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HEALTH AND SAFETY PLAN FOR CONTAMINATION ASSESSMENT AT TANK SITES 163B,  
1586 AND F365 NS MAYPORT FL  
6/1/2002  
TETRA TECH NUS

**Health and Safety Plan**  
for  
**Contamination Assessment at  
Tank Sites 163B, 1586, and G365**

**Naval Station Mayport  
Mayport, Florida**



**Southern Division  
Naval Facilities Engineering Command  
Contract No. N62467-94-D-0888  
Contract Task Order 0247**

June 2002

HEALTH AND SAFETY PLAN  
FOR  
CONTAMINATION ASSESSMENT  
AT  
TANK SITES 163B, 1586, AND G365

NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

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

Submitted to:  
Southern Division  
Naval Facilities Engineering Command  
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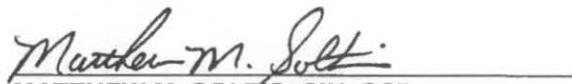
JUNE 2002

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## **1.0 INTRODUCTION**

This Health and Safety Plan (HASP) has been written to encompass site activities that are to be conducted at the Naval Station Mayport (NAVSTA Mayport), Mayport, Florida as part of Contract Task Order (CTO) 0247. Specifically, this HASP addresses activities conducted as part of the Contamination Assessment Plan for Tank Sites 163B, 1586, and G365 within NAVSTA Mayport. This HASP is being prepared for NAVSTA Mayport as part of an overall effort conducted under Comprehensive Long-Term Environmental Action Navy (CLEAN) III contract administered through the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), as defined under Contract Number N62467-94-D-0888. In addition to the HASP, a copy of the Tetra Tech NUS, Inc. (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 (SOPs). 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 the 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 on-site operations, has 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 on-site activities. Personnel assigned to these positions will exercise the primary responsibility for the on-site 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 on-site 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. Modifying 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, and enforces safety procedures as applicable to the work plan.
- The SSO supports site activities by advising the FOL on the aspects of health and safety on site. These duties may include:
  - i. Coordinating the health and safety activities with the FOL.
  - ii. Selecting, applying, inspecting, and maintaining PPE.
  - iii. Establishing work zones and control points in areas of operation.
  - iv. Implementing air-monitoring program for on-site activities.
  - v. Verifying training and medical clearance of on-site personnel status in relation to site activities.
  - vi. Implementing Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities.
  - vii. Coordinating emergency services.
  - viii. Providing site-specific training for on-site personnel.
  - ix. Investigating accidents and injuries (see Attachment I - Illness/Injury Procedure and Report Form).
  - x. Providing input to the PHSO regarding the need to modify, this HASP, or applicable health and safety associated documents 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 NAVSTA Mayport 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:** NAVSTA Mayport **Address:** Mayport, Florida

**Navy Engineer-in-Charge:** Ms. Beverly Washington **Phone Number:** (843) 820-5581

**Facility Contact:** Mr. Jan Bovier **Phone Number:** (904) 270-6730

**Purpose of Site Visit:** This activity is divided into a multi-task operation (see Section 4.0), including groundwater and subsurface soil sampling, and other related activities.

**Proposed Dates of Work:** April 2002 until completion

### **Project Team:**

#### **TtNUS Personnel:**

Mark Peterson, P.G.

David Siefken

Matthew M. Soltis, CIH, CSP

Donald J. Westerhoff, CSP

David Siefken

#### **Discipline/Tasks Assigned:**

Task Order Manager (TOM)

Field Operations Leader (FOL)

CLEAN Health and Safety Manager (HSM)

Project Health and Safety Officer (PHSO)

Site Safety Officer (SSO)

#### **Non-TtNUS Personnel:**

#### **Affiliation/Discipline/Tasks Assigned:**

TBD

\_\_\_\_\_

TBD

\_\_\_\_\_

Hazard Assessments (for purposes of 29 CFR 1910.132) and HASP preparation conducted by:  
Donald J. Westerhoff, CSP

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. The site activities will be coordinated with NAVSTA Mayport emergency services prior to commencement. In the event of an emergency, which cannot be mitigated using on-site resources, personnel will evacuate to a safe place of refuge and the FOL will contact "911" to report the emergency. Site personnel may transport ill workers or those who have non-serious injuries to medical facilities, provided that such transport can be done safely. 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. NAVSTA Mayport Emergency Dispatch will be notified anytime that outside response agencies are required. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(l)(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, injury or illness resulting from exposure to chemical or physical hazards are the most probable emergencies that can be encountered during site activities. The SSA and/or the FOL are responsible for minimizing and eliminating these potential emergency situations, pre-emergency planning activities associated with this project include the following.

- Coordinating response actions with NAVSTA Mayport Emergency Services personnel to ensure that TtNUS emergency action activities are compatible with existing facility 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 includes the following:

- Chemical Inventory (for substances used on site), with Material Safety Data Sheets (MSDS).
  - On-site personnel medical records (medical data sheets).
  - A logbook identifying personnel on site each day.
  - Emergency notification phone numbers in the site vehicles.
- 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.

It is the responsibility of the TtNUS FOL to ensure that this information is available and present at the site.

## **2.3 EMERGENCY RECOGNITION AND PREVENTION**

### **2.3.1 Recognition**

Foreseeable emergency situations that may be encountered during site activities will generally be recognizable by visual observation. A clear knowledge of the signs and symptoms of overexposure to contaminants of concern may alert personnel of the potential hazards concerning themselves or their fellow workers. These potential hazards, the activities with which they have been associated, and the recommended control methods are discussed in detail in sections 5.0 and 6.0 of this document. Additionally, early recognition will be supported by periodic site surveys to eliminate any conditions that may predispose site personnel or properties to an emergency. These surveys will consist of ensuring:

- Approach paths to monitoring wells are maintained (cleared, mowed, etc.).
- Monitoring well protective casings are cleared of spider and insect nests.

The FOL and the SSO will constitute the site evaluation committee responsible for these periodic surveys. A site survey will be conducted during the initiation of this effort. The survey will be documented.

### **2.3.2 Prevention**

TtNUS and subcontractor personnel will minimize the potential for emergencies by ensuring compliance with the HASP, the Health and Safety Guidance Manual, applicable OSHA regulations, and by following directions given by those persons responsible for the health, safety, and welfare of personnel.

## **2.4 SAFE DISTANCES AND PLACES OF REFUGE**

In the event that the site must be evacuated, personnel will immediately stop activities and report to a pre-determined safe place of refuge. The safe place of refuge may also serve as the telephone communication point, as communication with emergency response agencies may be necessary. Telephone communication points and safe places of refuge will be determined prior to the commencement of site activities and will be conveyed to personnel as part pre-site training. Upon reporting to the refuge location, personnel will remain there until directed otherwise by the TtNUS FOL or the On-Scene Incident Commander. The FOL will take a head count at this location to confirm the presence of site personnel. Emergency response agencies will be notified of any unaccounted for personnel.

## **2.5 EVACUATION ROUTES AND PROCEDURES**

Once an evacuation is initiated, personnel will proceed immediately to the designated place of refuge, unless doing so would further jeopardize the welfare of workers. In such an event, personnel will proceed to a designated alternate location (to be identified) and remain there until further notification from the FOL. The use of these locations as assembly points provides communication and a direction point for emergency services, should they be needed.

Evacuation procedures will be discussed prior to the initiation of any work at the site. This shall include identifying primary and secondary evacuation routes and assembly points. Evacuation routes from the site are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) will influence the designation of evacuation routes. As a result, assembly points at NAVSTA Mayport will be selected, and in the event of an emergency, field personnel will proceed to these points by the most direct route possible without further endangering themselves.

## **2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES**

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

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

- Initiate incident alerting procedures (if needed) verbally, by air horn, or using two-way radios.
- Evacuate non-essential personnel.

- Initiate initial response procedures.
- Describe to the FOL (who will serve as the Incident Commander) what has occurred in as much detail as possible.

In the event that site personnel cannot control the incident through offensive and/or defensive measures, the FOL and/or the SSO will enact emergency notification procedure to secure additional outside assistance in the following manner:

- Report the emergency to the NAVSTA Mayport Emergency Dispatch (See Table 2-1) by calling "911".
- Give the emergency operator the location of the emergency and a brief description of what has occurred.
- Stay on the phone; follow the instructions given by the operator.
- The appropriate agency will be notified and dispatched.
- Call the Navy On-Site Representative.
- Call the TOM.

If an incident occurs outside of our designated operating areas impacting field personnel, the following procedures are to be initiated:

- Initiate an evacuation (if needed) by voice commands, hand signals, air horns, or two-way radio.
- Call the Navy On-Site Representative.
- Proceed to the assembly points as directed by NAVSTA Mayport or other Navy personnel.

## **2.7 EMERGENCY CONTACTS**

Prior to performing work at the site, personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an incident. A cellular phone shall be available at the site. Table 2-1 provides a list of emergency contacts and their corresponding telephone numbers. These numbers will be used for the site to be visited during this project. This table must be readily available to personnel at the site.

**TABLE 2-1  
EMERGENCY CONTACTS  
NAVSTA MAYPORT**

<b>AGENCY</b>	<b>TELEPHONE</b>
NAVSTA Mayport - Emergency Dispatch	<b>911</b>
EMERGENCY (outside services) (Police, Fire, and Ambulance Services)	911 or (904) 270-5333
Base Security	(904) 270-5583 or (904) 270-5584
Base Medical Center (for life threatening emergencies only)	(904) 270-5444
Memorial Health Care Center (for other emergencies)	(904) 858-7500
Base Safety Department	(904) 270-5218
Site Point of Contact, Mr. Jan Bovier	(904) 270-6730
Public Works Trouble Desk (for utility problems)	(904) 542-2122
Sunshine State Utility One-Call of Florida	(800) 432-4770
Naval Station Operator (for information)	(904) 270-5011
Poison Control Center	(800) 222-1222
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
TtNUS Jacksonville Office and Task Order Manager Mark Peterson, P.G.	(904) 281-0400
CLEAN Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer Don Westerhoff, CSP	(412) 921-7281
Workcare	(800)-455-6155 (enter Ext. 109)

Note: When calling base telephone numbers from within the base (i.e., from an on-base telephone), dial a zero (0) and the last four digits of the telephone number. For example, to contact the Base Medical Clinic dial 05444.

## 2.8 ROUTE TO HOSPITALS

For emergency care only, non-Navy personnel are permitted to go to the Base Medical Center.

Branch Medical Clinic  
NAVSTA Mayport  
Mayport, FL 32228

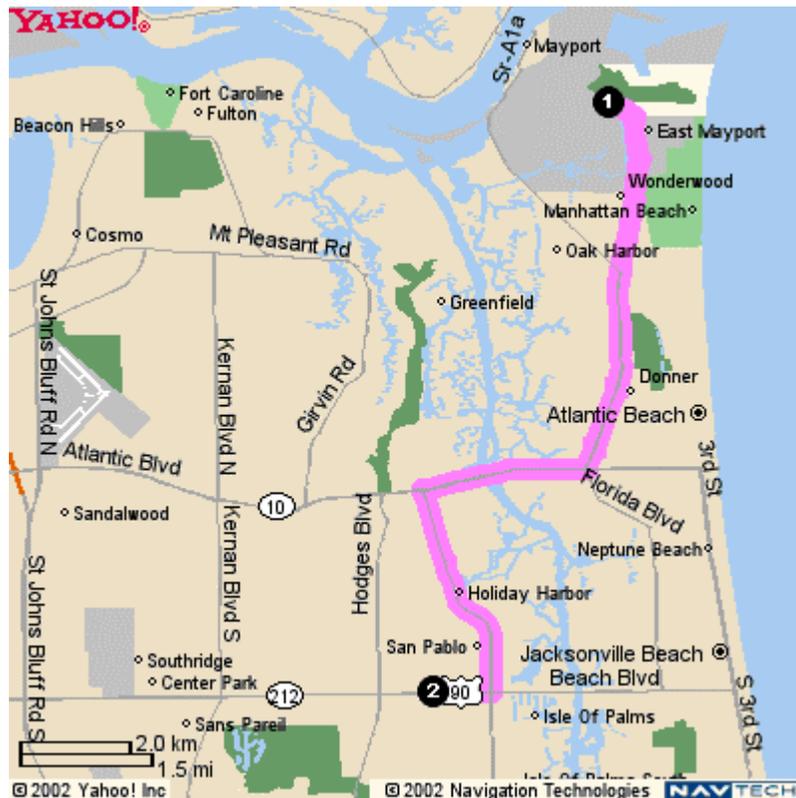
The Base Medical Clinic should be used for life-threatening emergencies only. It is located in Building 1363 on Massey Avenue.

For non-emergency care services:

Memorial Health Care Center  
14444 Beach Blvd  
Jacksonville, Florida 32202  
(904) 858-7500

Memorial Health Care Center will be used for medical care beyond basic first aid treatment. Directions to the Center: Exit base, take Mayport Road (A1A) to Atlantic Blvd. Take a right onto Atlantic Blvd. across the Intercoastal Waterway. At the first intersection, take a left onto San Pablo Blvd. The Medical Center is at the intersection of San Pablo Blvd. and Beach Blvd (14444 Beach Blvd.). See Figure 2-1 "Route to Memorial Health Care Center".

**Figure 2-1**  
**Route to Memorial Health Care Center**



## **2.9 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 not be performed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. **If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-2.**

## **2.10 INJURY/ILLNESS REPORTING**

If any TtNUS personnel are injured or develop an illness as a result of working at the site, the TtNUS "Injury/Illness Procedure" (Attachment I) must be followed. Following this procedure is necessary for documenting 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 service personnel. This information is listed on Medical Data Sheets (Attachment II) filed on site. If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel.

## FIGURE 2-2 EMERGENCY RESPONSE PROTOCOL

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

In the event of a personnel exposure to a hazardous substance or agent:

- 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 exposed 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 (enter Ext. 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 exposure.
  - 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 exposed Tetra Tech NUS, Inc. employee(s).
  - Name and phone number of an informed site officer who will be responsible for further investigations.
  - Fax appropriate information (e.g., MSDS) to WorkCare at (714) 456-2154.
  - Contact Corporate Health and Safety Department (Matt Soltis) at 1-800-245-2730.

As environmental data is gathered and the exposure scenario becomes more clearly defined, this information should be forwarded to WorkCare. WorkCare will compile the results of the 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. This generalized summary will be accompanied by a personalized letter describing the individual's findings/results. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

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

Name: \_\_\_\_\_ Date of Exposure: \_\_\_\_\_

Social Security No.: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Client Contact: \_\_\_\_\_ Phone No.: \_\_\_\_\_

Company Name: \_\_\_\_\_

**I. Exposing Agent**

Name of Product or Chemicals (if known): \_\_\_\_\_

Characteristics (if the name is not known)

Solid          Liquid          Gas          Fume          Mist          Vapor

**II. Dose Determinants**

What was individual doing? \_\_\_\_\_

How long did individual work in area before signs/symptoms developed? \_\_\_\_\_

Was protective gear being used? If yes, what was the PPE? \_\_\_\_\_

Was 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 NAVSTA MAYPORT**

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, and approximately 12 miles to the northeast of downtown Jacksonville and adjacent to the Town of Mayport. The station complex is located on the northern end of a peninsula bounded by the Atlantic Ocean to the east and the St. Johns River to the north and west.

### **3.2 TANK SITE 163B**

Tank Site 163B contained a 500-gallon steel, diesel fuel, aboveground storage tank (AST). The tank was originally installed in 1959 and was surrounded with a concrete block, secondary containment area. Omega Environmental Services, Inc. (OES) of Atlanta Georgia, removed the tank in March 2000. Aerostar Environmental Services, Inc. (AES) of Jacksonville, Florida conducted the environmental assessment in accordance with the guidelines established by the Florida Department of Environmental Protection (FDEP) for the Storage Tank Closure Assessment Requirements. The AST was inspected for soundness of its integrity, no cracks or pinholes were observed. During the excavation, 16 soil vapor samples were collected for vapor headspace screening from the tank pit. Three of the sixteen-screened soil samples contained excessively contaminated petroleum vapor readings. Additional soil samples were collected from the location of the highest vapor headspace reading for laboratory analysis. These samples were analyzed for volatile organic aromatics (VOAs), polynuclear aromatic hydrocarbons (PAH), and total recoverable petroleum hydrocarbons (TRPHs). The soil sample collected from 4 feet below land surface (bls) exceeded the FDEP soil cleanup target levels (SCTLs) and one temporary well was installed in the area with the greatest potential of contamination. Groundwater from this well was analyzed for VOAs including methyl-tertiary-butyl-ether (MTBE) and PAHs. Results of the laboratory analysis did record PAH petroleum constituents as being present, but were below the FDEP Groundwater Cleanup Target Levels (GCTLs).

### **3.3 TANK SITE 1586**

Tank Site 1586 has been the focus of an ongoing Site Assessment to evaluate the extent of petroleum hydrocarbons in soil and groundwater that resulted from a ruptured fuel line. This work included the installation of eight monitoring wells and numerous soil borings. The results of this investigation indicated that Tank Site 1586 was a candidate for natural attenuation (NA). Subsequent monitoring of the site conducted in 1999 and 2000 indicated that petroleum constituents were below GCTLs and therefore the site was eligible for closure. However, on April 30, 2000, the contractor installing a new 5,000-gallon double-walled fiberglass UST in the same tank pit as the previously removed 4,000-gallon fuel oil UST,

spilled 1,400 gallons of fuel oil. The release was reported to Mr. Jim Cason of FDEP. The contractor installed free product recovery wells. However, free product extraction was not initiated.

Monitoring activities indicated that as much as 3 ft of free product was present in a well adjacent to the tank pit. As a result, FDEP has required that a site investigation be conducted to determine the extent of free product occurrence and to determine the appropriate remedial technique.

### **3.4 TANK SITE G365**

Tank Site G365 (fire station) contained a 300-gallon, steel, diesel fuel AST, installed in a concrete block, secondary containment area. OES removed the tank in March 2000. Once the AST was removed a new 350-gallon diesel AST was installed in the same location. AES conducted the environmental assessment in accordance with the guidelines established by the FDEP for the Storage Tank Closure Assessment Requirements. The AST was inspected for soundness of its integrity, no cracks or pinholes were observed. During the excavation, 12 soil vapor samples were collected for screening from the tank pit. No soil vapor headspace readings exceeded the State action level for contaminated soil. Additional soil samples were collected from the location with greatest potential for impacts for laboratory analysis. These soil samples were analyzed for VOAs, PAH, and TRPHs. A soil sample was collected 1 foot bls near the discharge point of the secondary containment structure. No petroleum parameters analyzed were detected. During March 2000, AES installed a temporary monitoring well along the northern side of the former secondary containment drainpipe. Groundwater from this well was analyzed for VOAs including MTBE and PAHs. Laboratory results recorded toluene to exceed the FDEP GCTLs. Following the tank pull a new double walled 350-gallon diesel AST was installed.

## 4.0 SCOPE OF WORK

The following activities are covered in this HASP for the CTO 0247 project:

- Mobilization/Demobilization
- Soil Boring using Direct Push Technology (DPT) and Hollow Stem Augering (HSA)
- Monitoring well installation and development and purging
- Multi-media sampling, including:
  - Subsurface Soil
  - Groundwater
- Surveying
- Decontamination
- Investigative-Derived Waste (IDW)Management

Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this document. The requested modifications to this document will be submitted to the HSM by the TOM or a designated representative.

## **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, 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.

A Health and Safety Guidance Manual accompanies 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 the Exclusion Zone activities (See Section 9.4 and Attachment III) 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. Partially completed Safe Work Permits are included in Attachment III of this HASP.

### **5.1 GENERAL SAFE WORK PRACTICES**

In addition to the task-specific work practices identified on Table 5-1, the following safe work practices are to be followed when conducting work on site. These safe work practices address a pattern of general precautions and measures for reducing risks associated with site operations. This is a partial list and may be amended as necessary.

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVSTA MAYPORT, 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
Mobilization/ Demobilization	<p><b>Chemical hazards:</b> 1) Exposure to potential site contaminants are not anticipated during this activity. However, chemicals brought on site in support of field activities are to be identified, inventoried, accompanied by an appropriate MSDS, properly stored, and evaluated for purposes of hazard communication.</p> <p><b>Physical hazards:</b></p> <p>2) Lifting (strain/muscle pulls) 3) Pinches and compressions 4) Slip, trips, and falls 5) Heavy equipment hazards (rotating equipment, hydraulic lines, etc.) 6) Vehicular and foot traffic 7) Ambient temperature extremes (heat stress)</p> <p><b>Natural hazards:</b></p> <p>8) Insect/animal bites and stings</p>	<p>1) To eliminate potential chemical hazards associated with this task ensure the following: - A chemical inventory list must be generated and maintained for all chemicals brought on site (Complete Section 5.0 of the TiNUS Health and Safety Guidance Manual). - Material Safety Data Sheets must be available for all chemicals brought on site. - Materials are to be stored in accordance with recommended practices and according to compatibility (See MSDS for storage and compatibility recommendations). 2) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 3) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. 4) Preview work locations for unstable/uneven terrain. 5) All equipment will be - Inspected in accordance with OSHA, and manufacturer's design. - Operated by knowledgeable operators, and knowledgeable ground crew. 6) Traffic and equipment considerations are to include the following: - Establish safe zones of approach (i.e. Boom + 3 feet). - Secure all loose articles to avoid possible entanglement. - Heavy equipment shall be equipped with movement warning systems. - All activities are to be conducted consistent with the Base 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 TiNUS Health and Safety Guidance Manual. 8) 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>	Not required	<p>Level D - (Minimum Requirements) - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes - Safety glasses - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Reflective vest for high traffic areas</i> - <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario.</i></p> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each task to address the work planned for that task. 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>	Not required
<p>Soil borings using DPT or HSA techniques</p> <p>This task also includes monitoring well installation, development, and purging.</p>	<p><b>Chemical hazards:</b> 1) Based on the site history and past UST removal and investigative activities, diesel fuel and heating oil are the sources of contamination. As a result, VOCs, and semivolatile organic compound (SVOC) (particularly PAHs) associated with these products are the primary contaminants of concern. It should be noted that free product was encountered in wells associated with Site1586. Exposure to site contaminants is most likely to occur as a result of inhalation of vapors or contact with the skin. Contaminants may be bound to particulates (dusts, soils, etc.) and contact should be avoided whenever possible. Furthermore, adequate decontamination and personal hygiene practices (hand washing) will minimize the potential for exposure via ingestion. See Table 6-1 for more information on the chemicals of concern. 2) Transfer of contamination into clean areas or onto persons</p> <p><b>Physical hazards:</b></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 stress)</p> <p><b>Natural hazards:</b></p> <p>10) Insect/animal bites and stings</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (air, water, soils, etc.). Although unlikely to be a concern, the generation of dusts should be minimized. If airborne dusts are observed, area wetting methods may be used. If area wetting methods are not feasible, termination of activities may be used to minimize exposure to excessive airborne dusts. 2) Decontaminate sampling equipment and supplies between boreholes and prior to leaving the site. 3) All equipment to be used will be - 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 V of this HASP). - Operated by knowledgeable operators and ground crew. - Only manufacturer approved equipment may be used in conjunction with equipment repair procedures In addition to the equipment considerations, the following standard operating procedures will be employed: - All personnel not directly supporting the soil boring or direct push operation will remain at least 25 feet from the point of operation. - All loose clothing/protective equipment will be secured to avoid possible entanglement. - Hand signals may be established prior to the commencement of soil boring or direct push activities. - A remote sampling device must be used to sample drill cuttings near rotating tools. - Work areas will be kept clear of clutter. - All 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 insure its operational status (See Equipment Inspection Form Attachment V of this HASP) - Areas will be inspected prior to the movement of direct push rigs and support vehicles to mitigate physical hazards. This will be the responsibility of the FOL and/or SSO. 4) Hearing protection will be used during all drilling/DPT activities. 5) All utility clearances shall be obtained, in writing, prior to subsurface activities. Prior to any subsurface investigations, the locations of all underground utilities will be identified and marked.(See Attachment IV Utility Clearance SOP) 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 (i.e. Boom + 5 feet). - Secure all loose articles to avoid possible entanglement. - All heavy equipment shall be equipped with movement warning systems. - All activities are to be conducted consistent with the Base requirements. 9) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the TiNUS Health and Safety Guidance Manual. 10) Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. Tape ankle and wrists areas to prevent ticks and chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 6.3 of this HASP and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards.</p>	<p>Direct reading instrument such as a Photoionization Detector (PID) with an 10.6 eV source (or higher) or Flame Ionization Detector (FID) will be used as a general screening instrument to detect volatile organic compounds and to evaluate airborne concentrations of potential site contaminants:</p> <p>Source areas (sample locations, borings, etc.) will be monitored using a PID or FID. Monitoring shall be performed periodically as the drill/DPT rig advances the bore hole. Any positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <p>Monitor the breathing zone of at-risk and downwind employees. Any sustained reading (greater than 1 minute in duration) above 10 parts-per-million (ppm) in worker breathing zones requires site activities to be suspended and site personnel to report to an unaffected area.</p> <p>Work may only resume if airborne readings in worker breathing zone return to below 10 ppm. If readings do not subside, contact the PHSO for further guidance.</p> <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 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>All subsurface operations are to be initiated in Level D protection. Level D protection constitutes the following minimum protection: - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes - Safety glasses - Hardhat - Reflective vest for traffic areas - <i>Tyvek coveralls and disposable boot covers if surface contamination is present and if the potential exists for soiling work attire.</i> - <i>Nitrile gloves or leather gloves with surgical style inner gloves</i> - <i>Hearing protection during drilling or for other high noise areas as directed by the SSO.</i></p> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment III) 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><b>Personnel Decontamination</b> - 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 - Equipment drop - Soap/water wash and rinse of reusable outer gloves, as applicable - Outer coveralls, boot covers, and/or outer glove removal - Removal, segregation, and disposal of non-reusable PPE in bags/containers provided - Wash hands and face, leave contamination reduction zone.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVSTA MAYPORT, 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, subsurface soil and groundwater sampling.</p>	<p><b>Chemical hazards:</b></p> <p>1) Based on the site history and past UST removal and investigative activities, diesel fuel and heating oil are the sources of contamination. As a result, VOCs, and SVOC (particularly PAHs) associated with these products are the primary contaminants of concern. It should be noted that free product was encountered in wells associated with Site1586. Exposure to site contaminants is most likely to occur as a result of inhalation of vapors or contact with the skin. Contaminants may be bound to particulates (dusts, soils, etc.) and contact should be avoided whenever possible. Furthermore, adequate decontamination and personal hygiene practices (hand washing) will minimize the potential for exposure via ingestion. See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas</p> <p><b>Physical hazards:</b></p> <p>3) Noise in excess of 85 dBA 4) Lifting (strain/muscle pulls) 5) Pinches and compressions 6) Slip, trips, and falls 7) Ambient temperature extremes (heat stress) 8) Vehicular and foot traffic</p> <p><b>Natural hazards:</b></p> <p>9) Insect/animal bites and stings</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 should be minimized. If airborne dusts are observed, area wetting methods may be used. If area wetting methods are not feasible, termination of activities may be used to minimize exposure to observed airborne dusts.</p> <p>2) Establish the Exclusion Zone for this activity at 10 feet surrounding the well head and discharge collection container. Decontaminate sampling equipment that comes into contact with contaminated media OVA/PID excluded] between sampling locations and prior to leaving the site.</p> <p>3) When sampling at the Drill/DPT rig use hearing protection. The use of hearing protection outside of 25 feet from the drill/DPT rig should be incorporated under the following condition:</p> <p align="center">If you have to raise your voice to talk to someone who is within 2 feet of your location, hearing protection must be worn.</p> <p>4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p> <p>5) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. - A remote sampling device must be used to sample drill cuttings near rotating tools. The equipment operator shall shutdown machinery if the sampler is near moving machinery parts.</p> <p>6) Preview work locations for unstable/uneven terrain.</p> <p>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 TiNUS Health and Safety Guidance Manual.</p> <p>8) Traffic and equipment considerations are to include the following: - Establish safe zones of approach (i.e. Boom + 3 feet). - Secure all loose articles to avoid possible entanglement. - All heavy equipment shall be equipped with movement warning systems. - All activities are to be conducted consistent with the Base requirements.</p> <p>9) Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. Tape ankle and wrists areas to prevent ticks and chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 6.3 of this HASP and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards.</p>	<p>Direct reading instrument such as PID with an 10.6 eV source (or higher) or FID will be used as a general screening instrument to detect volatile organic compounds and to evaluate airborne concentrations of potential site contaminants:</p> <p>Source areas (sample locations, borings, etc.) will be monitored using a PID or FID. Monitoring shall be performed periodically as the drill/DPT rig advances the bore hole. Any positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <p align="center">Monitor the breathing zone of at-risk and downwind employees. Any sustained reading (greater than 1 minute in duration) above 10 ppm in worker breathing zones requires site activities to be suspended and site personnel to report to an unaffected area.</p> <p>Work may only resume if airborne readings in worker breathing zone return to below 10 ppm. If readings do not subside, contact the PHSO for further guidance.</p> <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 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 all sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Steel toe safety shoes</li> <li>- Safety glasses</li> <li>- Surgical style gloves (double-layered if necessary)</li> <li>- Reflective vest for high traffic areas</li> <li>- <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i></li> <li>- <i>Tyvek coveralls if surface contamination is present and if the potential for soiling work attire exists.</i></li> <li>- <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario.</i></li> </ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each task to address the work 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><b>Personnel Decontamination</b> will consist of a removal and disposal of non-reusable PPE (gloves, coveralls, etc., 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"> <li>- Equipment drop</li> <li>- Outer coveralls, boot covers, and/or outer glove removal (as applicable)</li> <li>- Removal, segregation, and disposal of non-reusable PPE in bags/containers provided</li> <li>- Soap/water wash and rinse of reusable PPE (e.g., hardhat) if potentially contaminated</li> <li>- Wash hands and face, leave contamination reduction zone.</li> </ul>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVSTA MAYPORT, 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
Decontamination of Sampling and Heavy Equipment	<p><b>Chemical hazards:</b></p> <p>1) Based on the site history and past UST removal and investigative activities, diesel fuel and heating oil are the sources of contamination. As a result, VOCs, and SVOC (particularly PAHs) associated with these products are the primary contaminants of concern. It should be noted that free product was encountered in wells associated with Site1586. Exposure to site contaminants is most likely to occur as a result of inhalation of vapors or contact with the skin. Contaminants may be bound to particulates (dusts, soils, etc.) and contact should be avoided whenever possible. Furthermore, adequate decontamination and personal hygiene practices (hand washing) will minimize the potential for exposure via ingestion. See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Decontamination fluids - Liquinox (detergent), acetone or isopropanol</p> <p><b>Physical hazards:</b></p> <p>3) Lifting (strain/muscle pulls)            4) Noise in excess of 85 dBA            5) Flying projectiles            6) Vehicular and foot traffic            7) Slips, trips, and falls            8) Ambient temperature extremes (heat stress)</p>	<p>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Establish the exclusion zone for this activity at least 25 feet surrounding the gross contamination wash and rinse as well as 25 feet surrounding the heavy equipment decontamination area. Obtain manufacturer's MSDS for any decontamination solvents used onsite. Use appropriate PPE as identified on MSDS. All 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).</p> <p>3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes.</p> <p>4) Wear hearing protection when operating pressure washer.</p> <p>5) Use eye and face protective equipment when operating pressure washer. All other personnel must be restricted from the area.</p> <p>6) Traffic and equipment considerations are to include the following:            - Establish safe zones of approach (i.e. Boom + 3 feet).            - Secure all loose articles to avoid possible entanglement.            - All equipment shall be equipped with movement warning systems.            - All activities are to be conducted consistent with the Base requirements.</p> <p>7) Preview work locations for unstable/uneven terrain.</p> <p>8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the TiNUS Health and Safety Guidance Manual.</p>	Use visual observation, and real-time monitoring instrumentation to ensure all equipment has been properly cleaned of contamination and dried.	<p>For Heavy Equipment This applies to high pressure soap/water, steam cleaning wash and rinse procedures.</p> <p>Level D Minimum requirements -            - Standard field attire (Long sleeve shirt; long pants)            - Steel toe safety shoes            - Chemical resistant boot covers            - Nitrile outer gloves            - Hard Hat            - <i>PVC Rainsuits or PE or PVC coated Tyvek</i>            - <i>Safety glasses underneath a splash shield</i>            - <i>Hearing protection (plugs or muffs)</i></p> <p>For sampling equipment (trowels, MacroCore Samplers, bailers, etc.), the following PPE is required</p> <p>Level D Minimum requirements -            - Standard field attire (Long sleeve shirt; long pants)            - Safety shoes (Steel toe/shank)            - Surgical outer gloves            - Safety glasses</p> <p>In the event of overspray of chemical decontamination fluids employ PVC Rainsuits or PE or PVC coated Tyvek as necessary.</p> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment III) 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><b>Personnel Decontamination</b> will 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><b>Equipment Decontamination</b> - All heavy equipment decontamination will take place 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. All site vehicles will have restricted access to exclusion zones, and 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><b>Sampling Equipment Decontamination</b></p> <p>Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.</p> <p>MSDS for any 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>All 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 onsite and leaving the site. No equipment will be authorized access or exit without this evaluation.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVSTA MAYPORT, FLORIDA**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring Type and Action Levels	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SSO require.)</i>	Decontamination Procedures
IDW management and moving IDW drums to storage areas	<p><b>Chemical hazards:</b></p> <p>1) Based on the site history and past UST removal and investigative activities, diesel fuel and heating oil are the sources of contamination. As a result, VOCs, and SVOC (particularly PAHs) associated with these products are the primary contaminants of concern. It should be noted that free product was encountered in wells associated with Site 1586. Exposure to site contaminants is most likely to occur as a result of inhalation of vapors or contact with the skin. Contaminants may be bound to particulates (dusts, soils, etc.) and contact should be avoided whenever possible. Furthermore, adequate decontamination and personal hygiene practices (hand washing) will minimize the potential for exposure via ingestion. See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contaminants to unaffected areas.</p> <p><b>Physical hazards:</b></p> <p>3) Noise in excess of 85 dBA 4) Lifting (strain/muscle pulls) 5) Pinches and compressions 6) Slip, trips, and falls 7) Vehicular and foot traffic 8) Ambient temperature extremes (heat stress)</p> <p><b>Natural hazards:</b></p> <p>9) Insect/animal bites and stings</p>	<p>1) Employ real-time monitoring instrumentation, action levels, and identify PPE to control exposures to potentially contaminated media (e.g. air, water, soils).</p> <p>2) An Investigative Derived Waste (IDW) area will be constructed and barricaded. Only authorized personnel will be allowed access. Decontaminate all equipment and supplies, if they become contaminated, between locations and prior to leaving the site.</p> <p>3) When working near heavy equipment, use hearing protection.</p> <p>4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p> <p>5) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points.</p> <p>6) Preview work locations for unstable/uneven terrain.</p> <p>7) Traffic and equipment considerations are to include the following: - Establish safe zones of approach (i.e. Boom + 3 feet). - Secure all loose articles to avoid possible entanglement. - All equipment shall be equipped with movement warning systems. - All activities are to be conducted consistent with the Base requirements.</p> <p>8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the TiNUS Health and Safety Guidance Manual.</p> <p>9) 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>Direct reading instrument such as PID with an 10.6 eV source (or higher) or FID will be used as a general screening instrument to detect volatile organic compounds and to evaluate airborne concentrations of potential site contaminants unless the field crew has process knowledge that excessive contamination is not present at the site:</p> <p>Source areas IDW containers/drums will be monitored using a PID or FID. Any positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <p>Monitor the breathing zone of at-risk and downwind employees. Any sustained reading (greater than 1 minute in duration) above 10 ppm in worker breathing zones requires site activities to be suspended and site personnel to report to an unaffected area.</p> <p>Work may only resume if airborne readings in worker breathing zone return to below 10 ppm. If readings do not subside, contact the PHSO for further guidance.</p> <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities.</p>	<p>Level B protection will be utilized for the initiation of all sampling activities.</p> <p>Level B - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (long sleeve shirt, long pants)</li> <li>- If necessary, Nitrile or cotton/leather work gloves with surgical style inner gloves</li> <li>- Safety steel toe shoes</li> <li>- Safety glasses</li> <li>- <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i></li> <li>- <i>Reflective vest for high traffic areas</i></li> <li>- <i>Tyvek coveralls and disposable boot covers if surface contamination is present and if the potential for soiling work attire exists.</i></li> <li>- <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario.</i></li> <li>- <i>Work/rest regimen</i></li> </ul>	<p><b>Personnel Decontamination</b> will 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"> <li>- Equipment drop</li> <li>- Soap/water wash and rinse of outer boots and gloves, as applicable</li> <li>- Soap/water wash and rinse of the outer splash suit, as applicable</li> <li>- Disposable PPE will be removed and bagged.</li> </ul>
Geographical Survey	<p><b>Chemical hazards:</b></p> <p>Significant exposure to site contaminants is anticipated to be unlikely given the nature of this task.</p> <p><b>Physical hazards:</b></p> <p>1) Slips, trips, and falls</p> <p>2) Ambient temperature extremes (heat stress)</p> <p><b>Natural hazards:</b></p> <p>3) Inclement weather</p> <p>4) 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.)</p> <p>2) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress is provided in Section 4 of the Health and Safety Guidance Manual.</p> <p>3) Suspend or terminate operations until directed otherwise by SSO</p> <p>4) 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 that volatile contaminants are not likely to be present during surveying activities.</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"> <li>- Standard field dress including sleeved shirt and long pants</li> <li>- Safety shoes (Steel toe/shank)</li> <li>- <i>Safety glasses, hard hats (if working near machinery)</i></li> <li>- <i>Snake chaps for heavily wooded area where encounters are likely.</i></li> <li>- <i>Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks. Work gloves may be worn if desired.</i></li> <li>- <i>Hearing protection</i></li> </ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each task to address the work 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><b>Personnel Decontamination</b> - 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.</p>

- NO 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.
- A thorough shower and washing must be conducted as soon as possible if excessive skin contamination occurs.
- Avoid contact with potentially contaminated substances. Avoid puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Keep monitoring equipment away from potentially contaminated surfaces.
- Attend briefings on anticipated hazards, equipment requirements, Safe Work Permits, emergency procedures, and communication methods before going on site.
- Plan and mark entrance, exit, and emergency escape routes. See Section 2.0.
- Rehearse unfamiliar operations prior to implementation.
- Buddies should maintain visual or communicative contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.
- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, unsafe conditions, unsafe practices, defective equipment, and potential exposure incidents to the SSO.
- Observe coworkers for signs of exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

## **5.2 DRILLING SAFE WORK PRACTICES**

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

### **5.2.1 Before Drilling**

- Identify all underground utilities and buried structures before drilling. Use the Utility Locating and Excavation Clearance SOP provided in Attachment IV.

- All 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. All repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment V. Inspection frequencies will be once every shift (either 5 or 10 day) or following repairs.
- The driller's helper will establish an equipment staging and lay down plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects such as drill flights will be provided to avoid the collapse stacked equipment.

### **5.2.2 During Drilling**

- Secure frayed or loose clothing, hair, and jewelry when working with rotating equipment.
- 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 five 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 at all times.

### **5.2.3 After Drilling**

- Equipment that comes into direct contact with potentially contaminated media will undergo a complete decontamination prior to moving to the next location, exiting the site, or prior to down time for maintenance.

- Whenever possible, all motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations on site, all equipment will be shutdown and bonded to the fuel provider to prevent the potential accumulation of static charges.
- When not in use all drill rigs will be shutdown, emergency brakes set, and wheels chocked where hilly terrain is present.
- All areas subjected to subsurface investigative methods will be restored to equal or better condition than original to the extent practical 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.

## 6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards associated with the site 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 the contaminants that may be present at the site.

### 6.1 CHEMICAL HAZARDS

The potential health hazards associated with work to be conducted at Tank Sites 163B, 1586, and G365 at NAVSTA Mayport, include inhalation, ingestion, and dermal contact of various contaminants that may be present in groundwater and soil. The following will be considered as the primary classes of contaminants on site:

Volatile Organic Compounds (VOCs) and PAHs related to Diesel Fuel / Heating Oil

Table 6-1 provides information on the compounds and individual substances identified as the potential site contaminants. Included is information on the toxicological, chemical, and physical properties of these substances. Certain information on this table (such as glove selection) is based on clinical information regarding pure chemicals. Assessment of hazards and recommended control measures (such as nitrile surgeon's gloves) within this HASP, however, are based on the diluted nature of media to be sampled and the limited anticipated contact. Exposure to these compounds is most likely to occur through inhalation of airborne vapors or through hand-to-mouth contact after handling contaminated media. As a result, air monitoring will be performed to detect potential airborne vapors and the use of PPE and basic hygiene practices (washing face and hands before leaving site) will be required to minimize the potential for exposure to site contaminants.

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Diesel Fuel	68334-30-5 68476-30-2 68476-31-3 68476-34-6 77650-28-3	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 National Institute for Occupational Safety and Health (NIOSH) Method #1550.	OSHA none  ACGIH 100 mg/m <sup>3</sup>  NIOSH 100 mg/m <sup>3</sup>  United States Air Force 200 ppm	Kerosene odor  <b>Recommended Air Purifying cartridges:</b> Organic vapor  <b>Recommended gloves:</b> Nitrile	<b>Boiling Pt:</b> <170-400°F; 77-204°C <b>Melting Pt:</b> Not available <b>Solubility:</b> Negligible <b>Flash Pt:</b> 125°F; 52°C <b>LEL/LFL:</b> 0.6% <b>UEL/UFL:</b> 7.5% <b>Vapor Density:</b> >5 <b>Vapor Pressure:</b> <1 mmHg @ 70°F; 21 °C <b>Specific Gravity:</b> 0.86 <b>Incompatibilities:</b> strong oxidizers, halogens, and hypochlorites <b>Appearance and odor:</b> Colorless to amber with a kerosene odor	Prolonged or repeated exposures to this product may cause skin and eye irritation. Due to 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.
Toluene	108-88-3	PID: I.P 8.82 eV, High response with PID and 10.2 eV lamp.  FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption. Sampling and analytical protocol shall proceed in accordance with OSHA Method #07, or NIOSH Method #1500.	OSHA: 200 ppm 300 ppm (Ceiling)  ACGIH: 50 ppm (skin)  NIOSH: 100 ppm 150 ppm STEL  IDLH: 500 ppm	Adequate - Odor threshold 1.6 ppm is considered good. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm.  <b>Recommended gloves:</b> 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	<b>Boiling Pt:</b> 232°F; 111°C <b>Melting Pt:</b> -139°F; -95°C <b>Solubility:</b> 0.05% (61°F;16°C) <b>Flash Pt:</b> 40°F; 4°C <b>LEL/LFL:</b> 1.2% <b>UEL/UFL:</b> 7.1% <b>Vapor Density:</b> 3.14 <b>Vapor Pressure:</b> 20 mmHg @ 65°F; 18 °C <b>Specific Gravity:</b> 0.87 <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and odor:</b> 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.
Xylene All isomers o-,m-, p-	1330-20-7	PID: I.P. 8.56 eV, High response with PID and 10.2 eV lamp.  FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol shall proceed in accordance with OSHA 07, or NIOSH Method 1500.	ACGIH, & NIOSH: 100 ppm, 150 ppm STEL  OSHA: 100 ppm  IDLH: 900 ppm	Adequate - Odor thresholds for the following isomers: 0.6 m-; 5.4 p-; 20 o- ppm. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm concentrations.  <b>Recommended gloves:</b> 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)	<b>Boiling Pt:</b> 269-281°F; 132-138°C <b>Melting Pt:</b> -130/-54m/56p°F; -250/-48m/13p °C <b>Solubility:</b> 0.02 % <b>Flash Pt:</b> 81-90°F;27-32°C <b>LEL/LFL:</b> 0.9% <b>UEL/UFL:</b> 7.0% <b>Vapor Density:</b> 3.66 <b>Vapor Pressure:</b> 7-9 mmHg @ 70°F; 21°C <b>Specific Gravity:</b> 0.86-0.88 <b>Incompatibilities:</b> Strong oxidizers and strong acids <b>Appearance and odor:</b> 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 (Continued)**  
**CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
General PAHs / Coal Tar Pitch Volatiles / Creosote / cresol (Fluoranthene, pyrene, benzo(a) anthracene, benzo(a) pyrene, benzo(f)fluoranthene, benzo(k)fluoranthene, etc.)	(CAS Numbers vary depending on specific compound)	PID: I.P. of 8.97 eV, relative response ratio unknown.  FID: Response factor unknown but given the substances flammability, detection by FID can be anticipated.	Refer to NIOSH methods for each specific compound for appropriate air sampling protocols.  Many PAHs can be sampled using <u>NIOSH Method 5506 or 5515</u> - Teflon filter with support ring - High pressure liquid chromatography with UV detector.  For cresol (a major constituent of creosote) by silica gel or xad-7 sorbent tube; Acetone desorption and analysis by gas chromatography - flame ionization detector or high-pressure liquid chromatography. (NIOSH Method #2001, or OSHA Method #32)	<b>General PAHs:</b> Most PAHs have no established exposure limits. Other Coal Tar Pitch Volatiles / PAHs such as chrysene and benzo(a)pyrene have an exposure limit of : OSHA: 0.2 mg/m <sup>3</sup> ACGIH: Exposure by all routes should be carefully controlled to levels as low as possible. NIOSH: 0.1 mg/m <sup>3</sup>  <b>Creosote / Cresol:</b>  OSHA; ACGIH: 5 ppm - 22 mg/m <sup>3</sup> NIOSH: 2.3 ppm - 10 mg/m <sup>3</sup> IDLH: 80 mg/m <sup>3</sup>	Adequate - Can use full-face air-purifying respirator with organic vapor / dust /mist cartridge up to 250 ppm. Cresol has an Odor Threshold of 0.00005-0.0079 ppm.  <b>Recommended gloves:</b> Viton >96.00 hrs; butyl rubber >90.00 hrs; neoprene >4.50 hrs	Properties of various PAHs/Coal Tar Pitch Volatiles vary depending upon the specific compound.  <u>For Creosote/Cresol:</u> <b>Boiling Pt:</b> 376-397°F; 191-203°C <b>Melting Pt:</b> 52-96°F; 10.9-35.5°C <b>Solubility:</b> Insoluble <b>Flash Pt:</b> 178°F; 81°C <b>LEL/LFL:</b> Not available <b>UEL/UFL:</b> Not available <b>Vapor Density:</b> 3.72 <b>Vapor Pressure:</b> 1 mmHg @ 100-127°F; 38-53°C <b>Specific Gravity:</b> 1.030-1.038 <b>Incompatibilities:</b> Nitric acid, oleum, chlorosulfonic acid, oxidizers <b>Appearance and Odor:</b> Yellowish or colorless, flammable, oily liquid (often brownish because of impurities or oxidation)	Regulated based on effects on respiratory tract and skin irritation Other effects may include eye irritation and central nervous system, disturbances. Acute exposures may result in difficulty breathing, respiratory failure and skin and eye irritation and burns. Chronic exposure may damage the liver, kidneys, lungs and skin and cause photosensitivity.  IARC, NTP, NIOSH, ACGIH, and the EPA list some PAHs such as benzo(a)pyrene as a potential carcinogen (ARC 2A, NTP-2, ACGIH TLV-A2, NIOSH-X, EPA-B2).

## **6.2 PHYSICAL HAZARDS**

The following is a list of physical hazards that may be encountered at the site or may present during the performance of site activities associated with the scope of work.

- Slip, trip, and fall hazards
- Strain/muscle pulls from manual lifting
- Entanglement or contact with moving or rotating equipment/machinery
- Contact with energized sources (aboveground and underground)
- Heat Stress
- Cuts and lacerations

### **6.2.1 Cuts and Lacerations**

The potential exists for works to suffer cuts or lacerations given the use of heavy equipment, hand tools, knives, and the handling and assembly of sampling/drilling equipment. Keeping hands, fingers, and other body parts away from pinch points, moving parts and other sharp surfaces is the primary control method to prevent cuts and lacerations. Leather work gloves and other protective equipment can also be used to prevent injuries. Cuts or lacerations often occur while using box cutter or other cutting devices when slicing teflon or silicon tubing used in groundwater sampling apparatus or when opening or sealing boxes and sampling coolers. In order to minimize injury, use the following precautions:

- Always cut away from the body and others.
- Never use your thumb to put pressure on tubing while cutting from the opposite side.
- Change the knife blades frequently. Many accidents result from struggling with dull cutting edge.

## **6.3 NATURAL HAZARDS**

Most of the proposed sample areas appear to be in maintained areas often in grassy areas. Although not anticipated to be a significant problem, insect/animal bites and stings 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. Specific discussion on principle hazards of concern are discussed below.

### **6.3.1 Insect/Animal Bites and Stings**

#### **Fire Ants**

Various insects and animals may be present and should be considered. For example, 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.

### **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**

NAVSTA Mayport is located in an area that may receive tropical storms and hurricane activity. 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.  Local officials may enforce mandatory evacuations.
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.	Local officials will most likely enforce mandatory evacuations.

A 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 degrees Fahrenheit (°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 INSTRUMENT AND USE

A direct reading instrument will be used primarily to monitor source points (soil borings, monitoring wells, etc.) 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 (PID)

In order to accurately monitor for any substances that may present an exposure potential to site personnel, a PID using lamp energy of 10.6 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 the instruments each day prior to and after their use. Field calibration will be performed on instruments according to manufacturer's recommendations. 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 SOPs (copies of which can be found in the Health & Safety Guidance Manual which will be maintained on site for reference). The 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 TtNUS personnel participating in on site activities. TtNUS personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NAVSTA Mayport. TtNUS personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within 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 site. Copies of certificates or other official documentation will be used to fulfill this requirement.

#### **8.1.1 Requirements for Subcontractors**

Identified 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) and 8 hours of refresher training meeting the requirements of 29 CFR 1910.120(e)(8) prior to performing field work at the NAVSTA Mayport. 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 in Figure 8-1. This letter will be accompanied by training certificates or some other form of official documentation for subcontractor personnel participating in site activities.

**FIGURE 8-1**

**EXAMPLE 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  
555 E. 5th Street  
Nowheresville, Kansas 55555

Month, day, year

Mr. Mark Peterson, P.G.  
Task Order Manager  
Tetra Tech NUS, Inc.  
7018 A.C. Skinner Parkway, Suite 250  
Jacksonville, Florida 32256

Subject: HAZWOPER Training for Naval Air Station Mayport, Florida

Dear Mr. Peterson:

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 126.

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

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

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

Sincerely,

(Name and Title of Company Officer)

## **8.2 SITE-SPECIFIC TRAINING**

TtNUS will provide site-specific training to TtNUS personnel who will perform work on this project. Site-specific training will include:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of PPE
- Work practices to minimize risks from hazards
- Medical surveillance requirements
- Signs and symptoms of overexposure to site contaminants
- Contents of the HASP
- Emergency response procedures (evacuation and assembly points)
- Spill response procedures
- Review of the contents of relevant MSDS
- Review of the uses of Safe Work Permits

Site-specific training documentation will be established through the use of Figure 8-2.

## **8.3 MEDICAL SURVEILLANCE**

TtNUS personnel participating in project field activities will have had a physical examination meeting the requirements of TtNUS's medical surveillance program. Documentation for medical clearances will be maintained in the TtNUS Pittsburgh office and made available, as necessary.

### **8.3.1 Medical Surveillance Requirements for Subcontractors**

Identified 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" with a letter, on company letterhead, containing the information in the example letter presented in Figure 8-4 of this HASP.



**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 NAVSTA Mayport work site
- not qualified to perform work at the NAVSTA Mayport 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):

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

---

---

---

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

---

---

---

I have informed this participant of the results of this medical examination and any medical conditions, 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 NAVSTA Mayport 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**  
**EXAMPLE**  
**MEDICAL SURVEILLANCE LETTER**

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

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

Month, day, year

Mr. Mark Peterson, P.G.  
Task Order Manager  
Tetra Tech NUS, Inc.  
7018 A.C. Skinner Parkway, Suite 250  
Jacksonville, Florida 32256

Subject: HAZWOPER Training for NAVSTA Mayport, Florida

Dear Mr. Peterson:

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 for NAVSTA Mayport.

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)

### **8.3.2 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**

In situations in which the exclusion zone is not entered or when there is no potential for exposure to site contaminants, subcontractor personnel may be exempt from some of the training and medical surveillance requirements. Subcontractors and visiting personnel are required to receive site-specific training (as discussed in Section 8.2) regarding information provided in this HASP. Examples of subcontractors who may be exempt from training and medical surveillance requirements may include surveyors who perform surveying activities at the site perimeters or in areas where there is no potential for exposure to site contaminants, and in this case the subcontractor providing concrete coring services.

**The use of the subcontractor exception is strictly limited to the authority of the CLEAN Health and Safety Manager.**

## **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, 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. The exclusion zone for drilling/DPT work and associated sampling activities will be 5 feet greater than the height of the mast. For example, if the rig has a 25-foot mast the exclusion zone will include the area within 30 feet from the point of operation. A 10 foot exclusion zone will be used for all other site activities conducted in areas where contaminated soil or groundwater may be present.

### **9.2 CONTAMINATION REDUCTION ZONE**

The Contamination Reduction Zone (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 activities conducted in support of this project will be done so using this HASP as a reference guide and Safe Work Permits to incorporate site-specific information to guide and direct field

crews on a task by task basis. An example of the Safe Work Permit to be used during site activities is illustrated in Figure 9-1. Permits will be issued by the SSO prior to the beginning of on-site activities. Partially completed Safe Work Permits are included in Attachment III of this HASP.

Safe Work Permits are to be completed in accordance with the specifications contained in Table 5-1, and the other sections of the HASP as appropriate.

## **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 (i.e., DOD, EPA, OSHA, FDEP, etc.)
- SOUTHNAVFACENGCOM Navy personnel
- Other authorized visitors

Non-Department of Defense (DOD) personnel working on this project are required to gain initial access to the base by coordinating with the TtNUS FOL or designee and following established base access procedures.

Once access to the base is obtained, personnel who require site access into areas of ongoing operations will be required to obtain permission from the FOL and the Base Contact. Upon gaining access to the site, site visitors wishing to observe operations in progress will be escorted by TtNUS representative and shall be required to meet the minimum requirements discussed below:

- Site visitors will be routed to the FOL, who will sign them into the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), the entity which they represent, and the purpose of the visit.
- Site visitors will be required to produce the necessary information supporting clearance to the site. This shall include information attesting to applicable training and medical surveillance as stipulated in Section 8.0 of this document. In addition, to enter the site 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 HASP.



Once the site visitors have completed the above items, they will be permitted to enter the operational zone. Visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. A TtNUS representative will accompany visitors entering the exclusion zones during ongoing operations. 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 the termination of on-site activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from the Base Contact. If necessary, the Base Contact 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 a Navy facility open to public access, the first line of security will take place using exclusive zone barriers, site work permits, 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 Base Contact. The Base Contact will serve as a focal point for base personnel, 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. 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 MSDS REQUIREMENTS**

TtNUS and subcontractor personnel will provide MSDSs for the 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 on site will be developed using the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request.

## **9.10 COMMUNICATION**

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 cellular telephones. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities at NAVSTA Mayport, the FOL will determine and arrange for telephone communications.

## **10.0 SPILL CONTAINMENT PROGRAM**

### **10.1 SCOPE AND APPLICATION**

It is anticipated that quantities of bulk potentially hazardous materials (greater than 55-gallons) will not be handled during the site activities. It is possible, however, that as the job progresses, disposable PPE and other non-reusable items may be generated. As needed, 55-gallon drums will be used to contain unwanted items generated during sampling activities. The drum(s) will be labeled with the site name and address, the type of contents, and the date the container was filled as well as an identified contact person. As warranted, samples will be collected and analyzed to characterize the material and determine appropriate disposal measures. Once characterized the drum(s) will be removed from the staging area and disposed of in accordance with Federal, State and local regulations. Given the likely solid nature of drum contents, a comprehensive Spill Containment Program is not necessary. The following discussion is provided as contingency information only.

### **10.2 POTENTIAL SPILL AREAS**

Should drums contain liquid wastes, potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Areas designated for handling, loading, and unloading of potentially contaminated waters and debris present limited potential for leaks or spills.

The drums/containers used for containing liquids will be sealed, labeled, and staged within a centralized area awaiting shipment or disposal.

### **10.3 LEAK AND SPILL DETECTION**

To establish an early detection of potential spills or leaks, periodic inspections by the SSO will be conducted during working hours to visually determine that containers are not leaking. If a leak is detected, the first approach will be to transfer the container contents using a hand pump into a new container. Other provisions for the transfer of container contents will be made and appropriate emergency contacts will be notified, if necessary. In most instances, leaks will be collected and contained using absorbents such as Oil-dry, vermiculite, and/or sand, which may be stored at the staging area in a conspicuously marked drum. This material too, will be containerized for disposal pending analyses. The inspections will be documented in the Project Logbook.

#### **10.4 PERSONNEL TRAINING AND SPILL PREVENTION**

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

#### **10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT**

The following represents the types of equipment that may be maintained at the staging area for the purpose of supporting this Spill Containment Program (depending on the likelihood that drums and/or liquid wastes are generated).

- Sand, clean fill, vermiculite, or other noncombustible absorbent (oil-dry);
- Drums [55-gallon U.S. Department of Transportation (DOT) 17-E or 17-H]
- Shovels, rakes, and brooms
- Labels

#### **10.6 SPILL CONTROL PLAN**

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

- 1) Notify the SSO or FOL immediately.
  
- 2) Take immediate actions to stop the leak or spill by plugging or patching the drum or raising the leak to the highest point. Avoid contacting drum contents. Spread the absorbent material in the area of the spill covering completely.

It is not anticipated that a spill will occur in which the field crews cannot handle. Should this occur; however, the FOL or SSO will notify appropriate emergency response agencies.

## 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
- MSDS for the 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 the chemicals brought on site, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area.

**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 the substances employed on-site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.

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

**Site Clearance (maintained)** - This list is found within the training section of the HASP (See Figure 8-1). This list identifies site personnel, dates of training (including site-specific training), and medical surveillance. The lists indicate not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while 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 the 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)** - The results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.

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

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

## 13.0 GLOSSARY

AES	Aerostar Environmental Services, Inc.
ACGIH	American Conference of Governmental Industrial Hygienists
AST	Aboveground Storage Tank
bls	Below Land Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-term Environmental Action - Navy
CNS	Central Nervous System
CTO	Contract Task Order
CZR	Contamination Reduction Zone
°F	Degrees Fahrenheit
DOD	Department of Defense
DOT	Department of Transportation
DPT	Direct Push Technology
eV	Electron Volts
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
FOL	Field Operations Leader
GCTLs	Groundwater Cleanup Target Levels
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSA	Hollow Stem Augering
HSM	Health and Safety Manager
IDLH	Immediate Dangerous to Life or Health
IDW	Investigative-Derived Wastes
LEL/LFL	Lower Explosive Limit / Lower Flammable Limit
MSDS	Material Safety Data Sheets
MTBE	Methyl-tertiary Butyl Ether
N/A	Not Available
NAVSTA	Naval Station
Navy	United States Navy
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration

NTP	National Toxicity Program
OES	Omega Environmental Services, Inc.
OSHA	Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts-per-Million
SAP	Sampling and Analyses Plan
SCTLs	Soil Cleanup Target Levels
SOPs	Standard Operating Procedures
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SSO	Site Safety Officer
SVOC	Semivolatile Organic Compounds
TBD	To Be Determined
TLV	Threshold Limit Value
TOM	Task Order Manager
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
TWA	Time-Weighted Average
UST	Underground Storage Tank
VOA	Volatile Organic Aromatics
VOCs	Volatile Organic Compounds
WP	Work Plan

**ATTACHMENT I**

**INJURY/ILLNESS PROCEDURE  
AND REPORT FORM**



CASE NO. \_\_\_\_\_

## **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 Duffy 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 Duffy 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:**

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits. All employees must follow the above injury/illness reporting procedures. Consultants, independent contractors, and employees of subcontractors are not covered by Tetra Tech's Worker's Compensation plan.

**WHAT IS COVERED:**

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



CASE NO. \_\_\_\_\_

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

To: Corporate Health and Safety Manager  
Human Resource Administrator

Prepared by: \_\_\_\_\_

Position: \_\_\_\_\_

Project Name: \_\_\_\_\_

Office: \_\_\_\_\_

Project No. \_\_\_\_\_

Telephone: \_\_\_\_\_

**Information Regarding Injured or Ill Employee:**

Name: \_\_\_\_\_

Office: \_\_\_\_\_

Home address: \_\_\_\_\_  
\_\_\_\_\_

Gender: M  F  No. of dependents: \_\_\_\_\_

Home telephone: \_\_\_\_\_

Marital status: \_\_\_\_\_

Occupation (regular job title): \_\_\_\_\_

Date of birth: \_\_\_\_\_

Department: \_\_\_\_\_

Social Security No.: \_\_\_\_\_

**Date of Accident:** \_\_\_\_\_

**Time of Accident:** \_\_\_\_\_

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

Street address: \_\_\_\_\_

City, state, and zip code: \_\_\_\_\_

County: \_\_\_\_\_

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

Did employee die? Yes  No

Was employee performing regular job duties? Yes  No

Was safety equipment provided? Yes  No

Was safety equipment used? Yes  No

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

**Witness(es):**

Name:

Address:

Telephone:

**Describe the Illness or Injury and Part of Body Affected:**

**Name the Object or Substance which Directly Injured the Employee:**

**Medical Treatment Required:**

No  Yes  First Aid Only

Physician's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Hospital or Office Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone No.: \_\_\_\_\_

**Lost Work Days:**

No. of Lost Work Days \_\_\_\_\_

Last Date Worked \_\_\_\_\_

Time Employee Left Work \_\_\_\_\_

Date Employee Returned to Work \_\_\_\_\_

No. of Restricted Work Days \_\_\_\_\_

None

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

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

**Name of Tetra Tech employee the injury or illness was first reported to:** \_\_\_\_\_

**Date of Report:** \_\_\_\_\_

**Time of Report:** \_\_\_\_\_

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

**To be completed by Human Resources:**

Date of hire:

Hire date in current job:

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

Position at time of hire:

Shift hours:

State in which employee was hired:

Status:  Full-time  Part-time Hours per week: \_\_\_\_\_ Days per week: \_\_\_\_\_

Temporary job end date:

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

Date reported:

Reported by:

TeleClaim phone number:

TeleClaim account number:

Location code:

Confirmation number:

Name of contact:

Field office of claims adjuster:

**ATTACHMENT II**

**MEDICAL DATA SHEET**

**MEDICAL DATA SHEET**

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

Project \_\_\_\_\_

Name \_\_\_\_\_ Home Telephone \_\_\_\_\_

Address \_\_\_\_\_

Age \_\_\_\_\_ Height \_\_\_\_\_ Weight \_\_\_\_\_

Name of Next Kin \_\_\_\_\_

Drug or other Allergies \_\_\_\_\_

Particular Sensitivities \_\_\_\_\_

Do You Wear Contacts? \_\_\_\_\_

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals \_\_\_\_\_

What medications are you presently using? \_\_\_\_\_

Do you have any medical restrictions? \_\_\_\_\_

Name, Address, and Phone Number of personal physician: \_\_\_\_\_

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

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**ATTACHMENT III**

**SAFE WORK PERMITS**

**SAFE WORK PERMIT  
DECONTAMINATION ACTIVITIES  
NAVSTA MAYPORT, 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 augers and drilling.
- 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)**

- |  |  |  |
|--|--|--|
| IV. 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, steam cleaners field crews will wear hearing protection, and face shields.

- |  |   |   |
|--|---|---|
| V. Chemicals of Concern  | Action Level(s)   | Response Measures   |
| <u>Diesel Fuel / Heating oil and associated VOCs and SVOCs (PAHs).</u> | <u>Any sustained readings &gt;10 ppm above background in worker breathing zones</u> | <u>Suspend site activities and report to an unaffected area until levels return to normal</u> |

- |  |   |  |
|--|---|--|
| VI. 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 checked="" 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 checked="" type="checkbox"/> No                |

Modifications/Exceptions: PVC rain suits or PE or PVC coated Tyvek for protection against splashes and overspray. Chemical resistant boot covers if excessive liquids are generated or to protected footwear.

- |  |                                     |                                     |                         |                                     |                          |
|--|-------------------------------------|-------------------------------------|-------------------------|-------------------------------------|--------------------------|
| VII. Procedure review with permit acceptors    | Yes                                 | NA                                  |                         | Yes                                 | NA                       |
| Safety shower/eyewash (Location & Use) .....   | <input checked="" type="checkbox"/> | <input 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"/> |

- |   |                          |                          |                                     |
|---|--------------------------|--------------------------|-------------------------------------|
| VIII. 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"/> |

- 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: Chemical hazards with decontamination because of use of fluids such as isopropyl alcohol, methanol, etc. To minimize the potential for exposure, site personnel will use PPE and prevent contact with potentially contaminated equipment. Refer to the manufacturer's MSDS regarding PPE, handling, storage, and first-aid measures related to decontamination fluids.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT FOR  
SOIL BORINGS AND WELL INSTALLATION  
NAVSTA MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Soil borings using DPT or HSA techniques. Monitoring well installation is 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  | 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 shoes, safety glasses, hardhat, hearing protection, and nitrile gloves or leather gloves with surgical-style inner gloves. Nitrile gloves if free product is discovered.

- |                                  |                                    |   |
|----------------------------------|------------------------------------|---|
| V. Chemicals of Concern          | Action Level(s)                    | Response Measures                         |
| <u>Diesel Fuel / Heating oil</u> | <u>Any sustained readings</u>      | <u>Suspend site activities and</u>        |
| <u>and associated VOCs and</u>   | <u>&gt;10 ppm above background</u> | <u>report to an unaffected area until</u> |
| <u>SVOCs (PAHs).</u>             | <u>in worker breathing zones</u>   | <u>levels return to normal</u>            |

- |  |   |  |
|--|---|--|
| VI. 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 checked="" 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 checked="" type="checkbox"/> No                |

Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall and impermeable boots if here is a potential for soiling work clothes.

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

- |   |                          |                          |                                     |
|---|--------------------------|--------------------------|-------------------------------------|
| VIII. 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"/> |

- 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: Inspect drill/DPT rigs prior to use in accordance with equipment inspection procedures. Maintain safe distances away from moving equipment and machinery. Avoid generating dusts. Free product was discovered with a monitoring well at Site 1586 – avoid contact with contaminated media and free product.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT FOR  
SOIL BORINGS AND WELL INSTALLATION  
NS MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Soil borings using DPT or HSA techniques. Monitoring well installation is 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  | 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 shoes, safety glasses, hardhat, hearing protection, and nitrile gloves or leather gloves with surgical-style inner gloves. Nitrile gloves if free product is discovered.

- |  |   |   |
|--|---|---|
| V. Chemicals of Concern  | Action Level(s)   | Response Measures   |
| <u>Diesel Fuel / Heating oil and associated VOCs and SVOCs (PAHs).</u> | <u>Any sustained readings &gt;10 ppm above background in worker breathing zones</u> | <u>Suspend site activities and report to an unaffected area until levels return to normal</u> |

- |  |   |  |
|--|---|--|
| VI. 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 checked="" 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 checked="" type="checkbox"/> No                |

Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall and impermeable boots if here is a potential for soiling work clothes.

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

- |   |                          |                          |                                     |
|---|--------------------------|--------------------------|-------------------------------------|
| VIII. 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"/> |

- 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: Inspect drill/DPT rigs prior to use in accordance with equipment inspection procedures. Maintain safe distances away from moving equipment and machinery. Avoid generating dusts. Free product was discovered with a monitoring well at Site 1586 – avoid contact with contaminated media and free product.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_



**SAFE WORK PERMIT FOR  
IDW HANDLING, SAMPLING, AND STAGING OF DRUMS  
NS MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): IDW management and moving IDW drums to storage area.
- II. Required Monitoring Instruments: PID with 10.6 eV (or higher) lamp detect presence of VOCs
- 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  Level B   
 Level C  Level A   
 Detailed on Reverse
- Respiratory equipment required  
 Full face APR   
 Half face APR   
 PAPR   
 Skid Rig
- Escape Pack   
 Airline/SCBA   
 Bottle trailer   
 None
- Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety shoes, hardhat, cotton/leather outer gloves with surgical-style inner gloves, impermeable boot covers.

- V. Chemicals of Concern Diesel Fuel / Heating oil and associated VOCs and SVOCs (PAHs).
- |   |   |
|---|---|
| Action Level(s)   | Response Measures   |
| <u>Any sustained readings &gt;10 ppm above background in worker breathing zones</u> | <u>Suspend site activities and report to an unaffected area until levels return to normal</u> |

- VI. Additional Safety Equipment/Procedures
- |                               |   |   |
|-------------------------------|---|---|
| Hard-hat .....                | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No   |
| Safety Glasses .....          | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No     |
| Chemical/splash goggles ..... | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Radio <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                   |
| Splash Shield .....           | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No              |
| Splash suits/coveralls .....  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type - Nitrile) <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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No       |
- Modifications/Exceptions: Tyvek coverall if there is a potential for soiling clothes. Work/rest regimen to be determined by SSO & site personnel

- VII. Procedure review with permit acceptors
- |  |   |                         |   |
|--|---|-------------------------|---|
| Safety shower/eyewash (Location & Use) .....   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> NA | Emergency alarms .....  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> NA |
| Procedure for safe job completion .....        | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> NA | Evacuation routes ..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> NA |
| Contractor tools/equipment/PPE inspected ..... | <input 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 type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA |
| Physical Hazards Barricaded and Isolated .....                | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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: Use caution when handling drums. Whenever possible use equipment or multiple personnel to prevent injuries resulting from overexertion. Beware of drums that have been exposed to heat or direct sunlight – a few accidents have occurred involving lids of pressurized drums striking field personnel. Mark all IDW containers appropriately. Inspect areas periodically for any leaks.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
MOBILIZATION AND DEMOBILIZATION ACTIVITIES  
NAVSTA MAYPORT, 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  | PAPR <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, or coveralls, safety glasses and safety footwear. 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>	_____	_____

- 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 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 checked="" type="checkbox"/> No | Gloves (Type - <u>Work</u> ) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Steel toe Work shoes or boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No            |

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.

VII. 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. If workin in high grass or vegetated 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 FOR  
MULTI-MEDIA SAMPLING  
NAVSTA MAYPORT, 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  | 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 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  | Action Level(s)   | Response Measures   |
| <u>Diesel Fuel / Heating oil and associated VOCs and SVOCs (PAHs).</u> | <u>Any sustained readings &gt;10 ppm above background in worker breathing zones</u> | <u>Suspend site activities and report to an unaffected area until levels return to normal</u> |

- VI. Additional Safety Equipment/Procedures
- |                               |   |  |
|-------------------------------|---|--|
| Hard-hat .....                | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input checked="" 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 checked="" type="checkbox"/> No | Gloves (Type - <u>Surgical Style</u> ) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                      |
- 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    | Yes                                 | NA                                  | Yes                                 | NA                       |
| Safety shower/eyewash (Location & Use) .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Procedure for safe job completion .....        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Contractor tools/equipment/PPE inspected ..... | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Emergency alarms .....                         |                                     |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Evacuation routes .....                        |                                     |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Assembly points .....                          |                                     |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

- |   |                          |                          |                                     |
|---|--------------------------|--------------------------|-------------------------------------|
| VIII. 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"/> |

- 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: Free product may be encountered in monitoring wells at Site 1586. Use caution when cutting acetate sleeves or when handling heavy objects such as sample coolers.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
SURVEYING ACTIVITIES  
NAVSTA MAYPORT, 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                         |                                  | PAPR          | <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 - Work)	<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"/>
Procedure for safe job completion .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Evacuation routes .....	<input checked="" type="checkbox"/>
Contractor tools/equipment/PPE inspected .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Assembly points .....	<input checked="" 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. If working in high grass or vegetated 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: \_\_\_\_\_

**ATTACHMENT IV**

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



TETRA TECH NUS, INC.

# STANDARD OPERATING PROCEDURES

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Effective	03/00	Date	Revision
			1
Applicability	Tetra Tech NUS, Inc.		
Prepared	Health & Safety		
Approved	D. Senovich <i>DS</i>		

Subject  
UTILITY LOCATING AND EXCAVATION CLEARANCE

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## 1.0 PURPOSE

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

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

## 2.0 SCOPE

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

## 3.0 GLOSSARY

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

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

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

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

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

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

## 4.0 RESPONSIBILITIES

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

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

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

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

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

## 5.0 PROCEDURES

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

### 5.1 Buried Utilities

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

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

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

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adequate to prevent employees from contacting such lines directly with any part of their body or indirectly through 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**

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

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

<b>Wyoming</b> West Park Utility Coordinating Council (307) 587-4800  Call-In Dig-In Safety Council (800) 300-9811  Fremont County Utility Coordinating Council (800) 489-8023  Central Wyoming Utilities Coordinating Council (800) 759-8035  Southwest Wyoming One Call (307) 362-8888  Carbon County Utility Utility Coordinating Council (307) 324-6666  Albany County Utility Coordinating Council (307) 742-3615  Southeast Wyoming Utilities Coordinating Council (307) 638-6666  Wyoming One-Call (800) 348-1030  Utilities Underground Location Center (800) 454-5555  Converse County Utility Coordination Council (800) 562-5561
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**ATTACHMENT 3  
UTILITY CLEARANCE FORM**

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

1. **Underground Utilities** Circle One
- a) Review of existing maps? yes no N/A
  - b) Interview local personnel? yes no N/A
  - c) Site visit and inspection? yes no N/A
  - d) Excavation areas marked in the field? yes no N/A
  - e) Utilities located in the field? yes no N/A
  - f) Located utilities marked/added to site maps? yes no N/A
  - g) Client contact notified yes no N/A  
 Name \_\_\_\_\_ Telephone: \_\_\_\_\_ Date: \_\_\_\_\_
  - g) State One-Call agency called? yes no N/A  
 Caller: \_\_\_\_\_  
 Ticket Number: \_\_\_\_\_ Date: \_\_\_\_\_
  - 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 V**

**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? _____	<input type="checkbox"/>	<input type="checkbox"/>

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**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 that 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**

- |  | <b>Yes</b>               | <b>No</b>                |
|--|--------------------------|--------------------------|
| - 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 |                          |                          |

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Site Safety Officer Signature