u>	<u>CLEAN Health and Safety Manager(HSM)</u>	<u>(412) 921-8912</u>
<u>James K. Laffey</u>	<u>Project Health and Safety Officer (PHSO)</u>	<u>(412) 921-8678</u>
<u></u>	<u></u>	<u></u>

Non-TtNUS Personnel	Affiliation/Discipline/Tasks Assigned	Phone Number
<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>

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

James K. Laffey

TBD - To be determined

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section is part of a planning effort to direct and guide field personnel in the event of an emergency. Site activities will be coordinated with the client contact, Dave Kruzicki. In the event of an emergency that cannot be mitigated using onsite resources, personnel will evacuate to a safe place of refuge and the appropriate emergency response agencies will be notified. It has been determined that the majority of potential emergency situations would be better supported by outside emergency responders. Based on this determination, TtNUS and subcontractor personnel will not provide emergency response support beyond the capabilities of onsite response. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. NAS Cecil Field contact Dave Kruzicki 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).

TtNUS will, through necessary services, 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

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are the types of emergencies which could be encountered during site activities.

To minimize and eliminate the potential for these emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating with City of Jacksonville Emergency Response personnel to ensure that TtNUS emergency action activities are compatible with existing emergency response procedures.

- Establishing and maintaining information at the project staging area (support zone) for easy access in the event of an emergency. This information will include the following:
 - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets (MSDS).
 - Onsite personnel medical records (Medical Data Sheets).
 - A log book identifying personnel onsite each day.
 - Hospital route maps with directions (these should also be placed in each site vehicle).
 - Emergency Notification - phone numbers.

The TtNUS FOL will be responsible for the following tasks:

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Periodically performing practice drills to ensure site workers are familiar with incidental response measures.
- Providing the necessary equipment to safely accomplish identified tasks.

2.3 EMERGENCY RECOGNITION AND PREVENTION

2.3.1 Recognition

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. Visual observation is primarily relevant for physical hazards that may be associated with the proposed scope of work. Visual observation will also play a role in detecting some chemical hazards. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with site contaminants. This information is provided in Table 6-1. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. The FOL and/or the SSO will be responsible for performing surveys of work areas prior to initiating site operations and periodically while operations are being conducted. Survey findings will be documented by the FOL and/or the SSO in the Site Health and Safety logbook, however, site personnel will be responsible for

reporting hazardous situations. Where potential hazards exist, TtNUS will initiate control measures to prevent adverse effects to human health and the environment.

The above actions will provide early recognition for potential emergency situations, and allow TtNUS to instigate necessary control measures. However, if the FOL and the SSO determine that control measures are not sufficient to eliminate the hazard then TtNUS will withdraw from the site and notify the appropriate response agencies listed in Table 2-1.

2.3.2 Prevention

TtNUS and subcontractor personnel will minimize the potential for emergencies by following the Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, by the FOL and/or the SSO will also assist in prevention of illness/injuries when hazards are recognized early and control measures initiated.

2.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE

An evacuation will be initiated whenever hazard controls beyond those listed in this HASP are required to protect the health, safety or welfare of site workers. Specific examples of conditions that may initiate an evacuation include the following: severe weather conditions; fire or explosion; excessive or sustained monitoring instrumentation readings.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the TtNUS FOL. Safe places of refuge will be identified prior to the commencement of site activities by the SSO and will be conveyed to personnel as part of the pre-activities training session. This information will be reviewed during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the TtNUS FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will perform a head count at this location to account for and to confirm the location of site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The SSO will document the names of personnel onsite (on a daily basis) in the site Health and Safety Logbook. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. As a result, assembly points will be

selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

2.5 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Decontamination will be postponed if the incident warrants immediate evacuation. However, the likelihood that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures is limited.

TtNUS personnel will perform rescue operations from emergency situations and may provide initial medical support for injury/illnesses requiring only "Basic First-Aid" level support, and only within the limits of training obtained by site personnel. Basic First-Aid is considered treatment that can be rendered by a trained first aid provider at the injury location and not requiring follow-up treatment or examination by a physician (for example; minor cuts, bruises, stings, scrapes, and burns). Medical attention above First-Aid level support will require assistance from the designated emergency response agencies. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-2.

2.6 EMERGENCY CONTACTS

Prior to initiating field activities, personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their telephone numbers. This table must be posted where it is readily available to site personnel. Facility maps should also be posted showing potential evacuation routes and designated meeting areas.

As soon as possible, Navy contact Dave Kruzicki 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 services personnel. This information is listed on Medical Data Sheets filed onsite. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

TABLE 2-1
EMERGENCY CONTACTS
NAS - CECIL FIELD, JACKSONVILLE, FLORIDA

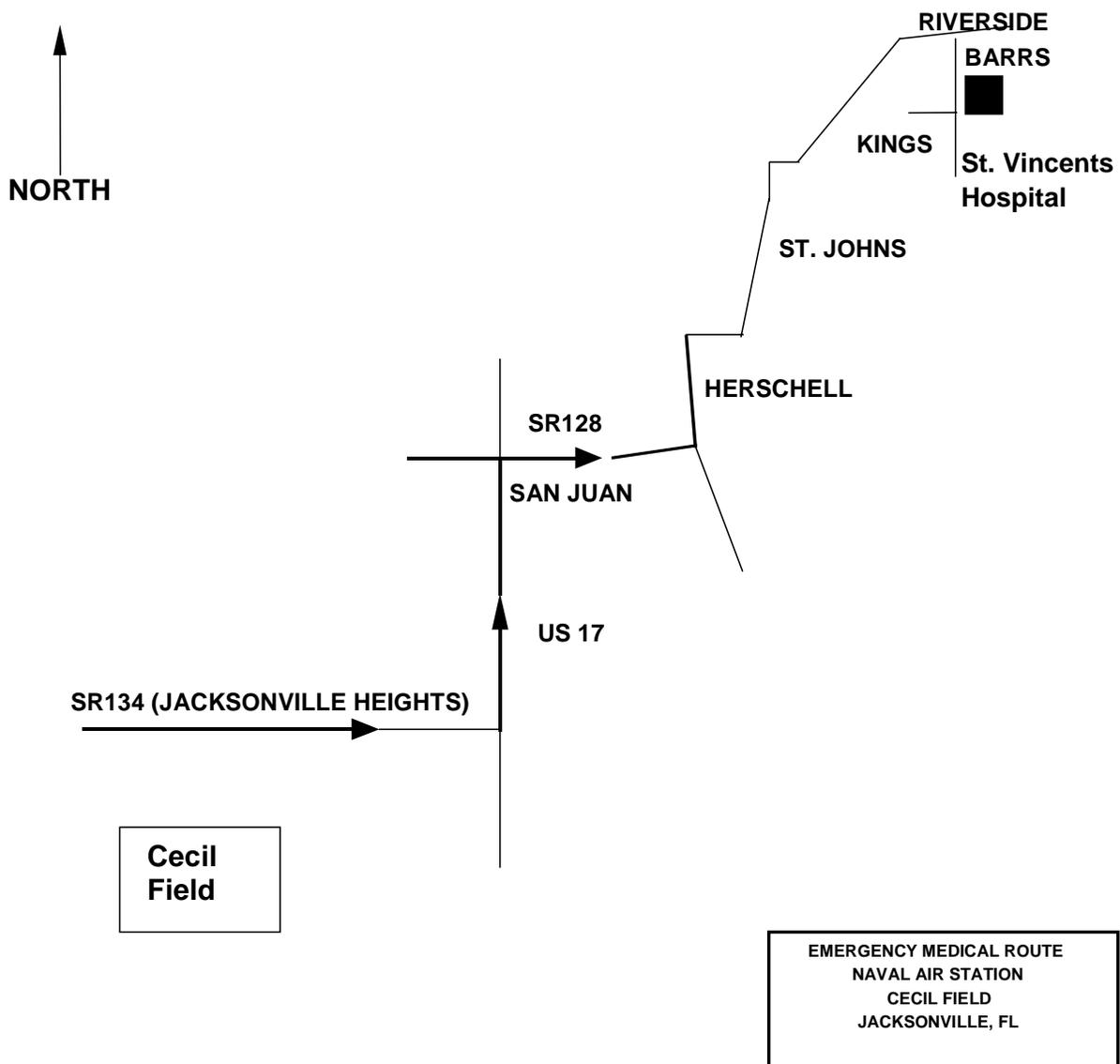
CONTACT	PHONE NUMBER
EMERGENCY (Police, Fire, Ambulance Service)	911
City of Jacksonville Sheriff's Office (non-emergency)	(904) 630-7600
Primary Hospital - St. Vincent Hospital	(904)387-7300
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
NAS - Cecil Field (Point-of-Contact) Dave Kruzicki	(904) 778-5620
Florida Poison Information Center - Jacksonville	(800) 222-1222
TtNUS, Pittsburgh Office	(412) 921-7090
TtNUS, Cecil Field Site Office	(904) 317-9199
Task Order Manager Paul Calligan P.G.	(813) 806-0202
Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer James K. Laffey	(412) 921-8678
Public Works (utilities, gas, water, sewage, telephone, fiber optics)	
Jacksonville Port Authority Portion Ken Melchior	(904) 573-1604
Bob Simpson	(904) 573-1601
City of Jacksonville Lt. Doug McCutchen	 (904) 778-5440

2.7 EMERGENCY ROUTE TO HOSPITAL

Directions to St. Vincent's Hospital, 1800 Barrs Street, Jacksonville, Florida (904) 387-7300 are as follows:

From Cecil Field: Take SR 134 (Jacksonville Heights) approximately 10 miles to US 17. Turn left and go north on US 17 approximately 2.5 miles to SR 128 (San Juan Ave.). Turn right on San Juan. Go east approximately 1/4 mile to Herschell. Turn left onto Herschell. Herschell will then turn in to St. Johns Ave. Follow St. Johns Ave. which will turn into Riverside. Take Riverside approximately 1 mile to King St. Turn right. Hospital will be on the corner of King Street and Barrs. See Figure 2-1 Map to St. Vincent's Hospital.

FIGURE 2-1
Map to St. Vincent's Hospital



2.8 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

TtNUS personnel will be working in close proximity to each other at NAS Cecil Field. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations.

If an emergency warranting evacuation occurs, the following procedures are to be initiated:

- Initiate the evacuation via hand signals, voice commands, line of site communication, or vehicle horns. The following signals shall be utilized when communication via vehicle horn is necessary:

HELP	three short blasts	• • •
EVACUATION	three long blasts	— — —

- Report to the designated refuge point.
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (FOL will serve as the Incident Coordinator) pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation, the FOL and SSO will enact emergency notification procedures to secure additional assistance in the following manner:

Dial 911 and call other pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

2.9 PERSONAL PROTECTIVE EQUIPMENT AND EMERGENCY EQUIPMENT

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office as well as in each site vehicle. At least one first aid kit supplied with equipment to protect against bloodborne pathogens will also be available on site. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance.

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 of the information obtained at the time of the incident.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite. 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.

FIGURE 2-2 EMERGENCY RESPONSE PROTOCOL

The purpose of this protocol is to provide guidance for the medical management of 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 for after hours and weekend notification, 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.
- Contact Human Resources Representative Marilyn Duffy at (412) 921-8475

As data is gathered and the scenario becomes more clearly defined, this information should be forwarded to WorkCare. WorkCare will compile the results of data and provide a summary report of the incident. A copy of this report will be placed in each victim'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 2-2 (continued)
WORKCARE
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 their 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
Tearing
Headache
Cough
Shortness of Breath

Chest Tightness / Pressure
Nausea / Vomiting
Dizziness
Weakness

Delayed Symptoms:

Weakness
Nausea / Vomiting
Shortness of Breath
Cough

Loss of Appetite
Abdominal Pain
Headache
Numbness / Tingling

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

Burning of eyes, nose, or throat
Tearing
Headache
Cough
Shortness of Breath
Chest Tightness / Pressure
Cyanosis

Nausea / Vomiting
Dizziness
Weakness
Loss of Appetite
Abdominal Pain
Numbness / Tingling

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-Medicating: _____ Physician Treated: _____

3.0 SITE BACKGROUND

3.1 SITE HISTORY

NAS Cecil Field is located in western Duval County, Florida, within the limits of the City of Jacksonville. In 1989, NAS Cecil Field was placed on the United States Environmental Protection Agency's (EPA's) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) as a result of pollution resulting from past waste disposal practices that predate CERCLA. In 1990, The United States Department of the Navy entered into a Federal Facilities Agreement (FFA) with EPA to define the overall extent of contamination. NAS Cecil Field has approximately 35 individual sites where hazardous wastes may have been handled, spilled, or buried. As a result, work at the various sites has been organized into eight Operable Units (OU), as well as more than 100 other areas undergoing evaluation in the Base Alignment and Closure and Underground Storage Tank (UST) programs.

3.1.1 Current Status

NAS - Cecil Field is closed. While the Jacksonville Port Authority is planning on maintaining the air field, currently, there is little re-development activity occurring on the base.

3.2 INVESTIGATION AREAS

The following areas are covered in this HASP:

3.2.1 Truck Stand (Facility 372)

This facility is located on Loop Road south of the North Fuel Farm area. It is used as a loading station for the flight line refueling tanker trucks. The Truck Stand site consists of a control building (Building 75), pumping station (truck stand), asphalt and concrete parking area, and detention pond.

A groundwater monitoring program is currently being conducted at the site. However, it has been recommended that three additional monitoring wells be installed to better delineate the dissolved hydrocarbon plume and verify that the Truck Stand Plume does not commingle with the North Fuel Farm plume.

3.2.2 North-South Apron Plume

The North-South Apron Plume (NSAP) is located on the north-south flightline, east of Building 815, on the eastern edge of the apron.

A groundwater monitoring program is currently being conducted at the site. The concentrations have remained static and the benzene concentration in the down gradient source well has exceeded the groundwater cleanup target level (GCTL) for three consecutive quarters. The benzene concentration in this well will likely exceed the milestone target level specified in the natural attenuation monitoring plan approval order by the next quarterly sampling event. Additional monitoring wells are being installed to better delineate the dissolved hydrocarbon plume and determine if a Remedial Action Plan (RAP) should be prepared.

3.2.3 Site 46 (Building 46)

Building 46 is currently a parking area located on D Avenue between Buildings 903 and 904. This property is the site of a former gas station that operated between 1946 and 1987, when it was demolished. Several USTs are known to have been associated with the building.

The site is currently undergoing active remediation using biosparging to address the groundwater contamination. Recent monitoring data suggests that the down gradient extent of the dissolved hydrocarbon plume is not adequately delineated. Additional wells are required to further delineate the down gradient extent.

3.2.4 South Fuel Farm

This site is located at the northern edge of the east-west runway. It was used as a fuel storage facility for gasoline, diesel fuel and JP-5. When fully operational, the facility contained three above ground storage tanks, four USTs and four earth-mounted tanks.

The site is currently undergoing active remediation using a combination of bioventing to address soil contamination and biosparging to address groundwater contamination. The system has not effectively reduced the concentrations of chemicals of concern (CoCs) in the soil or the groundwater. The site is being re-evaluated to determine if design modifications are needed to help improve the performance of the system.

3.2.5 Building 293 Aboveground Storage Tank

This site contained one 200,000 gallon Aboveground Storage Tank (AST) for storage of jet fuel to supply the high-speed refuelers located on the fightline at NAS Cecil Field. The earth mounded (cut and cover) AST was installed in 1956 and was in service until September 1999. The site also contained a 500 gallon return tank and a 3,000 gallon skim tank that were used as part of the Day Tank 1 system for supplying the high speed refuelers. Numerous spills that occurred during the operation of the Day Tank 1 system resulted in soil and groundwater contamination at the site.

3.2.6 Day Tank 1 (Facility 293)

Day Tank 1, Facility 293 is located east of Jet Road and north of Buildings 824 and 824A. It consists of one 200,000 gallon, interior lined, asphalt coated, steel tank containing JP-5 aviation fuel. The earth mound (cut and cover) tank was installed in 1956. The associated piping is corrosion-resistant coated steel and is cathodically protected. The tank is gauged daily. The site is covered by asphalt and grass. The tank and fuel containment areas are enclosed by a barbed wire and chain link fence to deter unwarranted entry.

The fuel containment area located directly north of Day Tank 1 was installed in 1990. The fuel containment area collects overflow in the event of a spill. An 8 inch polyvinyl chloride (PVC) pipe extends from Day Tank 1 to the containment area. The area is equipped with overflow catch basins and a 10 inch PVC pipe that extends from the containment area to a 15 inch PVC storm drain line located directly east. A former containment pond located in the northeast corner inside the fenced area of the site was back filled and abandoned in place in 1990. the fuel pumps for Day Tank 1 are located directly on top of the tank in the center, Fuel is pumped from Day Tank 1 using an underground fuel distribution line that extends from the Day Tank out to the flightline area.

Numerous spills have occurred at the site. In 1981, approximately 497,000 gallons of JP-5 was released when the tank overflowed with more than half being recovered.

3.2.7 BP Wells Area

The BP Wells Area is located on the north-south flightline, southeast of Building 880, on the west edge of the apron.

3.2.8 Building 842

A 550 gallon UST was located on the west side of Building 842 at the intersection of the airfield runways. The UST was installed in 1985 to store diesel fuel for a generator that supplied power to Building 842. Building 842 was used to house radio transmitters and receivers that guided aircraft approaching and departing the airfield.

4.0 SCOPE OF WORK

The following is a list of activities that are covered in this HASP for the Contract Task Order (CTO) 0248 project:

- Mobilization/demobilization
- Soil boring activities [using hollow-stem auger, and direct push technology (DPT)]
- Monitoring well installation and development
- Multi-media sampling, including:
 - Subsurface soil
 - Groundwater
 - Investigative-Derived Waste (IDW)
- Decontamination of sampling and heavy equipment
- IDW management
- Geographic surveying

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 Site Assessment Plan (SAP). Any Field Change Requests that may require work other than what is listed here will be submitted to the PHSO for additional guidance and HASP modification.

5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION

Table 5-1 of this section serves as the primary portion of the site-specific HASP which identifies the tasks that are to be performed as part of the scope of work. This table will be modified and incorporated into this document as new or additional tasks are performed at the site. The anticipated hazards, recommended control measures, air monitoring recommendations, required PPE, and decontamination measures for each site task are discussed in detail. This table and the associated control measures shall be changed, if the scope of work, contaminants of concern, or other conditions change.

Through using the table, site personnel can determine which hazards are associated with each task and at each site, and what associated control measures are necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which PPE and decontamination procedures to use based on proper air monitoring techniques and site-specific conditions.

The TtNUS Health and Safety Guidance Manual must accompany this table and HASP. The manual is designed to further explain supporting programs and elements for other site-specific aspects as required by 29 CFR 1910.120. The Guidance Manual should be referenced for additional information regarding air monitoring instrumentation, decontamination activities, emergency response, hazard assessments, hazard communication and hearing conservation programs, medical surveillance, PPE, respiratory protection, site control measures, standard work practices, and training requirements. Many of TtNUS SOPs are also provided in this Guidance Manual.

Safe Work Permits issued for Exclusion Zone activities (See Section 9.4 and Attachment IV) will use elements defined in Table 5-1 as it's primary reference. The FOL and/or the SSO completing the Safe Work Permit will add additional site-specific information. In situations where the Safe Work Permit is more conservative than the direction provided in Table 5-1 due to the incorporation of site-specific elements, the Safe Work Permit will be followed.

5.1 GENERAL SAFE WORK PRACTICES

In addition to the task-specific work practices identified on Table 5-1, the follow these safe work practices when conducting work involving known and unknown site hazards. These safe work practices establish a pattern of general precautions and measures for reducing risks associated with hazardous site operations.

- Refrain from eating, drinking, chewing gum or tobacco, taking medication, or smoking 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.
- Avoid contact with potentially contaminated substances.
- Rehearse unfamiliar operations prior to implementation.
- Use the “buddy system”. Establish hand signals or other means of emergency communication in case two-way radio failure.
- Maintain visual contact with each other and with other on-site team members by remaining in close proximity in order to assist each other in case of emergency.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, and unsafe conditions, practices, and equipment to the SSO.
- Observe coworkers for signs of heat stress.

5.2 DRILLING SAFE WORK PRACTICES

The following safe work practices are to be followed when working in or around the drill rig operations.

5.2.1 Before Drilling

- Identify underground utilities and buried structures before drilling. Use the Utility Locating and Excavation Clearance SOP provided in Attachment II.
- Drill rigs will be inspected by a competent person (the SSO or designee) prior to the acceptance of the equipment at the site and prior to the use of the equipment. Repairs or deficiencies identified will be corrected prior to use. See the Equipment Inspection Checklist provided in Attachment III. Inspection frequencies will be 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 operating equipment.
- The driller’s helper will establish an equipment staging and laydown 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 drill flights will be provided to avoid the collapse stacked equipment.
- Potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.

5.2.2 During Drilling

- 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 of the height of the mast plus 5 feet to remove 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 auger flights and other heavy tooling.
- Only personnel absolutely essential to the work activity will be allowed in the Exclusion Zone. Site visitors will be escorted.

5.2.3 After Drilling

- Equipment used within the Exclusion Zone will undergo a complete decontamination and evaluation by the SSO to determine cleanliness before moving to the next location, exiting the site, or before down time for maintenance.
- Motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations, equipment will be shut down and bonded to the fuel provider.
- When not in use, drill rigs will be shut down and emergency brakes set. If necessary, wheels will be chocked to control movement.
- 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
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are optional as conditions and or the FOL or SSO require.)</i>	Decontamination Procedures
Mobilization/ Demobilization	<p><i>Physical Hazards</i></p> <p>1) Lifting (strain/muscle pulls) 2) Pinches and compressions; Cuts and lacerations 3) Slips, trips, and falls 4) Ambient temperature extremes (Heat/cold stress)</p> <p><i>Natural hazards</i></p> <p>5) Insect/animal bites and stings, poisonous plants, etc. 6) Inclement weather</p>	<p>1) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. See Section 6.2.2 of this HASP for further instructions. 2) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. If hand tools (brush hooks, machetes, etc.) are necessary to clear sample access pathways, the following precautions are recommended: - Handles are to be of good construction (no cracks, splinters, loose heads/cutting apparatus. - Cutting tools are to be maintained. Blades shall be sharp without knicks and gouges in the blade. - Hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals when not in use. - Personnel will maintain a 10-foot perimeter around persons clearing brush. 3) Preview work locations for unstable/uneven terrain. 4) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding Heat/cold stress is provided in Section 4 of the Health and Safety Guidance Manual. 5) Avoid nesting areas, use commercially available insect repellents. Report potential hazards to the SSO. 6) Suspend or terminate operations until directed otherwise by SSO.</p>	Not required	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes or boots - Safety glasses - Hardhat (when overhead hazards exists, or identified as an operation requirement) - Reflective vest for high traffic areas - Hearing protection for high noise areas, or as directed on an operation by operation scenario. 	Not required
<p>Soil borings using Hollow Stem Auger (HSA) or Direct Push Technology (DPT).</p> <p>This task also includes monitoring well installation, development, and purging.</p>	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminants include Volatile Organic Compounds (VOCs), specifically Benzene, Ethylbenzene, Xylenes, Naphthalene, Toluene and 1,3,5-Trimethylbenzene. Semi-Volatile Organic Compounds (SVOCs), including Total Petroleum Hydrocarbons (TPHs) such as Diesel Fuel, JP-5, and general Polynuclear Aromatic Hydrocarbons (PAH's)</p> <p>See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas or onto persons</p> <p><i>Physical hazards</i></p> <p>3) Heavy equipment hazards (pinch/compression points, rotating equipment, hydraulic lines, etc.) 4) Noise in excess of 85 dBA 5) Energized systems (contact with underground or overhead utilities) 6) Lifting (strain/muscle pulls) 7) Slip, trips, and falls 8) Vehicular and foot traffic 9) Ambient temperature extremes (heat or cold stress) 10) Eye and foot hazards</p> <p><i>Natural hazards</i></p> <p>11) Insect/animal bites and stings, poisonous plants, etc. 12) Inclement weather</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (air, water, soils, etc.). Generation of dusts and contact with dust/dirt should be minimized whenever possible. If airborne dusts are observed, area-wetting methods will be used. If area-wetting methods are not feasible, termination of activities will be used to minimize exposure to excessive airborne dusts. 2) Decontaminate equipment and supplies between boreholes and prior to leaving the site. 3) The following equipment and standard operating procedures guidelines will be used: - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600,.601,.602), and manufacturers design and documented as such using Equipment Inspection Sheet (see Attachment III of this HASP). - Operated by knowledgeable operators and ground crew. - Only manufacturer approved equipment may be used in conjunction with equipment repair procedures. - Personnel not directly supporting the soil boring operation will remain at least 25 feet from the point of operation. - Loose clothing/protective equipment will be secured to avoid possible entanglement. - Hand signals (if necessary) will be established prior to the commencement of soil boring activities. - A remote sampling device must be used to sample drill cuttings near rotating tools. - Work areas will be kept clear of clutter. - Personnel will be instructed in the location and operations of the emergency shut off device(s). This device will be tested initially (and then periodically) to ensure its operational status. - Areas will be inspected prior to the movement of drill rigs and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SSO. 4) Hearing protection will be used during subsurface activities. Refer to Section 6 of the Guidance Manual for further information. 5) Utility clearances shall be obtained, in writing, prior to subsurface activities (contact Dave Kruzicki). Prior to any subsurface investigations, the locations of underground utilities will be identified and marked. Refer to SOP for Utility Locating and Excavation Clearance Attachment II. 6) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 7) Preview work locations for unstable/uneven terrain. 8) Traffic and equipment considerations are to include the following: - Establish safe zones of approach. - Activities are to be conducted consistent with area traffic requirements. 9) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold/heat stress concerns is provided in Section 4 of the TINUS Health and Safety Guidance Manual. 10) Avoid eye and foot hazards. Wear PPE. 11) Avoid nesting areas, use commercially available repellents. Report potential hazards to the SSO. 12) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>A direct reading Photoionization Detector w/10.6 eV lamp or Flameionization Detector (FID) will be used to screen samples and to detect the presence of VOCs, SVOCs, and any other detectable contaminants. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location which may impact the field crew will require the following actions:</p> <ul style="list-style-type: none"> - Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area. - Work may only resume if airborne readings in worker breathing zone return to below 10 ppm. If elevated readings in the worker's breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection. <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be controlled to minimize the potential for inhalation of contaminated dusts and particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.</p> <p>Where the utility clearance cannot be determined, subsurface activities shall proceed with extreme caution using a magnetometer for periodic down-hole surveys every 2 feet to a depth of at least 10 feet.</p>	<p>Subsurface operations are to be initiated in Level D protection. Level D protection constitutes the following minimum protection</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe) - Safety glasses - Hardhat - Nitrile gloves or leather gloves with surgical style inner gloves - Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists for soiling work attire. - Hearing protection during drilling or for other high noise areas as directed by the SSO. - Reflective vest for traffic areas <p>Note: The Safe Work Permit(s) for this task (see Attachment IV) will be issued and reviewed 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 protective equipment (e.g., gloves). This function will take place at an area adjacent to the drilling operations bordering the support zone.</p> <p>This decontamination procedure for Level D protection will consist of</p> <ul style="list-style-type: none"> - Equipment drop - Outer coveralls or boot covers removal, as applicable - Soap/water wash and rinse of reusable outer gloves, as applicable - Removal, segregation, and disposal of non-reusable PPE in bags/containers provided - Wash hands and face, leave contamination reduction zone.

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Tasks/Operation /Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SSO require.)</i>	Decontamination Procedures
<p>Multi-media sampling, including: Ground Water Sub-surface Soils IDW</p>	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminants include Volatile Organic Compounds (VOCs), specifically Benzene, Ethylbenzene, Xylenes, Naphthalene, Toluene and 1,3,5-Trimethylbenzene. Semi-Volatile Organic Compounds (SVOCs), including Total Petroleum Hydrocarbons (TPHs) such as Diesel Fuel, JP-5, and general Polynuclear Aromatic Hydrocarbons (PAH's)</p> <p>See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas</p> <p><i>Physical Hazards</i></p> <p>3) Lifting (strain/muscle pulls) 4) Pinches and compressions 5) Slips, trips, and falls 6) Ambient temperature extremes (cold stress)</p> <p><i>Natural Hazards</i></p> <p>7) Insect/animal bites and stings, poisonous plants, etc. 8) Inclement weather</p>	<p>1) Use contamination avoidance, good work hygiene practices, PPE, and decontamination procedures to control exposures to media (sediments, water, soils, etc.). 2) Decontaminate equipment and supplies between sample locations and prior to leaving the site. 3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes. 4) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. 5) Preview work locations for unstable/uneven terrain; Follow establish trails (cleared and marked) access ways to identified 6) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold stress is provided in Section 4 of the Health and Safety Guidance Manual. 7) Avoid nesting areas, use repellents where approved. Report potential hazards to the SSO. Follow guidance presented in Section 4 of the Health and Safety Guidance Manual. 8) Suspend or terminate operations until directed otherwise by the SSO.</p>	<p>A direct reading Photoionization Detector w/10.6 eV lamp or Flameionization Detector (FID) will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"> - Monitor the breathing zone of at-risk and downwind employees. Sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone of the at-risk employees require site activities to be suspended and site personnel to report to an unaffected area. - Work may only resume if airborne readings in worker breathing zone return to below 10 ppm levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection. <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to the greatest extent possible to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.</p>	<p>Level D protection will be utilized for the initiation of sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Safety glasses - Surgical style gloves (double-layered if necessary) - Reflective vest for high traffic areas - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists. - Hearing protection for high noise areas, or as directed on an operation by operation scenario. - Snake chaps shall be worn in areas of known or suspected snake infestation. <p>Pants should be taped to boots to control access by ticks and other crawling insects.</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 Personal decontamination will vary based on the type of sampling conducted. These are as follows: Sampling surface water, groundwater, sediments, and seeps the following provisions will apply - Upon completion of the sampling dedicated tubing, etc. will be bagged for transport back to the central decontamination area. - PPE (gloves) will be washed, removed and also bagged for disposal. - Handi-Wipes or similar product will be used to clean hands prior to moving to the next location, when access to soap and water is not feasible due to the location. - Hands and face washing will be conducted upon arrival back at the central decontamination unit prior to scheduled breaks and when leaving the site.</p> <p>Clothing examinations should be conducted to remove ticks and other crawling insects upon leaving the sample areas</p> <p>Equipment Decontamination Equipment used in remote sampling locations will be brought back to the central decontamination area for decontamination and re-use or decontamination and gross removal of contamination prior to disposal.</p>
<p>Decontamination of Sampling and Heavy Equipment</p>	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminants include Volatile Organic Compounds (VOCs), specifically Benzene, Ethylbenzene, Xylenes, Naphthalene, Toluene and 1,3,5-Trimethylbenzene. Semi-Volatile Organic Compounds (SVOCs), including Total Petroleum Hydrocarbons (TPHs) such as Diesel Fuel, JP-5, and general Polynuclear Aromatic Hydrocarbons (PAH's)</p> <p>See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Decontamination fluids – Liquinox (detergent), acetone or isopropanol</p> <p><i>Physical Hazards</i></p> <p>3) Lifting (muscle strains and pulls) 4) Noise in excess of 85 dBA 5) Flying projectiles 6) Vehicular and foot traffic 7) Ambient temperature extremes (heat stress) 8) Slips, trips, and falls 9) Eye and foot hazards</p> <p><i>Natural Hazards</i></p> <p>10) Inclement weather</p>	<p>1) and 2) Use protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's MSDS for any decontamination solvents used onsite. Use appropriate PPE as identified on MSDS. Chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5). 3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes. 4) Wear hearing protection when operating pressure washer. Refer to Section 6 of the Guidance Manual for further information. 5) Use eye and face protective equipment when operating pressure washer. Other personnel must be restricted from the area. 6) Traffic and equipment considerations are to include the following: Activities are to be conducted consistent with the area requirements. 7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold/heat stress concerns is provided in Section 4 of the TtNUS Health and Safety Guidance Manual. 8) Preview work locations for unstable/uneven terrain. 9) Avoid recognized eye and foot hazards. Wear PPE. 10) Suspend or terminate operations until directed otherwise by SSO</p>	<p>Use visual observation, and real-time monitoring instrumentation to ensure equipment has been properly cleaned of contamination and dried. After decon is completed, screen equipment with a PID/FID. If any elevated readings (i.e., above background) are observed, perform decon again and re-screen. Repeat until no elevated PID/FID readings are noted.</p>	<p>For Heavy Equipment - This applies to high pressure soap/water, steam cleaning 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 - Nitrile outer gloves - PVC Rain suits or PE or PVC coated Tyvek - Safety glasses underneath a splash shield - Hearing protection (plugs or muffs) <p>For sampling equipment - the following PPE is required:</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"> - Standard field attire (Long sleeve shirt; long pants) - Steel toe safety shoes or boots - Nitrile outer gloves - Safety glasses <p>In the event of over spray of chemical decontamination fluids use PVC Rain suits 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 and reviewed 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 Consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of: - Equipment drop - Soap/water wash and rinse of outer boots and gloves, as applicable - Soap/water wash and rinse of the outer splash suit, as applicable - Disposable PPE will be removed and bagged.</p> <p>Equipment Decontamination – Conduct at a centralized decontamination pad utilizing steam or pressure washers. Heavy equipment will have the wheels and tires cleaned along with any loose debris removed, prior to transporting to the central decontamination area. Site vehicles will be restricted to the exclusion zones, or have their wheels/tires sprayed off as not to track mud onto the roadways servicing this installation. Roadways shall be cleared of any debris resulting from the onsite activity.</p> <p>Sampling Equipment Decontamination - Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.</p> <p>MSDS for decon solutions (Alconox, isopropanol, etc.) will be obtained and used to determine proper handling / disposal methods and protective measures (PPE, first-aid, etc.).</p> <p>Equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The FOL or the SSO will be responsible for evaluating equipment arriving and leaving the site. No equipment will be authorized access or exit without this evaluation.</p>

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SSO require)</i>	Decontamination Procedures
IDW management and moving IDW drums to storage areas	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminants include Volatile Organic Compounds (VOCs), specifically Benzene, Ethylbenzene, Xylenes, Naphthalene, Toluene and 1,3,5-Trimethylbenzene. Semi-Volatile Organic Compounds (SVOCs), including Total Petroleum Hydrocarbons (TPHs) such as Diesel Fuel, JP-5, and general Polynuclear Aromatic Hydrocarbons (PAH's)</p> <p>See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas</p> <p><i>Physical Hazards</i></p> <p>3) Noise in excess of 85 dBA 4) Lifting (muscle strains/pulls) 5) Pinches and compressions 6) Slip, trips, and falls 7) Vehicular and foot traffic 8) Ambient temperature extremes (heat/cold stress) 9) Eye and foot hazards</p> <p><i>Natural Hazards</i></p> <p>10) Insect/animal bites and stings, poisonous plants, etc. 11) Inclement weather</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identify PPE to control exposures to potentially contaminated media (e.g. air, water, soils). 2) Decontaminate equipment and supplies, if they become contaminated, between locations and prior to leaving the site. 3) When working near heavy equipment, use hearing protection. Refer to Section 6 of the Guidance Manual for further information. 4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 5) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. 6) Preview work locations for unstable/uneven terrain. 7) Traffic and equipment considerations are to include the following: - Secure loose articles to avoid possible entanglement. - Activities are to be conducted consistent with the Base requirements. 8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold/heat stress concerns is provided in Section 4 of the TtNUS Health and Safety Guidance Manual. 9) Avoid recognized eye and foot hazards. Wear appropriate PPE. 10) Avoid nesting areas, use commercially available insect repellents. Report potential hazards to the SSO. 11) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>A direct reading Photoionization Detector w/10.6 eV lamp or Flameionization Detector (FID) will be used to screen samples and to detect the presence of any potential volatile organics. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"> - Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area. - Work may only resume if airborne readings in worker breathing zone return to below 10 ppm levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection. 	<p>Level D protection will be utilized for the initiation of sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (long sleeve shirt; long pants) - Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists. - Cotton/leather work gloves with surgical style inner gloves - Steel toe safety shoes - Safety glasses - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Reflective vest for high traffic areas - Hearing protection for high noise areas, or as directed on an operation by operation scenario. <p>Note: The Safe Work Permit(s) for this task (see Attachment IV) will be issued and reviewed 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</p> <p>Consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> - Equipment drop - Soap/water wash and rinse of outer boots and gloves, as applicable - Soap/water wash and rinse of the outer splash suit, as applicable - Disposable PPE will be removed and bagged.
Surveying– Geographical	<p>Chemical hazards:</p> <p>Significant exposure to site contaminants is anticipated to be unlikely given the nature of this task.</p> <p>Physical Hazards:</p> <p>1) Slips, trips, and falls 2) Struck by 3) Ambient temperature extremes (heat/cold stress)</p> <p>Natural Hazards:</p> <p>4) Inclement weather 5) Insect/animal bites or stings, poisonous plants, etc.</p>	<p>1) Preview work locations and site lines for uneven and unstable terrain. Clear necessary vegetation, establish temporary means for traversing hazardous terrain (i.e., rope ladders, etc.) 2) If hand tools (brush hooks, machetes, etc.) are necessary to clear and carry lines and bench marks to the area of operation the following precautions are recommended: - Ensure handles are of good construction (no cracks, splinters, loose heads/cutting apparatus. - Ensure cutting tools are maintained. Blades shall be sharp without knicks and gouges in the blade. - Hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals, when not in use. - Personnel will maintain a 10-foot perimeter around persons clearing brush. 3) Wear appropriate clothing for weather conditions. - Provide acceptable shelter and replacement liquids for field crews as relief from excessive ambient temperatures. - Under conditions of elevated temperatures allow for periods of acclimatization. 4) Suspend or terminate operations until directed otherwise by SSO 5) Avoid nesting areas, use repellents. Report potential hazards to the SSO. Follow guidance presented in Section 4 of the Health and Safety Guidance Manual.</p>	<p>Air monitoring is not required given the likelihood that airborne contaminants will be present. The potential for exposure to site contaminants during this activity is considered minimal.</p>	<p>Surveying activities shall be performed in Level D protection</p> <p>Level D Protection consists of the following:</p> <ul style="list-style-type: none"> - Standard field dress including sleeved shirt and long pants - Shoes rugged lug sole for traction - Work gloves shall be worn when clearing brush. - <i>Safety glasses, hard hats (if working near machinery, overhead hazards, or clearing brush)</i> - <i>Snake chaps for heavily wooded area where encounters are likely.</i> - <i>Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks.</i> - <i>Reflective or blaze orange vests should be worn when working along traffic thoroughfares.</i> <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</p> <p>A structured decontamination is not required as the likelihood of encountering contaminated media is considered remote. However, survey parties should inspect themselves and one another for the presence of ticks when exiting wooded areas, grassy fields, etc. This action will be employed to stop the transfer of these insects into vehicles, homes, and offices. In addition, early detection shall provide for early removal.</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. Table 6-1, which is included as part of this HASP, provides various information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data. Section 6.1 provides general information regarding contaminants that may be present at the sites.

6.1 CHEMICAL HAZARDS

The potential health hazards associated with work to be conducted at NAS Cecil 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 classes of these contaminants, including the specific compound(s) of interest:

- Volatile Organic Compounds (VOCs), specifically Benzene, Ethylbenzene, Xylenes, Naphthalene, Toluene and 1,3,5 Trimethylbenzene.
- Semi-Volatile Organic Compounds (SVOCs), including Total Petroleum Hydrocarbons (TPHs) such as Diesel Fuel, JP-5, and general Polynuclear Aromatic Hydrocarbons (PAH's)

Table 6-1 provides information on the compounds and individual substances likely to be present at the sites to be investigated. Included is information on the toxicological, chemical, and physical properties of these substances. It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (drilling, soil sampling, etc.). Exposure to these compounds is most likely to occur through ingestion and inhalation of contaminated soil or water, or hand-to-mouth contact during soil disturbance activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be extremely important. Inhalation exposure will be avoided by using appropriate PPE and engineering controls where necessary.

**TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
NAS CECIL FIELD, JACKSONVILLE, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Diesel Fuel No.2-D	Mixture	Components of this substance will be detected readily; however, no documentation exists as to the relative response ratio of either PID or FID.	Air sampling use charcoal tube as a collection media; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with NIOSH Method #1550.	OSHA/NIOSH/ACGIH: 5 mg/m ³ as mineral oil mist. In addition NIOSH and ACGIH establish 10 mg/m ³ as a STEL.	Kerosene odor Recommended air-purifying cartridges: Organic vapor Recommended gloves: Nitrile	Boiling Pt: <170-400°F; 77-204°C Melting Pt: Not available Solubility: Negligible Flash Pt: 125°F; 52°C LEL/LFL: 0.6% UEL/UFL: 7.5% Vapor Density: >5 Vapor Pressure: <1 mmHg @ 70°F; 21°C Specific Gravity: 0.86 Incompatibilities: strong oxidizers, halogens, and hypochlorites Appearance and odor: Colorless to amber with a kerosene odor	Prolonged or repeated exposures to this product may cause skin and eye irritation. Because of the defatting capabilities, this exposure may lead to a dermatitis condition. High vapor concentrations are irritating to the eyes and respiratory tract. Exposure to high airborne concentrations may result in narcotic effects, including dizziness, headaches, and anesthetic to unconsciousness. High concentrations in a confined space may adequately displace oxygen thereby resulting in suffocation.
Jet Fuels (ranging from JP-1 to JP-5)	N/A	Components of these substances will be detected readily however no documentation exists as to the relative response ratio of either the PID or FID.	Air sample using charcoal tube and carbon disulfide desorption; Sampling and analytical protocol shall proceed in accordance with NIOSH Method #1501.	USAF 8 hr - 200 ppm	Kerosene odor threshold ~ 800 ppm Rating - Poor to Adequate Recommended Air Purifying cartridges: Organic vapor Recommended gloves: Nitrile	Boiling Pt: <300-550°F; 149-288°C Melting Pt: Not available Solubility: Negligible Flash Pt: -10 to 145°F; -23 to 63°C LEL/LFL: <1% UEL/UFL: 8% (JP-4) Vapor Density: >1 Vapor Pressure: 75 mmHg; 70°F; 21°C Specific Gravity: 0.78 Incompatibilities: strong oxidizers Appearance and odor: Colorless to amber with a kerosene odor	Based on the constituents of jet fuels, it can be surmised that they are irritating to the eyes, skin, and respiratory tract. 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 may result in headache, nausea, confusion, narcotic effect, and drowsiness. Chronic inhalation of jet fuel vapors may produce symptoms such as fatigue, anxiety, mood changes, liver and kidney damage, and memory difficulties in exposed workers.
Gasoline	8006-61-9	Relative response ratios for the components of gasoline range from 100 - 200% for PID and FID detection.	See components for measurement considerations.	ACGIH & OSHA: 300 ppm 500 ppm STEL NIOSH: Reduce to lowest feasible concentration.	Respiratory Protection: Odor threshold 0.7 ppm, adequate air purifying respirator with organic vapor cartridges up to 100 ppm. Recommended Gloves: Nitrile >6.00 hrs; PV alcohol >6.00 hrs; Viton/neoprene >8.00 hrs	Boiling Pt: 102°F; 39°C Melting Pt: Not available Solubility: Negligible Flash Pt: -50°F; -45°C LEL/LFL: 1.4% UEL/UFL: 7.6% Vapor Density: ~5 Vapor Pressure: 38-300 mmHg (varies seasonally) Specific Gravity: 0.74 @ 20/20°C Incompatibilities: Strong oxidizers, peroxides, strong acids, and perchlorates Appearance and Odor: Colorless liquid with gasoline odor.	Overexposure to this substance may result in irritation to the eyes, skin, and mucous membranes. Systemically, headache, fatigue, blurred vision, dizziness, slurred speech, confusion, possible convulsion, and chemical pneumonia (aspiration). Prolonged or chronic exposures may result in possible liver or kidney damage. Components of this substance have been determined to be confirmed human carcinogens.

**TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
NAS CECIL FIELD, JACKSONVILLE, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Benzene	71-43-2	I.P 9.24 eV, 100% response with PID and 10.2 eV lamp 150% response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07 or NIOSH Method #1500	OSHA 1 ppm ACGIH 0.5 ppm TWA 2.5 ppm STEL NIOSH 0.1 ppm TWA 1 ppm STEL 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. Central Nervous 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.
Toluene	108-88-3	I.P 8.82 eV, High response with PID and 10.2 eV lamp 110% response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07, or NIOSH Method 1500	OSHA 200 ppm 300 ppm Ceiling ACGIH 50 ppm (skin) NIOSH 100 ppm REL 150 ppm STEL IDLH 500	Adequate - Odor threshold 1.6 ppm is considered good. Can use air-purifying respirator with organic vapor cartridge up to 500 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 DATA
NAS CECIL FIELD, JACKSONVILLE, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
1,3,5 Trimethylbenzene (or Mesitylene)	108-67-8	I.P. 8.48 eV	None available	NIOSH and ACGIH 25 ppm	Aromatic odor Recommended Air Purifying cartridges: Organic vapor Recommended gloves: NitrilSolve (100 minutes) or Viton 890 (>480 minutes)	Boiling Pt: 329°F; 165°C Melting Pt: -45°F, -49°C Solubility: negligible 0.002% Flash Pt: 122°F; 50°C LEL/LFL: ? UEL/UFL: ? Autoignition temperature: 1038°F, 559°C Vapor Density: 1.006 @ 20C Vapor Pressure: 2 mmHg @ 70°F; 21°C Specific Gravity: 0.86 Incompatibilities: oxidizers and nitric acid Appearance and odor: Clear, colorless liquid with a distinctive aromatic odor.	Inhalation of vapors irritates the respiratory tract. May cause sore throat, coughing, headache and nausea. Affects central nervous system. Not expected to be very acutely toxic. Care should be taken due to potential irritant effects. May cause risk of chemical pneumonia from droplets entering lungs. Affects central nervous system. Causes irritation to skin. Symptoms include redness, itching, and pain. Liquid and vapor causes irritation, redness, and pain. Repeated inhalation may cause chronic bronchitis of the asthmatic type. High concentrations of vapors causes blood effects.
Ethylbenzene	100-41-4	I.P 8.76, High response with PID and 10.2 eV lamp 100% response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07 NIOSH Method #1501 Aromatic Hydrocarbon	OSHA 100 ppm TWA 200 ppm Ceiling ACGIH & NIOSH 100 ppm REL 125 ppm STEL 800 ppm IDLH	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 700 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.
Xylene All isomers o-, m-, p-	1330-20-7	I.P. 8.56 eV, High response with PID and 10.2 eV lamp 110% response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07, or NIOSH Method 1500	ACGIH, & NIOSH 100 ppm TWA 150 ppm STEL OSHA 100 ppm PEL 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 900 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: -130/-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 DATA
NAS CECIL FIELD, JACKSONVILLE, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
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 STEL: 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.

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.

- Heavy equipment hazards
- Cuts and Lacerations
- Slips, trips, and falls
- Energized systems (contact with underground or overhead utilities)
- Lifting (strain/muscle pulls)
- Noise in excess of 85 decibels (dBA)
- Flying projectiles
- Pinches and compressions
- Vehicular and foot traffic

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 Heavy Equipment Hazards

Often the hazards associated with drilling operations such as pinch/compression points, rotating equipment, etc. are the most dangerous to be encountered during site activities. The SSO will discuss safe drilling procedures as part of site-specific training and/or during daily safety meetings using Safe Work Permits (Figure 9-1) presented in this HASP. The following rules will apply to drilling operations:

- Site personnel will be aware of the location and operation of this equipment.
- Each drill rig must be equipped with emergency stop devices which will be tested daily to ensure that they are operational.
- Long handled shovels or equivalent shall be used to clear cuttings from the borehole and rotating equipment.

Additional requirements during drilling activities are discussed in Table 5-1. The SSO will thoroughly discuss safe drilling procedures during the pre-activities training session. Site personnel will sign the form in Figure 8-2 documenting that they received the training and understand the procedures.

6.2.2 **Cuts**

A number of accidents have been reported in last few years when field personnel accidentally cut themselves while extracting soil samples from acetate sample tubes. The tubes are normally inserted in the Macro Core[®] Samplers or the dual tube samplers. Removing the soil sample requires cutting the tube and spooning the sample into a sample jar.

However, this activity has resulted in numerous cuts to the hands and legs. These injuries have occurred when field personnel open plastic liners improperly. To minimize this hazard, it is recommended that a liner cutter kit of some type be used. The Geoprobe[®] Corporation markets a liner cutter kit that can be used. This liner cutter makes two simultaneous longitudinal cuts 1-3/8 inch wide the entire length of Macro Core[®] liners. The kit includes cutting tool, cutter holder, and hooked stationary blades. The liner cutter holder is 48 inch long and slips onto a flat surface. Also has center mount for securing in a vise. In addition, the following safe work practices will assist in the minimization of this hazard. These items have been engineered to allow sample acquisition without placing the sampler at risk.

- 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 out blades as necessary to maintain a sharp cutting edge. Many accidents result from struggling with dull cutting attachments.

6.2.3 **Contact with Underground or Overhead Utilities**

Underground utilities such as pressurized lines, water lines, telephone lines, buried utility lines, and high voltage power lines may be present throughout the facility. Therefore, subsurface activities must be conducted following the requirements of the TtNUS SOP for "Utility Locating and Excavation Clearance (HS-1.0)". A copy of this SOP is provided as Attachment II. Clearance of underground and overhead utilities for each sample location will be coordinated with NAS Cecil Field personnel. Dave Kruzicki is the point-of-contact for NAS Cecil Field and can be reached at (904) 778-5620 Ext. 114. Additionally, drilling operations will be conducted at a safe distance from overhead power lines as discussed in Attachment II. In certain cases, NAS Cecil Field personnel may need to de-energize electrical cables using facility lockout/tagout procedures to insure electrical hazards are eliminated.

6.3 **NATURAL 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/Animal Bites and Stings

Various insects and animals may be present on site and should be considered when performing any of the work tasks described in this HASP.

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 sting injects venom (formic acid) that causes an extreme burning sensation. Pustules form 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. Fire ants can be identified by their habitat. They build mounds in open sunny areas sometimes supported by a wall or shrub. The mound has no external opening. The size of the mound can range from a few inches across to some which are in excess of two feet or more in height and diameter. When disturbed they defend it by swarming out and over the mound, even running up grass blades and sticks.

Also, areas to be investigated could be prime nesting and/or hiding locations for snakes and other insects. Personnel should avoid reaching into areas that are not visibly clear of snakes or insects. Snake chaps will be worn in areas of known or anticipated snake infestation. Site personnel who are allergic to stinging insects such as bees, wasps, and hornets must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet and the FOL and SSO notified.

Alligators

Alligators live in all Florida counties but are most common in the major river drainage basins and large lakes in the central and southern portions of the state. They also can be found in marshes, swamps, ponds, drainage canals, phosphate-mine settling ponds, and ditches. Alligators are tolerant of poor water-quality and occasionally inhabit brackish marshes along the coast. A few even venture into salt water.

Mature alligators seek open water areas during the May-to-May courtship and breeding season. After mating, the females move into marsh areas to nest in June and early July where they remain until the following spring. Males generally prefer open and deeper water year-round. Alligators less than four feet long typically inhabit the marshy areas of lakes and rivers. Dense vegetation in these habitats provides protective cover and many of the preferred foods of young alligators.

- Most human attacks associated with alligators occur when humans have fed them or when defending their nests.
- Under no circumstances should you approach an alligator closely. They are quite agile, even on land. As with any wild animal, alligators merit a measure of respect.
- Alligators are classified as a threatened species and thus enjoy the protection of state and federal law. Only representatives of the Florida Game and Fresh Water Fish Commission are empowered to handle nuisance alligators.
- It is illegal to feed, tease, harass, molest, capture or kill alligators.
- If a serious problem does exist, contact the Florida Game and Fresh Water Fish Commission.

Ticks

There are various areas throughout the United States where Lyme Disease is endemic. Fortunately, Florida is not one of these areas. Nonetheless, personnel should be aware of the hazards of tick bites and Lyme Disease. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots). As well as performing frequent body checks will prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures and symptoms of exposure consult Section 4.0 of the Health and Safety Guidance Manual.

6.3.2 Inclement Weather

Project tasks under this Scope of Work will be performed outdoors and near water. 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 SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

Tropical Storms and Hurricanes

As Florida is a tropical storm, hurricane prone area, the following information is supplied to explain the potential severity of these natural hazards. The decision to curtail operations and evacuate the area should be made by the FOL, TOM, and the HSM.

During the early summer to late fall months, typically from the first of June through the end of November, disturbances migrating off the West Coast of Africa move into the Atlantic Ocean and develop into tropical

cyclones known as tropical storms and hurricanes. Many of these cyclones become strong enough to threaten life and property along the Eastern Seaboard and Gulf Coast. There are three main threats associated with tropical storms and hurricanes:

- High winds
- Excessive rainfall
- Storm surge

The impacts of high winds and excessive rainfall occur hours, maybe days, before the tropical storm or hurricane makes landfall. However, the storm surge accompanies the storm or hurricane at the time that landfall occurs.

High Winds

Sustained winds vary greatly from storm to storm, but can range from 39 to 73 miles per hour (wind speeds associated with a tropical storm) to greater than 74 miles per hour (minimal wind speed for a Category 1 hurricane). Table 6-2 compares the type of storm or hurricane and the corresponding wind speed.

TABLE 6-2
Tropical Storm/Hurricane Rating Scale

TYPE	CATEGORY*	WINDS (MPH)
Tropical Depression	NA	>35-38
Tropical Storm	NA	39 – 73
Hurricane	1	74 – 95
Hurricane	2	96 – 110
Hurricane	3	111 – 130
Hurricane	4	131 – 155
Hurricane	5	>155

Based on the Saffir-Simpson scale

NA – Not Applicable

In addition to strong winds, there is the threat of debris (i.e. building material, trees, etc.) becoming airborne projectiles as they are carried by the high winds. Thunderstorms and tornadoes embedded within the tropical storm or hurricane can further increase the wind speeds on a localized level.

Excessive Rainfall

Heavy rains associated with tropical storms and hurricanes also vary greatly from storm to storm. On average, an inch of rainfall an hour is not uncommon with major hurricanes, somewhat lesser amounts with tropical storms. However, the primary threat is not the intensity of rain, but the duration of rainfall. Since many tropical storms and hurricanes are slow-movers, they are capable of producing sustained heavy rainfall over a long period of time. It is not uncommon for an area to receive nearly 20 inches of rain in 24 hours. Under these conditions, street; stream and creek flooding is inevitable only to be exacerbated by locally heavier rains from thunderstorms.

Storm Surge

The storm surge is an abnormal rise in sea level accompanying a hurricane or tropical storm. The height of the storm surge (usually measured in feet) is the difference in sea level from the observed level (during the storm) and the level that would have occurred in the absence of the storm or hurricane. The more intense the storm or hurricane the higher the storm surge. Storm surges become even higher if they occur during periods of high tide. Table 6-3 defines some of the terminology and possible calls to action regarding tropical cyclones:

**TABLE 6-3
TROPICAL STORM/HURRICANE
WATCH AND WARNING**

STORM DESCRIPTION	DEFINITION	CALL TO ACTION
Tropical Storm Watch	Tropical storm conditions are possible in the specified area of the watch, usually within 36 hours	Weather conditions should be monitored for further advisories. Prepare for possible evacuation by local officials
Tropical Storm Warning	Tropical storm conditions are expected in the specified area of the warning, usually within 24 hours.	Work should be suspended in areas where lightning, high winds and rainfall could pose a threat to life. Mandatory evacuations may be enforced by local officials.
Hurricane Watch	Hurricane conditions are possible in the specified area of the watch, usually within 36 hours.	Weather conditions should be monitored for further advisories. Prepare for possible evacuation by local officials
Hurricane Warning	Hurricane conditions are expected in the specified area of the warning, usually within 24 hours.	Mandatory evacuations will most likely be enforced by local officials.

A National Oceanic and Atmospheric Administration (NOAA) Weather Radio is the best means to receive watches and warnings from the National Weather Service. The National Weather Service continuously broadcasts updated hurricane advisories that can be received by widely available NOAA Weather Radios.

6.3.3 Heat Stress

Given the geographic location of the site and the project schedule, overexposure to high ambient temperatures (heat stress) may exist during performance of this work depending on the project schedule. (extremely cold temperatures are not expected to be encountered due to project location). 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 percent sunshine, as well as physiological factors such as metabolic rate and skin moisture content. Additionally, workload 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. Additional information such as Work-Rest Regimens and personnel monitoring may be found in Section 4.0 of the Health & Safety Guidance Manual.

Many of these physical hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual. Additional information regarding physical hazards associated with the site is provided in Table 5-1 of this HASP.

7.0 AIR MONITORING

Direct reading instruments will be used at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions. As a result, specific air monitoring measures and requirements are established in Table 5-1 pertaining to the specific hazards and tasks of an identified operation. Additionally, the Health and Safety Guidance Manual, Section 1.0, contains detailed information regarding direct reading instrumentation, as well as general calibration procedures of various instruments.

7.1 INSTRUMENTS AND USE

Instruments will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. Action levels are discussed in Table 5-1 as they may apply to a specific task or location.

7.1.1 Photoionization Detector or Flame Ionization Detector

In order to accurately monitor for any substances which may present an exposure potential to site personnel, a Photoionization Detector (PID) using a lamp energy of 10.6 electron Volts (eV) or higher will be used. This instrument will be used to monitor potential source areas and to screen the breathing zones of employees during site activities. The PID with this lamp strength has been selected because it is capable of detecting the organic vapors of concern.

Prior to the commencement of any field activities, the background levels of the site must be determined and noted. Daily background readings will be taken away from any areas of potential contamination. These readings, any influencing conditions (i.e., weather, temperature, humidity) and site location must be documented in the field operations logbook or other site documentation (e.g., sample log sheet).

7.1.2 Hazard Monitoring Frequency

Table 5-1 presents the frequencies that hazard monitoring will be performed as well as the action levels that will initiate the use of elevated levels of protection. The SSO may decide to increase these frequencies based on instrument responses and site observations. The frequency at which monitoring is performed will not be reduced without the prior consent of the PHSO or HSM.

7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS Equipment Manager. Operational checks and field calibration will be performed on instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the 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). 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 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

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section is included to specify health and safety training and medical surveillance requirements for both TtNUS and subcontractor personnel participating in site activities.

8.1.1 Requirements for TtNUS Personnel

TtNUS personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NAS Cecil Field facility. Additionally, TtNUS personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training in the past 12 months before being cleared for site work. In addition, 8 hour supervisory training in accordance with 29 CFR 1910.120 (e)(4) will be required for site supervisory personnel.

Documentation of TtNUS introductory, supervisory, and refresher training as well as site-specific training will be maintained at the project. Copies of certificates or other official documentation will be used to fulfill this requirement.

8.1.2 Requirements for Subcontractors

TtNUS subcontractor personnel must have completed introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120 (e). Additionally, personnel who have had the introductory training more than 12 months ago, are required to have 8 hours of refresher training meeting the requirements of 29 CFR 1910.120 (e)(8) prior to performing field work at the NAS Cecil Field facility if required. TtNUS subcontractors must certify that each employee has had such training by sending TtNUS a letter, on company letterhead, containing the information in the example letter provided as in Figure 8-1 and by providing copies of certificates for subcontractor personnel participating in site activities.

**FIGURE 8-1
TRAINING LETTER**

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

LOGO
XYZ CORPORATION
333 E. 33rd Street
East Overshoe, Georgia 33333

Month, day, year

Mr. Paul Calligan, P.G.
Task Order Manager
Tetra Tech NUS, Inc.
5421 Beaumont Center Boulevard
Suite 660
Tampa, Florida 33634

Subject: HAZWOPER Training for NAS Cecil Field, Jacksonville, 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 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 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 hour 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)

Enclosed: Training Certificates

8.2 SITE-SPECIFIC TRAINING

TtNUS will provide site-specific training to TtNUS employees and subcontractor personnel who will perform work on this project. Site-specific training will also be provided to personnel (U.S. Department of Defense (DOD), EPA, etc.) who may enter the site to perform functions that may or may not be directly related to site operations. Site-Specific training will include:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present at the sites
- Use of PPE
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the HASP
- Emergency response procedures (evacuation and assembly points)
- Initial response procedures
- Review of the contents of relevant MSDSs
- Review of the use of Safe Work Permits

Site-specific documentation will be established through the use of Figure 8-2. Site personnel and visitors must sign this document upon receiving site-specific training.

8.3 MEDICAL SURVEILLANCE

8.3.1 Medical Surveillance Requirements for TtNUS Personnel

TtNUS personnel participating in project field activities will have had a physical examination meeting the requirements of TtNUS's medical surveillance program and will be medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained in the TtNUS Pittsburgh office and made available, as necessary.

8.3.2 Medical Surveillance Requirements for Subcontractors

Subcontractors are required to obtain a certificate of their ability to perform hazardous waste site work and to wear respiratory protection. The "Subcontractor Medical Approval Form" provided in Figure 8-3 shall be used to satisfy this requirement, providing it is properly completed and signed by a licensed physician.

Subcontractors who have a company medical surveillance program meeting the requirements of paragraph (f) of OSHA 29 CFR 1910.120 can substitute "Subcontractor Medical Approval Form" (See Figure 8-3) with a letter, on company letterhead, containing the information in the example letter presented in Figure 8-4 of this HASP.

8.3.3 Requirements for 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 Medical Data Sheet found in the TtNUS Health and Safety Guidance Manual. This shall be provided to the SSO, 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 EXCEPTIONS

Subcontractors who will not enter the Exclusion Zone during operation, and whose activities involve no potential for exposure to site contaminants, will not be required to meet the requirements for training/medical surveillance other than site-specific training as stipulated in Section 8.2. This exception may only be granted by the CLEAN HSM, Matt Soltis.

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 found to be medically -

- qualified to perform work at the NAS Cecil Field work site
- not qualified to perform work at the NAS Cecil Field work site

and,

2. Undergone a physical examination as per OSHA 29 CFR 1910.134(b)(10) and 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 which 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 which 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 which 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 Cecil Field 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
333 E. 33rd Street
East Overshoe, Georgia 33333

Month, day, year

Mr. Paul Calligan, P.G.
Task Order Manager
Tetra Tech NUS, Inc.
5421 Beaumont Center Boulevard
Suite 660
Tampa, Florida 33634

Subject: HAZWOPER Training for NAS Cecil Field, Jacksonville, 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. 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 license 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 Cecil Field facility.

LIST OF 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, Contamination Reduction 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. 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. Therefore, the Exclusion Zones for this project will be limited to those areas if the site where active work is being performed plus an established safety zone depending on the task, as follows:

- Soil borings and monitoring well installation – The boundary perimeter will be established by determining the height of the drill rig mast, plus five feet. For example, if the rig mast is 35 feet the Exclusion Zone would be a 40 foot boundary surrounding the point of operation.
- Groundwater sampling - Ten feet surrounding the well head
- Subsurface soils and IDW sampling – Five feet surrounding the sample collection point.
- Decontamination (heavy equipment – steam/pressure washers) – 35 feet surrounding the point of operation. Equipment decontamination will take place at a centralized location

Exclusion Zones will be delineated (as necessary) using barrier tape, cones and/or drive poles, and postings to inform and direct facility personnel.

9.1.1 Exclusion Zone Clearance

A pre-startup site visit will be conducted by members of the field team in an effort to identify proposed subsurface investigation locations, conduct utility clearances, and provide up-front notices concerning scheduled activities within the facility. Subsurface activities will only proceed with proper utility clearance. Subsurface activities must be conducted following the requirements of the TtNUS SOP for "Utility Locating and Excavation Clearance (HS-1.0)". In the event that a utility is struck during a subsurface investigative activity, the appropriate site contact identified in Table 2-1 will be notified. When base personnel are working within the proximity of this investigation, they will be moved or their operation temporarily discontinued to protect them from potential hazards associated with this operation.

9.2 CONTAMINATION REDUCTION ZONE

The CRZ will be a buffer area between the Exclusion Zone and any area of the site where contamination is not suspected. This area will also serve as a focal point in supporting Exclusion Zone activities. This area may be delineated using barrier tape, cones, and postings to inform and direct facility personnel. Decontamination will be conducted at a central location. Equipment potentially contaminated will be bagged and taken to that location for decontamination.

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. 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

Exclusion Zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task by task basis. An example of the Safe Work Permit to be used is illustrated 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 site-specific considerations and changing conditions are incorporated into the planning effort. Permits will require the signature of the FOL and/or the SSO. 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. Permits will be turned into the FOL and/or the SSO upon reaching their termination period or upon completion of the task for which the permit was issued.

**FIGURE 9-1
SAFE WORK PERMIT**

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

SECTION I: General Job Scope (To be filled in by person performing work)

I. Work limited to the following (description, area, equipment used): _____

II. Names: _____

III. Onsite Inspection conducted Yes No Initials of Inspector _____
TtNUS

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

IV. Protective equipment required	Respiratory equipment required	
Level D <input 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 type="checkbox"/>

Modifications/Exceptions: _____

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

VI. Additional Safety Equipment/Procedures

Hardhat..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Radio..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suits/coveralls..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type)..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe/shank Workboots .. <input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: _____

VII. Procedure review with permit acceptors	Yes	NA	Emergency alarms.....	Yes	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 inspected	<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 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"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, fill out appropriate section(s) on safety work permit addendum

X. Special instructions, precautions: _____

Permit Issued by: _____ Permit Accepted by: _____
Job Completed by: _____ Date: _____

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 (DOD, OSHA, Florida Department of Environmental Protection (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:

- 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.
- 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 Southern Division Navy personnel) and medical surveillance, as stipulated in Section 8 of this document. In addition, to enter the site's operational zones during planned activities, visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this document.

NOTE: Site visitors will be escorted while at the site.

Following this, the site visitor will be permitted to enter the site and applicable operational areas. Visitors are required to observe the protective equipment and site restrictions in effect at the area of their visit. Any 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 onsite 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.

9.6 SITE SECURITY

Site security will be accomplished using TtNUS field personnel. TtNUS will retain complete control over active operational areas. As this activity takes place at Navy facilities open to public access, and along public highways, the first line of security will take place using traffic permit restrictions, Exclusion Zone

barriers, and any existing barriers at the sites to restrict the general public. The second 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 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 personnel involved in this operation.

9.9 MATERIAL SAFETY DATA SHEET REQUIREMENTS

TtNUS and subcontractor personnel will provide MSDSs for chemicals brought on-site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on-site. A chemical inventory of the chemicals used at the 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

As personnel will be working in proximity to one another during field activities, a supported means of communication between field crews members will not be necessary. External communication will be accomplished by using the telephones at predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities, the FOL will determine and arrange for telephone communications.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that bulk hazardous materials (over 55 gallons) will be handled at any given time as part of this scope of work. It is also not anticipated that such spillage would constitute a danger to human health or the environment. However, as the job progresses, the potential may exist for accumulating IDW such as decontamination fluids, soil cuttings, and purge and well development waters, in a central staging area. Once these fluids and other materials have been characterized, they can be removed from this area and properly disposed.

10.2 POTENTIAL SPILL AREAS

Potential spill areas will be periodically monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Currently, limited areas are vulnerable to this hazard including:

- Resource deployment
- Waste transfer
- Central staging

It is anticipated that IDW generated as a result of this scope of work will be containerized, labeled, and staged to await further analyses. The results of these analyses will determine the method of disposal.

10.3 LEAK AND SPILL DETECTION

To establish an early detection of potential spills or leaks, a periodic walk-around by the personnel staging or disposing of drums or in the Resource Deployment area will be conducted during working hours to visually determine that storage vessels are not leaking. If a leak is detected, the contents will be transferred, using a hand pump, into a new vessel. The leak will be collected and contained using absorbents such as Oil-Dry, vermiculite, or sand, which are stored at the vulnerable areas in a conspicuously marked drum. This used material, too, will be containerized for disposal pending analysis. Inspections will be documented in the project logbook.

10.4 PERSONNEL TRAINING AND SPILL PREVENTION

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

10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

The following represents the minimum equipment that may be maintained (depending on anticipated need) at the staging areas for the purpose of supporting this Spill Prevention/Containment Program.

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)
- Drums (55 gallon United Nations (U.N.) 1A2)
- Shovels, rakes, and brooms
- Container labels

10.6 SPILL CONTROL PLAN

This section describes the procedures the TtNUS field crew members will employ upon the detection of a spill or leak.

1. Notify the SSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove non-essential personnel.
2. Employ the PPE 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.
3. 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.
4. Recontainerize spills, including 2 inch of top cover impacted by the spill. Await test results for treatment or disposal options.

It is not anticipated that a spill will 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 SSO in accordance with the procedures discussed 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 any confined spaces. A confined space is defined as an area which has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- 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).
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is one 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.
- 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 chemicals brought on-site, including decon solution, fuels, sample preservations, calibration gases, etc.
- A full size OSHA Job Safety and Health Poster
- Training/Medical Surveillance Documentation Form (blank)
- Emergency Reference Form (Section 2.0, extra copy 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 chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc.. This list should be posted in a central area.

Material Safety Data Sheets (MSDS) (maintained) - The MSDSs should also be in a central area accessible to site personnel. These documents should match the listings on the chemical inventory list for 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. The law also states that reproductions or facsimiles of **the poster shall be at least 8 1/2 by 14 inches with 10-point type.**

Site Clearance (maintained) - This list is found within the training section of the HASP (See Figure 8-2). This list identifies 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.

Emergency Phone Numbers and Directions to the Hospital(s) (posted) - This list of numbers and directions will be maintained at 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 will accompany any injury or illness requiring medical attention to the medical facility. a copy of this sheet or a wallet card will be given to personnel to be carried on their person.

Hearing Conservation Standard (29 CFR 1910.95) (posted) - this standard will be posted anytime hearing protection or other noise abatement procedures are employed.

Personnel Monitoring (maintained) - 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 Department of Transportation (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

AST	Aboveground Storage Tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-term Environmental Action - Navy
CoC	Chemicals of Concern
CTO	Contract Task Order
CRZ	Contamination Reduction Zone
dBA	Decibel
DOD	United States Department of Defense
DOT	United States Department of Transportation
DPT	Direct Push Technology
EPA	United States Environmental Protection Agency
eV	electron Volts
FDEP	Florida Department of Environmental Protection
FFA	Federal Facilities Agreement
FOL	Field Operations Leader
GCTL	Groundwater Cleanup Target Levels
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigative-Derived Waste
MSDS	Material Safety Data Sheets
N/A	Not Available
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NSAP	North-South Apron Plume
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
OU	Operable Units
PAH	Polynuclear Aromatic Hydrocarbons
PG	Professional Geologist
PHSO	Project Health and Safety Officer

PID	Photoionization Detector
PPE	Personal Protective Equipment
PVC	polyvinyl chloride
RAP	Remedial Action Plan
SAP	Site Assessment Plan
SOPs	Standard Operating Procedures
SSO	Site Safety Officer
SVOC	Semi-Volatile Organic Compounds
TBD	To be determined
TOM	Task Order Manager
TPH	Total Petroleum Hydrocarbon
TtNUS	Tetra Tech NUS, Inc
UN	United Nations
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
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.



case no. _____

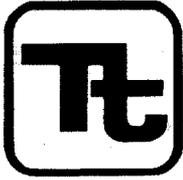
WHO IS COVERED:

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. 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.

ATTACHMENT II
SOP FOR UTILITY LOCATING AND
EXCAVATION CLEARANCE



TETRA TECH NUS, INC.

STANDARD OPERATING PROCEDURES

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>[Signature]</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, TtNUS 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 TtNUS 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-61.

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

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

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

<p>ALABAMA Alabama Line Location (800) 292-8525 Tucson Blue Stake Center (800) 782-5348</p>	<p>Maine Dig Safe – Maine (800) 225-4977</p>
<p>Alaska Locate Call Center of Alaska Inc. (800) 478-3121</p>	<p>Maryland Miss Utility (800) 257-777 Miss Utility of Delmarva (800) 282-8555</p>
<p>Arizona Arizona Blue Stake Inc. (800) 782-5348</p>	<p>Massachusetts Dig Safe – Massachusetts (800) 322-4844</p>
<p>Arkansas Arkansas One Call System Inc. (800) 482-8998</p>	<p>Michigan Miss Dig System (800) 482-7171</p>
<p>California Underground Service Alert North (800) 227-2600 Underground Service Alert South (800) 227-2600</p>	<p>Minnesota Gopher State One Call (800) 252-1166</p>
<p>Colorado Utility Notification Center of Colorado (800) 922-1987</p>	<p>Mississippi Mississippi One-Call System Inc. (800) 227-6477</p>
<p>Connecticut Call Before You Dig (800) 922-4455</p>	<p>Missouri Missouri One Call System Inc. (800) 344-7483</p>
<p>Delaware Miss Utility of Delmarva (800) 282-8555</p>	<p>Montana Utilities Underground Location Center (800) 424-5555 Montana One Call Center (800) 551-8344</p>
<p>District of Columbia Miss Utility (800) 257-7777</p>	<p>Nebraska Diggers Hotline of Nebraska (800) 331-5666</p>
<p>Florida Call Sunshine (800) 432-4770</p>	<p>Nevada Underground Service Alert North (800) 227-2600</p>
<p>Georgia Utilities Protection Center Inc. (800) 282-7411</p>	<p>New Hampshire Dig Safe – New Hampshire (800) 225-4977</p>
<p>Idaho Palouse Empire Underground Coordinating Council (800) 882-1974 Utilities Underground Location Center (800) 424-5555 Kootenai Country Utility Coordinating Council (800) 428-4950 Shoshone County One Call (800) 398-3285 Dig Line (800) 342-1585 One Call Concepts (800) 626-4950</p>	<p>New Jersey New Jersey One Call (800) 272-1000</p>
<p>Illinois Julie Inc. (800) 892-0123 Digger (Chicago Utility Alert Network) (312) 744-7000</p>	<p>New Mexico New Mexico One Call System Inc. (800) 321-ALERT Las Cruces-Dona Utility Council (505) 526-0400</p>
<p>Indiana Indiana Underground Plant Protection Services (800) 382-5544</p>	<p>New York Underground Facilities Protection Organization (800) 962-7962 New York City: Long Island One Call Center (800) 272-4480</p>
<p>Iowa Underground Plant Location Service Inc. (800) 292-8989</p>	<p>North Carolina The North Carolina One-Call Center Inc. (800) 632-4949</p>
<p>Kansas Kansas One-Call Center (800) 344-7233</p>	<p>North Dakota Utilities Underground Location Center (800) 795-0555</p>
<p>Kentucky Kentucky Underground Protection Inc. (800) 752-6007</p>	<p>Ohio Ohio Utilities Protection Service (800) 362-2764 Oil & Gas Producers Underground Protection Service (800) 925-0988</p>
<p>Louisiana Louisiana One Call (800) 272-3020</p>	<p>Oklahoma Call Okie (800) 522-6543</p>

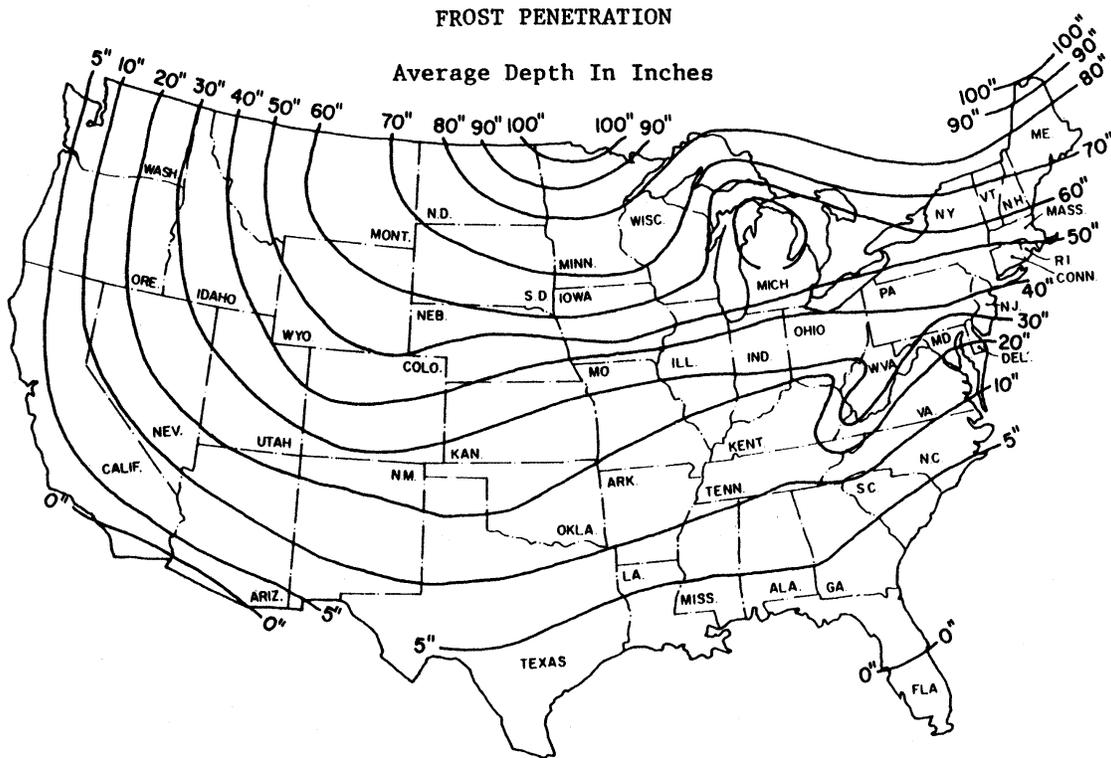
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<p>Oregon Utilities Underground Location Center (800) 424-5555</p> <p>Douglas Utilities Coordinating Council (503) 673-6676</p> <p>Josephine Utilities Coordinating Council (503) 476-6676</p> <p>Rogue Basin Utility Coordinating Council (503) 779-6676</p> <p>Utilities Notification Center (800) 332-2344</p>
<p>Pennsylvania Pennsylvania One Call System Inc. (800) 242-1776</p>
<p>Rhode Island Dig Safe – Rhode Island (800) 225-4977</p>
<p>South Carolina Palmetto Utility Protection Service Inc. (800) 922-0983</p>
<p>South Dakota South Dakota One Call (800) 781-7474</p>
<p>Tennessee Tennessee One-Call System (800) 351-1111</p>
<p>Texas Texas One Call System (800) 245-4545</p> <p>Texas Excavation Safety System (800) 344-8377</p> <p>Lone Star Notification Center (800) 669-8344</p>
<p>Utah Blue Stakes Location Center (800) 662-4111</p>
<p>Vermont Dig Safe – Vermont (800) 225-4977</p>
<p>Virginia Miss Utility of Virginia (800) 552-7001</p> <p>Miss Utility (800) 257-7777</p> <p>Miss Utility of Delmarva (800) 441-8355</p>
<p>Washington Utilities Underground Location Center (800) 424-5555</p> <p>Grays Harbor & Pacific County Utility Coordinating Council (206) 535-3550</p> <p>Utilities County of Cowlitz County (360) 425-2506</p> <p>Chelan-Douglas Utilities Coordinating Council (509) 663-6111</p> <p>Upper Yakima County Underground Utilities Council (800) 553-4344</p> <p>Inland Empire Utility Coordinating Council (509) 456-8000</p> <p>Palouse Empire Utilities Coordinating Council (800) 822-1974</p> <p>Utilities Notification Center (800) 332-2344</p>
<p>West Virginia Miss Utility of West Virginia Inc. (800) 245-4848</p>
<p>Wisconsin Diggers Hotline Inc. (800) 242-8511</p>

<p>Wyoming West Park Utility Coordinating Council (307) 587-4800</p> <p>Call-In Dig-In Safety Council (800) 300-9811</p> <p>Fremont County Utility Coordinating Council (800) 489-8023</p> <p>Central Wyoming Utilities Coordinating Council (800) 759-8035</p> <p>Southwest Wyoming One Call (307) 362-8888</p> <p>Carbon County Utility Utility Coordinating Council (307) 324-6666</p> <p>Albany County Utility Coordinating Council (307) 742-3615</p> <p>Southeast Wyoming Utilities Coordinating Council (307) 638-6666</p> <p>Wyoming One-Call (800) 348-1030</p> <p>Utilities Underground Location Center (800) 454-5555</p> <p>Converse County Utility Coordination Council (800) 562-5561</p>
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ATTACHMENT 2

FROST LINE PENETRATION DEPTHS BY GEOGRAPHIC LOCATION



Courtesy U.S. Department Of Commerce

Subject UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 11 of 12
	Revision 1	Effective Date 03/00

**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: _____
 - h) Geophysical survey performed? yes no
N/A 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 CHECKLIST

EQUIPMENT INSPECTION

COMPANY: _____ **UNIT NO.** _____

FREQUENCY: Inspect daily, document prior to use and as repairs are needed.

Inspection Date: ____/____/____ Time: _____ Equipment Type: _____

	(e.g., bulldozer)		
	Good	Need Repair	N/A
Tires or tracks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hoses and belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cab, mirrors, safety glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Is the equipment equipped with audible back-up alarms and back-up lights?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Horn and gauges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brake condition (dynamic, park, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher (Type/Rating - _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Levels:			
- Engine oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Transmission fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Brake fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Cooling system fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Windshield wipers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Hydraulic oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil leak/lube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coupling devices and connectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blade/boom/ripper condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accessways: Frame, hand holds, ladders, walkways (non-slip surfaces), guardrails?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power cable and/or hoist cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steering (standard and emergency)	<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"/>
- Have emergency shutoffs been field tested? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Results? _____	<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? _____

Portable Power Tools:

- Tools and Equipment in Safe Condition? _____
- Saw blades, grinding wheels free from recognizable defects (grinding wheels have been sounded)? _____
- Portable electric tools properly grounded? _____
- Damage to electrical power cords? _____
- Blade guards in place? _____
- Components adjusted as per manufacturers recommendation? _____

Cleanliness:

- Overall condition (is 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? _____

Operator Qualifications (as applicable for all heavy equipment):

- Does the operator have proper licensing where applicable, (e.g., CDL)? _____
- Does the operator, understand the equipments operating instructions? _____
- Is the operator experienced with this equipment? _____
- Does the operator have emotional and/or physical limitations which would prevent him/her from performing this task in a safe manner? _____
- Is the operator 21 years of age or more? _____

Identification:

- Is a tagging system available, for positive identification, for tools removed from service? _____

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: _____ | | |
| Approved for Use: <input type="checkbox"/> Yes <input type="checkbox"/> No | | |

Site Safety Officer Signature

ATTACHMENT IV

SAFE WORK PERMITS

**SAFE WORK PERMIT
DECONTAMINATION ACTIVITIES
NAS CECIL FIELD, FLORIDA**

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

SECTION I: General Job Scope

I. Work limited to the following (description, area, equipment used): Decontamination of sampling equipment and machinery (i.e., drill rigs, augers). Brushes and spray bottles will be used to decon small sampling equipment. Pressure washers or steam cleaning units will be used to decon the drilling equipment.

II. Required Monitoring Instrument(s): PID with 10.6 eV or higher lamp source (used to screen equipment)

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	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	PAPR <input type="checkbox"/>	Bottle Trailer <input type="checkbox"/>
	Skid Rig <input type="checkbox"/>	None <input checked="" type="checkbox"/>

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety glasses, safety footwear, and nitrile gloves. When using pressure washers, field crews will also wear hearing protection, and face shields. Coveralls and boot covers are at the SSO's discretion.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>VOCs (BETX and Naphthalene).</u>	<u>Any sustained readings</u>	<u>Suspend site activities and</u>
<u>SVOCs (TPHs and PAH's)</u>	<u>above 10 ppm in worker</u>	<u>report to an unaffected area.</u>
_____	<u>breathing zones</u>	_____

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 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 type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type - Nitrile)..... <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 type="checkbox"/> No	

Modifications/Exceptions: PVC rain suits or PE or PVC coated Tyvek may be required (at the SSO's discretion) for protection against splashes and overspray. Chemical resistant boot covers if excessive liquids are generated or to protected footwear.

VIII. Procedure review with permit acceptors	Yes	NA	Yes	NA
Safety shower/eyewash (Location & Use).....	<input type="checkbox"/>	<input type="checkbox"/>	Emergency alarms.....	<input type="checkbox"/>
Procedure for safe job completion.....	<input type="checkbox"/>	<input checked="" 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 checked="" 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"/>

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

X. Special instructions, precautions: If decontamination solvents are used (such as isopropyl alcohol, methanol, etc.), consult appropriate MSDS and container labels. Avoid or control visible dust clouds. To minimize the potential for exposure, site personnel will use PPE and prevent contact with potentially contaminated equipment..

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
MOBILIZATION AND DEMOBILIZATION ACTIVITIES
NAS CECIL FIELD, FLORIDA**

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

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Mobilization and demobilization activities
- II. Required Monitoring Instruments: None
- 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 | 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: Minimum requirement include sleeved shirt, long pants and safety footwear. Safety glasses are required if any potential eye hazards are noted. Hard hats and hearing protection will be worn when working near operating equipment. Reflective vests required in high traffic areas.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>None anticipated given the nature of surveying activities and limited contact w/ media.</u>	<u>None</u>	<u>Not Applicable</u>

VII. Additional Safety Equipment/Procedures

- | | |
|--|---|
| Hard-hat <input type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses <input 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 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 checked="" type="checkbox"/> No | Gloves (Type - _____) <input 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 type="checkbox"/> No |

Modifications/Exceptions: Tyvek coverall to protect against natural hazards (e.g., ticks). If working in areas where snakes are a threat, wear snake chaps to protect against bites.

VIII. Procedure review with permit acceptors	Yes	NA	Yes	NA
Safety shower/eyewash (Location & Use).....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Procedure for safe job completion	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Contractor tools/equipment/PPE inspected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>
Emergency Equipment Staged	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Avoid potential nesting areas. Wear light colored clothing so that ticks and other biting insects can be easily visible and can be removed. Inspect clothing and body for ticks. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
MULTI-MEDIA SAMPLING
NAS CECIL FIELD, 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 subsurface soils and groundwater. IDW sampling is also included in this task.
- II. Required Monitoring Instrument(s): FID or PID with 10.6 eV lamp (or higher) lamp source
- 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)

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

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety shoes, surgical style gloves, and safety glasses. Hard hats and hearing protection will be worn when working near operating equipment or when required by the SSO.

V. Chemicals of Concern <u>VOCs, (BETX and Naphthalene),</u> <u>SVOCs (TPHs and PAH's)</u>	Action Level(s) <u>Any sustained readings</u> <u>above 10 ppm in worker</u> <u>breathing zones</u>	Response Measures <u>Suspend site activities and</u> <u>report to an unaffected area.</u>
--	---	---

- | | |
|---|--|
| VI. Additional Safety Equipment/Procedures
Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Steel toe Work shoes or boots <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Radio..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Barricades..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Gloves (Type – <u>Surgical Style</u>)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
|---|--|
- Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall if there is a potential for soiling work clothes.

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

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

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

X. Special instructions, precautions _____

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT FOR
SOIL BORING
NAS CECIL FIELD, FLORIDA**

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

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Hollow Stem Auguring or Direct Push Technology
- II. Required Monitoring Instrument(s): FID or PID with 10.6 eV lamp (or higher) lamp source
- 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 | 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: Minimum requirement include sleeved shirt and long pants, steel toe safety shoes, safety glasses, hardhat, and hearing protection. The following items are at the SSO's discretion: nitrile or leather gloves with surgical-style inner gloves; Tyvek coveralls, and; boot covers.

- | | | |
|---|--|--|
| VI. Chemicals of Concern | Action Level(s) | Response Measures |
| <u>VOCs, (BETX and Naphthalene).
SVOCs (TPHs and PAH's)</u> | <u>Any sustained readings
above 10 ppm in worker
breathing zones</u> | <u>Suspend site activities and
report to an unaffected area.</u> |

- 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 checked="" 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/leather)..... | <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 type="checkbox"/> No |
- Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall and impermeable boots if there is a potential for soiling work clothes.

- | | | | | |
|--|-------------------------------------|--------------------------|-------------------------|--|
| 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 checked="" type="checkbox"/> <input type="checkbox"/> |
| Contractor tools/equipment/PPE inspected | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Assembly points..... | <input checked="" type="checkbox"/> <input type="checkbox"/> |

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

- X. Additional Permits required: Excavation/Utility Clearance Yes No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

- XI. Special instructions, precautions: _____

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
SURVEYING ACTIVITIES
NAS CECIL FIELD, FLORIDA**

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

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Geographical surveys
- II. Required Monitoring Instruments: None
- 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 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: Minimum requirements include sleeved shirt and long pants and safety footwear. Safety glasses, hard hats, and hearing protection will be worn when working near operating equipment.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>None anticipated given the nature of surveying activities and limited contact w/ media.</u>	<u>None</u>	

- VII. Additional Safety Equipment/Procedures
- | | | | |
|-------------------------------------|---|---------------------------------------|---|
| Hard-hat..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Safety Glasses | <input 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 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 checked="" type="checkbox"/> No | Gloves (Type - <u>Work</u>)..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots | <input type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

Modifications/Exceptions: Tyvek coverall to protect against natural hazards (e.g., ticks). If working in areas where snakes are a threat, wear snake chaps to protect against bites. In high traffic areas wear high visibility vests.

VIII. Procedure review with permit acceptors	Yes	NA	Yes	NA
Safety shower/eyewash (Location & Use)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Emergency alarms.....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Procedure for safe job completion.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Evacuation routes	<input checked="" type="checkbox"/> <input type="checkbox"/>
Contractor tools/equipment/PPE inspected.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Assembly points.....	<input checked="" 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 checked="" type="checkbox"/>
Emergency Equipment Staged.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Avoid potential nesting areas. Wear light colored clothing so that ticks and other biting insects can be easily visible and can be removed. Inspect clothing and body for ticks. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather.

Permit Issued by: _____ Permit Accepted by: _____