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HEALTH AND SAFETY PLAN FOR PHASE 2 SITE INSPECTION NAS INDIAN HEAD MD  
7/1/2011  
TETRA TECH

**Health and Safety Plan  
for  
Phase 2 Site Inspection  
at the  
Naval Support Facility  
Indian Head Stump Neck Annex  
Indian Head, Maryland**



**Naval Facilities Engineering Command  
Washington**

**Contract Number N62467-04-D-0055**

**Contract Task Order 423**

**Revision 0  
July 2011**

HEALTH AND SAFETY PLAN  
FOR  
MUNITIONS RESPONSE PROGRAM PHASE 2 SITE INSPECTION  
FIELD ACTIVITIES  
AT THE  
NAVAL SUPPORT FACILITY  
INDIAN HEAD STUMP NECK ANNEX  
INDIAN HEAD, MARYLAND

Submitted to:

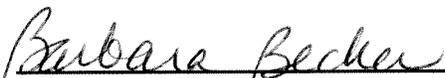
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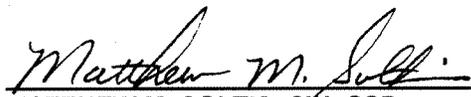
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Revision 0  
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## 1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been developed to provide practices and procedures for Tetra Tech NUS, Inc. (Tetra Tech) personnel engaged in Phase 2 Site Inspection (SI) activities at the Stump Neck Annex at Naval Support Facility - Indian Head (NSFIH), Charles County, Maryland. This Phase 2 SI is being conducted to evaluate impacts to groundwater and includes the collection of groundwater data to determine whether surface contaminants have migrated from soil to groundwater, as well as a human health risk screening to determine whether groundwater contaminant concentrations may pose an unacceptable risk to potential future human receptors.

In addition to the HASP, a copy of the Tetra Tech Health and Safety Guidance Manual must be present at the site during the performance of site activities. The Guidance Manual provides supporting information pertaining to the HASP, as well as Tetra Tech Standard Operating Procedures (SOP's). Both documents must be present at the site to comply with the requirements stipulated in the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response standard or HAZWOPER).

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 at the site. The HASP will be modified, if new information becomes available. Changes to the HASP will be made with the approval of the Tetra Tech Project Health and Safety Officer (PHSO) and the Tetra Tech Health and Safety Manager (HSM). Requests for modifications to the HASP will be directed to the PHSO, who will determine if the changes are necessary. The PHSO will notify the Project Manager (PM), who will notify affected personnel of changes.

### 1.1 KEY PROJECT PERSONNEL AND ORGANIZATION

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

- The Tetra Tech PM 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:
  - Providing information regarding site contaminants and physical hazards associated with the site.

- Establishing air monitoring and decontamination procedures.
  - Assigning personal protective equipment based on task and potential hazards.
  - Determining emergency response procedures and emergency contacts.
  - Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
  - Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
  - Modifying this HASP, as it becomes necessary.
- The Tetra Tech 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:
    - Coordinates health and safety activities with the FOL.
    - Selects, applies, inspects, and maintains personal protective equipment.
    - Establishes work zones and control points in areas of operation.
    - Implements air monitoring program for onsite activities.
    - Verifies training and medical clearance of onsite personnel status in relation to site activities.
    - Implements Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities.
    - Coordinates emergency services.
    - Provides site-specific training for onsite personnel.
    - Investigates accidents and injuries (Attachment I – Incident Report Form)
    - Provides input to the PHSO regarding the need to modify, this HASP, or applicable health and safety associated documents as per site-specific requirements.
  - The Unexploded Ordnance (UXO) Technician will be responsible for advising the Project Manager on UXO matters, including the measures that will be necessary to effectively implement and adhere to the Unexploded Ordnance and Chemical Warfare Agents Activities SOP. (Attachment II). Duties will include the following:
    - Conducting UXO avoidance surveys prior to and during site activities.
    - Participating in site specific training sessions.
    - Maintaining familiarity with the Tetra Tech UXO SOP.
    - Conduct daily and in progress functional tests on instruments used in the survey

- Conduct the instrument assisted survey with the FOL
- Keeping current with pertinent new information and technologies.
- Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the Tetra Tech HSM.
- In some cases one person may be designated responsibilities for more than one position. For example, at NSFIIH the FOL may also be responsible for SSO duties. This action will be performed only as credentials, experience, and availability permits.

## **1.2 STOP WORK AUTHORIZATION**

ALL employees are empowered, authorized, and responsible to STOP WORK at any time when an imminent and uncontrolled safety or health hazard is perceived. In a Stop Work event (immediately after the involved task has been shut down and the work area has been secured in a safe manner) the employee shall contact the Project Manager and the Corporate Health and Safety Manager. Through observations and communication, all parties involved shall then develop, communicate, and implement corrective actions necessary and appropriate to modify the task and to resume work.

### 1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

**Site Name:** Indian Head Stump Neck Annex – NSFIH **Navy RPM:** Joseph Rail

**Address:** Indian Head, MD **Phone Number:** (202) 685-3105

**Purpose of Site Visit:** Site Investigation at the Stump Neck Annex

**Proposed Dates of Work:** July 2011 until completion

#### Project Team:

<b>Tetra Tech Personnel:</b>	<b>Discipline/Tasks Assigned:</b>	<b>Telephone Number</b>
<u>Barbara Becker, EIT, PMP</u>	<u>PM</u>	<u>(610) 382-3770</u>
<u>Fred Ramser</u>	<u>FOL/SSO</u>	<u>(412) 921-8838</u>
<u>Ralph Brooks</u>	<u>UXO Manager</u>	<u>(770) 413-0965 ext. 231</u>
<u>Matthew M. Soltis, CIH, CSP</u>	<u>HSM</u>	<u>(412) 921-8912</u>
<u>James K. Laffey</u>	<u>PHSO</u>	<u>(412) 921-8678</u>
<u>TBD</u>	<u>UXO Technician</u>	<u>TBD</u>

<b>Non-Tetra Tech Personnel</b>	<b>Affiliation/Discipline/Tasks Assigned</b>	<b>Telephone Number</b>
<u>TBD</u>	<u></u>	<u></u>

Hazard Assessment (for purpose of 29 CFR 1910.132) for HASP preparation has been conducted by:

James K. Laffey

## 2.0 EMERGENCY ACTION PLAN

### 2.1 INTRODUCTION

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

Tetra Tech will, through necessary services, provide the following emergency action measures:

- Initial stage fire fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Initial medical support for injuries or illnesses requiring basic first-aid
- Site control and security measures as necessary

### 2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards and Unexploded Ordnance (UXO) are the types of emergencies that could be encountered during site activities.

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

- Coordinating with local Emergency Response personnel to ensure that Tetra Tech emergency action activities are compatible with existing emergency response procedures.

- Base Fire Protection and Emergency Services will be notified of scheduled events and activities. This is most imperative in situations where their services may be required.
- Establishing and maintaining information at the project staging area (Support Zone) for easy access in the event of an emergency. This information will include the following:
  - Chemical Inventory of chemicals used onsite, with Material Safety Data Sheets.
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency Notification - phone numbers.

The Tetra Tech FOL will be responsible for the following tasks:

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Anomaly avoidance techniques will be used for intrusive subsurface soil activities. It is understood that the use of two-way communication devices (cellular phones and radios) may be used at the NSFIIH providing such equipment is intrinsically safe.
- Periodically performing practice drills to ensure site workers are familiar with incidental response measures.
- Providing the necessary equipment to safely accomplish identified tasks.

## **2.3 EMERGENCY RECOGNITION AND PREVENTION**

### **2.3.1 Recognition**

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with site contaminants. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in

detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency.

Munitions and Explosives of Concern (MEC) will be avoided. If any MEC are discovered, the location will be recorded and NSFIIH will be notified. These surveys findings will be documented by the FOL and/or the SSO in the Site Health and Safety log book, however, site personnel will be responsible for reporting hazardous situations. Where potential hazards exist, Tetra Tech will initiate control measures to prevent adverse effects to human health and the environment.

The above actions will provide early recognition for potential emergency situations, and allow Tetra Tech to initiate the necessary control measures.

### **2.3.2      Prevention**

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

## **2.4            EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE**

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to the following: severe weather conditions; fire or explosion; monitoring instrumentation readings which indicate levels of contamination are greater than instituted action levels; and evidence of personnel overexposure to potential site contaminants.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the Tetra Tech FOL. Safe places of refuge will be identified prior to the commencement of site activities by the SSO and will be conveyed to personnel as part of the pre-activities training session. This information will be reiterated during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the Tetra Tech FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will perform a head count at this location to account for and to confirm the location of site personnel.

Emergency response personnel will be immediately notified of any unaccounted personnel. The SSO will document the names of personnel onsite (on a daily basis) in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

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

Tetra Tech personnel will be working in close proximity to each other at NSFIIH. As a result, hand signals, two-way radio communications, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations. If an emergency warranting evacuation occurs, the following procedures are to be initiated:

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

HELP	three short blasts	(. . .)
EVACUATION	three long blasts	(- - -)

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

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

- Dial 911 (outside services) and call other pertinent emergency contacts listed in Table 2-1 and report the incident.
  
- Give the emergency operator the:
  - Location of the emergency
  - Type of emergency
  - Number of injured
  - A brief description of the incident.
  
- Stay on the phone and follow the instructions given by the operator.
  
- The operator will then notify and dispatch the proper emergency response agencies.

## **2.6 EMERGENCY CONTACTS**

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

**TABLE 2-1  
 EMERGENCY CONTACTS  
 NSFIIH**

EMERGENCY AGENCY / CONTACT	TELEPHONE NUMBER
<b>EMERGENCY</b>	<b>911</b>
Civista Medical Center	(301) 609-4000
Poison Control Center	(800) 222-1222
Utility Clearance	811
Navy RPM, Joseph Rail	(202) 685-3105-office (412) 251-9736-cell
NSFIIH POC, Nick Carros	(301) 744-2263-office
Tetra Tech PM, Barbara Becker	(610) 382-3770-office (949) 929-2748-cell
UXO Manager, Ralph Brooks	(770) 413-0965, ext. 231-office (404) 661-4916-cell
FOL/SSO, Fred Ramser	(412) 921-8838-office
UXO Technician, TBD	TBD
HSM, Matthew M. Soltis, CIH, CSP	(412) 921-8912-office
PHSO, James K. Laffey	(412) 921-8678-office (412) 370-6668-cell

**2.7 EMERGENCY ROUTES TO HOSPITALS**

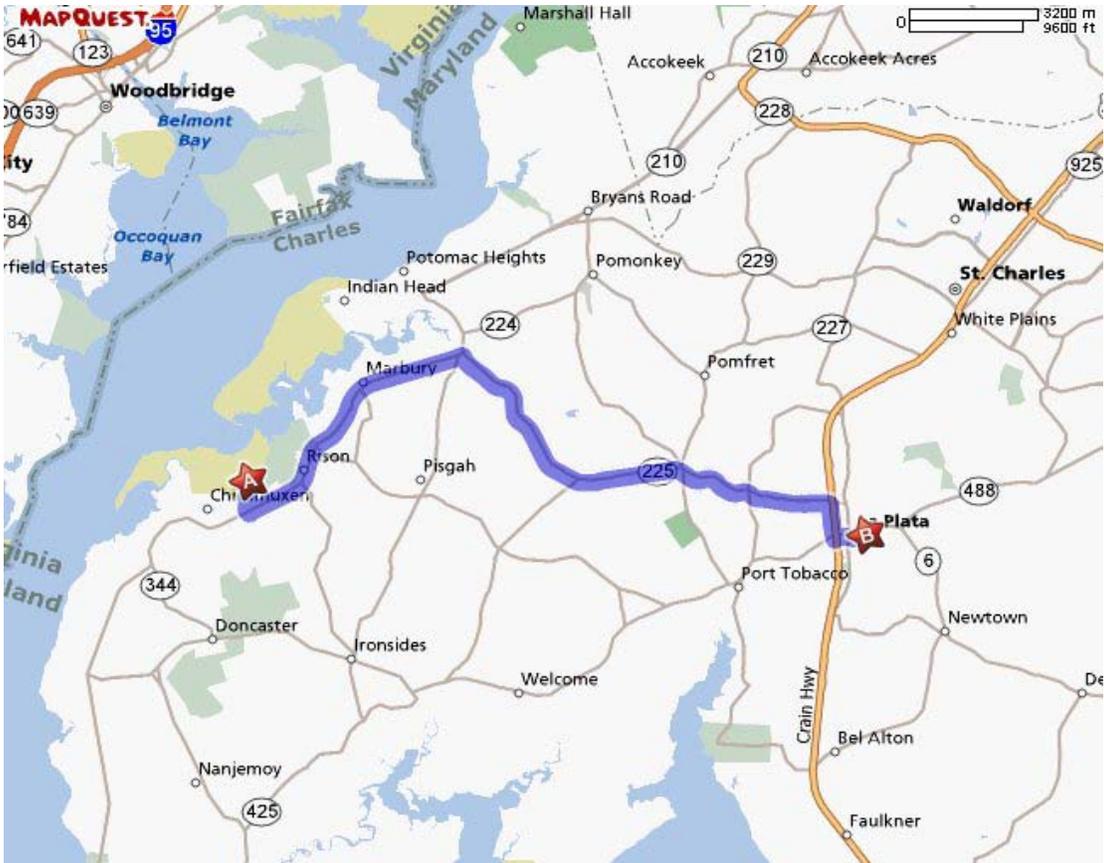
**Civista Medical Center**  
701 Charles St  
La Plata, MD 20646  
(301) 609-4000

Stump Neck Rd, Indian Head, MD 20640

- 1: Start out going EAST on STUMP NECK RD toward RUM POINT RD. 0.1 mi
- 2: Turn RIGHT to stay on STUMP NECK RD. 0.7 mi
- 3: Turn LEFT onto CHICAMUXEN RD/MD-224. 5.7 mi
- 4: Turn RIGHT onto HAWTHORNE RD/MD-225. 8.9 mi
- 5: Turn RIGHT onto CRAIN HWY/US-301 S/BLUE STAR MEMORIAL HWY. 0.7 mi
- 6: Turn LEFT onto MD-6. 0.6 mi
- 7: End at 701 Charles St La Plata, MD 20646

Total Time: 27 minutes Total Distance: 16.73 miles  
Civista Medical Center: 701 Charles St, La Plata, MD 20646, (301) 609-4000

**FIGURE 2-1  
ROUTE TO MEDICAL CENTER**



## **2.8 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT**

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

Tetra Tech 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. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets (Attachment III) filed onsite. If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel.

## 3.0 SITE BACKGROUND

### 3.1 SITE HISTORY AND BACKGROUND

The Navy has conducted various testing, training, and disposal activities related to military munitions at the Stump Neck Annex, NSFIH, Maryland, since it was established in 1890 as a Naval Ordnance Station. NSFIH is located in northwestern Charles County, Maryland, approximately 25 miles southwest of Washington, D.C. The Stump Neck Annex covers approximately 1,100 acres on the Stump Neck peninsula at the confluence of the Potomac River and Chicamuxen Creek in Charles County, Maryland. Stump Neck Annex was acquired by the Navy in 1901 to support activities at the 2,300-acre Indian Head Main Installation. General Smallwood State Park and private property parcels are located east and southeast, respectively, of Stump Neck Annex, and the Chicamuxen Wildlife Management Area (WMA) is to the south across Chicamuxen Creek.

The Valley Impact Area and Stump Neck Impact Area are both located on the Stump Neck Annex. These two areas received fire from the Valley Gun Proving Site located on the Main Installation of NSFIH from 1891 through 1921. Various caliber guns (4-inch through 16-inch) were fired into these two areas. The projected firing fan from the Main Installation to the impact areas covers several of the sites in this HASP. In addition to fire from the gun proving site, the Stump Neck Impact Area received impacts from a firing range set up in the vicinity of Rum Point. Marine Corps Base (MCB) Quantico was also permitted to fire large artillery at the Stump Neck Annex for several years until 1934.

As a result of the Navy's explosives and munitions training activities, MEC may be present at various sites throughout the Stump Neck Annex. The term MEC includes Discarded Military Munitions (DMM), Unexploded Ordnance (UXO), and Munitions Constituents (MC) in high enough concentrations to pose an explosive hazard. This HASP will cover the five small arms ranges located on the Stump Neck Annex and presented in Table 3-1 below. No MEC have been observed or documented at any of the small arms ranges, however two of the small arms ranges (the Marine Rifle Range and the Old Skeet and Trap Range) are located within the range fan of the Valley Impact Area and will be treated as suspect for MEC. Brief descriptions of each site are also included in the following sections.

Individual site histories and physical descriptions are presented in the following subsections. Due to the lack of historical soil boring or well installation data from these sites, only limited information is included regarding site-specific subsurface conditions.

UXO avoidance support will be provided during field operations. UXO personnel providing this support will meet the requirements of Department of Defense Explosive Safety Board (DDESB) Technical Paper (TP)

18 for UXO Technician II or higher and will follow procedures outlined in the Tetra Tech UXO Avoidance Standard Operating Procedure (SOP) included in the site-specific HASP.

**TABLE 3-1**

**SUMMARY OF SMALL ARMS RANGE SITES  
 NAVAL SUPPORT FACILITY INDIAN HEAD  
 INDIAN HEAD, MARYLAND**

Site Name	Site No.	Size (acres)	Purpose	Dates of Use
Marine Rifle Range <sup>(1)</sup>	UXO 14	30.44	Rifle range	1911-1918
Old Skeet and Trap Range <sup>(1)</sup>	UXO 15	29.33	Skeet and trap range	1966-1991
Rum Point Skeet Range	UXO 16	33.45	Skeet and trap range	1991-2001
Small Arms (Pistol) Range	UXO 17	2.41	Pistol range	Mid-1980s - 1991
Roach Road Rifle Range	UXO 25	0.27	Rifle range	1967-1980s

<sup>(1)</sup> Located within firing range of Valley Impact Area

**3.1.1 Marine Rifle Range (Site UXO-14)**

Environmental contamination may exist at the Marine Rifle Range (30.5 acres) because the facility was an active range from 1911 through 1918. Specific small arms ammunition types and materials used at the Marine Rifle Range include general rifle ammunition from the early 1900s (e.g., .30-caliber ammunition). Expended ammunition is suspected along the range floor immediately in front of the target embankments, in the target embankments themselves, and in the hillside east of the target embankments, which would have been impacted by bullets shot through, over, or alongside the targets.

MC consisting of metals (primarily lead and, to a lesser extent, antimony, arsenic, copper, tin, and zinc) may be present in site soil (particularly at the 0 to 6 inch interval) and surface water and sediment of any drainage leading from the range to the adjoining areas. Lead is the primary metal MC of concern because it is the primary constituent in the spent. It is anticipated that other metals contamination will be spatially correlated with lead concentrations because of their association with bullets. The nature and extent of the potential contamination is not known at this time because of the lack of environmental sampling.

### **3.1.2 Old Skeet and Trap Range (Site UXO-15)**

Environmental contamination may exist at the Old Skeet and Trap Range (23.5 acres) because the facility was active for 25 years as a skeet and trap range. Specific small arms ammunition types and materials used at the range may have included .410-, .28-, .20-, and 12-gauge shells, clay targets, 5 pound containers of smokeless powder, and shot. Based on the proximity of the site to the Potomac River, a significant amount of the shot is assumed to have fallen both in the water and along the shoreline of the river.

MC consisting of metals (primarily lead and, to a lesser extent, antimony, arsenic, copper, tin, and zinc) and PAHs (from pitch tar used in the clay pigeon targets) may be present in site soil (particularly surface soil [the 0-to 6-inch interval]) and surface water and sediment. Lead is assumed to be the primary metal MC of concern in soil and sediment because it is the primary constituent of the spent munitions. Other metals contamination will be spatially correlated with lead. The nature and extent of potential contamination is not known because of a lack of environmental sampling.

### **3.1.3 Roach Road Rifle Range (Site UXO-25)**

Environmental contamination may exist at the Roach Road Rifle Range (0.3 acre) because the facility was an active range from 1963 through 1986. Specific small arms ammunition types and materials used at the Roach Rifle Range most likely included small arms and pistol ammunition (9mm, .45-cal, and .50-cal). Expended bullets are suspected along the range floor and in the earthen embankment to the west behind the former range targets (i.e., the primary impact berm).

MC consisting of metals (primarily lead and, to a lesser extent, antimony, arsenic, copper, tin, and zinc) may be present in site soil (particularly surface soil [the 0- to 6-inch interval]) and surface water and sediment. Lead is assumed to be the primary metal MC of concern because it is the primary constituent of the spent munitions. Other metals contamination will be spatially correlated with lead. The nature and extent of potential contamination is not known because of a lack of environmental sampling.

### **3.1.4 Rum Point Skeet Range (Site UXO-16)**

Environmental contamination may exist at the Rum Point Skeet Range (33.45 acres) because the facility was active for 10 years (1991 to 2001) as a skeet range (limited to shotguns). Specific small arms ammunition types and materials used at the Rum Point Skeet Range may have included .410-, .28-, .20-, and 12-gauge shells, and clay targets. Based on the anticipated annual site usage, 53,000 pounds of lead and 196,800 pounds of clay target fragments may have accumulated in soil over the 10 years of operations. Lead shot may also be imbedded in trees along the tree line within the shot fall zone for the

range. Much of the area within the boundary of the range drains to the west via a shallow surface depression that conveys surface water and sediment into a wetland and unnamed tributaries that discharge into Mattawoman Creek.

MC consisting of metals (primarily lead and, to a lesser extent, antimony, arsenic, copper, tin, and zinc) and PAHs (from pitch tar used in the clay pigeon targets) may be present in site soil (particularly at the 0- to 6-inch interval) and surface water and sediment. Lead is assumed to be the primary metal MC of concern in soil and sediment because it is the primary constituent of the spent munitions. Other metals contamination will be spatially correlated with lead. The nature and extent of potential contamination is not known because of a lack of environmental sampling.

### **3.1.5 Small Arms (Pistol) Range (Site UXO-17)**

Environmental contamination may exist at the Small Arms (Pistol) Range (2.41 acres) because the facility was an active range from the mid-1980s through 1991. Specific small arms ammunition types and materials used at the range most likely included small arms pistol ammunition and possibly rifle ammunition (9mm, .45-cal, .22-cal, and .50-cal). Expended ammunition is suspected along the range floor immediately in front of the hillside, in the earthen hillside embankment to the east, and behind the former range targets (i.e., the primary impact berm). There appears to be some limited slumping (slope failure) along this hillside such that uncontaminated soil at the head of the slope may now cover potentially contaminated soil at the toe of the slope.

MC consisting of metals (primarily lead and, to a lesser extent, antimony, arsenic, copper, tin, and zinc) and PAHs (from pitch tar used in the clay pigeon targets) may be present in site soil (particularly at the 0- to 6-inch interval) and surface water and sediment. Lead is assumed to be the primary metal MC of concern in soil and sediment because it is the primary constituent of the spent munitions. Other metals contamination will be spatially correlated with lead. The nature and extent of potential contamination is not known because of a lack of environmental sampling.

## 4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at NSFIH during the investigation. Additionally, each task has been evaluated and the associated hazards and recommended control measures are listed in the Accident Prevention Plan and Activity Hazard Analysis in Attachment IV of this HASP. The planned activities involved in this effort are presented in detail in the Work Plan developed for the project. If new tasks are to be performed at the site, the Accident Prevention Plan and Activity Hazard Analysis and this section will be modified accordingly.

MEC/anomaly avoidance field procedures will be practiced for the field investigation activities being performed by Tetra Tech. Specific tasks to be conducted include the following:

- Mobilization and demobilization
- UXO escort sub-surface anomaly avoidance
- Temporary monitoring well installation via DPT implementing anomaly avoidance procedures
- Groundwater sampling
- Decontamination
- IDW management

The above listing represents a summarization of the tasks as they apply to the scope and application of this HASP. For more detailed description of the associated tasks, please refer to the Site-Specific Work Plan. If additional tasks are determined to be necessary, this HASP will be amended and a hazard evaluation of the additional tasks performed.

## **5.0 IDENTIFYING AND COMMUNICATING TASK-SPECIFIC HAZARDS AND GENERAL SAFE WORK PRACTICES**

The purpose of this section is to identify the anticipated hazards and appropriate hazard prevention/hazard control measures that are to be observed for each planned task or operation. These topics have been summarized for each planned task through the use of task-specific Activity Hazard Analysis located in Section 14.0 of the APP. The AHAs are to be reviewed in the field by the SSO with the task participants prior to initiating any task. Additionally, potential hazard and hazard control matters that are relevant but are not necessarily task-specific are addressed in the following portions of this section.

Section 6.0 presents additional information on hazard anticipation, recognition, and control relevant to the planned field activities.

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

In addition to the task-specific work practices identified in the AHAs, the following general safe work practices are to be followed when conducting work on-site.

- Avoid contact with potential MEC or MPPEH by avoiding metallic objects and following the instructions of the UXO Technicians.
- 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 is prohibited.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area.
- If a source of potable water is not available at the work site that can be used for hands-washing, the use of waterless hands cleaning products will be used, followed by actual hands-washing as soon as practicable upon exiting the site.
- Avoid contact with potentially contaminated substances including puddles, pools, mud, or other such areas.
- Avoid, kneeling on the ground or leaning or sitting on equipment.

- Keep monitoring equipment away from potentially contaminated surfaces.
- Plan and mark entrance, exit, and emergency evacuation routes.
- Rehearse unfamiliar operations prior to implementation.
- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.
- Establish appropriate safety zones including support, contamination reduction, and exclusion zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the exclusion zone). Non-essential vehicles and equipment should remain within the support zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report any injuries, illnesses, and unsafe conditions, practices, and equipment to the SSO.
- Observe co-workers for signs of toxic exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

## **5.2 MEC/MEC RELATED ITEMS SAFE WORK PRACTICES**

One of the obvious hazards associated with this activity is the potential for encountering MEC. The unintended detonation of MEC or a MEC related item could result in injury or possibly death.

MEC/MPPEH represents a potential safety hazard at this site and may constitute an imminent and substantial endangerment to personnel and the local populations due to its explosive potential. Activities involving work in areas potentially containing MEC hazards shall be conducted with approval from the Naval Ordnance Safety and Security Activity (NOSSA) and in accordance with OPNAV 8020.15, NAVSEA Operations Pamphlet (OP) 5, NOSSA Instruction (INST) 8020.15, and Department of Defense (DOD) 6055.9-M., and other Department of Navy (DoN) and DOD requirements regarding personnel, equipment,

and procedures. Tetra Tech and any subcontractors to Tetra Tech will perform the work in accordance with the approved Explosives Safety Submission (ESS) Determination per NOSSAINST 8020.15C.

To address MEC hazards, the following measures will be incorporated.

### 5.2.1 General MEC Avoidance Measures

Tetra Tech Unexploded Ordnance (UXO) Support will perform a visual survey of the areas the Site Inspection Team will enter. During the pre-planning phase of the visit the team will identify the areas they wish to inspect.

- Site personnel will follow instructions and directions provided by the UXO Technician.
- Site personnel will restrict themselves to the areas identified by UXO personnel.
- UXO personnel will perform anomaly avoidance techniques during the installation of the temporary groundwater monitoring wells.
- Personnel will be assigned in such a manner to permit the direct visual observation of one another as well as provide any emergency assistance should it be required.
- Personnel will notify the UXO Technician should they encounter suspected MEC/MPPEH articles or unidentified items.
- Smoking is prohibited on site.
- Matches, lighters, or other fire, flame, or spark-producing devices are prohibited the site.
  - Cell phones or two-way radios will be used under the direct supervision and expressed permission of the UXO Technician
  - Personnel shall suspend outdoor activities in the event of inclement weather (thunderstorms, lightning, heavy rain).

### 5.2.2 Temporary Monitoring Well Installation Measures

The following information describes anomaly avoidance procedures for installing temporary monitoring well installation on a site with known or suspected MEC.

- The UXO Technician must conduct an access survey of the routes to and from the proposed investigation site as well as an area around the investigation site.
- The UXO Technician must visually survey the surface of each proposed soil boring for any indication of MEC/MPPEH impact.
- The UXO Technician will survey locations using a Schonstedt as a downhole magnetometer.
- The DPT rod will be withdrawn and the downhole magnetometer will be used to survey the boring at 2 foot intervals.
  - The procedure will be repeated desired depth is reached.
- If anomalies are detected at a proposed sampling location or too many anomalies are detected in a general area of interest, an alternate location for collection of surface soil samples will be selected.
  - Detected anomalies will be prominently marked with survey flagging or pin flags for avoidance during sampling activities.

## 6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards anticipated to be present during the activities to be conducted.

### 6.1 CHEMICAL HAZARDS

The potential health hazards associated with the five small arms/skeet ranges at the Stump Head Annex include inhalation and ingestion of, and direct contact with various contaminants that may be present. Based on historic information and previous sampling data, the following have been identified as potential contaminants of concern (PCOCs) at these sites:

- Metals primarily lead, and to a lesser degree antimony, arsenic, copper, tin, and zinc
- MC and explosive contaminants (nitroglycerin)
- PAHs (from pitch tar used in the clay pigeon targets)

As direct contact will be minimal given the sampling method, it is unlikely that exposure will occur. Area wetting techniques will be used if dust generation occurs. Exposure to these compounds is most likely to occur through incidental ingestion of contaminated water, or hand-to-mouth contact during sampling activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) and direct reading instruments will be the principal methods for minimizing exposures. The signs and symptoms of general exposure to these substances are summarized below:

**Metals:** There are 35 metals that are of concern because of occupational exposure; 23 of these are the heavy metals: antimony, arsenic, bismuth, cadmium, cerium, chromium, cobalt, copper, gallium, gold, iron, lead, manganese, mercury, nickel, platinum, silver, tellurium, thallium, tin, uranium, vanadium, and zinc. Small amounts of these elements are common in our environment and diet and are actually necessary for good health, but large amounts of any of them may cause acute or chronic toxicity (poisoning).

Heavy metal toxicity can result in damaged or reduced mental and central nervous function, lower energy levels, and damage to blood composition, lungs, kidneys, liver, and other vital organs. Allergies are not uncommon and repeated long-term contact with some metals or their compounds may even cause cancer.

The association of symptoms indicative of acute toxicity is not difficult to recognize because the symptoms are usually severe, rapid in onset, and associated with a known exposure or ingestion: cramping, nausea,

and vomiting; pain; sweating; headaches; difficulty breathing; impaired cognitive, motor, and language skills; mania; and convulsions.

**MC and explosive contaminants:** Routes of exposure are inhalation, ingestion, skin and eye contact. Signs and symptoms of overexposure may include headaches, dizziness, nausea, hyperactivity, convulsions, seizures, fatigue, and irritability rashes, dry skin and itchy eyes, respiratory problems, joint pain, sore throat, and depression. These effects may be experienced quickly or several hours later. Some can be topically irritating to skin and eyes.

**PAHs:** PAHs comprise a group of over 100 different chemicals that are produced during the incomplete burning of fuels, garbage or other organic substances. As a pollutant, they are of concern because some compounds have been identified as carcinogenic, mutagenic, and teratogenic. Seventeen PAHs have been identified as being of greatest concern with regard to potential exposure and adverse health effects and are thus considered as a group. PAH's may be present at the Old Skeet and Trap Range and Rum Point Skeet Ranges from the composites used in clay pigeons. Occupational exposures to high levels of pollutant mixtures containing PAHs can result in symptoms such as eye irritation, nausea, vomiting, diarrhea and confusion. In addition some PAHs are direct skin irritants and some are skin sensitizers, i.e. cause an allergic skin response.

### **6.1.1 Ingestion and Skin Contact**

Potential exposure to the PCOCs may also occur through ingesting or coming into direct skin contact with contaminated media. The likelihood of worker exposure concerns through these two routes are also considered very unlikely, provided that workers follow good personal hygiene and standard good sample collection/sample handling practices, and wear appropriate PPE as specified in this HASP. Examples onsite practices that are to be observed that will protect workers from exposure via ingestion or skin contact include the following:

- No hand-to-mouth activities on site (eating, drinking, smoking, etc.)
- Washing hands upon leaving the work area and prior to performing any hand to mouth activities
- Wearing surgeon's-style gloves whenever handling potentially-contaminated media, including soils, hand tools, and sample containers.

## **6.2 PHYSICAL HAZARDS**

The physical hazards that may be present during the performance of site activities are summarized below:

- MEC (Munitions and Explosives of Concern)
- MPPEH (Materials Potentially Presenting an Explosive Hazard)
- Fire
- Vehicular and foot traffic
- Heavy equipment hazards
- Pinch/compression points
- Heat/Cold stress
- Slips, trips, and falls

These physical hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual.

### **6.2.1 Contact with MEC/MPPEH**

Field personnel will practice UXO avoidance techniques. Because of the mission and history of the sites, MEC/MPPEH may be encountered during operations. If suspect MEC is encountered during site activities, work will stop and personnel will evacuate and secure the site until the Navy RPM and UXO PM are notified. The Navy RPM and UXO PM will notify the field team of any further actions that must be taken and when operations may resume.

In general, field personnel will practice UXO avoidance techniques:

- Do not pick-up or kick any unknown materials
- Notify the UXO personnel if you encounter unknown materials
- Where the potential exists for MEC/MPPEH, the UXO Specialist will clear the access routes and work areas

### **6.2.2 Fire**

Fire is an inherent safety hazard when working in and around suspect MEC/MPPEH areas. To combat this hazard, personnel will adhere to the following:

- Lighters, matches, and other flame producing devices will not be used or carried onto any SI work site. A designated smoking area will be established off-site as needed.
- Parking vehicles in high grassy areas (i.e., where the grasses are high enough to be in direct contact with the vehicle undercarriage) will not be done.

- Exhaust and other elevated temperature components may cause the grasses to catch fire, so care will be taken when placing/operating exhaust producing equipment such as DPT rigs, vehicles, and generators.

### **6.2.3 Vehicular and Foot Traffic**

Hazards associated with vehicular and equipment traffic may exist during various site activities and whenever site personnel perform work on or near roadways. To minimize the potential for injuries associated with these hazards, personnel will be present to control traffic as necessary through the use of warning signs, traffic cones, and flags. Additionally, site personnel will be instructed to maintain awareness of traffic and moving equipment when performing site activities. When working near roadways, site personnel will wear high visibility vests.

### **6.2.4 Heavy Equipment Hazards**

The following precautions will be used when working at or near the heavy equipment.

- Equipment will be inspected using the Equipment Inspection Checklist.
- Heavy equipment will be operated and supported by knowledgeable operator(s).
- Self-propelled equipment with restricted field of vision moving backwards shall be equipped with a back up alarm.
- Personnel will not be present within the swing radius of the excavation equipment.
- Personnel will remain at least four feet away from the edge of any excavation.

### **6.2.5 Pinch/Compression Points**

Handling of tools, machinery, and other equipment may expose personnel to pinch/compression point hazards during these activities. Where applicable, equipment will have intact and functional guarding to prevent personnel contact with hazards. Personnel will exercise caution when working around pinch/compression points, using additional tools or devices (e.g., pinch bars) to assist in completing activities.

### **6.2.6 Heat/Cold Stress**

It is necessary for the field team to be aware of the signs and symptoms and the measures appropriate to prevent heat/cold stress. This is addressed in detail in Section 4.0 of the Tetra Tech Health and Safety Guidance Manual, which the SSO is responsible for reviewing and implementing as appropriate on this

project. For more information on heat/cold stress recognition and prevention, consult Section 4.0 of the Guidance Manual.

### **6.2.7 Slips, Trips, and Falls**

This is a predominant hazard regarding this site. During various site activities, there is a potential for slip, trip, and fall hazards associated with wet, steep, or unstable work surfaces. Other factors exacerbating this hazard may include:

- Carrying bulky loads
- Maneuvering through and over debris and vegetation to gain access to sample locations
- Unstable terrain
- Poor housekeeping

To minimize hazards of this nature, personnel required to work in and along areas prone to these types of hazards will:

- Exercise caution and use appropriate precautions
- Clear access routes of debris and potential trip hazards. These routes should be maintained.
- Break loads into small manageable sizes.
- Site activities will be performed using the buddy system.
- Always maintain a clean area of operation.

## **6.3 NATURAL HAZARDS**

### **6.3.1 Insect/Animal Bites and Stings, Poisonous Plants, etc.**

During warm months (spring through early fall), tick-borne Lyme Disease may pose a potential health hazard. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots). As well as performing frequent body checks will prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures and symptoms of exposure consult the Health and Safety Guidance Manual.

West Nile Virus (WNV) and other mosquito-borne diseases may occur when an infected mosquito sucks blood from a person. About one in 150 people infected with WNV will develop severe illness. Severe symptoms can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors,

convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent. Up to 20 percent of the people who become infected have symptoms such as fever, headache, and body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Symptoms can last for as short as a few days, though even healthy people have become sick for several weeks. Approximately 80 percent of people (about 4 out of 5) who are infected with WNV will not show any symptoms.

Although no longer common in the United States, malaria may occur when a mosquito or other infected insect sucks blood from an infected person, and the insect becomes the carrier to infect other hosts. The parasite reproduces within the mosquito, and is then passed on to another person through the biting action. Acute symptoms include chills accompanied by fever and general flu-like symptoms. This generally terminates in a sweating stage. These symptoms may recur every 48 to 72 hours.

Contact with poisonous plants and bites or stings from poisonous insects are other natural hazards that must be considered. Long pants (tucked into boots), and avoiding potential nesting areas will minimize the hazards of exposure. 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**

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

## **7.0 AIR MONITORING**

Based on historical data the contaminants of concern in the soil are non-volatile. Therefore it is not anticipated that any VOCs will be generated during site activities. As a result direct reading instruments will not be required to monitor worker exposures at the site.

Should site conditions change to warrant air monitoring, as determined by the FOL and/or SSO, this HASP will be modified accordingly and personnel will be trained on the need for and use of direct reading instrument(s).

## **8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS**

### **8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING**

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

Tetra Tech and subcontractor personnel who will engage in field associated activities as described in this HASP must have completed:

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

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

### **8.2 SITE-SPECIFIC TRAINING**

Tetra Tech will provide site-specific training to Tetra Tech employees and subcontractor personnel who will perform work on this project. Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities.

Tetra Tech will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting will be held daily to discuss operations planned for that day. At the end of the workday, a short meeting may be held to discuss the operations completed and any problems encountered.

### **8.3 MEDICAL SURVEILLANCE**

Tetra Tech and subcontractor personnel participating in project field activities will have had a physical examination. Physical examinations shall meet the minimum requirements of paragraph (f) of OSHA 29 CFR 1910.120. The physical examinations will be performed to ensure that personnel are medically qualified to perform hazardous waste site work using respiratory protection. Documentation for medical clearances will be maintained at the job site and made available, as necessary.



## **9.0 SPILL CONTAINMENT PROGRAM**

### **9.1 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.

### **9.2 POTENTIAL SPILL AREAS**

Potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Currently, there are various areas vulnerable to this hazard including the areas used for central staging and decontamination activities. Additionally, areas designated for handling, loading, and unloading of potentially contaminated soils, waters, and debris present limited potential for leaks or spills. It is anticipated that the IDW generated as a result of this scope of work will be disposed of off-site. Used personal protective equipment (PPE) will be bagged and disposed of as regular trash in an appropriate facility waste container.

### **9.3 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. Inspections will be documented in the Project Logbook.

#### **9.4 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.

#### **9.5 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. DOT 1A1 and/or 1A2)
- Shovels, rakes, and brooms
- Labels

#### **9.6 SPILL CONTROL PLAN**

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

- Notify the SSO or FOL immediately.
- 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.

## 10.0 SITE CONTROL

This section outlines the means by which Tetra Tech 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. A three-zone approach will be used to control site activities. This three-zone approach will utilize an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. Use of such controls will restrict the general public, minimize the potential for the spread of contaminants, and protect individuals who are not cleared to enter work areas.

### 10.1 EXCLUSION ZONE

The exclusion zone will be considered those areas of active operations plus an established safety zone depending on the task. The following represent the exclusion zone boundaries for the following identified tasks:

- MEC Avoidance Operations – 200 feet surrounding the work zone
- Sampling – 5 feet surrounding the sample collection points
- Decontamination – 5 feet surrounding the point of operation

Exclusion zones will be delineated using barrier tape, cones and/or drive poles, and postings to inform and direct facility site personnel and visitors, as necessary.

#### 10.1.1 Exclusion Zone Clearance

A pre-startup site visit will be conducted by members of the field team in an effort to identify proposed subsurface investigation locations, conduct utility clearances, and provide up-front notices concerning scheduled activities within the facility. When base personnel are working within the proximity of this investigation, they will be moved or their operation temporarily discontinued to protect them from potential hazards associated with this operation.

### 10.2 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. The personnel and equipment decontamination will not take place in this area, but will take place at a central location established for this project. This area instead will serve as a focal point in supporting Exclusion Zone activities.

### **10.3 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.

### **10.4 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 Tetra Tech
- Regulatory personnel (EPA, OSHA, etc.)
- NSFIIH personnel
- Other authorized visitors

Personnel working on this project are required to gain initial access to the site by coordinating with the Tetra Tech FOL or designee and following established site access procedures.

Upon gaining access to the site, site visitors wishing to observe operations in progress will be escorted by a Tetra Tech representative (arranged for by the FOL) and shall be required to meet the following minimum requirements:

- 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 (40-hours of HAZWOPER 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.

Note: Visitors will be escorted by UXO personnel while at the site.

Once the site visitors have completed the above items, they will be permitted to enter the work area. Visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. Visitors not meeting the requirements stipulated in this plan will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of onsite activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from the FOL, SSO or on-site security personnel.

#### **10.5 SITE SECURITY**

Site security will be accomplished using existing base security resources and procedures, supplemented by Tetra Tech personnel, if necessary. Tetra Tech will retain control over active operational areas. The first line of security will take place at the base boundaries restricting the general public. The second line of security will take place at the work site referring interested parties to the FOL. The FOL will serve as a focal point for site personnel, and will serve as the final line of security and the primary enforcement contact.

#### **10.6 SITE MAPS**

A site map will be generated once access routes, utilities, etc., are determined, and it will be adjusted as site conditions change. These maps will show potential points of contact with the public, roadways, and other significant characteristics that may impact site operations and safety. Site maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points if warranted.

#### **10.7 BUDDY SYSTEM**

Personnel engaged in onsite activities will practice the "buddy system" to ensure their safety during this operation.

#### **10.8 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS**

Tetra Tech personnel will retain MSDSs for chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of chemicals used on site will be developed using Section 5.0 of the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location and will be available for anyone to review upon request.

## **10.9 COMMUNICATION**

As personnel will be working in proximity to one another during field activities, a supported means of communication between field crew members will not be necessary.

External communication may be accomplished by using cellular telephones at approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. This must be approved by the UXO Technician.

Prior to the commencement of activities at the site, it is strongly recommended that cell signal strength be checked in the work areas and the relevant project phone numbers are programmed on site worker cell phones. Emergency numbers listed in Table 2-1 should be entered into site cell phones prior the beginning of work. The FOL along with the UXO Technician will determine and arrange for telephone communication procedures.

## **10.10 ACCIDENT PREVENTION PLAN/ACTIVITY HAZARD ANALYSES**

The work conducted in support of this project will be performed using an Accident Prevention Plan (APP), including Activity Hazard Analyses (AHAs) to guide and direct field crews on a task-by-task basis. The APP including the AHAs are included as Attachment IV. Daily safety meetings will be conducted during site work and the task-specific AHA(s) will be reviewed prior to initiating any field activities. This effort will ensure that site-specific considerations and changing conditions are incorporated into the planning effort. Use of the APP will provide the communication line for reviewing task-specific hazards and protective measures associated with each operation. The HASP will be used as the primary reference for selecting levels of protection and control measures.

The FOL and/or the SSO will be responsible for making workers aware of the contents and requirements of the APP. Any problems encountered with the protective measures required will be documented and brought to the attention of the SSO.

As an ongoing quality assurance effort, the SSO will review operations to insure the AHAs adequately address potential hazards for the tasks being conducted. Where deficient, they will be corrected and that information shared with field personnel. Amended AHAs will be forwarded to the PHSO for inclusion in future APPs for similar activities.

## 11.0 CONFINED SPACE ENTRY

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

A confined space 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 Tetra Tech FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- MSDSs for chemicals brought onsite, including decontamination solutions, fuels, lime, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailers)
- Training/Medical Surveillance Documentation Form (Blank)
- Emergency Reference Information (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 in which 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 onsite, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area.

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

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

**Site Clearance (maintained)** - This list is found within the training section of the HASP (See Figure 8-2). This list identifies site personnel, dates of training (including site-specific training), and medical

surveillance. The list indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

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

**Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be completed by onsite 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 carry at times.

**Hearing Conservation Standard (29 CFR 1910.95) (posted)** - This standard will be posted any time hearing protection or other noise abatement procedures are used.

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

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

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

## 13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
APR	Air Purifying Respirators
BG	Background
BGS	Below Ground Surface
BZ	Breathing Zone
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
DOD	Department of Defense
DOT	Department of Transportation
EEA	Experimental Explosive Area
EIT	Engineer in Training
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
HMX	Cyclotetramethylene tetranitramine octagen
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Presenting an Explosive Hazard
NAVFAC	Naval Facilities Engineering Command
N/A	Not Available
NIOSH	National Institute Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PAH	Polycyclic Aromatic Hydrocarbon
PEL	Permissible Exposure Limit
PG	Professional Geologist
PID	Photoionization Detector
PHSO	Project Health and Safety Officer
PM	Project Manager

PMP	Project Manager Professional
PPE	Personal Protective Equipment
RDX	Cyclo-1,3,5-trimethylene-2,4,6-trinitramine
SOP	Standard Operating Procedure
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
TBD	To Be Determined
Tetra Tech	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
WP	Work Plan

**ATTACHMENT I**  
**INCIDENT REPORT FORM**



Report Date	Report Prepared By	Incident Report Number
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**INSTRUCTIONS:**

All incidents (including those involving subcontractors under direct supervision of Tetra Tech personnel) must be documented on the IR Form.

Complete any additional parts to this form as indicated below for the type of incident selected.

TYPE OF INCIDENT (Check all that apply)	Additional Form(s) Required for this type of incident
Near Miss (No losses, but could have resulted in injury, illness, or damage)	<input type="checkbox"/> Complete IR Form Only
Injury or Illness	<input type="checkbox"/> Complete Form IR-A; Injury or Illness
Property or Equipment Damage, Fire, Spill or Release	<input type="checkbox"/> Complete Form IR-B; Damage, Fire, Spill or Release
Motor Vehicle	<input type="checkbox"/> Complete Form IR-C; Motor Vehicle

**INFORMATION ABOUT THE INCIDENT**

**Description of Incident**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

<b>Date of Incident</b>	<b>Time of Incident</b>
_____	_____ AM <input type="checkbox"/> PM <input type="checkbox"/> OR Cannot be determined <input type="checkbox"/>

<b>Weather conditions at the time of the incident</b>	<b>Was there adequate lighting?</b>
_____	_____ Yes <input type="checkbox"/> No <input type="checkbox"/>

**Location of Incident**

\_\_\_\_\_ Was location of incident within the employer's work environment? Yes  No

<b>Street Address</b>	<b>City, State, Zip Code and Country</b>
_____	_____

<b>Project Name</b>	<b>Client:</b>
_____	_____

<b>Tt Supervisor or Project Manager</b>	<b>Was supervisor on the scene?</b>
_____	Yes <input type="checkbox"/> No <input type="checkbox"/>

**WITNESS INFORMATION (attach additional sheets if necessary)**

<b>Name</b>	<b>Company</b>
_____	_____

<b>Street Address</b>	<b>City, State and Zip Code</b>
_____	_____

**Telephone Number(s)**

\_\_\_\_\_

CORRECTIVE ACTIONS				
<b>Corrective action(s) immediately taken by unit reporting the incident:</b>				
<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black;"></div>				
<b>Corrective action(s) still to be taken (by whom and when):</b>				
<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black;"></div>				
ROOT CAUSE ANALYSIS LEVEL REQUIRED				
Root Cause Analysis Level Required: Level - 1 <input type="checkbox"/> Level - 2 <input type="checkbox"/> None <input type="checkbox"/>				
<b>Root Cause Analysis Level Definitions</b>				
<b>Level - 1</b>	<p><b>Definition:</b> A Level 1 RCA is conducted by an individual(s) with experience or training in root cause analysis techniques and will conduct or direct documentation reviews, site investigation, witness and affected employee interviews, and identify corrective actions. Activating a Level 1 RCA and identifying RCA team members will be at the discretion of the Corporate Administration office.</p> <p>The following events may trigger a Level 1 RCA:</p> <ul style="list-style-type: none"> <li>▪ Work related fatality</li> <li>▪ Hospitalization of one or more employee where injuries result in total or partial permanent disability</li> <li>▪ Property damage in excess of \$75,000</li> <li>▪ When requested by senior management</li> </ul>			
<b>Level - 2</b>	<p><b>Definition:</b> A Level 2 RCA is self performed within the operating unit by supervisory personnel with assistance of the operating unit HSR. Level 2 RCA will utilize the 5 Why RCA methodology and document the findings on the tools provided.</p> <p>The following events will require a Level 2 RCA:</p> <ul style="list-style-type: none"> <li>▪ OSHA recordable lost time incident</li> <li>▪ Near miss incident that could have triggered a Level 1 RCA</li> <li>▪ When requested by senior management</li> </ul>			
<b>Complete the Root Cause Analysis Worksheet and Corrective Action form. Identify a corrective action(s) for each root cause identified within each area of inquiry.</b>				
NOTIFICATIONS				
Title	Printed Name	Signature	Telephone Number	Date
Project Manager or Supervisor				
Site Safety Coordinator or Office H&S Representative				
Operating Unit H&S Representative				
Other: _____				

The signatures provided above indicate that appropriate personnel have been notified of the incident.

**INSTRUCTIONS:**

Complete all sections below for incidents involving injury or illness.  
Do NOT leave any blanks.  
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)

**EMPLOYEE INFORMATION**

**Company Affiliation**

Tetra Tech Employee?

TetraTech subcontractor employee (directly supervised by Tt personnel)?

**Full Name**

**Company (if not Tt employee)**

**Street Address, City, State and Zip Code**

**Address Type**

\_\_\_\_\_

Home address (for Tt employees)

\_\_\_\_\_

Business address (for subcontractors)

**Telephone Numbers**

Work: \_\_\_\_\_

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

Cell: \_\_\_\_\_

**Occupation (regular job title)**

**Department**

**Was the individual performing regular job duties?**

**Time individual began work**

Yes  No

\_\_\_\_\_ AM  PM  OR Cannot be determined

**Safety equipment**

Provided? Yes  No

Type(s) provided:  Hard hat  Protective clothing

Used? Yes  No  If no, explain why

Gloves  High visibility vest

Eye protection  Fall protection

Safety shoes  Machine guarding

Respirator  Other (list)

**NOTIFICATIONS**

**Name of Tt employee to whom the injury or illness was first reported**

**Was H&S notified within one hour of injury or illness?**

Yes  No

**Date of report**

**H&S Personnel Notified**

**Time of report**

**Time of Report**

**If subcontractor injury, did subcontractor's firm perform their own incident investigation?**

Yes  No  If yes, request a copy of their completed investigation form/report and attach it to this report.

## INJURY / ILLNESS DETAILS

**What was the individual doing just before the incident occurred?** Describe the activity as well as the tools, equipment, or material the individual was using. Be specific. Examples: "Climbing a ladder while carrying roofing materials"; "Spraying chlorine from a hand sprayer"; "Daily computer key-entry"

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**What Happened?** Describe how the injury occurred. Examples: "When ladder slipped on wet floor and worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; Worker developed soreness in wrist over time"

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**Describe the object or substance that directly harmed the individual:** Examples: "Concrete floor"; "Chlorine"; "Radial Arm Saw". If this question does not apply to the incident, write "Not Applicable".

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## MEDICAL CARE PROVIDED

Was first aid provided at the site: Yes  No  If yes, describe the type of first aid administered and by whom?

---

Was treatment provided away from the site: Yes  No  If yes, provide the information below.

<b>Name of physician or health care professional</b>	<b>Facility Name</b>
<b>Street Address, City State and Zip Code</b>	<b>Type of Care?</b>
	Was individual treated in emergency room? Yes <input type="checkbox"/> No <input type="checkbox"/>
	Was individual hospitalized overnight as an in-patient? Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>Telephone Number</b>	Did the individual die? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, date: _____
	Will a worker's compensation claim be filed? Yes <input type="checkbox"/> No <input type="checkbox"/>

**NOTE: Attach any police reports or related diagrams to this report.**

## SIGNATURES

I have reviewed this report and agree that all the supplied information is accurate

Affected individual (print)	Affected individual (signature)	Telephone Number	Date

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

**INSTRUCTIONS:**

Complete all sections below for incidents involving property/equipment damage, fire, spill or release.  
Do NOT leave any blanks.  
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)

**TYPE OF INCIDENT (Check all that apply)**

Property Damage       Equipment Damage       Fire or Explosion       Spill or Release

**INCIDENT DETAILS**

Results of Incident: Fully describe damages, losses, etc.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Response Actions Taken:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Responding Agency(s) (i.e. police, fire department, etc.)

Agency(s) Contact Name(s)

\_\_\_\_\_  
\_\_\_\_\_

**DAMAGED ITEMS (List all damaged items, extent of damage and estimated repair cost)**

Item:	Extent of damage:	Estimated repair cost

**SPILLS / RELEASES (Provide information for spilled/released materials)**

Substance	Estimated quantity and duration	Specify Reportable Quantity (RQ)
		_____ Exceeded? Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>

**FIRES / EXPLOSIONS (Provide information related to fires/explosions)**

Fire fighting equipment used? Yes  No  If yes, type of equipment: \_\_\_\_\_

**NOTIFICATIONS**

Required notifications	Name of person notified	By whom	Date / Time
Client: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Agency: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Other: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			

Who is responsible for reporting incident to outside agency(s)?    Tt  Client  Other  Name: \_\_\_\_\_

Was an additional written report on this incident generated?    Yes  No  If yes, place in project file.

**INSTRUCTIONS:**

Complete all sections below for incidents involving motor vehicle accidents. Do NOT leave any blanks.  
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form) \_\_\_\_\_

**INCIDENT DETAILS**

Name of road, street, highway or location where accident occurred \_\_\_\_\_ Name of intersecting road, street or highway if applicable \_\_\_\_\_

County

City

State

Did police respond to the accident?

Yes  No

Did ambulance respond to the accident?

Yes  No

Name and location of responding police department

Ambulance company name and location

Officer's name/badge # \_\_\_\_\_

Did police complete an incident report? Yes  No  If yes, police report number: \_\_\_\_\_  
Request a copy of completed investigation report and attach to this form.

**VEHICLE INFORMATION**

How many vehicles were involved in the accident? \_\_\_\_\_ (Attach additional sheets as applicable for accidents involving more than 2 vehicles.)

**Vehicle Number 1 – Tetra Tech Vehicle**

**Vehicle Number 2 – Other Vehicle**

Vehicle Owner / Contact Information

Vehicle Owner / Contact Information

Color

Color

Make

Make

Model

Model

Year

Year

License Plate #

License Plate #

Identification #

Identification #

Describe damage to vehicle number 1

Describe damage to vehicle number 2

Insurance Company Name and Address

Insurance Company Name and Address

Agent Name

Agent Name

Agent Phone No.

Agent Phone No.

Policy Number

Policy Number

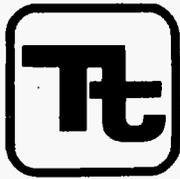
DRIVER INFORMATION							
Vehicle Number 1 – Tetra Tech Vehicle				Vehicle Number 2 – Other Vehicle			
Driver's Name				Driver's Name			
Driver's Address				Driver's Address			
Phone Number				Phone Number			
Date of Birth				Date of Birth			
Driver's License #				Driver's License #			
Licensing State				Licensing State			
Gender		Male <input type="checkbox"/> Female <input type="checkbox"/>		Gender		Male <input type="checkbox"/> Female <input type="checkbox"/>	
Was traffic citation issued to Tetra Tech driver? Yes <input type="checkbox"/> No <input type="checkbox"/>				Was traffic citation issued to driver of other vehicle? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Citation #				Citation #			
Citation Description				Citation Description			
PASSENGERS IN VEHICLES (NON-INJURED)							
<p>List all non-injured passengers (excluding driver) in each vehicle.            Driver information is captured in the preceding section.            Information related to persons injured in the accident (non-Tt employees) is captured in the section below on this form.            Injured Tt employee information is captured on FORM IR-A</p>							
Vehicle Number 1 – Tetra Tech Vehicle				Vehicle Number 2 – Other Vehicle			
How many passengers (excluding driver) in the vehicle? ____				How many passengers (excluding driver) in the vehicle? ____			
Non-Injured Passenger Name and Address				Non-Injured Passenger Name and Address			
Non-Injured Passenger Name and Address				Non-Injured Passenger Name and Address			
Non-Injured Passenger Name and Address				Non-Injured Passenger Name and Address			
INJURIES TO NON-TETRATECH EMPLOYEES							
Name of injured person 1				Address of injured person 1			
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?	
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>	
Name of injured person 2				Address of injured person 2			
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?	
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>	
OTHER PROPERTY DAMAGE							
Describe damage to property other than motor vehicles							
Property Owner's Name				Property Owner's Address			

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED

A large, empty rectangular box with a black border, intended for drawing a diagram. The box occupies most of the page below the header.

## **ATTACHMENT II**

**UNEXPLODED ORDNANCE AND CHEMICAL  
WARFARE AGENTS  
ACTIVITIES OPERATING PROCEDURES FOR  
INDIAN HEAD STUMP HEAD ANNEX  
INDIAN HEAD, MARYLAND**



TETRA TECH NUS, INC.

# STANDARD OPERATING PROCEDURES

Number HS-2.0	Page 1 of 14
Effective Date 09/03	Revision 1
Applicability Tetra Tech NUS, Inc.	
Prepared Earth Sciences Department	

Subject  
UNEXPLODED ORDNANCE AND CHEMICAL  
WARFARE AGENTS ACTIVITIES

Approved  
D. Senovich *DS*

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## 1.0 GENERAL

This Standard Operating Procedure (SOP) was prepared in accordance with applicable U.S. Army Corps of Engineers procedures and policies governing field activities requiring Unexploded Ordnance (UXO) and Chemical Warfare Material (CWM) operations. All personnel conducting operations under this SOP must read and understand applicable parts of references listed in paragraph 9.1 below prior to commencing any work described within this SOP. Other documents supporting this SOP include project-specific Work Plans and Health and Safety Plans which are prepared for the purpose of accomplishing work that contain a UXO or CWM component.

## 2.0 PURPOSE

This SOP applies to all operations involving UXO and/or CWM support during field operations at various sites where Tetra Tech NUS (TtNUS) personnel are present. It provides procedural requirements for any activity involving UXO and CWM, as well as detailed procedures for the location, identification, documentation, and emergency response actions pertaining to UXO/CWM activities.

## 3.0 APPLICABILITY

This SOP applies to persons who may visit any site where TtNUS is performing work that involve some UXO or CWM component. Compliance the content of this SOP is mandatory for all TtNUS personnel, subcontractors, and visitors to any site where UXO/CWM activities are in progress.

## 4.0 RESPONSIBILITIES

### Project Manager

Effective implementation of this SOP at the project level will be the ultimate responsibility of the assigned TtNUS Project Manager. The Project Manager is responsible for ensuring that all applicable rules and regulations are complied with, and that all necessary safety precautions are taken to conduct operations in accordance with this SOP. To fulfill this responsibility, the assigned Project Manager is required to ensure that appropriately-qualified technical staff are involved in all stages of project planning and field work, as well as for ensuring that appropriate resources are marshaled and used on his/her assigned projects. For projects involving UXO and/or CWM, this will involve ensuring that a suitably qualified and experienced UXO technician and a site Health and Safety Officers are part of the project team. In some cases, the assigned UXO Technician may also serve as the project site Health and Safety Officer.

It is also the responsibility of the Project Manager to ensure that all personnel conducting field activities in accordance with this SOP have proper training (including hazard control briefings) and, if required, the proper certifications for the job being performed.

### UXO Technician

A suitably qualified and experienced UXO Technician will be included as part of the project team where these types of concern are known or suspected to exist. The UXO Technician will be primarily responsible for advising the Project Manager on all UXO/CWM matters, including on the measures that will be necessary to effectively implement and adhere to this SOP. Other specific duties will include:

- Providing technical expertise and input into project planning activities and documents such as the project-specific Work Plan and Health and Safety Plan
- Clearing worksite areas of UXO/CWM concerns prior to the initiation of any other onsite activities

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- Participating in the development and conductance of site specific training sessions and daily tailgate meetings to communicate UXO/CWM matters to the field personnel
- Maintaining a sound familiarity with the contents of this SOP, the contents of the references listed in section 9.1, and keeping current with new information and technology pertinent to UXO/CWM matters

#### **Site Health and Safety Officer**

A suitably qualified and experienced health and safety professional will be assigned to all projects that involve fieldwork. Project-specific responsibilities will include:

- Effectively implementing the requirements and restrictions specified in the project-specific Health and Safety Plan
- Ensuring that all personnel participating in onsite activities have satisfied all appropriate medical and training qualifications prior to participating in any onsite intrusive activities.
- Conduct initial site-specific health and safety training for all personnel participating in onsite activities prior to their participation in any onsite intrusive activities.
- Conduct tail-gate safety briefings prior to the initiation of all tasks, but not less than daily.
- On certain projects, these duties may be assigned to the UXO Technician. This would be considered acceptable on field projects where the predominant concern is contact with UXO and/or CWM, and minimal health concerns or requirements (e.g., chemical exposures or monitoring) exist.

#### **Corporate Health and Safety Manager**

Perform periodic project audits and evaluations to determine the ongoing effectiveness of this SOP to address UXO/CWM concerns, and review and evaluate this SOP to determine any revisions that are appropriate.

### **5.0 LOCATION OF OPERATIONS**

Activities where UXO and/or CWM concerns may exist may be encountered in support of various TtNUS contracts, with potential project sites located throughout the continental United States and abroad. Wherever the installation/site is located, it will be necessary to ensure that project planning activities include collecting available historical information that may be pertinent to these issues, as well as identifying and addressing contract/client-specific requirements and any location-specific requirements (e.g., State, local-level, or host-nation requirements). A detailed site description, discussion of known and/or suspected contamination sources, and results of previous studies will be provided to field personnel as part of their field mobilization and initial site-specific training activities.

The initial project evaluation must involve the performance of a preliminary risk assessment, including the investigation of probable contaminants, potential transport pathways, the identification of potential receptors, and a preliminary evaluation of human health and environmental concerns. Preliminary identification of applicable or relevant and appropriate requirements (ARARs) will also be made available to field personnel conducting activities at the installation.

### **6.0 PERSONNEL QUALIFICATIONS AND REQUIREMENTS**

6.1 Personnel Qualifications: Qualifications of those personnel actively involved in UXO/CWM operations shall be as follows:

- a. UXO personnel shall be graduates an accredited Explosive Ordnance Disposal (EOD) School such as Indian Head or Eglin Air Force Base.
- b. The Senior UXO Supervisor (SUXOS) for the operation will have been awarded the Master EOD Badge and have served at least 15 years in military EOD assignments, of which more than 10 years were in a supervisory position.

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- c. UXO personnel are responsible for maintaining current status with training and medical surveillance requirements, as specified in the project-specific Health and Safety Plans and OSHA 29 CFR 1010.120, paragraphs (e) and (f).

6.2 Personnel Requirements: During any activity where the possibility that UXO and or CWM may be encountered (no matter how remote), the following requirements will be met:

- a. One UXO-qualified technician will be required to support each field team engaged in operations in areas that might contain UXO/CWM.
- b. One UXO-qualified technician will be present at the site during all activities to provide UXO/CWM support in the event their services are required.

## 7.0 PERSONNEL LIMITS

The activities to be conducted under most contracts will not normally be conducted in areas requiring maximum personnel limitations except for intrusive UXO activities. Work will not be permitted unless at least two persons are present in the work area. The provisions of 29 CFR 1910.120 concerning personnel qualifications and requirements will be followed while working on-site. Any additional personnel limitation requirements specified by the client or the project work location (e.g., state, local ordnance, host nation, etc.) will also be identified and adhered to at all times.

7.1 Personnel Limits for UXO Operations:

- a. UXO Avoidance Operations – Two UXO Technicians (one UXO Technician III and one UXO Technician II)
- b. UXO Intrusive Operations - Three UXO Technicians (one UXO Technician III and two UXO Technician II)

## 8.0 MATERIAL LIMITS

The properties and configurations of specific explosive materials are not addressed in this SOP. That level of detail is required to be addressed in project-specific Work Plans and Health and Safety Plans. This SOP must be maintained onsite along with these project-specific documents to aid in appropriate communication and implementation activities. Bulk liquids to be used for decontamination of equipment will be maintained in 2-gallon containers or less. Material Safety Data Sheets (MSDSs) will be kept on file in the TtNUS Command Post for any chemical substances brought to the project site by TtNUS and TtNUS subcontractor personnel. This is addressed in greater detail in section 5. of the TtNUS Health and Safety Guidance Manual.

## 9.0 SAFETY REQUIREMENTS

9.1 Referenced Safety Requirements: The safety requirements that apply to the UXO/CWM operations covered under this SOP are:

- a. OSHA 29 CFR 1910.120 and 1926.65 – Hazardous Waste Operations and Emergency Response (HAZWOPER). Available online at:  
[http://www.osha.gov/pls/oshaweb/owasrch.search\\_form?p\\_doc\\_type=STANDARDS&p\\_toc\\_level=0&p\\_keyvalue=OSHA\\_Std\\_toc.html](http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=0&p_keyvalue=OSHA_Std_toc.html)

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- b. US Army Corps of Engineers Engineering Regulation 385-1-92, *Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OE) Activities*.
- c. US Army Corps of Engineers Engineering Regulation (ER) 385-1-96, *Safety and Health Requirements*. Available on line at:  
<http://www.usace.army.mil/publications/eng-manuals/em385-1-1/toc.htm>.
- d. US Army Corps of Engineers Engineering Pamphlet (EP) 1110-1-18, *Ordnance and Explosive (OE) Response*.
- e. US Army Corps of Engineers Engineering Pamphlet (EP) 75-1-2, *Unexploded Ordnance Support for Hazardous, Toxic and Radioactive Waste and Construction Activities*.
- f. US Army Corps of Engineers Engineering Pamphlet (EP) 75-1-3, *Chemical Warfare Material Response*.
- g. US Army Technical Manual 9-1300-206 (TM 9-1300-206), *Ammunition and Explosive Hazards*.
- h. Technical Manual 60A-1-1-31, *Explosive Ordnance Disposal Procedures, General Information on EOD Disposal Procedures*.

9.2 Specific Safety Requirements:

- a. All site operations will be suspended if any site worker encounters an item of suspected UXO/CWM. Site work will remain suspended until the item is inspected and cleared by the UXO Technician.
- b. All site operations will be suspended if so ordered by an authorized client representative (i.e., Installation Range Control and/or Safety Office).
- c. A minimum of two UXO-qualified technicians will be present during all UXO-related activities.
- d. Standard work practices as outlined in project-specific Health and Safety Plans and/or Work Plans will be observed.

9.3 Inherent UXO/CWM Hazards: UXO/CWM operations have inherent safety and health risks associated with the various field activities conducted. All planned activities will be conducted in accordance with the requirements of the references listed in Section 9.1 above, as safety is the primary consideration in all UXO/CWM activities. Every effort should be made to determine all hazards associated with the site through a thorough research of archives, past site/range uses, and any other available information. Some of the hazards to consider are:

- a. Propellant, Explosives, and Pyrotechnics (PEP)
- b. Depleted Uranium (DU)
- c. White Phosphorus (WP)
- d. Corrosive chemicals (acids and bases) and decontamination agents
- e. Toxic gases, liquids and solids
- f. Corroded and damaged containers, munitions bodies, drums, etc.
- g. Fuze conditions
- h. Etiological agents

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## 10.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Task-specific PPE will be identified in project-specific Health and Safety Plans. Typical PPE for project sites where the principle concern is for UXO/CWM will include the items listed below. Items marked with an asterisk (\*) will be available and will be used as specified in the Health and Safety Plan and/or as determined by the TtNUS Site Health and Safety Officer.

- a. Safety glasses
- b. Safety shoes (and protective over boots or steel-toed rubber boots). NOTE: During geophysical survey operations, the UXO technicians will not wear steel-toed boots as they interfere with the magnetometer survey; however, around heavy equipment and activities where foot and overhead hazards may exist, steel-toed boots and hard hats will be worn.
- c. Cotton clothing (with protective coveralls\*)
- d. Gloves (type to be specified for each project task in the Health and Safety Plan and/or by the site Health and Safety Officer)
- e. Respiratory protection equipment\* (29CFR1910.134)
- f. Hearing protection\*
- g. Hard hats\*

## 11.0 EMERGENCY RESPONSE AND CONTINGENCY PLANS

11. Emergency Contacts: The identification of (and means to communicate with) appropriate local emergency response agencies must be identified as part of project planning/mobilization activities, and these agencies must be contacted prior to the initiation of any onsite work. These initial communications must determine the capabilities of these agencies to respond to foreseeable emergency situations, their willingness to respond, and their locations/driving directions/phone numbers. These details must be specified in the project-specific Health and Safety Plan and posted in the site Command Center/Field office.

At a minimum, the names and means of communication (phone number, radio frequency, etc.) of the following parties must be included in the project-specific Emergency Contacts procedure:

- a. Local Emergency Fire Response that will respond (i.e., local Fire Department)
- b. Emergency Medical Assistance (Hospital, Emergency Room, and ambulance service that will respond)
- c. Installation Safety Office or other client safety/emergency response contact
- d. Installation EOD Office/Detachment
- e. Installation Environmental Office

The senior TtNUS managing employee onsite (Project Manager, Site Manager, Site Supervisor, Field Operations Leader) is responsible for initiating these calls in the event of an emergency where such support is needed. If the Project Manager is not onsite at the time of an emergency event, he/she must be added to the above list of contacts.

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In the event of an emergency, all site personnel will be evacuated to a predetermined location away from the work place. Emergency Response Planning will be addressed in the project-specific Health and Safety Plan and will be in accordance with either 29 CFR 1910.38(a) or 1910.120(l). TtNUS will utilize the Installations Base Fire Protection and Emergency Services in emergencies or potential emergencies.

11.2 Contingency Plans: The following contingency plans will be implemented:

- a. Pre-Planning – Upon arrival at the site/installation, the TtNUS Field Operations Leader (FOL) and/or the Site Safety Officer will meet with the Base or local Fire Protection Department, Base Security Personnel or local Police Department, and onsite and/or offsite Emergency services to notify them of the activities that are to be undertaken, when, and where. All site personnel will be required to follow established base/local emergency procedures and will rely on base/local services to handle emergency calls when needed.
- b. Emergency Escape Procedures and Assignments – Upon notification of a site emergency that requires evacuation, all site personnel will proceed to predetermined locations based on emergency location and wind direction. An alternate assembly point will be designated in case personnel cannot reach these locations without danger to their lives and health. These primary and alternate escape routes and meeting places will be designated during the daily hazard control briefing. Personnel will be trained to remain at the assembly points until directed to either resume work or to leave the site.
- c. Procedures to Account for Site Personnel – The site work force is typically small enough that accounting for personnel will not be a problem via visual head counting. On projects with larger field team sizes, roll calls will be taken using the daily sign in logs, logbook entries, or the tail-gate briefing sheets. Accounting for personnel will be the Field Operations Leader's responsibility.
- d. Rescue and Medical Duties – TtNUS personnel will not be authorized to participate in emergency rescue operations. Typical first aid response equipment that is to be on hand at a project site includes suitable first aid kit, an emergency eye wash station, and Class ABC fire extinguishers.
- e. Activation of Emergency Response Procedures - Should an emergency occur which requires the support of outside services, the appropriate contacts will be made by the senior TtNUS managing employee onsite (Project Manager, Site Manager, Site Supervisor, Field Operations Leader). A list of appropriate contacts will be posted at the Command Post. Cellular phones, land-line phones, or hand-held radios will be the primary means of communication.
- f. Airborne Chemical Release Contingency Plan –
  - (1) Chemical Release Monitoring – every member of the site team will be responsible for observing and reporting any gross chemical releases or conditions that could lead to releases. Air monitoring will be performed as described in the project-specific Work Plans and Health and Safety Plans.
  - (2) Responses to Measured Airborne Chemical Releases – the readings on monitoring instrumentation will be compared to the action levels specified in the project-specific Work Plans and Health and Safety Plans. The primary purpose of appropriate real-time monitoring instruments will be monitor worker breathing zone areas for the protection of employee health. The project-specific Health and Safety Plan will specify actions that are to be taken in the event that monitoring instrument readings indicate that detected

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concentrations may represent a health threat to onsite workers. Area and perimeter monitoring as well as sample screening activities may also be called for in the Work Plan or Health and Safety Plan, but these are secondary purposes for the use of these instruments.

Unless otherwise specified in a project-specific Health and Safety Plan, the following monitoring instrument action levels and response measures will be observed on UXO/CWA sites:

<u>Parameter</u>	<u>Action Level</u>
Total Organic Vapors	Any sustained level above background
Airborne particulates	Readings >2.5 mg/m <sup>3</sup>
Flammable Vapors	10% of the Lower Explosive Limit (LEL)

If such levels are noted at site perimeters or adjacent to neighboring residential or commercial property, the TtNUS Field Operations Leader and/or the Site Safety Officer will notify the appropriate client or base contacts.

- g. Liquid Release Monitoring – All field team members will be responsible for observing and reporting any liquid chemical releases or conditions that could lead to a release. If field operations on site result in a release of liquid chemicals in the absence of vapors, field personnel will attempt to contain the liquid by means of berms constructed with available equipment. If the work team cannot control the spill, they will leave the area for the assembly point quickly, without panic. The TtNUS Field Operations Leader and/or the Site Safety Officer will notify the appropriate client/base contact. This is not considered to be a significant probability during operations. However, in the unlikely instance that it should occur, field personnel may effect these types of defensive efforts, providing that such a response does not appear to present a chemical overexposure or other personal health or safety threat.

## 12.0 TYPICAL CLIENT/FACILITY SAFETY POINTS OF CONTACT

The following positions are typically encountered on UXO/CWA projects. Communication and coordination with these positions should be implemented and maintained throughout all project activities (from pre-field operations planning through to project close-out).

- a. Installation Safety Management Office
- b. Installation Ordnance Officer and/or EOD Officer
- c. Installation Radiation Officer
- d. Installation Environmental Office

## 13.0 TOOLS AND EQUIPMENT

Tools and equipment necessary to safely and effectively accomplish the objectives of a project will be detailed in the project-specific Work Plans and Health and Safety Plans. Items commonly required for UXO/CWM operations are presented below:

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### **13.1 Personal Protective Equipment**

- a. Respiratory Protective Equipment (i.e., air purifying or air supplied devices)
- b. Dermal (chemical resistant) protective equipment (e.g., coveralls, gloves, eye and face protection)
- c. Physical safety PPE (hard hats, hearing protection, safety glasses, safety shoes, etc.)

### **13.2 Air Monitoring Equipment**

- a. Explosive/O<sub>2</sub> Meter (Combustible Gas Indicator)
- b. Direct reading Organic Vapor Analyzer (PID or FID)
- c. Direct reading particulate meter
- d. Radiation Survey Meters and TLD Badges

### **13.3 Geophysical/Hydrology Survey Instrumentation**

- a. Magnetometers (Cesium Vapor, Schonstedt)
- b. Electromagnetic Terrain Conductivity Meter (EM-31)
- c. Time-Domain Electromagnetic All-Metals Detector (EM-61)
- d. Water Level Indicator/Recorder
- e. pH/Temperature/Conductivity Meter for water samples (Horiba, etc.)
- f. Survey Equipment (transit, tripod, level, etc.) as required

### **13.4 UXO Support Equipment**

- a. Schonstedt Magnetic Locators (GA-52Cx or equivalent passive instrument) will be used for UXO surface survey during UXO activities. The GA-52Cx detects the magnetic field of any ferromagnetic object.
- b. Schonstedt MG-220 Magnetic Gradiometer (Down-Hole Magnetometer or equivalent will be used to conduct down hole UXO checks. The MG-220 detects the magnetic field of any ferromagnetic object as it is lowered into a borehole.
- c. Marking tape, pin flags, stakes, utility spray paints, etc.

### **13.5 CWM Support Equipment**

- a. Chemical Agent Identification Kits (M18A2 Kit)
- b. ICAMs (Individual Chemical Agent Monitor)

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### 13.6 Decontamination Equipment

As required by the level of protection for each site. See Site Health and Safety Plan for specifics.

### 13.7 Hand Tools/ Miscellaneous Equipment

As may be required.

## 14.0 ENVIRONMENTAL CONCERNS

The field operations covered by this SOP will be performed in such a manner as to minimize the effects of pollution of air, water, or land and to control noise and dust emissions within reasonable limits.

Every effort will be made to:

- a. Protect the land areas and to preserve them in their existing condition.
- b. Protect water resources, including measures for run-off or run-off controls if applicable.
- c. Implement sediment control measures, where warranted. These measures will also be implemented to control erosion.

Usually, field operations will generate solid and liquid waste (Investigative Derived Waste – IDW) requiring onsite handling and possible offsite disposal. The major types of waste to be generated, their environmental concerns, and their handling and disposition are summarized below:

- a. Personal and equipment decontamination containers disposed offsite following a thorough decontamination. Liquid waste will be included with well purging and development fluids.
- b. Personal Protective Equipment (PPE) will be double-bagged and will be the responsibility of TtNUS to dispose of according to applicable regulations. Disposal will normally be offsite.

It is not anticipated that any chemical releases will occur during the field activities.

The MSDSs for chemicals being brought onto the installation for use in field operations will be listed on a site-specific Chemical Inventory and maintained at the TtNUS Field Command Post. Copies of these documents are to be made available to client and offsite representatives who may be called upon to respond to an emergency event.

## 15.0 UXO/CWM PROCEDURES FOR FIELD OPERATIONS

15.1 General – field procedures for work on any installation can include any or all of the following tasks:

- a. Initial entry into suspect areas
- b. CWM operations
- c. Surface and subsurface sampling
- d. Monitoring well installation
- e. Exploratory trenching

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- f. Geophysical surveys
- g. Other miscellaneous operations

15.2 Initial Entry – initial entry into suspect areas require an UXO-qualified technician with a magnetometer (GA-52Cx) to screen a path into the area. The screened area is marked with lanes using either pin flags with plastic pins or marking tape. Suspect items on the surface and subsurface magnetic anomalies will be marked, usually with a different color tape or flag, and will be avoided by team members. The site where the work is to be conducted will be thoroughly screened for UXO/CWM contamination prior to any work commencing. All personnel will stay within the cleared areas and not venture out into areas not screened. If an area that has magnetic anomalies cannot be avoided, the UXO-qualified technician will hand excavate down to the anomaly to check to see if a hazard exists. Before excavation begins, the immediate area will be cleared of non-essential personnel outside of what could be a fragmentation zone (as determined by the UXO Technician). If the excavation reveals a hazard, the emergency notification procedures in paragraph 11.0 will apply.

15.3 CWM Operations - prior to conducting CWM operations, an Emergency Response Plan as required by 29CFR1910.120 and DA Pam 50-6 will be developed and implemented. Most of the information required to develop this plan should be obtained from the installation safety office; however, as a minimum, the following elements will be addressed:

- a. Pre-emergency planning and procedures for reporting incidents to appropriate government agencies for potential chemical exposure, person injuries, fire/explosions, environmental spills and releases, and discovery of radioactive materials.
- b. Personnel roles, lines of authority, communications.
- c. Posted instructions and list of emergency contacts: physicians, nearby notified medical facility, fire and police departments, ambulance service, state/local/federal environmental agencies, Certified Industrial Hygienist (CIH), and installation commander.
- d. Emergency recognition and prevention.
- e. Site topography, layout and prevailing weather conditions.
- f. Criteria and procedures for site evacuation (emergency alerting procedures/employee alarm system, emergency PPE and equipment, safe distance, place of refuge (assembly area), evacuation routes, site security and control).
- g. Specific procedures for decontamination and medical treatment of injured personnel.
- h. Route maps to nearest pre-notified medical facility.
- i. Criteria for initiating community alert program, contacts and responsibilities.
- j. Critique of emergency responses and follow-up.
- k. Material Safety Data Sheets (MSDS) for each hazardous substance anticipated to be encountered on site would be made accessible to site personnel at all times.

15.4 Sampling – sampling will be conducted in accordance with established protocols and methodologies. Site-specific sampling requirements will be presented in the project-specific Work Plans and/or in other project-specific documents such as Field Sampling and Analysis Plans and Quality Assurance Plans.

Prior to initiating any sampling activities, an UXO-qualified technician will screen sites potentially contaminated with UXO/CWM. A magnetometer will be used to screen entry into a suspect area as in paragraph 15.2 above. Lanes will be marked and suspect items and subsurface anomalies will be identified and avoided. The immediate sampling area will be surface-screened prior to the introduction of the sampling team into the area.

Prior to any subsurface intrusive sampling, another check with a magnetometer needs to be accomplished. The GA-52Cx Magnetic Locator (magnetometer) can be used for collecting

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subsurface samples not greater than 0.5 feet. If excavation of a borehole or hand auguring hole is to exceed this depth, a MG-220 Magnetic Gradiometer (down hole magnetometer) shall be utilized with readings taken at two feet depth intervals.

If an anomaly is detected, the location will be marked and avoided. If appropriate and acceptable, an alternate sampling location (in a cleared area) will be designated. If the sampling location cannot be relocated then the UXO-qualified technician will hand excavate down to the anomaly to determine if it is hazardous. If it is not hazardous, the object will be set aside and the sampling event will continue. If the object has been determined to be hazardous or suspect, the sampling team will move out of the area and the emergency procedures listed in paragraph 11.0 will be implemented.

15.5 Monitoring Well Installation – the area within a 50-foot radius of the borehole and the off- road access path will be screened with the GA-52Cx magnetometer and be cleared of all metal objects. Once this is accomplished, the areas around borehole sites will be marked using colored marking tape and/or pin flags. Heavy equipment such as front-end loaders, backhoes, and bulldozers will not be used to develop or establish drill sites. The following action will be followed:

- a. The GA-52Cx magnetometer will be used directly over the borehole site to check for buried items down to 0.5 feet. After a surface check, the UXO-qualified technician will hand auger down to a depth of two feet and check down the hole using the MG-220 magnetometer.
- b. Once the hand-auguring hole has been cleared, the drill rig will be positioned over the proposed borehole. Drilling will commence to a depth of four feet, the drill auger will be removed from the borehole, the drill crew chief and UXO personnel will make observations of the soil from the core barrel and the soil removed from the hole by hand auger (if needed). The drilling log and lithologic log will be maintained in accordance with standard practices, noting any metal objects that may be found.
- c. The drilling derrick will be secured and drill rig moved to a position at least 20 feet from the borehole.
- d. The borehole will be checked again with the MG-220 magnetometer.
- e. If UXO or magnetic anomaly is present, the borehole will be abandoned and another location selected. The new borehole should be at least six feet from the original borehole. If a UXO or anomaly is not detected and the clearance is given, the drill rig shall be positioned back over the borehole, and drilling will proceed to the next depth (6 feet).
- f. Repeat above steps at intervals of 2 feet, until a depth of ten feet is reached. At the ten-foot interval, a magnetometer reading shall be taken with the MG-220 set on the maximum sensitivity. The instrument will detect larger objects (approaching 100 lbs.) that could be expected to penetrate to depths of 10 feet or more.
- g. After reaching the depth of ten feet, the above steps will be repeated at intervals of 4 feet, until the desired depth is reached.

15.6 Exploratory Trenching and Excavation – at times, exploratory trenching may be required to determine the lateral extent of a landfill, burial pit, or subsurface geophysical anomaly. Trenching and excavation to uncover a subsurface area will be conducted using a backhoe, an excavator, or sometimes a front-end loader. **Any trenching or excavation activities (regardless of depth) must be done in accordance with OSHA 29 Subpart P requirements, which must be considered and addressed in the project-specific Health and Safety Plan.**

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On project sites where excavation activities are within the scope of work and a UXO/CWM concern exists, the following additional procedures will be utilized to conduct these operations:

- a. The surface of the area to be trenched or excavated will first be swept with the GA-52Cx magnetometer. Anomalies will be hand excavated to determine if hazardous.
- b. No more than 0.5 feet of surface soil will then be gingerly removed (scraped) from the area of concern.
- c. The heavy equipment will be removed at least 20 feet away from the area, and the area will be checked with the MG-220 magnetometer. If the area is a trench, the entire length of the trench will be checked with the MG-220 and the excavation can continue two feet at a time. If the area is a wide-open area, it can once again be checked with the GA-52Cx, but only 0.5 feet of soil removal can be excavated at a time.
- d. Anomalies will continue to be uncovered by hand excavation until the desired results are obtained and the trench/area is abandoned and refilled.
- e. Excavation will continue another 2 feet if using the MG220 or 0.5 feet if using the GA-52Cx magnetometer. Once again after the proper depth of soil is excavated, the heavy equipment is removed from the area (>20 feet) and the area is rechecked with the magnetometer. If excavation depths reach 4 feet, suitable means of access/egress must be provided (e.g., ladders) and atmospheric monitoring must be performed prior to any entries.
- f. The above procedures are followed until the desired depth is reached and/or the desired results are obtained.

Once the area or trench has been cleared, excavation can continue to the proper depth before the equipment is again moved away (at least 20 feet) and the area/trench.

- 15.7 Geophysical Surveys – there are several instruments that can be used to conduct geophysical surveys. The GA-52Cx (Schonstedt) and the MG-220 are magnetometers and are passive instruments. The Geonics Terrain Conductivity Meter (EM-31) is an active instrument and is commonly used to measure subsurface terrain conductivity. This information can be used geophysical surveys, as well as for locating voids, discontinuities in soil structures such as boundaries of disposal pits and buried conducting objects. An Ordnance Safety Analysis of the Geonics Model EM-61 Non-Contacting Terrain Conductivity Meter was conducted by the Naval Surface Warfare Center at the request of TtNUS in April 1993. The analysis concluded, in summary, that the “Geonics EM-61 poses no ordnance safety hazard when operated in the normal survey mode, where the device is held at hip height.” However, the Geonics EM-61 should not be used with the boom on the ground if ordnance is present or suspected.

When using the magnetometer or the EM-61, a UXO-qualified technician will conduct a surface sweep of the area to be surveyed to ensure that no surface ordnance or other hazards exist. The magnetometer is a passive instrument; therefore, no special ordnance safety precautions are required.

Manufacture recommended procedures for the EM-61 must be followed to ensure safe operation during the geophysical survey. Standard survey protocols and quality assurance methods will also be required during survey operations.

- 15.8 Miscellaneous Operations – due to the potential of UXO/CWM materials being encountered during field activities, UXO support will be provided at all site locations. UXO support will be

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provided for any and all field activities that are in areas suspected to contain UXO and/or CWM. These areas also include those areas covered with water and creeks, canals, etc.

Operations that involve the inspection, hazard classification, segregation, and final disposal of UXO and UXO-related scrap will not be covered in this SOP. The demilitarization of UXO and UXO-related scrap is not authorized unless specific work plans, SOPs, health and safety plans and other established procedures are written and approved addressing these operations.

## **16.0 HAZARD CONTROL BRIEF**

A Health and Safety Hazard Control Briefing (i.e., tailgate meetings) will be conducted daily prior to the start of onsite activities. The briefing will be detailed and will cover the information in the Safe Work Permits for the anticipated tasks for the day, as well as applicable portions of this SOP. Additional briefings will be conducted as necessary for tasks that become necessary during the course of a workday, if they were not covered in the morning briefing. These briefings are in addition to (not in place of) the site-specific health and safety training that is required for all onsite personnel prior to their participation in any onsite, intrusive activities.

The following information will be given during the daily briefings:

- a. Overview of task(s) to be performed and review of appropriate Safe Work Permits with task participants.
- b. Overview of the day's objectives, as well as general site hazards
  - Unexploded Ordnance Hazards
  - Chemical Warfare Agents and Materials
  - Physical Hazards
- c. Overview of Standard Work Practices pertinent to the day's planned activities
- d. Review of any worker incidents or near-miss events, including a review of corrective/preventive measures to prevent recurrence
- e. Overview of Emergency Response Actions, evacuation routes and assembly points

## **17.0 SECURITY**

Field activities under various TtNUS contracts are typically unclassified and normal security measures apply in accordance with above references (paragraph 9.1 above). TtNUS personnel and their subcontractors will check in with the appropriate client/installation's security office and may be issued security badges for entry into certain work areas. This SOP will not cover special security requirements for projects involving UXO/CWM as most installations have established policies and procedures on reporting and securing recovered items that are UXO and/or CWM. The TtNUS Project Manager will incorporate all security procedures required by the installation into the site work plan.

**ATTACHMENT III**

**MEDICAL DATA SHEET**

## MEDICAL DATA SHEET

This Medical Data Sheet must be completed by 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 \_\_\_\_\_

Person to notify in the event of an emergency: Name: \_\_\_\_\_  
Phone: \_\_\_\_\_

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

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

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

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

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

### **Note: Health Insurance Portability and Accountability Act (HIPAA) Requirements**

HIPAA took effect April 14, 2003. Loosely interpreted, HIPAA regulates the disclosure of Protected Health Information (PHI) by the entity collecting that information. PHI is any information about health status (such as that you may report on this Medical Data Sheet), provision of health care, or other information. HIPAA also requires Tetra Tech to ensure the confidentiality of PHI. This Act can affect the ability of the Medical Data Sheet to contain and convey information you would want a Doctor to know if you were incapacitated. So before you complete the Medical Data Sheet understand that this form will not be maintained in a secure location. It will be maintained in a file box or binder accessible to other members of the field crew so that the can accompany an injured party to the hospital.

DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment.

\_\_\_\_\_  
Name (Print clearly) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

## **ATTACHMENT IV**

# **ACCIDENT PREVENTION PLAN/ ACTIVITY HAZARD ANALYSIS**

**Accident Prevention Plan**

**For**

**Munitions Response Program Phase 2 Site Inspection  
Field Activities**

**At The**

**Naval Support Facility  
Indian Head Stump Neck Annex  
Indian Head, Maryland**

**Submitted to:  
Naval Facilities Engineering Command  
Washington  
1314 Howard Street, SE  
Washington Navy Yard, DC 20374-5018**

**Submitted by:  
Tetra Tech NUS Inc.  
234 Mall Boulevard, Suite 260  
King of Prussia, Pennsylvania 19406**

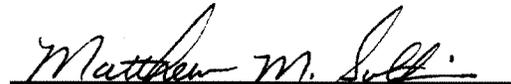
**Revision 0  
July 2011**

**PREPARED UNDER THE SUPERVISION OF:**

**APPROVED FOR SUBMISSION BY:**



**BARBARA BECKER  
PROJECT MANAGER  
TETRA TECH NUS, INC.  
KING OF PRUSSIA, PENNSYLVANIA**



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

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## APPENDICES

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- 1 Employee Training/Qualifications

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- 1 Stump Neck Annex Activity Hazard Analysis

## ACRONYMS

§	Section
dB	decibels
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute

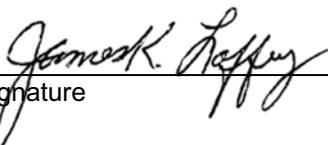
APP	Accident Prevention Plan
BLS	Bureau of Labor Statistics
CFR	Code of Federal Regulations
CPR	Cardiopulmonary resuscitation
CTO	Contract Task Order
DART	Days Away/Restricted Duty/Transfer
DDESB	Department of Defense Explosives Safety Board
DEET	N, N-diethyl-m-toluamide
EM	Engineer Manual
EMR	Experience modification rate
EOD	Explosive Ordnance Disposal
ESS	Explosive Safety Submission
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
MC	Munitions constituents
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Presenting an Explosive Hazard
NAICS	North American Industry Classification System
NAVFAC	Naval Facilities Engineering Command
NEHC	Navy Environmental Health Center
NHSO	Navy Health and Safety Officer
NIOSH	National Institute of Occupational Safety and Health
NRR	Noise Reduction Rating
NSFIH	Naval Systems Facility – Indian Head
OSHA	Occupational Safety and Health Administration
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	Personal protective equipment
RCIR	Recordable Case Incident Rate
RPM	Remedial Project Manager
HSM	Safety and Health Manager
SSC	Site Safety Coordinator
TP	Technical Paper
UST	Underground Storage Tank
UXO	Unexploded Ordnance

## 1.0 SIGNATURE SHEET

NAVAL FACILITIES ENGINEERING COMMAND WASHINGTON  
CONTRACT NO. N62467-04-D-0055  
ACCIDENT PREVENTION PLAN FOR PHASE 2 SITE INSPECTION AT  
NAVAL SUPPORT FACILITY – INDIAN HEAD STUMP NECK ANNEX  
INDIAN HEAD, MARYLAND

Prepared by:

James K. Laffey  
Tetra Tech NUS  
Project Health and Safety Officer

  
Signature

(412) 921-8678  
Phone

Concurred by:

Matthew M. Soltis, CIH, CSP  
Tetra Tech NUS  
Safety and Health Manager

  
Signature

(412) 921-8912  
Phone

Approved by:

John Trepanowski  
Tetra Tech NUS  
Company Officer

  
Signature

(610) 491-9688  
Phone

## 2.0 BACKGROUND INFORMATION

Contractor: Tetra Tech NUS  
Contract Number: N62467-04-D-0055  
Project Name: Stump Neck Annex Site Inspection at Naval Systems Facility – Indian Head (NSFIH)

### 2.1 Project Description

The objective of this task will be to implement field sampling activities at the NSFIH Stump Neck Annex sites.

NSFIH is located in northwestern Charles County, Maryland, approximately 25 miles southwest of Washington, D.C. The Stump Neck Annex covers approximately 1,100 acres on the Stump Neck peninsula at the confluence of the Potomac River and Chicamuxen Creek in Charles County, Maryland. Stump Neck Annex was acquired by the Navy in 1901 to support activities at the 2,300-acre Indian Head Main Installation. General Smallwood State Park and private property parcels are located east and southeast, respectively, of Stump Neck Annex, and the Chicamuxen Wildlife Management Area (WMA) is to the south across Chicamuxen Creek.

It is the intent of this visit to solicit and collect site-specific information, necessary to refine the Conceptual Site Model/Data Quality Objectives (CSM/DQO) to be presented to the Navy, regulators, and stake holders.

This Accident Prevention Plan (APP) addresses only the activities to be performed by Tetra Tech personnel and their subcontractors.

The site-specific health and safety provisions in this document have been developed for use during the provision of unexploded ordnance (UXO) avoidance support during the Stump Neck Annex Site Inspection field work activities. This document addresses applicable items specified under the U.S. Army Corps of Engineers Safety and Health Requirements Manual, Engineering Manual (EM) 385-1-1, and United States Occupational Safety and Health Administration (OSHA) Title 29 of CFR, § 1910.120(b). This APP will be available to (1) on-site personnel who may be exposed to hazardous on-site conditions, including Tetra Tech and subcontractor personnel participating in field activities and UXO avoidance activities, and (2) site visitors, including regulatory agency representatives. Site-specific sections of EM 385-1-1 applicable to this field effort are as follows:

- 1 - Program Management
- 2 - Sanitation
- 3 - Medical and First Aid Requirements
- 4 - Temporary Facilities
- 5 - Personal Protective and Safety Equipment
- 6 - Hazardous Substances, Agents, and Environments
- 7 - Lighting
- 8 - Accident Prevention Signs, Tags, Labels, Signals, Piping System ID, and Traffic Control
- 9 - Fire Prevention and Protection
- 10 - Welding and Cutting
- 11 - Electrical
- 12 - Control of Hazardous Energy
- 13 - Hand and Power Tools
- 14 - Material Handling, Storage, and Disposal
- 15 - Rigging
- 16 - Machinery and Mechanized Equipment
- 17 - Conveyors
- 18 - Motor Vehicles and Aircraft
- 19 - Floating Plant and Marine Activities
- 20 - Pressurized Equipment and Systems
- 21 - Safe Access and Fall Protection
- 22 - Work Platforms
- 23 - Demolition
- 24 - Floor and Wall Holes and Openings
- 25 - Excavations
- 26 - Underground Construction, Shafts, and Caissons
- 27 - Concrete and Masonry Construction and Steel Erection
- 28 - Hazardous Waste Operations and Emergency Response (HAZWOPER)
- 29 - Blasting
- 30 - Contract Diving Operations

## **2.2 Site Maps**

A facility location map and a site location map showing the location where Tetra Tech employees will be performing work are included as part of the Work Plan for the work associated with this field effort at Stump Neck Annex NSFIIH.

## **2.3 Tetra Tech NUS Safety Statistics**

The following table presents safety statistics for Tetra Tech NUS for the last 3 calendar years compared to the national averages for our industry. This comparison uses data collected by the United States Dept. of Labor, Bureau of Labor Statistics (BLS), for different types of employers, segregated by North American Industry Classification System (NAICS) codes.

**Comparison of TtNUS and 2009 BLS Data for NAICS Code 541  
(RCIR and DART Case Rates)**

	NAICS 541 Professional, Scientific, and Technical Services 2009	TtNUS 2008	TtNUS 2009	TtNUS 2010
Total Recordable Case Incident Rate (RCIR)	1.2	0.48	0.2	0.7
Days Away/Restricted Duty/Transfer Case Rate (DART)	0.5	0.2	0.2	0.2

The data comparison illustrate that Tetra Tech's performance compares favorably with the most-recent national averages for the environmental engineering and hazardous waste services industries.

**2.3.1 Tetra Tech, Inc. Experience Modification Rates and OSHA Logs:**

Policy Year (October 1 - September 30) 2008-2009	0.81
Policy Year 2009 -2010	0.74
Policy Year 2010-2011	0.76

**2.4 Work Phases**

Work on this project will occur in the following phases. Associated dates when Tetra Tech personnel will be on site performing work will be listed for each phase of the project.

- Phase 1 - Mobilization
- Phase 2 - UXO Support (avoidance) and field activities
- Phase 3 – MC sampling activities
- Phase 4 – Demobilization

**2.5 Specific Site Activities**

For each of these tasks, detailed Activity Hazard Analyses (AHAs) have been prepared and are provided in Section 14.0 of this APP.

### **3.0 STATEMENT OF SAFETY AND HEALTH POLICY**

Tetra Tech is committed to providing our employees with a safe and healthful workplace. The principal elements of our program are founded on the requirements presented in the Health and Safety Policy presented on the following page.



## TETRA TECH NUS, INC. HEALTH AND SAFETY POLICY

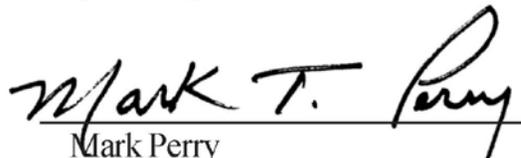


Tetra Tech NUS, Inc., is committed to providing our employees with a safe and healthful workplace. We believe that occupational injuries and illness can be prevented; and we are convinced that a strong Health and Safety Program is essential to achieve this objective.

To implement these Program objectives, we require that our managers and employees:

- Recognize a *personal responsibility* for his/her own health and safety, and for actions which affect fellow employees:
- Integrate safety and health with all aspects of their work, with the well-being of employees as the primary concern in all activities.
- Comply with applicable federal, state and local regulations, as well as with Tetra Tech's and our clients policies and procedures.
- Be actively involved in the Health and Safety Program by providing input and constructive criticism for Program improvements.



  
Mark Perry  
President

  
Matthew M. Soltis, CIH, CSP  
Health and Safety Manager



TETRA TECH NUS, Inc.

January 2010



## 4.0 RESPONSIBILITIES AND LINES OF AUTHORITY

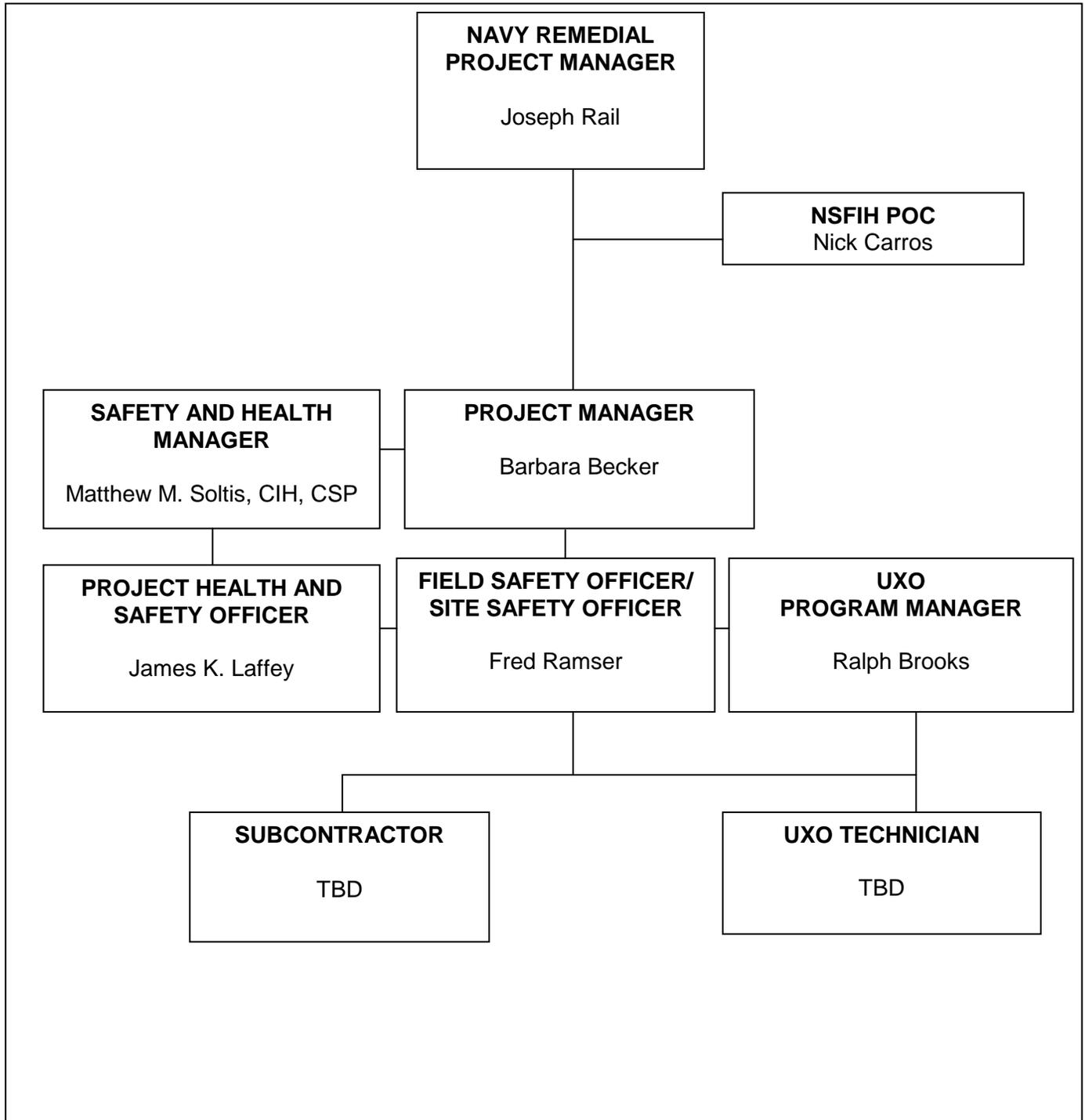
The Tetra Tech Site Safety Officer (SSO) for this project has been appointed by the Project Manager (PM) and is responsible for field implementation of tasks and procedures contained in the HASP (see Section 15.0) portion of the APP. The SSO for this project may be the UXO Safety Officer/Quality Control (UXOSO/QC) technician on site. The SSO has completed 40-Hour HAZWOPER and subsequent 8-Hour HAZWOPER Refresher Training, 8-Hour HAZWOPER Supervisor Training, and First Aid/CPR and Blood-borne Pathogen training in accordance with regulatory requirements applicable to the work that will be performed for this project. The Tetra Tech SSO has primary responsibility for responding to and correcting emergency situations and for taking appropriate measures to ensure the safety of site personnel and the public (e.g., evacuation of personnel from the site area). The SSO is also responsible for ensuring that corrective measures have been implemented, appropriate internal and Navy authorities have been notified, and follow-up reports have been completed.

Individual subcontractors are required to cooperate with the SSO within the parameters of their Scopes of Work.

Personnel are required to immediately report any injuries, illnesses, spills, fires, and property damage to the SSO. The SSO must be notified of any on-site emergencies and is responsible for ensuring that the appropriate emergency procedures described in this section are followed. The SSC is also responsible for informing the Navy Remedial Project Manager (RPM) of major incidents and associated corrective actions.

Management at Tetra Tech has the authority and responsibility for implementing and maintaining this APP and HASP. Specific responsibilities are discussed in Section 15. An organization chart presenting the lines of authority for this project is shown on the next page.

**ORGANIZATION CHART  
ON-SITE MRP SITE INSPECTION SUPPORT OF  
FIELD ACTIVITIES AT NSFIH**



The work under this contract, including this field effort, is subject to a comprehensive health and safety program developed, designed, and implemented by Matthew M. Soltis, CIH, CSP. Mr. Soltis serves as Director of Health and Safety for Tetra Tech and as the Health and Safety Manager (HSM) for the planned work addressed in this APP.

## 5.0 SUBCONTRACTORS

Tetra Tech may employ a subcontractor in the performance of work covered by this APP. Any subcontractor participating at work at NSFIIH are required to prepare and adhere to safety planning and program documents (e.g., APP, HASP, etc.) as appropriate for the activities that they will perform on this project site. In addition, subcontractor personnel will also be required to read and comply with the sections of this Tetra Tech APP and HASP. The subcontractor personnel entering the site must sign the Site-Specific Training Documentation form included in the HASP. Subcontractor personnel must comply with the applicable 29 CFR §1910.120 training and medical surveillance requirements. Subcontractors are responsible for providing personal protective equipment (PPE) needed to protect personnel as specified by their safety and health planning documents and by this APP, and are directly responsible for assuring the health and safety of their employees. Subcontractors who have not met OSHA training, medical surveillance, and PPE requirements are not permitted to enter areas where exposure to hazardous materials is possible.

This APP and associated HASP shall be rigorously enforced during this field effort. Violators of the HASP and APP will be verbally notified upon first violation, and the violation will be noted by the Tetra Tech SSO in a field logbook. Upon second violation, the violator will be notified in writing, and the Tetra Tech PM and the violator's supervisor will be notified. A third violation will result in a written notification and the violator's eviction from the sites. The written notification will be sent to the human resources development and the HSM.

Any violations that are deemed to be serious, intentional, or otherwise egregious will be subject to immediate corrective action, up to and including removal from the site, and will not require adherence to this progressive, three-step disciplinary process.

Personnel will be encouraged to report to the SSO any conditions or practices that they consider detrimental to their health or safety, or those they believe violate applicable health and safety standards. Such reports may be made orally or in writing. Personnel who believe that an imminent danger threatens human health or the environment are encouraged to bring the matter to the immediate attention of the SSO for resolution. Job site activities presenting danger to life or limb should be stopped immediately and reported to the SSO for resolution.

At least one copy of this APP and the HASP will be available to site personnel. Minor changes in the HASP procedures will be discussed at the beginning of each work day by the SSO at the daily tailgate

safety meeting. Significant HASP revisions must be discussed with the HSM and PM and approved via the HASP amendment form.

## **6.0 TRAINING**

Site personnel who may be exposed to hazardous conditions and who will participate in on site activities are required to meet the training requirements outlined in 29 CFR §1910.120, Hazardous Waste Operations and Emergency Response. Furthermore, site personnel must satisfy any specialized training requirements that are presented in the AHAs for tasks to be completed under this Contract Task Order (CTO).

### **6.1 Mandatory Training and Certifications**

Tetra Tech personnel qualification and training certification documentation will be obtained by the PM/FOL and included in Appendix I of this APP, and a copy maintained on site. Mandatory training and certifications applicable to this project include the following:

- HAZWOPER as outlined in 29 CFR § 1910.120
- Current 8-hour HAZWOPER refresher
- The supervisory personnel will also have Supervisory Training in accordance with 29 CFR 1910.120(e)(4)
- First Aid, Cardio Pulmonary Resuscitation (CPR) and Blood Borne Pathogen (BBP)

As indicated above, these are base training requirements necessary to be on the site. Specialized operations (UXO) or responsibilities (First Aid-CPR-BBP) will also require additional training for personnel filling those roles.

### **6.2 Site-Specific Safety and Health Training**

Prior to accessing active work areas of the sites or participating in any intrusive activities, site personnel and visitors will first be required to undergo a site-specific safety and health training session conducted by the SSO, which will include a review of the HASP and signing of the Site-Specific Training Documentation form. Site workers will be required to sign a Daily Tailgate Safety Meeting form (included in HASP).

In addition, UXO team members on site will meet or exceed the requirements stated in the Department of Defense Explosives Safety Board (DDESB) Technical Paper (TP) 18 for their respective assignments.

Before on-site activities begin, the Tetra Tech SSO will present a briefing for the personnel who will participate in on-site activities. The following topics will be addressed during the pre-work briefing:

- Names of the SSO and designated alternate
- Site history
- Work tasks
- Hazardous chemicals that may be encountered on site
- Physical hazards that may be encountered on site
- PPE, including types of respiratory protection to be used for work tasks
- Mandatory training and certification requirements (e.g., HAZWOPER; HAZWOPER 8-hour Refresher; MEC-specific)
- Environmental surveillance (air monitoring) equipment use and maintenance
- Action levels and situations requiring an upgrade or downgrade of level of protection
- Site control measures including site communications and control zones
- Decontamination procedures
- Emergency communication signals and codes, including incident reporting procedures
- Environmental accident emergency procedures (if contamination spreads outside the exclusion zone)
- Personnel exposure and accident emergency procedures (falls, exposure to hazardous substances, and other hazardous situations)
- Fire and explosion emergency procedures
- Emergency telephone numbers
- Emergency routes

Any other health and safety-related issues that may arise before site activities begin will also be discussed during the pre-work briefing by the SSO.

Issues that arise during implementation of on-site activities will be addressed during tailgate safety meetings to be held daily before the workday or shift begins and will be documented in a Daily Tailgate Safety Meeting form (included in the HASP). The tailgate safety meetings will be attended by site workers, subcontractors, and visitors and will be conducted by the FOL and/or SSO. Any changes in procedures or site-specific health and safety-related matters will be addressed during these meetings.

## **7.0 SAFETY AND HEALTH INSPECTIONS**

It is Tetra Tech's internal policy that the job sites involving work for Naval Facilities Engineering Command Washington DC (NAVFAC Washington) are subject to audits by corporate safety staff. Daily site safety

inspections shall be conducted by the Tetra Tech SSO during this field effort to ensure safe work areas and compliance with the HASP.

The items noted during field audits will be communicated to the Tetra Tech HSM who maintains a corrective/preventive action database. Responsibility for resolving each item noted during these audits is assigned and tracked through resolution. Results from field audits are also regularly communicated throughout Tetra Tech through training and electronic means as a method of continuous program improvement.

## **8.0 SAFETY HEALTH EXPECTATIONS AND COMPLIANCE**

It is the goal of Tetra Tech to continue excellent safety performance on NAVFAC Washington contracts to support the Navy in their safety efforts. Specifically, Tetra Tech will perform the work in a manner that is consistent with the Zero Incident philosophy. In accordance with this philosophy, it is our stated goal to plan and perform the work in a manner that integrates safety and health considerations so that it is accomplished without experiencing any worker injuries or illnesses, environmental releases/impacts, or property damage events.

In addition to the line and staff management functions described in this APP and the accompanying HASP, each individual performing work under this contract has the responsibility for their own personal health and safety, as well as assisting in assuring the health and safety of their co-workers. This element is also the first one listed in our corporate Health and Safety Policy Statement, which requires that "each employee recognize a personal responsibility for their own health and safety and for actions that affect the health and safety of fellow employees." This employee responsibility includes observing specified health and safety requirements and communicating with the designated SSO on matters such as the effectiveness of specified control measures, identification of new potential hazards, and other related issues.

An employee's failure to adhere to the requirements of this APP and HASP or to observe specified safety requirements and restrictions or to properly use identified protective equipment may lead to injury or illness. As a result, deviation from safety and health procedures is not tolerated. Failure to comply with health and safety procedures and requirements will lead to reprimand up to and including dismissal. Health and safety-related information will be communicated to employees through meetings, postings, written communications, and reporting of hazards.

## 9.0 INCIDENT REPORTING

If any Tetra Tech personnel are injured or develop an illness as a result of working on site, the Tetra Tech “Incident Report Form” (Attachment II) must be followed. Following this procedure is necessary for documenting of the information obtained at the time of the incident.

### 9.1 TOTAL Incident Reporting System

TOTAL is Tetra Tech’s online incident reporting system. Site employees can use TOTAL to directly report health and safety incidents, notify key personnel, and initiate the process for properly investigating and addressing the causes of incidents, including near-miss events. An incident is considered any unplanned event. It may include several types of near misses, events where no loss was incurred, or incidents that resulted in injuries or illness, property or equipment damage, chemical spills, fires, or damage to motor vehicles.

TOTAL looks like the incident reporting form in Attachment II. TOTAL is an intuitive system that will guide you through the necessary steps to report an incident within 24 hours of its occurrence.

TOTAL is maintained on the Tetra Tech Intranet site at <https://my.tetrattech.com/>

Once on the “My Tetrattech” site, TOTAL can be found under the Health and Safety tab, Incident Reporting section, select “Report an Incident (TOTAL)”. This will connect you directly to TOTAL. TOTAL can also be accessed directly from the internet using the following web address: <http://totalhs.tetrattech.com/>

**Note:** When using the system outside the Tetra Tech intranet system or when operating in a wireless mode, a Virtual Private Network (VPN) connection will be required. The speed of the application may be affected dependent upon outside factors such as connection, signal strength, etc. Enter the system using your network user name and password. The user name should be in the following format - TT\nickname.lastname.

## 10.0 MEDICAL SUPPORT

As required by EM 385-1-1, Tetra Tech will ensure that a minimum of two people have current certifications in CPR, First Aid, and Blood-borne Pathogens. Other than rendering basic CPR and First Aid, these employees are not expected to perform emergency medical duties. However, they are authorized to perform emergency rescue or other duties up to the level of their training.

Emergency medical assistance will be acquired from non-Navy sources. The closest hospital to the site is Civista Medical Center. Directions to this hospital are included in the HASP, as well as contact numbers for both the hospital and ambulance services. Tetra Tech personnel are instructed to perform a drive-by of the nearest hospital to ensure that it is accessible and available and that the most efficient route is well mapped.

## **11.0 PERSONAL PROTECTION REQUIREMENTS**

The levels of personal protection to be used for work tasks at the NSFIIH site have been selected based on the nature of the planned work activities and on the known or anticipated hazards; types and concentrations of contaminants that may be encountered on site; and contaminant properties, toxicity, exposure routes, and matrixes. Specific PPE selected for this project is listed, by task, in the AHAs located in Section 14.0 of this APP.

PPE is selected by the PHSO when writing the APP and HASP, and is confirmed through a rigorous review process by the Tetra Tech HSM. To assure proper PPE has been selected, both the physical and chemical hazards present at the job site are taken into account in both developing and reviewing safety-related documents. In lieu of a separate hazard assessment document being developed by Tetra Tech for Navy field efforts, the signatures of the HSM and the PHSO on the Signature Page of this APP constitute approval of the hazard assessment contained in the HASP.

The anticipated levels of protection selected for use by field personnel during site activities is Level D. If site conditions warrant a higher level of protection, field personnel will withdraw from the site, immediately notify the Tetra Tech SSO, and obtain further instructions.

PPE levels can be upgraded or downgraded based on a change in site conditions or investigation findings. When a significant change in site conditions occurs, hazards will be reassessed. Some indicators of the need for reassessment are discussed in Section 15.0.

PPE has been selected based on the results of task-specific hazard assessments. Through the completion of employee training (e.g., introductory 40-hour hazardous waste training, annual refresher training, etc.), Tetra Tech employees have been informed of the proper selection, use, and care of PPE items provided to them. After PPE is provided to an employee, the responsibility for using and caring for it appropriately is the responsibility of that employee. The SSO is responsible for assuring that these responsibilities are fulfilled through daily observations and work area inspections at the sites. The SSO is

also responsible for assuring that appropriate and adequate supplies of PPE are maintained such that they are readily available for issuance/replacement and in a clean and sanitary manner and location. The site personnel will use the procedures presented in Section 15.0 to obtain optimum performance from PPE.

## 12.0 APPLICABLE SITE SPECIFIC PLANS, PROGRAMS AND PROCEDURES

Listed below are potential site-specific plans and procedures that may be applicable to this Navy field effort. The required plans (as noted below) are included in the HASP.

- Layout Plan
- Emergency Response Plan
- Spill Plan
- Firefighting Plan
- Posting of Emergency Telephone Numbers
- Wildfire Prevention Plan
- Man Overboard – Abandon Ship
- Hazard Communication Program
- Respiratory Protection Plan
- Health Hazard Control Program
- Lead Abatement Plan
- Asbestos Abatement Plan
- Abrasive Blasting Plan
- Confined Space Entry Plan
- Hazardous Energy Control Plan
- Critical Lift Procedure
- Contingency Plan for Severe Weather
- Access and Haul Road Plan
- Demolition Plan (engineering and asbestos surveys)
- Emergency Rescue (tunneling)
- Underground Construction Fire Prevention and Protection Plan
- Compressed Air Plan
- Formwork and Shoring Erection and Removal Plan
- Jacking Plan (lift) Slab Plan
- Health and Safety Plan
- Blasting Plan
- Diving Plan
- Prevention of Alcohol and Drug Abuse
- Fall Protection Plan
- Steel Erection Plan
- Night Operations Lighting Plan
- Site Sanitation Plan
- Fire Prevention Plan

### **13.0 CONTRACTOR (TETRA TECH) INFORMATION**

Tetra Tech' HASP must accompany this APP on job sites. The HASP contains information specific to the Stump Neck Annex NSFIIH effort and provides requirements that employees must follow to ensure that their activities are carried out in accordance with both OSHA and applicable EM 385-1-1 requirements. Compliance with the HASP by Tetra Tech will be the means used to meet the requirements outlined in this APP.

Additionally, site-specific AHAs (Section 14.0) have been developed that comply with OSHA requirements and EM 385-1-1 requirements. By adhering to requirements specified in the AHAs, work will be performed on site in a safe manner. Minor changes to AHAs based on actual site conditions are permitted as necessary and applicable by the SSO in the field. Major changes to AHAs, such as Scope of Work changes, must be documented on a revised AHA forms and are subject to additional review by the Tetra Tech HSM.

### **14.0 SITE-SPECIFIC HAZARDS AND CONTROLS**

Detailed task-specific hazards and controls are provided in the AHAs attached to this APP. Table 1 details the AHAs for the UXO activities being provided in support of the Stump Neck Annex NSFIIH field activities.

		<b>ACTIVITY HAZARD ANALYSIS (AHA)</b>			
		<b>Site Name:</b> Rifle, Skeet, Trap, and Small Arms Range Sites NSFIIH, Indian Head, Maryland			
		<b>Task:</b> Mobilization/Demobilization			
<b>Prepared by</b>	J. Laffey	<b>Date</b>	May 13, 2011	<b>FOL</b>	
<b>Reviewed by</b>	R. Brooks	<b>Date</b>	May 13, 2011	<b>SSO</b>	
Task Steps		Hazards		Critical Safety Procedures and Controls	
<ul style="list-style-type: none"> <li>Assembling, packing, unpacking equipment and supplies</li> <li>Performing a Jobsite Hazard Evaluation and initial/exit inspections of the intended work areas.</li> </ul>		1. Minor cuts, abrasions, or contusions handling equipment and tools		1. Wear cut-resistant gloves when handling items with sharp or rough edges.	
		2. Heavy lifting (muscle strains and pulls)		2. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure a clear path of travel and good grasp on object. Lift with legs not back, obtain help when needed to lift large, bulky, or heavy items).	
		3. Vehicular traffic at the work site		3. Locate vehicle and equipment staging areas. Inform site personnel of equipment areas and of their responsibility to stay clear of moving vehicles. Observe designated and marked travel pathways. Wear safety vests when activities involve encroaching on active traffic ways.	
		4. Intermittent high noise levels		4. Although not considered a highly probable event, based on the anticipated activities, the use of hearing protection may occasionally be required (at the onsite SSO's). The SSO will observe the following: <ul style="list-style-type: none"> <li>Available data or monitoring results collected from similar operations and/or collected during this activity.</li> <li>Use of hearing protection within an established distance from an operation potentially generating excessive noise levels until these levels can be quantified. For instance, during the operation of heavy equipment (excavator) typical site control boundary will be the length of the boom/bucket plus 10- feet. This is a sufficient distance to remove personnel from excessive noise levels. Inside this boundary personnel will wear hearing protection.</li> <li>Lastly, the employees may utilize the following general rule of thumb to help make these determinations:</li> <li>If noise levels are such that a worker must raise their voice to communicate with someone who is within arm's reach (approximately 2</li> </ul>	

Task Steps	Hazards	Critical Safety Procedures and Controls
		<p>feet) of them, excessive noise levels are being approached and hearing protection is required.</p> <ul style="list-style-type: none"> <li>Hearing protection will consist of either ear muffs or ear plugs that have a Noise Reduction Rate (NRR) of at least 25 decibels (dB).</li> </ul>
<ul style="list-style-type: none"> <li>Performing initial clearance of travel pathways (foot/vehicular).</li> </ul>	<p>1. MEC/UXO Hazards</p>	<p>1. MEC/UXO avoidance operations will be conducted by trained UXO Technicians. All Non-UXO personnel will be escorted while in the area of concern. Magnetometers will be tested using inert UXO/surrogates similar in size to the suspected target anomalies. Any MEC/UXO items on the surface and near surface will be flagged for UXO avoidance. UXO Technicians will clear vehicle and foot travel paths within the area in order to move up support personnel and equipment. Once this is completed, grid/transect clearance of the area of concern will be conducted. If MEC/UXO is observed, the UXO Technician making the observation will signal to stop operations.</p> <ul style="list-style-type: none"> <li>Any MEC/UXO item discovered during the UXO Avoidance operations will be flagged for UXO avoidance and left in place. No MEC/UXO items will be moved during this operation. All MEC/UXO items discovered will be reported to the Navy POC.</li> <li>An inventory will be maintained by the UXO Technician with location and description (provided that information can be obtained without moving the item) for all MEC/UXO discovered during this operation, and the Navy POC will be provide an update about the inventory on a daily basis.</li> </ul>
	<p>2. Slip/trip/fall hazards</p>	<p>2. Implement and maintain good housekeeping practices throughout work areas. Preview walking/working areas and maintain them to identify and avoid when possible slipping/tripping hazards. Preview work locations for unstable/uneven terrain.</p>
	<p>3. Lightning – inclement weather (high winds, heavy rains, etc.)</p>	<p>3. If electrical storms or inclement weather are within the area as determined through local forecasting or weather alerts issued, the UXO Technician will suspend activities. The 30-30 rule shall be applied: <i>If 30 seconds or less is between lightning and its thunder, go inside and stay inside for at least 30 minutes. Personnel will be directed to seek suitable shelter.</i></p>

Equipment	Inspection	Training
Hand tools (dollies, hand carts, hand knives, shovels, etc.)	Visual inspection of hand tools prior to use by user.  SUXOS to perform regular inspections for housekeeping issues and surveys of operational areas to insure compliance with the HASP.	None required.

I have read and understand this AHA:

Name (Printed)	Signature	Date

		<b>ACTIVITY HAZARD ANALYSIS (AHA)</b>			
		<b>Site Name:</b> Rifle, Skeet, Trap, and Small Arms Range Sites NSFIIH, Indian Head, Maryland			
		<b>Task:</b> Monitoring Well Installation and UXO Avoidance			
<b>Prepared by</b>	J. Laffey	<b>Date</b>	May 13, 2011	<b>FOL</b>	
<b>Reviewed by</b>	R. Brooks	<b>Date</b>	May 13, 2011	<b>SSO</b>	
<b>Task Steps</b>	<b>Hazards</b>	<b>Critical Safety Procedures and Controls</b>			
Temporary monitoring well installation via All Terrain Vehicle (ATV) mounted DPT.  UXO avoidance during sampling activities- identifying materials as not MEC-related prior to sampling.	1. Injury due to contact with operating/moving heavy equipment, if applicable. These include the following potential hazards: <ul style="list-style-type: none"> <li>• Struck by</li> <li>• Overhead hazards</li> <li>• Eye injury</li> <li>• Foot injury</li> <li>• Intermittent noise</li> </ul>	1. Be aware of safe work zones and use the designated routes of approach at the sites. Personnel will not approach operating DPT equipment and will be aware of sample rods, augers, and equipment pinch-points. <ul style="list-style-type: none"> <li>• Only authorized and essential personnel will be permitted in the work area.</li> <li>• Heavy equipment such as the excavator and earthmoving trucks will be equipped with movement warning systems (audible and/or visual).</li> <li>• Wear safety vest when working near heavy equipment.</li> <li>• Hard hats, safety impact eye protection, and steel toe safety footwear must be worn in areas where DPT equipment is actively operating.</li> <li>• If steel toe footwear cannot be worn because of interferences with UXO detection devices, safety impact footwear with non-metallic toe protection (provided that the footwear satisfies ANSI Z-41 requirements for protective footwear) shall be used.</li> <li>• Hearing protection will be worn at the discretion of the SSO's/UXO Technician. The following general rule of thumb applies:                             <ul style="list-style-type: none"> <li>- If noise levels are such that a worker must raise their voice in order to communicate with someone who is within arm's reach (approximately 2 feet) of them, excessive noise levels are being approached and hearing protection is required.</li> <li>- Hearing protection will consist of either ear muffs or ear plugs that have an NRR of at least 25 dB.</li> </ul> </li> </ul>			
	2. Utility Contact	2. Utility clearance is required for the 10 subsurface investigation points. Under the National One Call system 811 these locations will be clear of subsurface utilities prior to drilling or mechanized advancement into the subsurface soils. When a utility is identified within 3-feet of a subsurface investigation point, site personnel will locate that utility via hand digging (to ensure it is where it is marked). Site personnel will also walk over the proposed site looking for surface monuments indicating subsurface utilities. DPT operations will be conducted at a safe distance from overhead power lines (Minimum 20-feet). See Section 7.0 of the HSGM for additional guidance.			
	3. MEC/MPPEH Hazards	3. MEC avoidance operations will be conducted by trained UXO Technicians. Non-UXO personnel will be escorted while in the area of concern. The field workers conducting the work will be accompanied by a UXO Technician II or higher during the fieldwork and sampling			

Task Steps	Hazards	Critical Safety Procedures and Controls
		<p>operations. Exclusion zone distances will be defined based on those specified in the Work Plan. Before beginning DPT operations, the UXO Technician will conduct a detector aided-visual survey for MEC/MPPEH at each new sampling location. During DPT operations, a downhole magnetometer will be used to survey the boring at 2 foot intervals until sampling depth is achieved. If an anomaly is encounter in or around the boring, the sample location will be off-set as close as safety allows to the original location and the procedure will be repeated until sample depth is achieved. If suspect MEC/MPPEH is observed, the UXO Technician making the observation will signal to stop operations and take the following precautions:</p> <ul style="list-style-type: none"> <li>• The UXO Technician will visually inspect the MEC/MPPEH to determine the type and condition if possible.</li> <li>• Under no circumstance will suspect MEC/MPPEH be moved or otherwise disturbed. This identification and the exact location will be recorded in the logbook.</li> <li>• Any suspect MEC/MPPEH item discovered during UXO Surface Survey operations will be treated or flagged for UXO avoidance as stated in the Work Plan.</li> <li>• The SUXOS will notify the UXO PM and await further instructions.</li> <li>• Suspect MEC/MPPEH items discovered will be reported by the UXO PM to the Navy RPM.</li> <li>• An inventory will be maintained by the SUXOS with locations and descriptions for suspect MEC/MPPEH discovered during this operation, and the Navy RPM will be provided an inventory update on a daily basis.</li> </ul>
	4. Insect/animal bites	4. Tape up joint between bottoms of pant legs and top of work boot with duct tape. Apply insect repellants containing at least 10 percent DEET. Follow manufacturer's label instructions for proper application and re-application. Perform close body inspections at the end of each day to detect/remove any insects. If walking through high grass or brush areas, wear snake chaps and avoid approaching or disturbing potential nesting areas.
	5. Inclement weather	5. If electrical storms or inclement weather are in the area, as determined through local forecasting or weather alerts issued, the SSO will suspend outside activities. The 30-30 rule shall be applied, which is <i>"if a time interval of 30 seconds or less is between lightning and its thunder, go inside (building/vehicle) and stay inside for at least 30 minutes."</i> If no additional lightning and/or thunder is noted within this 30 minutes, work may resume at the SSO's direction. Personnel will be directed to seek suitable shelter that will provide adequate protection from the elements. Lightning threat detection will be coordinated within NSFIIH's existing systems.
	6. Slips/Trips/Fall Hazards	6. Practice good housekeeping to the extent possible and conduct the following: <ul style="list-style-type: none"> <li>• Maintain clear walking and working areas.</li> <li>• Eliminate, when possible, any debris and rutted areas that may create a tripping hazard.</li> <li>• Remaining hazards should be pointed out to the UXO Technicians.</li> <li>• Personnel will return the site to a neat and orderly condition prior to leaving the site.</li> <li>• Exit and access pathways will be maintained free of obstructions.</li> <li>• Personnel will remain 4 feet or more away from the edges of excavations</li> </ul>

Task Steps	Hazards	Critical Safety Procedures and Controls
	<p>7. Chemical exposure: Metals, PAHs, MC</p>	<ul style="list-style-type: none"> <li>• If excavation holes are to be left open overnight, they must be barricaded.</li> </ul> <p>7. As direct contact will be minimal given the sampling method, it is unlikely that exposure will occur. Area wetting techniques will be employed if significant dust generation occurs. Exposure to these compounds is most likely to occur through incidental ingestion of contaminated water, or hand-to-mouth contact during sampling activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be the principal methods for minimizing exposures. The signs and symptoms of exposure for these substances are summarized in HASP Section 6.0. Potential exposure concerns to the COCs may also occur through ingesting or coming into direct skin contact with contaminated media. The likelihood of worker exposure concerns through these two routes are also considered very unlikely, provided that workers follow good personal hygiene and standard good sample collection/sample handling practices, and wear appropriate PPE as specified in this HASP.</p> <p>Examples onsite practices that are to be observed that will protect workers from exposure via ingestion or skin contact include the following:</p> <ul style="list-style-type: none"> <li>• No hand-to-mouth activities on site (eating, drinking, smoking, etc.)</li> <li>• Washing hands upon leaving the work area and prior to performing any hand to mouth activities</li> <li>• Wearing surgeon's-style gloves whenever handling potentially-contaminated media, including soils, hand tools, and sample containers.</li> </ul>
	<p>8. ATV Hazards</p>	<p>8. These motorized vehicles are safe under normal operating standards. However, ATVs may become hazardous if safety precautions are not followed. Drivers should read labels and operating instruction before operating. The following safety and operating instructions shall apply:</p> <ul style="list-style-type: none"> <li>• Do not exceed the passenger limit and load capacity.</li> <li>• Do not operate vehicle on public streets, roads, highways, canals or ditches.</li> <li>• Vehicles shall not be operated in a manner that may endanger passengers or other individuals.</li> <li>• Keep your entire body inside the vehicle at all times.</li> <li>• Do not add or modify vehicle to affect capacity or safe operation.</li> <li>• Do not operate vehicle under the influence of alcohol or drugs.</li> <li>• Start vehicle with brake applied.</li> <li>• Turn main power switch to the on position.</li> <li>• Turn selector switch to forward or reverse towards the direction of travel.</li> <li>• Make sure path is clear in the direction of travel.</li> <li>• When accelerator is depressed the vehicle will begin to move.</li> <li>• Press brake pedal to stop vehicle.</li> <li>• Do not use accelerator to hold vehicle while on an incline.</li> <li>• Use extra precaution in congested areas or backing up.</li> </ul>

Task Steps	Hazards	Critical Safety Procedures and Controls	
		<ul style="list-style-type: none"> <li>• Vary the speed of the vehicle to match the terrain.</li> <li>• Avoid sharp turns at high speeds.</li> <li>• Always drive slowly straight up and down slopes.</li> </ul>	
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<p>DPT mounted on an ATV. Personal Protective Equipment: Minimum:</p> <p>Steel toe boots, hard hats, and safety impact eye protection (when in active heavy vehicle operation areas or when handling heavy boxes and/or containers), work gloves and clothes</p> <p>Optional items: Hearing protection at SSO/ discretion</p> <p>High-visibility vests when near active traffic areas.</p> <p>For UXO Technicians - Steel toe/shank boots are required when working in areas where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole. If steel toe footwear cannot be worn because of interferences with UXO detection devices, safety impact footwear with non-metallic toe protection (provided that the footwear satisfies ANSI Z-41 requirements for protective footwear) shall be used.</p> <p>HTRW: none</p>	<p>Initial PPE inspection performed by the SUXOS. Ongoing (prior to each use) inspections are the responsibility of PPE users. Must complete Heavy Equipment Inspection Checklist prior to beginning work when using DPT.</p>	<p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40-hour HAZWOPER training, which is to be verified by the UXOS through initial training documentation and reviewed prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.</p> <p>Explosive handling and transportation is not anticipated. If required this task will be conducted by qualified UXO Technicians. Therefore, this training and background is considered sufficient for this task.</p>	

I have read and understand this AHA:

Name (Printed)	Signature	Date

		<b>ACTIVITY HAZARD ANALYSIS (AHA)</b>			
		<b>Site Name:</b> Rifle, Skeet, Trap, and Small Arms Range Sites NSFIIH, Indian Head, Maryland			
		<b>Task:</b> Groundwater Sampling from Temporary DPT Monitoring Well			
<b>Prepared by</b>	J. Laffey	<b>Date</b>	May 13, 2011	<b>FOL</b>	
<b>Reviewed by</b>	R. Brooks	<b>Date</b>	May 13, 2011	<b>SSO</b>	
JOB STEPS		HAZARDS		CONTROLS	
Equipment Set Up		1. Slips, Trips, Falls  2. Insect bites, snake bites, and contact with poisonous plants.		1. Clear intended work areas and walking paths of roots, weeds, limbs and other ground hazards. Practice good housekeeping to keep the site clear of obstructions, materials, equipment and other tripping hazards. Ensure that work boots have adequately-aggressive sole design. Use caution when working on uneven and wet ground.  2. Shake out boots before donning. Use insect repellants (products containing DEET should be applied to exposed skin, products containing Permethrin should be applied to clothing only. Follow manufacturer's recommendations. Tape up pants leg to work boot joints with duct tape. Wear light-colored clothing to better see and remove any insects. Perform close body inspections at least daily upon leaving the site. Avoid potential nesting areas (brush, deadfall, etc.) where insects or snakes may be present. Review Natural Hazards information in section 4.0 of the Tetra Tech H&S Guidance Manual with field team as appropriate based on site observations and conditions.	
Measure depth to water		1. Employee Exposure		1. Wear safety glasses and nitrile gloves to protect against splash	
Measure and insert tube into well		2. Laceration		1. Only use retractable safety blade to cut tubing 2. Cut in a direction away from the face/body	
Begin extracting water from well		3. Employee exposure		1. Wear safety glasses and nitrile gloves	
Fill sample bottles with sample material; load coolers and IDW (if appropriate) into vehicle		Laceration		1. Handle all glass containers carefully 2. Have a first-aid kit available on site for small cuts 3. Dispose of all broken shards immediately	
Store sample containers in coolers and load onto vehicles		Slip/trip/fall Back strain/sprain		1. Ensure all debris has been removed from the path of travel 2. Use proper lifting techniques, including obtaining help with heavy coolers	

EQUIPMENT	INSPECTION	TRAINING
<ul style="list-style-type: none"> <li>• Sampling pump, plastic tube</li> <li>• Retractable safety blade knife</li> <li>• Portable eye wash kit.</li> <li>• First Aid Kit</li> </ul>	Visual inspection prior to use by user.	Training/experience in proper sample collection, handling and chain of custody requirements.
<p><b>Personal Protective Equipment: <u>Minimum:</u></b>            Level D PPE nitrile surgeon's type gloves, safety toe boots, safety glasses  <b><u>Optional items:</u></b> Hardhat, hearing protection.            Reflective safety vest if in areas of vehicle traffic</p> <p><b>HTRW:</b> none</p>	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	OSHA 40 Hazardous Waste Operations and Emergency Response (HAZWOPER) training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. ALSO: Review of AHA during pre-task tailgate safety briefing with all intended task participants.

I have read and understand this AHA:

Name (Printed)	Signature	Date

		<b>ACTIVITY HAZARD ANALYSIS (AHA)</b>			
		Site Name: Rifle, Skeet, Trap, and Small Arms Range Sites NSF1H, Indian Head, Maryland			
		Task: Decontamination			
<b>Prepared by</b>	J. Laffey	<b>Date</b>	May 13, 2011	<b>FOL</b>	
<b>Reviewed by</b>	R. Brooks	<b>Date</b>	May 13, 2011	<b>SSO</b>	
JOB STEPS		HAZARDS		CONTROLS	
Personal Decontamination <ul style="list-style-type: none"> <li>• Equipment drop</li> <li>• Segregated removal of PPE (wash and rinse reusable items, dispose of non-reusable items)</li> </ul>		1. Slips, Trips, Falls  2. Exposure to contaminated media		1. Clear intended decon area location of roots, weeds, limbs and other ground hazards. Practice good housekeeping to keep the site clear of obstructions, materials, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.  2. Follow good decontamination practices (work from top down and outside in). Nitrile gloves are to be the last item of PPE removed. Wash hands and face following personal decontamination and prior to performing any hand-to-mouth activity.	
Decontamination of sampling equipment		1. Slips/trips/falls  2. Exposure to contaminated media		1. Keep decon areas orderly, maintain good housekeeping, spread light coating of sand on decon pad liner to increase traction.  2. Follow good decontamination practices (work from top down and outside in). Surgeon's gloves are to be the last item of PPE removed. Wash hands and face following personal decontamination and prior to performing any hand-to-mouth activity.	
EQUIPMENT		INSPECTION		TRAINING	
Hand tools (hand brushes, garden sprayers, etc.)		Visual inspection prior to use by user. Check wooden handles for cracks or splinters.		None required.	
<b>Personal Protective Equipment:</b> <b>Minimum:</b> Safety toe boots, safety glasses <b>Optional items:</b> Hardhat, hearing protection. <b>HTRW:</b> none		Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.		OSHA 40 Hazardous Waste Operations and Emergency Response (HAZWOPER) training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. Also Review of AHA during tailgate safety briefing with the intended task participants.  PPE training in proper use, care, storage, and limitations. It is anticipated that	

EQUIPMENT	INSPECTION	TRAINING
		this has been covered in employees' 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date

		<b>ACTIVITY HAZARD ANALYSIS (AHA)</b>			
		<b>Site Name:</b> Rifle, Skeet, Trap, and Small Arms Range Sites NSFIIH, Indian Head, Maryland			
		<b>Task:</b> IDW Management			
<b>Prepared by</b>	J. Laffey	<b>Date</b>	May 13, 2011	<b>FOL</b>	
<b>Reviewed by</b>	R. Brooks	<b>Date</b>	May 13, 2011	<b>SSO</b>	
<b>JOB STEPS</b>		<b>HAZARDS</b>		<b>CONTROLS</b>	
Filling, moving 55-gallon drums of IDW		<ol style="list-style-type: none"> <li>1. Heavy lifting</li> <li>2. Struck by/pinches compressions</li> <li>3. Falling objects (drums)</li> <li>4. Slips, Trips, Falls</li> <li>5. Foot hazards</li> <li>6. Strains/sprains due to heavy lifting</li> <li>7. Minor contusions, abrasions, cuts</li> </ol>		<ol style="list-style-type: none"> <li>1. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel, good grasp on object, perform "test lift" to gauge ability to safely make the lift, lift with legs not back, obtain help when needed to lift large, bulky, or heavy items).</li> <li>2. Exercise caution when handling drums. Position drums so that there is adequate room between them for placement and repositioning.</li> <li>3. Do not stack drums on top of each other. Do not place more than 4 drums to a pallet. Leave at least 4 ft. of clearance between pallets for clear access.</li> <li>4. Maintain good housekeeping in IDW storage areas, keeping it clear of loose debris and other potential tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.</li> <li>5. Safety toe foot protection will be required for IDW container handling activities.</li> <li>6. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel, good grasp on object, lift with legs not back, and obtain help when needed to lift large, bulky, or heavy items).</li> <li>7. Wear cut-resistant gloves when handling items with sharp or rough edges.</li> </ol>	

EQUIPMENT	INSPECTION	TRAINING
Hand tools (drum dollies, wrenches, etc.)	Visual inspection prior to use by user. Check wooden handles for cracks or splinters.	All personnel participating in this activity must be current with HAZWOPER training requirements.
<p><b>Personal Protective Equipment: <u>Minimum:</u></b> Safety toe boots, safety glasses <b><u>Optional items:</u></b> Hardhat, cotton or leather work gloves.</p> <p><b><u>HTRW:</u></b> If contact with IDW is likely, wear chemical-resistant coveralls (e.g., Tyvek) or aprons and surgeon's nitrile gloves under leather/cotton work gloves.</p>	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date

## 15.0 HEALTH AND SAFETY PLAN

This APP is an attachment to the site-specific HASP.

## 16.0 REFERENCES

United States Army Corps of Engineers (USACE). 2008. Engineer Manual (EM) 385-1-1, Safety and Health Requirements Manual. It is available online at:  
<http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/entire.pdf>

# **APPENDICES TO ACCIDENT PREVENTION PLAN**

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**Appendix 1 to APP**  
**Employee training/qualifications to be**  
**attached by PM/FOL**  
(40-Hour HAZWOPER Certificates; 8-Hour  
HAZWOPER Refresher Certificates; First  
Aid/CPR Certificates; Employee Resumes  
as required)

**ATTACHMENT V**  
**EQUIPMENT INSPECTION CHECKLIST**

### Equipment Inspection Checklist

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

Unit/Serial No#: \_\_\_\_\_

Inspection Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Time: \_\_\_\_ :

Equipment Type: \_\_\_\_\_

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

Project No#: \_\_\_\_\_

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pre Use Inspection <ul style="list-style-type: none"> <li>• Cab, mirrors, safety glass?</li> <li>• Turn signals, lights, brake lights, etc. (front/rear) Seat Belts?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Is the equipment equipped with audible back-up alarms &amp; lights?</li> <li>• Horn and gauges</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Brake condition (dynamic, park, etc.)</li> <li>• Tires (Tread) or tracks</li> <li>• Windshield wipers</li> <li>• Exhaust system</li> <li>• Steering (standard and emergency)</li> <li>• Wheel Chocks?</li> <li>• Are tools and material secured to prevent movement during transport? Especially those within the cab?</li> <li>• Are there flammables or solvents or other prohibited substances stored within the cab?</li> <li>• Are tools or debris in the cab that may adversely influence operation of the vehicle (in and around brakes, clutch, gas pedals)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fluid Levels: <ul style="list-style-type: none"> <li>• Engine oil</li> <li>• Transmission fluid</li> <li>• Brake fluid</li> <li>• Cooling system fluid</li> <li>• Hoses and belts</li> <li>• Hydraulic oil</li> </ul>	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>High Pressure Hydraulic Lines</p> <ul style="list-style-type: none"> <li>• Obvious damage</li> <li>• Operator protected from accidental release</li> <li>• Coupling devices, connectors, retention cables/pins are in good condition and in place</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Mast Condition</p> <ul style="list-style-type: none"> <li>• Structural components/tubing</li> <li>• Connection points</li> <li>• Pins</li> <li>• Welds</li> <li>• Outriggers</li> <li>• Operational</li> <li>• Plumb (when raised)</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Safety Guards –</p> <ul style="list-style-type: none"> <li>• Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact?</li> <li>• Hot pipes and surfaces exposed to accidental contact?</li> <li>• High pressure lines</li> <li>• Nip/pinch points</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Operator Qualifications</p> <ul style="list-style-type: none"> <li>• Does the operator have proper licensing where applicable,</li> <li>• Has the operator, read and understand the equipment’s operating instructions?</li> <li>• Is the operator experienced with this equipment?</li> <li>• Is the operator 21 years of age or more?</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>PPE Required for DPT Rig Exclusion Zone</p> <ul style="list-style-type: none"> <li>• Hardhat</li> <li>• Safety glasses</li> <li>• Work gloves</li> <li>• Chemical resistant gloves_____</li> <li>• Steel toed Work Boots</li> <li>• Chemical resistant Boot Covers</li> <li>• Apron</li> <li>• Coveralls Tyvek, Saranex, cotton)_____</li> </ul>	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Other Hazards <ul style="list-style-type: none"> <li>• Excessive Noise Levels? _____ dBA</li> <li>• Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.)</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> <li>- MSDSs available?</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Will On-site fueling occur</li> <li>- Safety cans available?</li> <li>- Fire extinguisher (Type/Rating - _____ - _____ )</li> </ul>	

Approved for Use     Yes     No     See Comments

\_\_\_\_\_  
 Site Health and Safety Officer

\_\_\_\_\_  
 Operator

**ATTACHMENT VI**

**OSHA POSTER**

# Job Safety and Health

## It's the law!

# OSHA

Occupational Safety  
and Health Administration  
U.S. Department of Labor

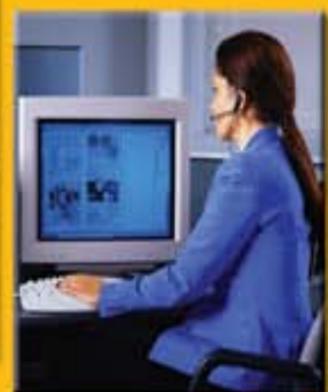
### EMPLOYEES:

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the *OSH Act* that apply to your own actions and conduct on the job.

### EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

This free poster available from OSHA –  
*The Best Resource for Safety and Health*



Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

**1-800-321-OSHA**  
[www.osha.gov](http://www.osha.gov)

OSHA 3165-12-06R