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HEALTH AND SAFETY PLAN FOR FIELD INVESTIGATION AT THE PCB CAPACITOR
BURIAL/POLE YARD SOLID WASTE MANAGEMENT UNIT 17 (SWMU 17) AT NSA CRANE IN

04/01/2012
TETRA TECH INC

Health and Safety Plan
for
Field Investigation
At The
PCB Capacitor Burial/Pole Yard
SWMU 17
at
Naval Support Activity (NSA) Crane
Crane, Indiana



Naval Facilities Engineering Command

Contract No. N62472-03-D-0057
Contract Task Order F271

April 2012

HEALTH AND SAFETY PLAN
FOR
FIELD INVESTIGATION
AT THE
PCB CAPACITOR BURIAL/POLE YARD
SWMU 17
NAVAL SUPPORT ACTIVITY
CRANE, INDIANA

Prepared for:

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Prepared under:

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April 2012

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1.0 INTRODUCTION

The objective of this Health and Safety Plan (HASP) is to provide the safety and health requirements, practices and procedures for Tetra Tech, Inc. (Tetra Tech) and subcontractor personnel working under their direction during the field investigation activities to be conducted at the PCB Capacitor Burial/Pole Yard, Solid Waste Management Unit (SWMU) 17 at the Naval Support Activity Crane (NSA Crane), located in Crane, Indiana. See Figure 1-1 for general location and 2-1 for location on facility. The purpose of the field investigation is to gather quantifiable data concerning polychlorinated biphenyl (PCB) concentrations in surface and subsurface soils resulting from past practices.

This HASP is to be used in conjunction with the Tetra Tech Health and Safety Guidance Manual (HSGM). The HSGM provides additional information pertaining to hazard recognition and control, and Tetra Tech standard operating procedures, and safe work practices to be employed to reduce and/or where possible eliminate hazards. This HASP and the referenced HSGM sections were developed to comply with the requirements stipulated in:

- 29 Code of Federal Regulations (CFR) 1910.120/1926.65 (OSHA's Hazardous Waste Operations and Emergency Response Standard).
- Applicable sections of 1926 Construction Industry Standards
- NSA Crane Policies and Procedures
- Elements of the tetra Tech Health and Safety Program

Both documents must be present at the site and immediately accessible to all employees to satisfy these requirements.

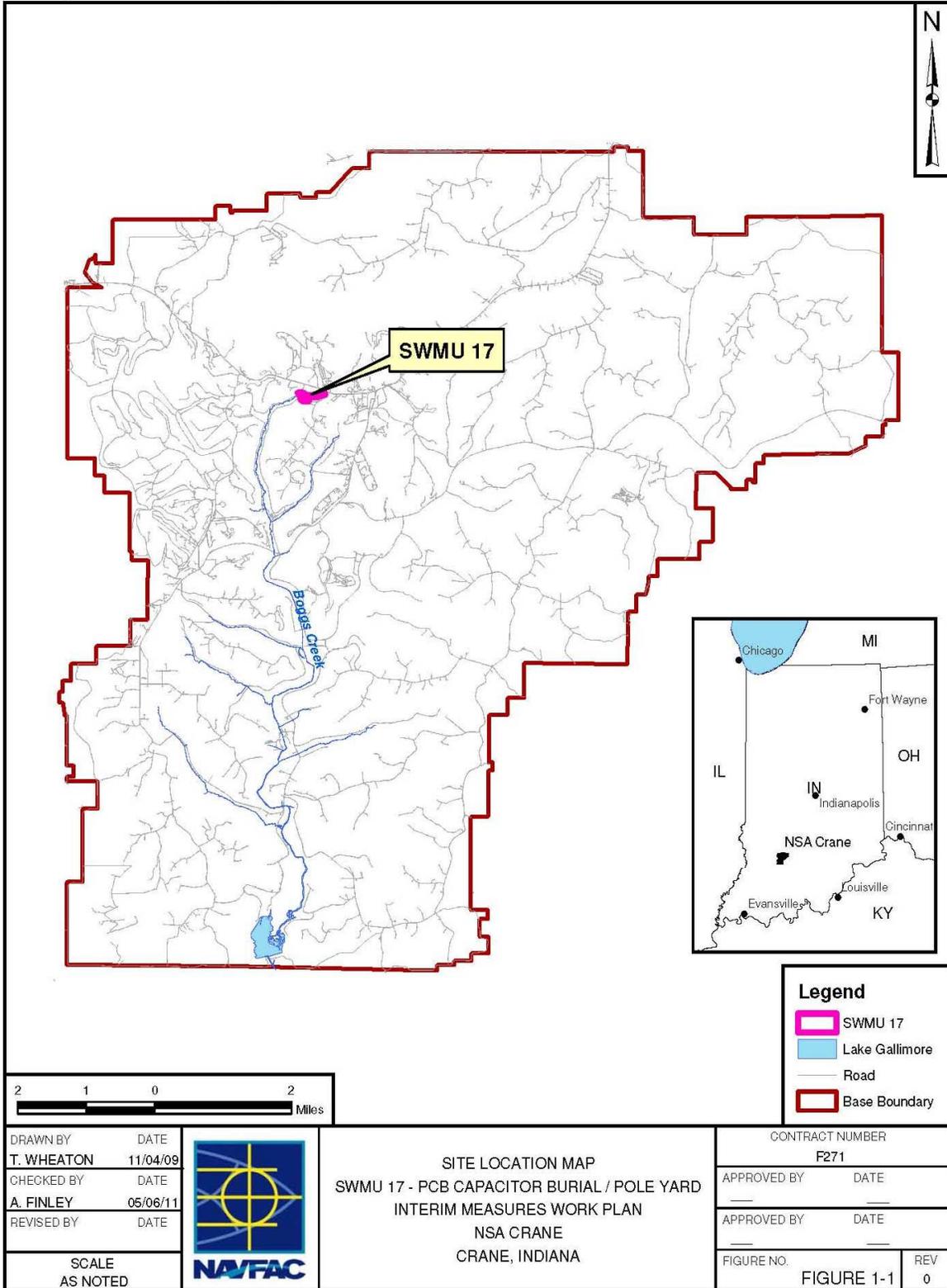
Modification/Changes: This HASP has been written to support proposed tasks and techniques associated with the scope of work as presented in Section 4.0. It has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. Modifications/changes will be made when:

- Changes in the proposed work site conditions and/or
- Suspected hazards change, or
- If new information becomes available, or
- If any person, invokes a Stop Work Authority

This document will be modified accordingly. The Project Manager will be responsible for notifying all affected personnel of the changes made.

FIGURE 1-1
SITE LOCATION MAP

P:\GIS\CRANE_NSWC\MAPDOCS\MXD\SWMU17_BASE_SITE_MAP.MXD 05/07/11 JEE



1.1 AUTHORITY

This work is authorized under the

Contract: Naval Facilities Engineering Command Midwest, Comprehensive Long –
Term Environmental Action Navy (CLEAN) contract

Contract Number: N62472-03-D-0057

Contract Task Order Number: F271

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibilities for site safety and health for Tetra Tech and subcontractor employees engaged in onsite activities. The personnel assigned to participate in the field work will have the primary responsibility for performing their work tasks in a manner that is consistent with:

- the Tetra Tech Health and Safety Policy,
- the health and safety training that they have received,
- the contents of this HASP and identified sections of the HSGM,
- an overall manner that protects their personal safety and health and that of their co-workers.

The following persons are the primary point of contact and have the primary responsibility for observing and implementing this HASP and for overall on-site health and safety.

1.2.1 Tetra Tech Project Manager

The Tetra Tech Project Manager (PM) is responsible for the overall direction of health and safety for this project including the following functions:

- Having Signed Approved documents onsite accessible to all employees and subcontractor personnel including the work plan and this HASP.
- Ensure recordkeeping meets the objectives specified in this workplan/HASP. This activity includes monitoring field documentation to ensure adequate health and safety practices and action items are properly employed.
- Verifying, where specified, corrective actions are implemented and evaluated.

- Ensure that project personnel have received training regarding the applicable contents of the work plan, this HASP, and identified elements of the HSGM.
- Providing budgeting for appropriate monitoring, personal protective equipment, decontamination materials, and other project necessities.
- The PM is ultimately responsible for the actions of his Field Operation Leaders (FOLs) and Site Safety and Health Officers (SSOs) as it pertains to the health and safety measures employed onsite.
- His role is to ensure when deficiencies are noted that the appropriate control measures are instituted and that this information is communicated to all personnel to ensure it does not happen again. Lessons learned are to be communicated during Tailgate Training sessions. This will also ensure as the project progresses the efficiency and quality of the work product continually improves.
- Notification of the Navy Remedial Project Manager, Contracting Officer, and the Facility Point of Contact in the event of an emergency action/response measure or incident.

1.2.2 Tetra Tech Project Health and Safety Officer

The Project Health and Safety Officer (PHSO) is responsible for developing this HASP in accordance with applicable OSHA regulations and elements of the Tetra Tech Health and Safety Program. Specific responsibilities include:

- Providing information regarding site contaminants and physical hazards associated with the site.
- Conducting Job hazard Analysis for each task in order to provide:
 - Identifying standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
 - Establishing air monitoring and decontamination procedures.
 - Assigning personal protective equipment based on task and potential hazards.
 - Determining emergency action or response procedures as well as identifying emergency contacts and resources nearest to the site to facilitate immediate lifesaving or non-life threatening care.
 - Identifying general training requirements; location specific training requirements as well as task specific training requirements.
- Modifying this HASP, as it becomes necessary.

To fulfill these objectives, the PM must provide:

- Current and historical data concerning each site to the PHSO.
- Site specific requirements as they may pertain to access, security, hours of operation, points of contact, etc.
- Site control elements including access and control points, possible terrain challenges, sensitive receptors, emergency action requirements(site specific), logistical support components (access to restrooms, telephone communication points) as determined to be necessary.

1.2.3 Tetra Tech Field Operations Leader

The Tetra Tech Field Operations Leader (FOL) is responsible for implementation of this HASP with the assistance of an appointed Site Safety and Health Officer (SSO). The FOL manages field investigation/remedial activities, executes the work/sampling plan, and enforces safety procedures as applicable to the work plan. Specific duties include:

- To serve as a liaison with facility and subcontractor personnel.
- Ensuring compliance with the HASP, identified sections of the HSGM, and policies and procedures of NSA Crane of all personnel. Examples of these include:
 - Keep your pass with you at all times
 - Enter only those areas in which you are approved to enter.
 - Follow posted signs including traffic control signs, use of radios, etc.
 - No Cell phone use while driving unless hands free devices are employed
- Coordinating site activities within independent areas of investigation such that they may be performed in an effective, efficient, and safe manner.
- Enforcing the buddy system on-site.
- Controlling site entry of unauthorized personnel.
- Assuring availability of all safety equipment. This includes the proper application.
- Conduct pre-site surveys prior to the commitment of personnel and equipment. The purpose is intended to identify potential hazards and/or challenges in completing the scope of work.
- Conduct operations surveys to ensure compliance with the elements specified in this HASP, HSGM, and NSA Crane policies and procedures such as Utility Clearance activities.
- Providing logistical support include access to items such as, but not limited to:
 - Potable water for drilling operations
 - Areas for equipment laydown and storage
 - Communication – Points of Contact

- Utility clearance support, where applicable
- Hours of operation
- Coordinate Tetra Tech Emergency Action Plan activities with the person(s) whose area the work is being performed. In all cases, upon entering an area the FOL will seek out the person in charge to coordinate
 - Planned work activities
 - Access restrictions; hours of operation; off hour activity
 - Emergency Planning – Not all emergencies will be Tetra Tech's. Information to request
 - Alarm types
 - Emergency evacuation routes
 - Assembly points
 - Who the FOL should report to in such an event that all personnel are accounted for or missing personnel.

1.2.4 Tetra Tech Site Safety and Health Officer

The Tetra Tech Site Safety and Health Officer (SSO) supports site activities by advising and assisting the FOL on the aspects of health and safety onsite. These duties may include:

- Coordinating and supporting health and safety activities with the FOL through implementation of this HASP and applicable elements of the HSGM.
- Evaluating and communicating with the PHSO concerning the selection, application, inspection, and maintenance of personal protective equipment, air monitoring instruments, and other site equipment and materials. The purpose of this evaluation is to ensure these items are meeting the identified objectives as they are presented in the field or that they are modified to do so.
- Confirm that site personnel meet appropriate training and medical clearance/surveillance requirements identified.
- Conducting site-specific training, periodic safety meetings (Tailgate Safety Meeting), and periodic inspections/self-assessments/pre-activities site surveys.
- Verification of decontamination procedures are being implemented as defined in the work plan to prevent cross contamination.
- Implement where appropriate safety and health programs including Hazard Communication, Hearing Conservation, and other associated health and safety programs as they may apply to site activities.
- Coordination of emergency action/ response procedures and follow-up.
- Investigation of accidents and injuries (see Attachment I - Illness/Injury Reporting Procedure and Form/Total System).

- Providing input to the PHSO regarding the need to modify this HASP, or applicable health and safety associated documents as per site-specific requirements.
- Observe and monitor field team members for symptoms of exposure, heat/cold stress as well as determining the proper use and application of (personal protective equipment) PPE and associated safety equipment.
- Perform site surveys along with the FOL prior to committing personnel or resources. The objective of this survey is to identify hazards that may be presented to site personnel. Then take measures to flag/identify, remove/mitigate; or barricade. In addition, as part of this measure selected entry and exit routes will be established as well as emergency assembly points.

Compliance with the requirements stipulated in this HASP will be monitored by the SSO and coordinated through the Tetra Tech PM, PHSO and, the Tetra Tech Health and Safety Manager.

1.2.5 Health and Safety Manager

Tetra Tech Health and Safety Manager (HSM) is responsible for providing the CLEAN Health and Safety Program and the PM with assistance and support with regard to all regulatory and safety aspects of site activity. The HSM is responsible for the following:

- Oversee the development and implementation of this HASP.
- Visits the site as needed to audit the effectiveness of these documents.
- Remain available for project emergencies.
- Evaluate the application of occupational exposure monitoring/air sampling data and direct the adjustment of action levels by the PHSO as necessary.
- Serves as a quality control staff member.
- Approve/sign this HASP indicating review and approval.
- Follow up on information generated through audits/evaluations to ensure corrective measures have been completed and are affective.
- Evaluate the Tetra Tech Health and Safety Program based on information derived from audits, self-assessments, incidents and near misses to determine where improvements may be made.
- Serve as the arbitrator and final authority as it may pertain to dispute resolution regarding health and safety issues associated with this project.

1.2.6 Tetra Tech Employees and Subcontractor Personnel

One of the founding principles of the Tetra Tech Health and Safety Policy is participation within the process. Therefore, Tetra Tech and subcontractor employees are responsible for:

- Understanding and following direction provided in this HASP and other project plans and as provided under the direction of the SSO and/or the FOL. Opportunities will be given to ask questions regarding the information provided in these documents during site-specific training, tail gate and safety meeting sessions and or course at any time during the project.
- Reporting unsafe conditions or incidents to the SSO and/or FOL.
- Satisfactorily completing/meeting necessary training and medical surveillance requirements.
- Completing the Medical Data Sheet(s) and provide this information to the SSO. In such cases where site activities may present an increased hazard to certain site personnel (such as allergies to bee stings or to identified medications) site personnel will be required to carry their doctor recommended antidote kits and to provide instruction to personnel they work with on the use of these devices.
- Attending site-specific training and periodic safety meetings.
- The Tetra Tech, Inc. Health and Safety Program is founded on the principal elements that our managers and employees:
 - Recognize a personal responsibility for their own health and safety and for actions that affect the health and safety of fellow employees.
 - They integrate safety and health into all aspects of their work, with the well-being of themselves and their fellow employees as their primary concern.
 - That each employee take an active role in the Health and Safety Program by providing input and constructive criticism for the overall improvement of the program.

Note: In some cases, one person may be designated responsibilities for more than one position. For example, the FOL may also be responsible for SSO duties. This action will be performed only as credentials, experience, complexity of the tasks, and availability permits. This should be evaluated on a case by case basis by the PM and HSM. This practice is strongly discouraged, as this may result in a potentially unmanageable amount of duties and creates an imbalance in which some practices may suffer.

1.3 STOP WORK AUTHORITY

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 Tetra Tech Health and Safety Manager (HSM). 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.

1.4 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Support Activity Crane **Address:** Crane, Indiana

Remedial Project Manager: Mr. Howard Hickey **Phone Number:** (847) 688-5999

Site Contact: Mr. Thomas Brent **Phone Number:** (812) 854-6160

Site Address: 300 Highway 361 Crane, Indiana 47522-5001

Purpose of Site Visit: This investigation will provide data on polychlorinated biphenyl (PCBs) concentrations in surface soils and subsurface soils at the PCB Capacitor Burial/Pole Yard, Solid Waste Management Unit (SWMU) 17, as well as defined dump and burial field delineation.

Proposed Start-up Date: April 2012 until completion

Project Team:

<u>Tetra Tech Personnel:</u>	<u>Discipline/Tasks Assigned:</u>	<u>Phone/Contact Information</u>
<u>Tom Johnston</u>	<u>Project Manager (PM)</u>	<u>(412) 921-8615 tom.johnston@tetrattech.com</u>
<u>TBD</u>	<u>Field Operations Leader (FOL)</u>	
<u>Matthew M. Soltis, CIH, CSP</u>	<u>Health and Safety Manager (HSM)</u>	<u>(412) 921-8912 matt.soltis@tetrattech.com</u>
<u>Clyde Snyder,</u>	<u>Project Health and Safety Officer (PHSO)</u>	<u>(412) 921-8904 clyde.snyder@tetrattech.com</u>
<u>TBD</u>	<u>Site Safety and Health Officer (SSO)</u>	

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

Prepared by: Clyde Snyder

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 incident or an emergency that could occur enroute to or on station.

Based on the above considerations, Tetra Tech will, through necessary services, provide initial response measures for incidents such as:

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

Incidents and conditions above this level of participation are and will be considered emergencies. These events are considered beyond the capabilities of field personnel and/or available resources to provide emergency response safely. Therefore, the emergency response agencies listed in this plan are capable of providing the most effective response and will be designated as the primary responders in the event of an emergency. These agencies are located within a reasonable distance (within 4 minutes) from the area of site operations, which ensures adequate emergency response time.

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, the following conditions are considered emergencies that could result from travel to or otherwise be associated with physical hazards encountered on station while completing the identified scope of work. These are as follows:

- Striking a utility – Field personnel are not equipped to respond to damaged utilities. This will be supported by NSA Crane Public Works Dept. All reports to the NSA Crane Public Works will go through the Emergency Dispatch (812) 854-3300 or 1333.
- Severe injury – Those requiring more than simple first aid treatment.
- Vehicle accidents – Those requiring Police participation; injury, and property damage.
- Fire and/or explosion
- On Station emergency

These are considered the most predominant hazards that through their occurrence are considered emergencies. To minimize the potential occurrence, the following actions will be employed:

- Effective communication with the Area Operations Manager – Not all emergencies will be Tetra Tech related. The FOL/SSO will request the Emergency Action Plan for the facility. From this, they will be instructed as to:
 - Alarm types for the area
 - Evacuation routes and assembly points
 - Emergency notification
 - Allow the FOL/SSO to share our intended response measures to be taken during incident response; chain of command; prevention and protection methods to be employed to minimize the potential occurrence of an incident and/or emergency.

- Effective communication with responding Agencies – In order to receive assistance those that would respond must be informed of your activity and the types of emergencies that could occur. Effective communication will allow rapid response and will allow the responding agencies to respond with some indication as to what they may face. This will involve contacting emergency services as part of initial site mobilization to ensure that they are aware that Tetra Tech and our subcontractor personnel will be onsite; our location; and our activities.

Information Requirements

The following information has been developed or will be collected, maintained onsite and made available to the responding agencies. This information will include the following:

- Identifying and mapping the closest hospital to the site. The Bloomington and Bedford Hospitals are the closest full service providers to be used when the facility Medical Clinic is not available. These commercial hospitals with suitable trauma units are greater than 20 miles from the site. Based on this distance, First Aid/CPR/BBP Trained personnel are to provide immediate assistance until medical assistance meeting the requirements of 29 CFR 1910.151 can be obtained.
- Emergency Notification - phone numbers. These are provided as Table 2-1.
- Onsite personnel Medical Data Sheets. All site personnel will be asked to complete a Medical Data Sheet. On this sheet they will be asked to provide information they would want medical personnel to know should they be incapacitated.
- Material Safety Data Sheets (MSDSs) for all chemicals brought onsite including volumes, storage locations and hazards associated with these chemicals.

2.3 EMERGENCY RECOGNITION AND PREVENTION

Many of the efforts, described in this HASP are intended to stop an emergency from happening, in the first place. Some of these are as follows:

Potential Emergency: Damaging an underground utility or striking an overhead utility.

Planned Control Measure: Utility location and clearance will occur in accordance with Indiana Underground Plant Protection Service (1-800-382-5544) or utilize 811 National Clearinghouse protocol for utility location and avoidance to minimize potential damage to buried utilities.

In addition, Tetra Tech Utility Locating and Excavation Clearance Procedures (Section 7.0 of the HSGM) will be employed in tandem with these procedures. Within this SOP direction is provided to the field crew concerning passive detection methods to identify subsurface structures. These will include but not limited to:

- Non-intrusive survey methods (Ground Penetrating Radar, etc.)
- Pot-holing can be conducted using hand tools or through more extravagant methods such as an air knife/vacuum extraction system to verify the location of the utility prior to excavating/drilling in that area.
- Examine the area and buildings where utilities enter and exit.
- Area will be surveyed for above ground monuments (valve and meter boxes; manhole covers, etc.). See Section 7.0 of the HSGM for additional passive detection methods.
- As this facility is not extremely old, the as-built drawings should be available concerning buried utility lines.
- The FOL will contact all non-responding utility owners to confirm the absence of utilities in the area. This will be recorded in the Project log book.
- The Excavation Ticket will remain active and onsite during ongoing activities.
- Follow NSA Crane procedures for utility locating and clearance.

Planned Control Measure – Jobsite Hazard Evaluation Site Surveys - As part of early recognition the FOL and/or the SSO will conduct the following activities:

- An initial site walk through will be conducted prior to the commitment of personnel or equipment. The purpose of this walk through will be to
 - Examine the site for conditions that may predispose field personnel to potential hazards including
 - The existence of overhead power sources or process lines near where equipment will operate.

- Surface monuments indicating underground utilities in the area (manhole covers, valve boxes, cathodic protection test points, etc.).
- Areas that may require alterations of traffic patterns or scheduling when the work will be conducted.
- Physical hazards within the work area including:
 - Terrain challenges
 - Size necessary to conduct certain operations
- Periodic operations surveys – FOL and/or the SSO will conduct these surveys for the purpose of:
 - Ensuring field personnel are following protective measures specified within this HASP (specifically stated in the AHAs).
 - Review the initial hazard assessments to ensure they reflect the hazards as it may pertain to site specific conditions.
 - Prepare for Emergencies. This includes staging emergency equipment, adequate site control measures, identifying site personnel who will engage incidental response measures and reviewing what measures will be taken and when and by who prior to declaring an emergency.

These surveys should be documented within the project logbook. The results of these surveys are not intended to be disciplinary in nature, however, identify areas of need improvement, where applicable. The results of these surveys are to be discussed with the field personnel as part of the Tail-Gate Safety meetings.

Potential Emergency: Severe injury

Planned Control Measure: It is the intent through the application of this HASP and elements of the HSGM to control such events through:

- Insuring all personnel are adequately trained and are medically qualified to perform such work.
- Initial project training supported by ongoing measures as the project continues.
- Conduct equipment inspections to ensure no one gets hurt due to faulty equipment.
- Site and operations surveys to identify hazards within the work zone and to correct deficiencies noted to avoid incidental occurrences or those that could lead to an emergency.
- Utilization of trained professionals to recognize, respond and control hazardous conditions.

Through the incorporation of these measures significant injuries can be controlled and avoided. If all measures fail provisions for addressing this emergency must be considered.

- As the distance to the closest medical assistance is greater than 4 minutes (life threatening; 15 minutes non-life threatening) at least two First Aid/CPR/BBP trained personnel will be onsite to provide emergency first aid until such time emergency care can be obtained.

During working hours, the medical facility on NSA Crane can be utilized for emergencies. As part of the emergency response teams responding to an incident, they will transport to this location. SWMU 17 is located very near the Facility Medical Clinic. See Figure 2-1 for the facility Medical Clinic location.

The FOL and/or the SSO will also:

- Identify the closest access point for emergency vehicles?
- As part of the pre-planning, have an emergency escape route and emergency assembly point planned in advance. **Record distances and turns** when entering the remote area so you can relay this location to emergency crews. Do not rely on your ability to remember in an emergency.
- Record building numbers and gate access points. Where possible for remote locations, it is recommended that coordinates be recorded to facilitate location as there may be no physical structures in which you can relay or tie to your location.

While it has been the practice that Tetra Tech and subcontractor personnel cannot employ on station medical support services it is assumed that if responding agencies retrieved an injured person they would be transported there at least for stabilization.

In situations where immediate transport is required, select at least a 250x250 ft² area without power lines or other aerial interference where a medical support helicopter could be landed to remove severely injured persons.

Note: If this area is to be on station, obtain permission first, as an element of the Emergency Response Measures to be employed. Accidents of this type include entanglement in spinning augers; being struck by a high pressure line, excavation collapse and injury; being struck by operating equipment. Measures to control such accidents have been incorporated into this HASP.

Potential Emergency: Vehicle Accident – Given the distance to the facility, personnel spend a fair amount of time in transit, sometimes after long work days.

FIGURE 2-1
SWMU 17/ NSA CRANE MEDICAL CLINIC/ TETRATECH FIELD TRAILER



Planned Control Measure: Persons are more likely to be injured in a vehicle accident than a work place injury. The following measures will be employed to minimize the potential for a vehicle accident.

- Make sure all drivers are Tetra Tech drivers are approved drivers
- Subcontractor personnel will have suitable license for the type of vehicles to be operated. Such as
 - >26001 lbs single or combination a CDL will be required
 - All persons operating vehicles will have a State License authorizing them to do so.
- Avoid distracted driving – Preventative measures have been provided in the site mobilization/demobilization AHA as well as direction in responding to such an accident.

Potential Emergency: Fire and/or explosion

Planned Control Measure: Fire and/or explosion will be controlled through fire prevention measures.

These include:

- There will be no hot work on station. If hot work needs to be performed, the pieces will be removed from the station, fire control measures will be incorporated such as removing all combustibles within 35-feet.
- A Hot Work Permit will be completed for all hot work.
- Suitable fire suppression equipment will be maintained onsite, inspected, placed in readily accessible locations (within 75-feet of travel for Class A fires and within 50-feet of travel for Class B fires), and ready for use.

Potential Emergency: On Station Emergency

Planned Control Measure: During the initial meeting with the area supervisor, the FOL will request the locations of their emergency assembly points should there be an emergency at their facility. Should an emergency be sounded (alarms activated) Tetra Tech and subcontractor will report to these location if an alarm is sounded. From this assembly point responding emergency response agencies can be directed to the location of the emergency. If the facility does not have provisions set in place for emergency evacuation and assembly, personnel will move to the entrance area of SWMU 17. Until this information is exchanged, the intersection of Hwys 100 and 5 will be employed as a temporary assembly point.

2.4 EMERGENCY CONTACTS

Prior to initiating field activities, personnel are 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. Any pertinent information regarding allergies to medications or other special conditions are provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite (see Attachment II).

**TABLE 2-1
EMERGENCY CONTACTS
CRANE, INDIANA**

CONTACT	TELEPHONE
EMERGENCY DISPATCH	(812) 854-3300
Alternate Emergency Contact Number	(812) 854-1333
Base Contact, Thomas Brent	(812) 854-6160
Base Environmental Office	(812) 854-3114
Bedford Ambulance	(812) 279-6545
Bloomington Hospital (Bloomington, Indiana)	(812) 336-9515
Bedford Medical Center (Bedford, Indiana)	(812) 275-1200
Indiana Underground Plant Protection Services	1-800-382-5544 or 811
Poison Control Center	(800) 222-1222
National Response Center	(800) 424-8802
Railroad Dispatch	(812) 854-1613
Project Manager, Tom Johnston, PhD	(412) 921-8615
Tetra Tech Field Operations Leader, TBD	TBD
Tetra Tech Site Safety Officer, TBD	TBD
Tetra Tech Office, Cincinnati	(513) 251-0200
CLEAN Health and Safety Manager, Matthew M. Soltis, CIH, CSP	(412) 921-8912
Human Resources, Ms. Marilyn Duffy	(412) 921-8475
Tetra Tech Project Health and Safety Officer, Clyde Snyder	(412) 921-8904 (724) 516-0907
WorkCare	1-800-455-6155 and enter Extension 109

***NOTE:** On-base extensions 3300 and 1333 are the primary emergency phone numbers. From an NSA Crane phone, on Base extensions must be preceded by “854”. Off-base numbers can only be reached by dialing “991” first.

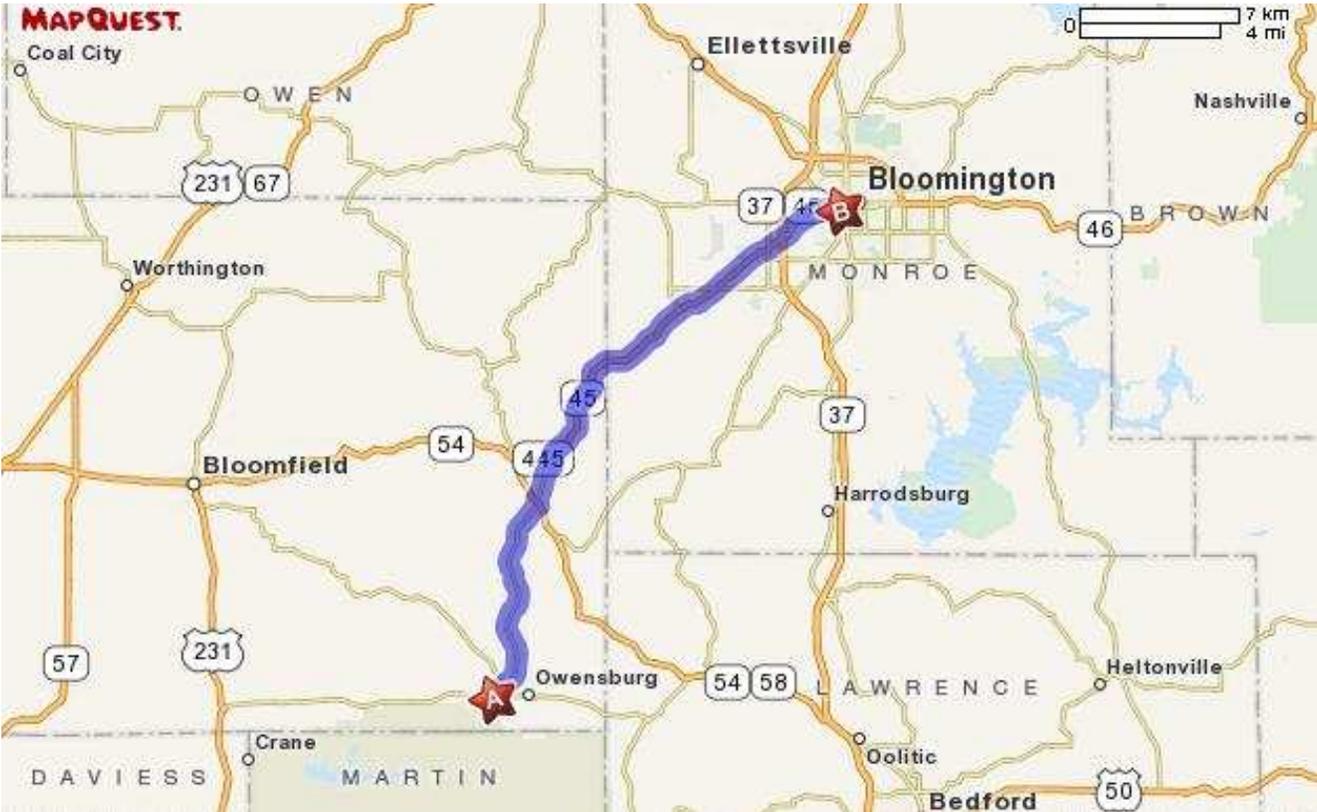
2.5 EMERGENCY ROUTE TO HOSPITAL

Directions to the Bloomington Hospital:
601 West Second Street
Bloomington, IN 47402
812.353.5252
webmaster@bloomingtonhospital.org

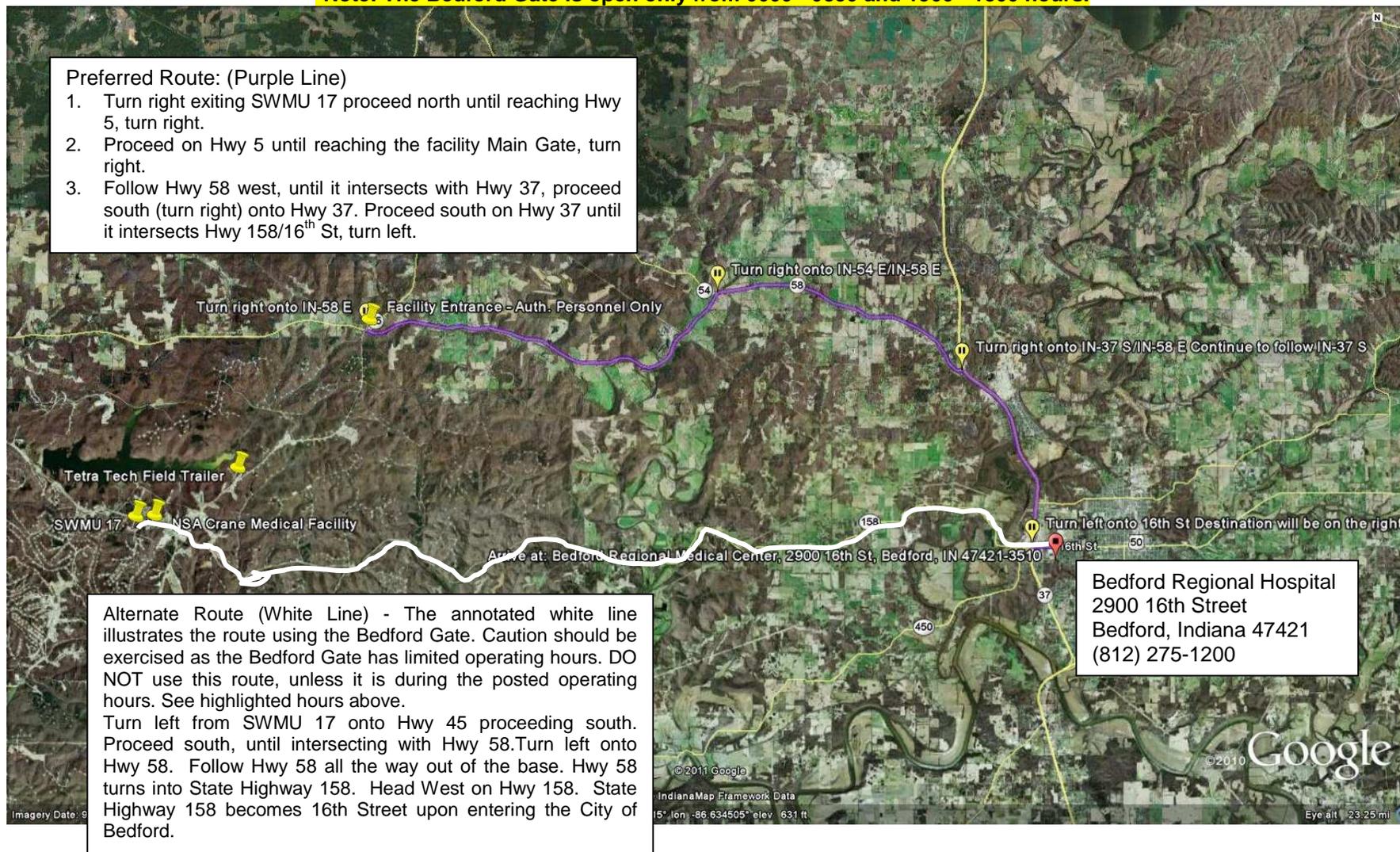
Turn right out of SWMU 17 proceed north to Hwy 5, turn right. Veer right right at the intersection of Highway 5 and Highway 45 to stay on Highway 45. Exit NSA Crane on H-45 through the Bloomington Gate. Follow Highway 45 North to Bloomington at Highway 45 and Highway 37. Continue going straight over the overpass (Bloomfield Road). Follow Bloomfield Road North; this road turns into 2nd Street. Follow 2nd Street, hospital will be on the right (601 West 2nd Street). The map below shows the route from the Bloomington Gate (A) to the Bloomington Hospital (B).

**FIGURE 2-2
MAP TO
BLOOMINGTON HOSPITAL ROUTE MAP (BLOOMINGTON GATE)**

****Note: The Bloomington Gate is open 24 hours.**



**FIGURE 2-3
MAP TO
BEDFORD MEDICAL CENTER ROUTE MAP (MAIN AND BEDFORD GATES)**
***Note: The Bedford Gate is open only from 0600 - 0830 and 1500 - 1800 hours.**



If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Tetra Tech personnel will be working in close proximity to each other at SWMU 17. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency.

If an Incident occurs, (not requiring emergency services dispatch) the following procedures are to be initiated:

- Alert other field personnel
- Initiate incidental response measures (employ fire extinguishers, spill pads, first aid, etc.)
- If the FOL and/or the SSO are not onsite alert them of the occurrence.
- The SSO will initiate Incident Investigation to determine cause and effect. As part of this effort, the Incident Reporting Forms will be completed. This information will be entered into the TOTAL Reporting System as soon as possible.
- The FOL will notify the PM and HSM of the occurrence, response measure, and measures to ensure it does not happen again.
- The PM or FOL will notify Mr. Tom Brent of the occurrence.
- The occurrence and the cause for the occurrence will be reviewed at the Tail-Gate Safety Meeting. Where necessary, retraining will be conducted to minimize or eliminate possible re-occurrence.
- Restock expended supplies.
- The PHSO will review the HASP, to determine the need for modification.

If an incident is not controlled in the initial response stages or if an emergency occurs requiring evacuation the following measures will be conducted:

- Alert other field personnel
- Initiate the evacuation
- Call (812)854-3300 (Base Security) – Inform the dispatch of the emergency, remain on the line and answer all questions pertaining to the incident (type of emergency, number of injured, etc.) so they may send the proper personnel and equipment.
- The FOL will notify Mr. Tom Brent of the occurrence. Mr. Brent then will notify or determine which agencies will receive additional notification, outside of those responding agencies

- The FOL and/or the SSO will account for all personnel. At this time personnel may be deployed at unaffected areas to serve as perimeter security until responding agencies arrive.

The FOL will notify the PM and HSM and begin the incident investigation using Attachment I.

2.7 PPE AND EMERGENCY EQUIPMENT

The following represent emergency equipment to be maintained on-site during operations:

- A First-aid kit(s), and
- Eye wash unit(s), and
- Fire extinguisher(s)
- Spill containment pads and absorbent

2.7.1 Fire Extinguisher Types

Portable fire extinguishers will be of Type A/B/C, so that they can be effective on any type of fire that is likely to occur at this work site. Capacity has been determined based on potential use, in this case recognizing the fuel capacity of the HSA/Air Rotary/DPT unit and any portable storage to supplement the supply as needed:

- Excavator – 2A:20:BC
- DPT Rig - 2A:20:BC

All site personnel will be instructed in the placement and use of these devices as part of their initial site specific health and safety training session. If it is maintained in a tool box, support vehicle, the outer container will be appropriately marked to allow quick access. Materials and equipment also stored in these storage locations will not restrict immediate access. During site specific training, the personnel will be reminded concerning the use of portable fire extinguishers. This will cover the following aspects:

- Proper use of portable fire extinguishers (P.A.S.S. – **P**ull pin, **A**im discharge hose at the base of the fire, **S**queeze the activating handle, and **S**weep the fire from a side-to-side motion.
- Requirement to notify other workers immediately in the event of any fire
- Authorization to use portable fire extinguishers only on small fires that can be extinguished with only one extinguisher. Fires greater than the capacity of one fire extinguisher will be considered an emergency and will require the responding agencies to be notified.
- The need to observe the area after the fire has been extinguished to monitor for flashback

Note: Hot work operations are not anticipated as part of this scope of work. The area will be examined to remove all combustibles and to support general housekeeping as a preventative measure.

Inspection: The fire extinguishers will be inspected once/month and the inspectors initials will be add to the tag along with the date of the inspection. Criteria will include:

- Adequately marked placement
- Adequate pressure
- No apparent physical damage
- All tamper indicator devices are in place
- Hydrostatic testing date is within the recommended 12 year time frame.

2.7.1.1 Safety Cans

An additional fire and spill prevention device will be the use and application of safety cans. Safety cans are designed to control the flammable vapors of gasoline and diesel fuel and to provide a safe and convenient means for storage and transfer. Underwriters Laboratories (UL) *approved* safety cans should be used to carry, dispense, and store gasoline in quantities up to five gallons.

Approved safety cans have several basic design qualities:

- They have a spring loaded cap that closes the spout automatically when released. Tension in the spring forces the cap closed and provides a leak proof seal.
- The spring tension is also designed to lift the cap slightly in the event of excessive internal vapor pressure inside the can. This automatically vents off vapors at approximately five psi internal pressure, to prevent the can from rupturing or exploding if it is exposed to excessive outside heat.
- The spout is also equipped with a flame arrester screen designed to prevent outside fire from reaching the gasoline inside the can. This is the same type of screen that is found in marine gasoline engine carburetors. With the screen in place, if the can is involved in a fire, the vapors will burn around the spout, but will not permit an internal fire or explosion. This screen must not be removed or damaged.

2.7.2 First-Aid Kits

At least one first-aid kit will be maintained at the job-site. The kit must be a Type III, 16-unit kit meeting the specifications of American National Standards Institute (ANSI Z308.1-1998), and the basic fill requirements as specified in USACE EM 385-1-1, Section 3. These minimum fill requirements are listed in Table 2-2. It is the SSO's responsibility to inspect the kit as part of initial site mobilization and at least weekly thereafter to ensure that the minimum basic fill requirements are maintained.

**Table 2-2
First Aid Kit Basic (Minimum) Fill Requirements**

Unit First Aid Item	Minimum Size or Volume (Metric)	Minimum Size or Volume (US)	Item Quantity per Unit Package	Unit Package Size
*Absorbent Compress	60 sq. cm	24 sq. in.	1	1
*Adhesive Bandage	2.5 x 7.5 cm	1 x 3 in.	16	1
*Adhesive Tape	457.2 cm	5 yd. (total)	1 or 2	1 or 2
*Antiseptic Swab	0.5 g	0.14 fl. Oz.	10	1
Antiseptic Wipe	2.5 x 2.5 cm	1 x 1 in.	10	1
Antiseptic Towelette	60 sq. cm	24 sq. in.	10	1
Bandage Compress (2 in.)	5 x 91 cm	2 x 36 in.	4	1
Bandage Compress (3 in.)	7.5 x 152 cm	3 x 60 in.	2	1
Bandage Compress (4 in.)	10 x 183 cm	4 x 72 in.	1	1
*Burn Treatment	0.5 g	0.14 fl. oz.	6	1
Eye Covering, with means of attachment			1	1
Eye Wash	30 ml	1 fl. oz. total	1	2
Eye Wash & Covering, with means of attachment			1	2
Surgeons or Dust Mask**			2	1
Roller Bandage, 4 in.	10 x 550 cm	4 in. x 6 yd.	1	1
Roller Bandage, 2 in.	5 x 550 cm	2 in. x 6 yd.	2	1
*Sterile Pad	7.5 x 7.5 cm	3 x 3 in.	4	1
*Triangular Bandage	101 x 101 x 142 cm	40 x 40 x 56 in.	1	1
Nitrile Surgeons Gloves**	Medium and Large		4 pair	1
MicroShield CPR Mask**			2	
Surgeons mask**			4	
Safety Glasses**			1 pair	
Hospital Map & Emergency Phone Number Listing			1 copy	
Medical Data Sheets***			Completed copies	

* Minimum mandatory contents for basic fill kit. Additional items from this table are needed to meet 16-unit kit requirement.

** - These items are those intended to support protection against bloodborne pathogens.

*** - Having these items contained within the First Aid kit will provide immediate access in the event of an injury.

Note: There are commercially available units marked as OSHA and ANSI Approved. These are sufficient provided adequate means for providing Blood Borne Pathogen (BBP) protection is included or incorporated by the FOL and/or the SSO. The SSO will also determine if operations become segregated, that additional kits maybe necessary.

2.7.3 Spill Response Equipment

Major spills are not anticipated in the performance of planned site activities. Items that will be maintained onsite to respond to minor spills that may occur include the following:

- Shovel/rake/broom
- Adsorbent material (such as kitty litter or oil-dry)
- Oil Pads
- PPE
 - Nitrile outer gloves
 - Splash Shield
 - Impermeable over-boots
 - Rain suit or impermeable apron

As the investigation proceeds, spills that could potentially threaten the environment are those associated with the resource deployment or due to equipment failure. Simple measures including:

- Place a spill pad under the hydraulic lines to capture potential rupture.
- Placing spill pads under the unit during fueling to capture incidental spills.
- Place plastic sheeting under the DPT/Drill rig to capture hydraulic fluid should a line rupture. Exercise care not to extend the plastic into the area where the driller and helper must walk/work.
- Have spill pads at the operation ready to respond should a release occur. The quicker response is rendered, the greater the likelihood that environmental damage is greatly reduced.

2.7.4 Eyewash Units

In order to minimize potential tissue damage, portable eyewash units will be readily available when working with corrosives or to flush foreign matter from the eyes. It is the intent of these portable units to provide immediate relief until a fixed unit or medical attention maybe obtained. Potable water, bottled water also may be used as circumstances dictate.

The eyewash units will be inspected weekly. While plumbed units have many requirements, the portable units will be inspected for expiration date; immediate access; and proper storage to facilitate an ambient wash.

2.8 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT

Based on the hazard assessment and PPE selection, decontamination will consist of the removal of protective garments including nitrile gloves, safety glasses, hard hat, affected field attire. There will be no additional decontamination in support of medical treatment.

Tetra Tech and subcontractor personnel are only permitted to provide treatment to the level of their training. It should also be noted that first-aid shall be administered voluntarily with the exception of those persons trained and designated to provide this service.

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

- Scene Safety – prior to providing emergency assistance, personnel will ensure the area is safe to approach.
- The FOL and/or the SSO have been notified of the incident if they are not present.
- Emergency services (812)854-3300 or (812) 854-1333 have been called and are enroute.

Those providing emergency medical treatment will:

- Take the necessary precautions to prevent direct contact with the injured person's body fluids. This may be accomplished through the employment of the following measures:
 - **Give attention to emergency health problems** -- breathing, cardiac function, bleeding, and shock.
 - Transfer the victim to a medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events) or through self-transport.
 - **Practice Universal Precautions** - Use sterile gloves when handling cuts, abrasions, bites, punctures, etc. or any part of the injured person. The use of safety glasses and surgeons masks maybe necessary if there is the potential for uncontrolled spread of body fluids. The PHSO will be immediately notified in event that personnel providing emergency first-aid come into contact with body fluids or other potentially infectious tissues. Measures described here are Universal precautions and Body Substance Isolation associated with the Tetra Tech Blood Borne Pathogen Program.

In order to engage BBP protective measures, the FOL shall ensure that these items are part of their first-aid kit. General first aid instructions will be provided in each First Aid Kit.

Personnel identified within the field crew who will provide First Aid and CPR support will also provide training documentation associated with the elements of the BBP.

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

2.9 INJURY/ILLNESS 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 I) must be followed. Following this procedure is necessary for documenting of the information obtained at the time of the incident.

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

If needed and once completed, the appropriate personnel on the incident report form (Attachment I) should be notified and their signatures obtained. Once signed, this form should be stored on site and filed. 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.

2.9.1 TOTAL Incident Reporting System

TOTAL is Tetra Tech’s new 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 I. TOTAL is an intuitive system that will guide you through the necessary steps to report an incident within 24 hours of its occurrence. Behind the scenes, TOTAL is a powerful tool for H&S professionals, and will help Tetra Tech to better track incidents, analyze root causes, implement corrective action plans, and share lessons learned. The ultimate result is a more safe and healthy working environment.

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 VPN connection will be required. The speed of the application may be 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.

3.0 SITE BACKGROUND

3.1 SITE HISTORY

The Naval Support Activity Crane (NSA Crane) is located in Crane, Indiana approximately 75 miles southwest of Indianapolis and 71 miles northwest of Louisville, Kentucky. The facility encompasses more than 100 square miles (64,463 acres) in Daviess, Greene, Lawrence, and Martin Counties. It is located in a rural, sparsely populated area. The acreage surrounding the base is either wooded or farmed land. The facility, originally called Naval Ammunition Depot (NAD), Burns City, was opened in 1941 to serve as an inland ammunition production and storage center. The Depot's name was changed to NAD, Crane in 1943. In 1975, the name was changed to Naval Weapons Support Center, Crane, and then in 1992, the name was again changed to Naval Surface Warfare Center, Crane. Today NSA Crane's mission is to "provide quality and responsive engineering, technical and material support to the Fleet for combat subsystems, equipment and components, microelectronic technology, microwave components, electronic warfare, acoustic sensors tests, engineering pyrotechnics, small arms, electronic module test and system command." Under the Single Service Management Program, a segment of the Center's mission is to provide support (including environmental protection) to the Crane Army Ammunition Activity (CAAA). The Army is tasked with the production and renovation of conventional ammunition and related items, the performance of manufacturing, engineering, and product quality assurance to support production; and the storage, shipment, demilitarization, and disposal of conventional ammunition and related components. Because of the nature of the Army's operations, CAAA contributes significant financial support for the environmental program through an Inter-service Support Agreement.

3.2 SWMU 17 PCB CAPACITOR BURIAL/POLE YARD

This HASP covers this RCRA Phase III Facility Investigations at the PCB Capacitor Burial/Pole Yard at the Naval Surface Warfare Center Crane Division. The PCB Capacitor Burial/Pole Yard (SWMU 17) has been in use since the 1970s. There is reported information indicating that capacitors and transformers were buried at SWMU 17 in the early 1970s. Excavation activities in and around the dumping area found electrical insulators, transformers and miscellaneous debris.

In addition, utility poles impregnated with creosote (PAHs) and potentially contaminated with PCBs, were also stored in this area.

NSA Crane intends to utilize the area for different purposes than its current use. In September, 2004 more than 2930 tons of soil was excavated to 2 feet and the site was covered with clean fill. Due to contractual obligations, excavation operations ceased before all of the contaminated soils were removed.

The vertical extent of this contamination remains ill defined. PCB contaminated soil was found in the drainageways downgradient of the areas where previous excavations occurred.

The use of PCBs as a dielectric cooling fluid ceased in 1977. The fact that burial disposal occurred up to 1970 is the first indicator that PCBs will be encountered associated with this debris. Intact or partially damaged intact capacitors and transformers may have a date of manufacture label (Pre 1977 assume PCBs), labels indicating the device contains PCBs, or may contain PCBs (1977 or later). This would indicate the dumping area was used past 1977.

If there are no labels, or the labels are defaced and you cannot make it out, assume the device contains PCBs.

4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at NSA Crane. The scope of this field investigation work includes collecting surface soils samples to determine the nature and extent of PCB contamination at SWMU 17. The Field Investigation will consist of the following tasks:

- Mobilization/Demobilization
- Vegetation Management
- Surface and subsurface soil sampling via DPT or hand augering
- Decontamination of sampling and excavation equipment
- IDW management
- Surveying via Global Positioning System (GPS)
- Test Pit Trench Excavation

If new tasks are to be performed at the site this section will be modified accordingly.

For more detailed description of the associated tasks refer to the NSA Crane –Sampling and Analysis to support Prescriptive Remediation for SWMU 17 (Boggs Creek, Ditch 3, Northwest Ditch) Technical Memorandum dated November 2011. If additional tasks are determined to be necessary, this HASP will be modified accordingly to reflect the hazard evaluation of the additional tasks performed.

5.0 GENERAL SAFE WORK PRACTICES

The purpose of this section is to provide safe work practices that are relevant in the hazard control 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 SAFE WORK PRACTICES

In addition to the task-specific work practices and restrictions identified in the SWPs attached to this HASP, the following general safe work practices are to be followed when conducting work on-site:

- 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.
- The use of waterless hand cleaning products is acceptable if followed by actual hand-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 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 EXCAVATION/DRILLING SAFE WORK PRACTICES

Pre-Drilling-

- All excavating and drilling equipment will be inspected and approved for use. The Equipment Inspection Checklist for Heavy Equipment and Drill Rigs are provided in Attachment III and will be used for this purpose. All excavation equipment/drill rig inspections will be conducted by a Competent or Qualified Person.
- All Drillers and Heavy Equipment Operators will be certified in the type of equipment to be used and will carry a license or certificate attesting to this competency or letter from an officer of the company attesting to these qualifications of this individual.
- Drilling or other operations with drill masts or other projecting devices (excavator boom) must be further than 20 feet in any direction from overhead power lines. Prior to any subsurface investigations the FOL shall ensure that the locations of all underground utilities will be identified and marked prior to initiating any subsurface activity. Those within 5-feet of the intended borehole will be pot-holed to positively identify the location.
- Hand signals with the driller and excavator operator will be established prior to the commencement of drilling and/or excavation activities.
- All heavy equipment and drill rigs (including DPT with rotating components) and other machinery with exposed moving parts must be equipped with an operational emergency stop device. All personnel working in a close proximity must be aware of the location of this emergency stop device and its operation. This device will be tested initially (and then periodically - at least daily) to ensure its proper

operational status. The driller and the helper shall only handle moving augers or flights when there is a standby person able to activate the emergency stop device.

- Ensure that all machine guarding is in place and properly adjusted.
- All personnel working in the vicinity of the drill rig while it's operating shall secure all loose clothing, jewelry, hair, and other potential snag and entanglement hazards.
- Only manufacturer-approved equipment may be used in conjunction with site equipment (i.e. pins for auger flights etc.). Pins or other protruding items from rotating equipment that creates a snag point shall not be permitted.
- Block the Drill rig and use levelers to prevent inadvertent movement, where applicable. Cribbing creating a larger surface area should be used when supporting ground is soft.

During excavation/drilling –

- The Driller will announce when he is about to engage the drilling mechanism and ensure all are clear. The operator of the excavator can sound the horn also to indicate that excavation will proceed once all personnel have been cleared from the exclusion zone.
- The driller may leave the controls only when tools are stopped or when all personnel are clear of the rotating equipment. The excavator operator will lower the bucket/boom and will disengage the controls before exiting the machine.
- Sampling from the excavator bucket are discussed in the AHA. Simply put the bucket and boom will be lowered and the controls disengaged allowing sampler to approach and collect the samples. Controls will not be re-engaged until such time as the sampler has exited the area.
- The driller's helper will establish an equipment staging and laydown plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects such as dual tubes will be provided to avoid the collapse of stacked equipment. This also prevents these devices from laying on a flat surface and someone stepping on them causing them to spin from beneath their feet.
- Minimize contact to the extent possible with contaminated tooling and environmental media.

- Potentially contaminated tooling will be placed on polyethylene sheeting for storage and wrapped for transport to the centrally located equipment decontamination area.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the DPT rig of the height of the mast plus five feet, but not less than 35 feet around the rig; Excavator (fully extended boom + 10 feet).
- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone.
- Keep boots and gloves clean of mud and well construction materials as these may facilitate a slip and fall.

After excavation/drilling -

- During maintenance, use only manufacturer provided/approved equipment (i.e. auger flight connectors, etc.). During such time, potential and kinetic energy will be positively controlled.
- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the FOL and/or the SSO to determine cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- Motorized equipment will be fueled prior to the commencement of the day's activities.
- When not in use the drill rig will be shutdown, and emergency brakes set (for truck mounted units).
- Investigative areas will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be immediately removed, the area will be barricaded to limit access.
- Soils will be placed back into the test pit in lifts of approximately 1 to 1.5 feet and compacted with the bucket. This will reduce future settling, creating uneven terrain.

5.3 CLEARING AND GRUBBING

- ***Chemical hazards:***
 - No chemical hazards are anticipated as part of this activity.

- **Physical hazards:**

All equipment will be:

- Inspected in accordance with Federal safety and transportation guidelines, OSHA and manufacturers design and documented as such using Equipment Inspection Checklist provided in Attachment III.
- Only manufacturer approved parts may be used in repair of site equipment.
- Operated by knowledgeable ground crew.
- Restrictions at the operation (All personnel not directly supporting this clearance activity will remain at least 50-100 feet from the point of this operation).
- Hand signals will be established by both the chipper operator and backhoe operator prior to the commencement of clearing activities.
- All personnel will be instructed in the location and operations of the emergency shut off device(s). This device will be tested initially (and then periodically) to insure its operational status.
- Work areas will be kept clear of clutter to permit escape, if necessary.

- **Chainsaw Operations**

Recommended Safe Work Practices:

- Inspect the chainsaw prior to each use. Insure the blade is adjusted and sharp, and all parts are lubricated per the manufacturer's instruction.
- Test all safety devices initially and then periodically to insure a safe operational status.
- When starting the chainsaw, place it on a firm surface. Place your foot in the hand guard at the rear of the saw, grip the top handle, pull the start cord with the free hand. Never attempt to start the saw free hand, or by placing it on your knee.
- Never cut with tip of the chain saw blade.
- Plan the cut. Know where the tree will fall. Have a clear escape plan when dropping trees greater than 2 inches in girth.
- Preview the tree to be dropped looking for insect nests bees and hornets that may be nesting in hollowed out trunks and tree tops.
- Do not stand between falling trees, branches, equipment or other trees.
- Never cut above your head.
- Cut only wood with the chain saw.
- Where prescribed safety equipment as described in the Activity Hazard Analysis.
- Monitor the condition of the saw during use, make adjustments, as necessary.
- When cutting a limb, cut from the opposite side of the trunk, the trunk will act as a shield to protect the worker.

- Be attentive as to how the trunk may move when removing limbs, keep yourself out of the pathway of falling limbs or branches.
- Keep the work area free from clutter to avoid potential slip, trip, and fall hazards.

- ***Hand Tools***

If hand tools (brush hooks, machetes, etc.) are used to clear brush and small trees the following precautions should be followed:

- Inspect handles are they in good condition (no cracks, splinters, loose heads/cutting apparatus.
- Check cutting tools edges all blades should be sharp without knicks or gouges in the blade.
- All hand tools (brush hooks, machetes, etc.) should be kept in a sheath when not in use.
- A 10-foot perimeter will be established around areas where brush clearing is being conducted.

Note: Excessive noise levels (raising your voice to speak to someone within two feet) will be require the use of hearing protection.

- ***General Safety Requirements for Clearing and Grubbing***

- Avoid insect nesting areas, employ repellents. Report potential hazards to the SSO.
- A backhoe or hand tools (rakes, pitch forks, etc.) will be used to pull brush away from piles to avoid nesting areas. Do not use hands or feet for this purpose.
- Traffic considerations:
 - Establish safe zones and routes of approach to the operation.
 - All personnel working among equipment traffic are required to wear reflective vests.
 - Secure all loose clothing articles to avoid possible entanglement.
 - Boundaries will be established based on the size of trees give sufficient space to keep personnel away from hazards (noise, flying projectiles, etc.)

6.0 HAZARD ASSESSMENT AND CONTROLS

This section provides reference information regarding the chemical and physical hazards (to a limited degree) which may be associated with activities that are to be conducted as part of the scope of work.

6.1 CHEMICAL HAZARDS

Based on previous sampling data and historical site information, the contaminants of concern associated with this site are PCBs. It is not anticipated that levels will be encountered that are of concern to field workers. It is recommended that exposure (via inhalation, ingestion, or skin contact) to these contaminants be minimized through the use of PPE, good work hygiene practices, and area wetting techniques, if necessary.

**TABLE 6-1
 COMPARISON OF COCs
 WITH CURRENT OCCUPATIONAL EXPOSURE LIMITS**

Contaminant of Concern	Highest Concentration Previously Detected	Amount of Dust-In-Air that Would Have to be Generated to Reach Current OEL	Current Occupation Exposure Level (OEL)
PCBs	0.15 mg/kg	833000 mg/m ³	OSHA PEL TWA 0.5 mg/m ³ [skin]
PAHs (creosote, BaP, coal tar pitch volatiles)	None reported – provided in the description associated with the telephone pole treatment application Concentrations would have to exceed >150,000 mg/kg in the soils before a threat would be considered viable	Not determined	0.2 mg/m ³ (coal tar pitch volatiles), Likely human carcinogen

Table Notes:

- TWA₈: Average air concentration over an 8-hour work period that is not to be exceeded

Table 6-1 provides information related to the chemical hazards that may be present at the site. Based on the maximum concentration of PCBs previously sampled at the site, in a worst case scenario, the amount of dust-in-air that would have to be generated to reach the current OEL is well within the visible range (>2.5 mg/m³). As a precaution, workers will watch for the generation of visible dust and utilize area wetting techniques if dust is generated to knock down airborne dusts. The greatest potential will be associated with excavation activities.

6.2 POLYCHLORINATED BIPHENYLS (PCBS)

PCBs were widely used for many applications, especially as dielectric coolants in transformers, capacitors, and other associated electrical equipment. Due to PCB's toxicity and classification as a persistent organic pollutant (bioaccumulative properties), PCB production was banned by the United States Congress in 1979 and by the Stockholm Convention on Persistent Organic Pollutants in 2001.^[1] Concerns about the toxicity of PCBs are largely based on compounds within this group which share a structural similarity and toxic mode of action with dioxin and furans. Toxic effects such as endocrine disruption and neurotoxicity are also associated with other compounds within the group.

The most commonly observed health effects in people exposed to extremely high levels of PCBs are skin conditions, such as chloracne and rashes, but these were known to be symptoms of acute systemic poisoning dating back to 1922. Studies in workers exposed to PCBs have shown changes in blood and urine that may indicate liver damage. In Japan in 1968, 280 kg of PCB-contaminated rice bran oil was used as chicken feed, resulting in a mass poisoning, known as Yushō disease, in over 14,000 people. Common symptoms included dermal and ocular lesions, irregular menstrual cycles, and lowered immune responses. Other symptoms included fatigue, headaches, coughs, and unusual skin sores. Additionally, in children, there were reports of poor cognitive development.

There have also been studies of the health effects of PCBs in the general population and in children of mothers who were exposed to PCBs.

6.2.1 Potential Routes of Exposure

Inhalation: It is important to keep in mind that the planned work area is outdoors, with ample natural ventilation that will reduce any airborne particulates through dilution and dispersion and the work being conducted is non-intrusive.

As a result of this, although possible, it is very unlikely that workers participating in these activities will encounter any airborne concentrations of the above COCs that would represent an occupational exposure concern. Examples of onsite practices that are to be observed that will protect workers from exposure via inhalation include:

- Positioning the excavator upwind
- Using area wetting to control and knock down airborne dust clouds.
- During dumping of the dirt from the bucket the bucket will be placed onto the spoils pile to minimize dust generation as the bucket is unloaded.
- The operator will work in an enclosed cab, if dusty conditions cannot be controlled.

Ingestion and Skin Contact: Potential exposure concerns to these Contaminants of Concern (COC) may also occur through ingesting or coming into direct skin contact with contaminated soils. However, the likelihood of worker exposure concerns through these two routes is also considered very unlikely, provided that:

- Workers follow good personal and work hygiene practices such as no hand-to-mouth activities on site (eating, drinking, smoking, etc.)
- Workers employ good sample collection/sample handling practices including wearing proper gloves whenever handling potentially-contaminated media, including soils, hand tools, and sample containers. Cleaning the outside of sample containers of residual soils as well as single and reusable sampling tools.
- Be diligent in the decontamination process as well as site control to minimize migration
- Working from what is suspected to be the least contaminated area to the most to avoid cross contamination.

6.3 PHYSICAL HAZARDS

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

- Slip, trips, and falls (See Section 4.1 of the HSGM for additional safe work practices)
- Contact with underground utilities (electric lines, gas lines, water lines, etc.) (see Section 7.0 of the HSGM for additional information concerning Utility Locating and Excavation Clearance)
- Strain/muscle pulls from heavy lifting (See Section 4.4 of the HSGM for additional safe work practices)
- Ambient temperature extremes (heat/cold stress) (see Section 4.6 of the HSGM for additional information concerning detecting, monitoring, and the prevention of heat related injuries)
- Pinch/compression points (see Section 4.5 of the HSGM for additional safe work practices)
- Vehicular and equipment traffic (see Section 4.3 of the HSGM for additional safe work practices)
- Inclement weather (see Section 4.6 of the HSGM for additional information)
- Heavy equipment hazards (pinch/compression points, rotating equipment, etc.). (See Section 4.2 of the HSGM for additional information)
- Noise in excess of 85 decibels (dBA) (see Section 6.0 of the HSGM for additional information)
- Natural hazards (snakes, ticks, poisonous plants, etc.) (see Section 4.0, Subsection 5.1 of the HSGM for additional information). Mites and ticks are prevalent at this worksite. While the work will be conducted in and around improved areas and emphasis to these hazards cannot be stressed enough.

These hazards are discussed in more detail in the Activity Hazard Analysis (AHAs) and additional information may be obtained in the HSGM in the identified sections.

7.0 AIR MONITORING

It is not anticipated that direct reading instruments will be used at this site to determine potential worker exposure to particulates and particulate based contaminants. This determination is based on the ability, through work practices, to control airborne dust generation and exposure to associated contaminants. This measure is further supported given remedial removal of contaminated soils has occurred in the past further reducing soil contaminant levels. As a precaution, workers will watch for the generation of visible dust and utilize area wetting techniques if dust is generated.

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

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

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

Tetra Tech and subcontractor personnel must complete:

- 40-hours of introductory hazardous waste site training and 3 days of on the job training prior to performing work at the NSA Crane, SWMU 17.
- Persons who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within the past 12 months before being cleared for site work.
- 8-hour supervisory training in accordance with 29 CFR 1910.120(e)(4) will be required for site supervisory personnel.
- 8-Hour Supervisory Refresher Training must be completed for supervisors who have had their initial or most recent supervisory refresher training greater than 12 months ago.

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

8.2 SITE-SPECIFIC TRAINING

Tetra Tech FOL and the SSO will provide site-specific training to Tetra Tech employees and subcontractor personnel who will perform work on this project.

The FOL will be responsible for providing training concerning the work to be performed as stipulated in the scope of work and elements of the SOPs that will be employed. In this training SOP review, methods of sampling, etc. The SSO in tandem or separately will review the safety and health measures as specified in this plan and in the identified elements of the HSGM as it relates to the scope of work and facility specific requirements.

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. This training documentation will be employed to identify personnel who through record review and attendance

of the site-specific training who are cleared for participation in site activities and for what duration. This document shall be posted to maintain an active list of cleared site personnel.

Tetra Tech will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting may be held daily to discuss operations planned for that day as well as a short meeting that may be held at the end of the day to discuss the operations completed and any problems encountered. This activity will be supported through the use of the AHA or Tail Gate Safety Meeting Attendance Form provided as Figure 8-1. Documentation of these efforts can also be recorded in the project logbook.

8.2.1 Other Training

In addition, on-site personnel will be required to provide proof of training, license or certification in:

- Driller License or Certification
- Heavy Equipment Operator Certification or Company Letter
- Surveyors License or Certification
- First Aid/CPR and Bloodborne Pathogen Training (2 persons preferred)
- Any activity requiring the support of a Competent or Qualified Person as defined by OSHA.
 - While no one is to enter excavations, Competent Persons are not required to support this aspect. However, excavation near surface encumbrances, subsurface utilities would require this support.
- Persons responsible for the implementation of Safety and Health programs including but not limited to
 - Hazard Communication
 - Hearing Conservation
 - Bloodborne Pathogens
 - Air monitoring and/or collection of air samples

Appropriate documentation of completed personnel training will be collected, reviewed, and maintained at the project worksite by the SSO.

8.3 MEDICAL SURVEILLANCE

Tetra Tech and subcontractor personnel participating in project field activities will have had a physical examination meeting the requirements of their respective companies medical surveillance program. The respective medical surveillance programs will meet the minimum contents identified in 29 CFR 1910.120(f).

Documentation for medical clearances will be maintained on the project site and made available, as necessary, and will be documented using Figure 8-1 for every employee participating in onsite work activities at this site.

Documentation will be censored for private information (social security numbers, etc.) to support HIPAA requirements. This information will be removed or blackened to obscure.

8.4 MEDICAL DATA SHEETS

Medical Data Sheet Exception - Health Insurance Portability and Accountability (HIPAA) Requirements – The Privacy Rule

The HIPAA came into effect in 1996. The Privacy Rule was then amended April 14, 2003. Loosely interpreted, it establishes regulations for the use and 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 your Medical Data Sheet Information), provision of health care, or payment for health care. This rule also requires Tetra Tech, in this case to ensure the confidentiality of communication (Medical Data Sheets). This provision severely limits the ability of the Medical Data Sheet to convey information you would want the Doctor to know regarding PHI if you were incapacitated. This rule also limits the SSO ability to ensure provisions are in place to provide timely response for instance to a severe allergic reaction. So before you complete the Medical Data Sheet understand that:

- The Medical Data Sheets will not be maintained in a secure location. They will be maintained in a file box or binder accessible to all members of the field crew. In addition, all personnel will carry a copy on their person. This is intended to make these documents quickly accessible so they can accompany the injured party to the hospital should there be an event.
- DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment such as allergic reaction to insects, drugs, or occupationally relevant information.

Each field team member, including visitors, entering the exclusion zone(s) will be requested to complete and submit a copy of the Medical Data Sheet (see Attachment II of this HASP). This shall be provided to the SSO, prior to participating in site activities. You may opt out, but should inform the SSO of any condition that may be relevant in your treatment.

9.0 SITE CONTROL

This section outlines the means to delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas. It is anticipated that a three-zone approach will be used during work at this site. This approach will be comprised of an exclusion zone, a contamination reduction zone, and a support zone. It is also anticipated that this approach will control access to site work areas, restricting access by the general public, minimizing the potential for the spread of contaminants, and protecting individuals who are not cleared to enter work areas. Furthermore, in an effort to reduce the potential for cross contamination, work will proceed from the least contaminated areas working towards the most.

9.1 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:

- Surface soil, sediment and groundwater sampling – 5 feet surrounding the sample collection points
- Decontamination – 5 feet surrounding the point of operation, low pressure decontamination (DPT rig) or HEPA vacuum use.
- Decontamination – High pressure – 35 feet surrounding the point of operation.
- High pressure decontamination – Pressure washer – 35-feet surrounding the decon pad boundary.
- DPT drilling – 35 feet surrounding the point of operation
- Excavation Operations – Fully extended boom + 10-feet. The operator will extend the boom to the utmost extension and slowly swing the arc. During this action, the SSO will place cones or similar markers out an additional 10-feet to demarcate this zone. No persons will enter this area unless the boom and bucket are on the ground and controls disengaged.
- *Surveying – Signs indicating surveyors working ahead will be required on all approach routes. If traffic patterns are to be altered signage will be placed at least 400-feet from where the taper zone begins to the point will lane restrictions take place. Speed will be reduced to 25mph. All Traffic control plans and signage will meet the Manual on Uniform Traffic Control Devices (MUTCD 2009).
- IDW management will consist of containerizing waste decon water from DPT activities. Acetate liners, PPE and associated supporting single use materials will be cleaned of residual soils then disposed of as trash.

*In times past NSA Crane provided signage as was needed. 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.

A pre-startup site visit will be conducted to identify proposed subsurface investigation locations, conduct utility clearances, and provide notices concerning scheduled activities.

Subsurface activities will proceed only when utility clearance has been obtained. In the event that a utility is struck during a subsurface investigative activity, the emergency numbers provided in Section 2.0, Table 2-1, will be notified.

9.2 CONTAMINATION REDUCTION ZONE

The contamination reduction zone (CRZ) will be a buffer area between the exclusion zone and any area of the site where contamination is not suspected. This area will also serve as a focal point in supporting exclusion zone activities. This area will be marked using barrier tape, cones, and postings to inform and direct facility personnel. High pressure decontamination activities of bucket and boom will occur over the test pit. A final decontamination will be conducted at a central location prior to the equipment leaving the site. Equipment potentially contaminated will be bagged and taken to that location for decontamination.

9.3 SUPPORT ZONE

The support zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The support zones will be established at areas of the site where away from potential exposure to site contaminants during normal working conditions or foreseeable emergencies.

9.4 ACTIVITY HAZARD ANALYSES

Work conducted in support of this project will be performed using Activity Hazard Analyses (AHAs) to guide and direct field crews on a task by task basis. Partially completed AHAs for the work to be performed are included as Attachment IV of this HASP. These AHAs were completed to the extent possible as part of the development of this HASP. It is the SSO's responsibility to finalize and complete these documents based on current, existing conditions the day the task is to be performed, and then review that completed AHA with the task participants as part of a pre-task tail gate briefing session. This will ensure that site-specific considerations and changing conditions are appropriately incorporated into the AHA, and will provide the SSO with a structured format for conducting the tail gate sessions, as well will also give personnel an opportunity to ask questions and make suggestions. The AHAs require the signature of the FOL and/or SSO.

9.5 SITE VISITORS

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

- NSA Crane personnel – Authorized by Tom Brent
- Personnel invited to observe or participate in operations by Tetra Tech
- Regulatory personnel (i.e., DoD, EPA, OSHA)
- Authorized Navy Personnel
- Other authorized visitors

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

Site visitors will be escorted and restricted from approaching any work areas where they could potentially be exposed to hazardous chemicals. If a visitor has authorization from the client and from the Tetra Tech Project Manager to approach our work areas, the FOL must assure that the visitor first provides documentation indicating that he/she/they have successfully completed the necessary OSHA introductory training, receive site-specific training from the SSO, and that they have been physically cleared to work on hazardous waste sites.

9.6 SITE SECURITY

Site security will be accomplished using Tetra Tech field personnel. Tetra Tech will retain complete control over active operational areas. As this activity takes place at a Navy facility open to public access, the first line of security will take place using exclusive zone barriers, AHAs, and any existing barriers at the sites to restrict the general public. The second line of security will take place at the work site referring interested parties to the Base Contact. The Base Contact will serve as a focal point for base personnel, interested parties, and serve as the final line of security and the primary enforcement contact.

9.7 BUDDY SYSTEM

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

9.8 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

Tetra Tech and subcontractor personnel will provide MSDSs for chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any

actual use or application of the substances on site. A chemical inventory of the chemicals used on site will be developed using the Health and Safety Guidance Manual (Section 6.0). The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request. It is required that during any transport of a hazardous material that the driver maintain MSDSs with the materials being transported.

9.9 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 will be accomplished by using the cell phone. Workers should enter the emergency and important phone numbers from Table 2-1 into their cell phones prior to beginning work.

9.10 SANITATION AND BREAK AREAS

This section will address the following items:

- Toilets
- Potable water
- Showers and change rooms
- Break Areas

9.10.1 Toilets

One toilet will be provided for every 20 people. All toilets will be unisex and will have locking doors. The toilet provided will either be a chemical toilet and service provider or the flush toilet readily accessible at a predetermined approved location at the site where work is being conducted. As work is being conducted a sufficient distance from supporting trailer it is recommended a chemical toilet be moved to that location.

9.10.2 Potable Water

Potable water as well as electrolyte balance sports drinks such as Gatorade will be provided to the field crews for fluid replacement, as it is necessary under conditions of ambient temperature extremes. Storage and dispensing will proceed as follows:

- All containers will be clean and replenished daily.

- All containers will clearly marked as to their contents (Potable Water – Drinking Water Only; Gatorade, etc.). It is also recommended that these flavored drinks be employed as they will stimulate consumption versus that of plain water. It is recommended that plain water be consumed at a 1 flavored to 3 water ratio.
- Dispensing locations will be placed in identified break areas within the support zone. The most likely location will be at a support vehicle staged near the work area. This will serve as an area for cooling or warming as well as an identified food and drink consumption area.
- If larger containers are used, dispensing cups will be provided.
- The coolers used for storage of potable drinks and cups will be stored in plastic bags away from potentially contaminating materials when not in use.

9.10.3 Showers and Change Rooms

Based on this scope and duration of this project shower facilities and locker rooms will not be required.

9.10.4 Break Areas

Given the location and the time of the year structured suitable locations for work breaks and cooling regimens will reflect the ambient conditions anticipated for that time of the year. Portable shelters such as canopies can be provided for protection from the sun as well as to provide a suitable area to permit cooling in a hot environment. This may also be suitable for conducting certain field activities within a static position such as monitoring well installation, monitoring well sampling, and/or traffic control.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

This spill containment program will apply to the following scenarios:

- Resource Deployment – This includes resource storage areas for fuels (petroleum products)
- Point of Investigation – This includes an area surrounding the drill rigs, excavating equipment, sample operations. As it is known that many of the components of the drill rigs and excavating equipment operate based on hydraulic pressure, the potential for release and spill response should be recognized.
- IDW Management Area – This is the area in which drums of decontamination waters are stored.

It is not anticipated that quantities of bulk potentially hazardous materials will be handled during some of the site activities conducted as part of the scope of work (including IDW). It is also not anticipated that spillage of these materials would constitute a significant danger to human health or the environment. It is however recognize that the potential for accumulation of these materials exists and therefore preparation for a spill or a release is necessary.

Further, it is possible that as the job progresses disposable PPE and other non-reusable items will be generated. These items will be washed or flushed of residual materials and disposed of as normal refuse.

10.2 POTENTIAL SPILL AREAS/PREVENTION METHODS

To establish an early detection of potential spills or leaks, the following measures will be employed

Resource Deployment

Fuels will be dispensed from safety cans to minimize the potential for spills.

Approved safety cans have several basic design qualities:

- They have a spring loaded cap that closes the spout automatically when released. Tension in the spring forces the cap closed and provides a leak proof seal.

- The spring tension is also designed to lift the cap slightly in the event of excessive internal vapor pressure inside the can. This automatically vents off vapors at approximately five psi internal pressure, to prevent the can from rupturing or exploding if it is exposed to excessive outside heat. Many plastic approved gasoline cans do not have this design characteristic and will rupture if overheated.
- The spout is also equipped with a flame arrester screen designed to prevent outside fire from reaching the gasoline inside the can. This is the same type of screen that is found in marine gasoline engine carburetors. With the screen in place, if the can is involved in a fire, the vapors will burn around the spout, but will not permit an internal fire or explosion. This screen must not be removed or damaged.

It is extremely dangerous to carry gasoline--even in a safety can--in the trunk of a vehicle. If the trunk heats up from the sun, the contents of the can will expand and pressure and in the case of a plastic can rupture. In the case of a safety can the spring cap will open. In both cases, this permits vapors to accumulate in the trunk, and an explosion may result.

Flammable and Combustible Liquids Safety Cans

OSHA defines a safety can as:

"An approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure" (1910.106(a)(29))."

Products that meet the requirements are given either a UL product or FM approved. Both laboratories are also recognized by OSHA. In addition, 29 CFR 1910.106 limits the amount of liquid in a single safety can. The following chart shows the allowable amounts for each class of liquid.

MAXIMUM ALLOWABLE SIZE OF CONTAINERS AND METAL PORTABLE TANKS					
Container Type	Flammable Liquids		Combustible Liquids		
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic	1 pint	1 quart	1 gallon	1 gallon	1 gallon
Metal (other than DOT drums)	1 gallon	5 gallon	5 gallon	5 gallon	5 gallon
Safety Cans	2 gallon	5 gallon	5 gallon	5 gallon	5 gallon
Metal Drum (DOT spec.)	60 gallon	60 gallon	60 gallon	60 gallon	60 gallon
Approved Metal Portable Tanks	660 gallon	660 gallon	660 gallon	660 gallon	660 gallon

Source: Lab Safety Supply EZ Facts

This table is provided to illustrate the size of other types of containers. As is indicated above, approved plastic containers will have a permitted capacity of only one gallon.

Spill prevention besides the use of the safety cans will be through:

- The use of funnels to guide and direct fuels into the fuel tanks;
- The use of spill pads to capture incidental spills during fueling;
- DO NOT over fill the safety can. This makes it more difficult to handle during fueling operations.

Compressed Gas Cylinders

- Expired compressed air calibration gases will be taken outside and discharged, marked empty. These disposable cylinders, once marked empty and disabled may be disposed of as general refuse.

DPT Drill Rig/Excavation Equipment

Potential releases associated with these types of equipment are based on the rupture and/or release of a hydraulic line or storage reservoir. To combat these potential release points the following will be conducted:

- Equipment inspection – All leaks will be corrected before work is allowed to commence. All hydraulic lines will be examined for damage (structural) and those caused by overheating. Dried or peeling friction resistant covers are an indication of overheating.
- Maintain spill pads at the drill rig and excavating equipment to permit rapid response should a line rupture.

- While it is somewhat cumbersome the placement of plastic sheeting under the drill rig will provide protection from the released material reaching the environment. However care must be exercised not to extend the plastic beyond the rig creating a slip, trip, and fall hazard.

IDW

The following measures will be employed to control and/or minimize spills associated with IDW management.

- A periodic walk-around by the personnel staging or disposing of drums area will be conducted during working hours to visually determine that storage vessels are not leaking. If a leak is detected, the contents will be transferred, using a hand pump, buckets, or similar device, into a new vessel. The leak will be collected and contained using absorbents such as Oil-Dry or sand, which will be maintained in vulnerable areas in a conspicuously marked drum. This used material, too, will be containerized for disposal pending analysis.
- The FOL and/or the SSO will identify potential transport routes (drainage swales and ditches) from the IDW Storage area. These routes will be blocked or otherwise controlled to minimize migration from this release location. This may include the placement of straw bales or silt fence leading from the IDW management area. The area for storage will not be selected along stream or other active conveyance routes.
- Drums and transport buckets will not be filled greater than 80%. Mortar tubs will be used as secondary containment for buckets at monitoring wells and for transport in vehicles. All containers will be covered to minimize spills.
- IDW Storage Areas Inspections will be documented in the project logbook.

Potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment.

10.3 PERSONNEL TRAINING AND SPILL PREVENTION

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

10.4 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 Prevention/Containment Program.

- Sand, clean fill, or other noncombustible absorbent (oil-dry);
- Drums (55-gallon U.S. Department of Transportation DOT 1A1 or 1A2)
- Shovels, rakes, and brooms
- Labels

10.5 SPILL CONTROL PLAN

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

1. Employ incipient spill prevention/protection devices to control and contain released materials.
2. Notify the SSO or FOL immediately upon detection of a leak or spill if they are not onsite at the time of occurrence.
3. Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
4. Transfer the effected material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
5. Re-containerize spills, including 2-inch of top cover (soils) impacted by the spill. Await test results for treatment or disposal options.

Emergency Alerting - Activate emergency alerting procedures for the affected area to remove non-essential personnel, if all measures to control the spill are unsuccessful.

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

11.0 CONFINED-SPACE ENTRY

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

A confined space is defined as a space that:

- 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, manholes, sewers, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

Additionally, a Permit-Required Confined Space is a confined space that has one or more of the following characteristics:

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

As it pertains to the scope of work, a confined space would be entry into an excavation or trench that is 4-feet or greater in depth. This is strictly prohibited.

If confined space operations are to be added to this scope of work, detailed procedures and training requirements will have to be addressed and this HASP will have to be modified accordingly.

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(s) of this HASP (signed)
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- Material Safety Data Sheets for chemicals brought on site, including decontamination solutions, fuels, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (Attachment V)
- Training/Medical Surveillance Documentation Form
- First-Aid Supply Usage Form
- Emergency Reference Form
- Directions to the Hospital

12.1 MATERIALS TO BE POSTED AT THE SITE

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

- **Chemical Inventory Listing (posted)** - This list represents the chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area.
- **MSDSs (maintained)** - The MSDSs should also be in a central area accessible to the site personnel. These documents should match the listings on the chemical inventory list for the substances employed on-site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.
- **The OSHA Job Safety & Health Protection Poster (posted)** - This poster should be conspicuously posted in places where notices to employees are normally posted, as directed by 29 CFR 1903.2 (a)(1). Each FOL shall ensure that this poster is not defaced, altered, or covered by other material. The law also states that reproductions or facsimiles of the poster shall be at least 8½ by 14 inches with 10 point type.

- **Site Clearance (maintained)** - This list is found within the training section of the HASP (Figure 8-1). This list identifies the 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 the phone communications points and in each site vehicle.
- **Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be filled out by on-site personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility.
- **Personnel Monitoring (maintained)** - The results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.
- **Placards and Labels (maintained)** - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable [Hazard Communication 29 CFR 1910.1200(f)] labels.

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

13.0 ACRONYMS / ABBREVIATIONS

ACGIH	American Conference of Governmental and Industrial Hygienists
BBP	Blood Borne Pathogen
BG	Background
BZ	Breathing Zone
CAAA	Crane Army Ammunition Activity
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Contaminants of Concern
CPR	Cardio Pulmonary Resuscitation
CSP	Certified Safety Professional
CTO	Contract Task Order
dBA	decibels
DoD	Department of Defense
DOT	Department of Transportation
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
mg/m ³	milligrams per cubic meter
N/A	Not Available
NSA	Naval Support Activity
NIOSH	National Institute for Occupational Safety and Health
OELs	Occupational Exposure Limits
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Personal Exposure Limit
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	Personal Protective Equipment
RPM	Remedial Project Manager
SOP	Standard Operating Procedure
SSO	Site Safety Officer
STEL	Short term exposure limit
SWMU	Solid Waste Management Unit

TBD	To be determined
Tetra Tech	Tetra Tech
TLV	Threshold Limit Values
TWA	Time Weighted Average

ATTACHMENT I

INCIDENT REPORT FORM

Report Date	Report Prepared By	Incident Report Number
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		
<hr/> <hr/> <hr/>		
Date of Incident	Time of Incident	
	_____ AM <input type="checkbox"/> PM <input type="checkbox"/> OR Cannot be determined <input type="checkbox"/>	
Weather conditions at the time of the incident	Was there adequate lighting?	
	_____ Yes <input type="checkbox"/> No <input type="checkbox"/>	
Location of Incident		
_____ Was location of incident within the employer's work environment? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Street Address	City, State, Zip Code and Country	
Project Name	Client:	
Tetra Tech Supervisor or Project Manager	Was supervisor on the scene?	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
WITNESS INFORMATION (attach additional sheets if necessary)		
Name	Company	
Street Address	City, State and Zip Code	
Telephone Number(s)		

CORRECTIVE ACTIONS				
Corrective action(s) immediately taken by unit reporting the incident:				
<hr/> <hr/> <hr/> <hr/>				
Corrective action(s) still to be taken (by whom and when):				
<hr/> <hr/> <hr/> <hr/>				
ROOT CAUSE ANALYSIS LEVEL REQUIRED				
Root Cause Analysis Level Required: Level - 1 <input type="checkbox"/> Level - 2 <input type="checkbox"/> None <input type="checkbox"/>				
Root Cause Analysis Level Definitions				
Level - 1	<p>Definition: 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"> ▪ Work related fatality ▪ Hospitalization of one or more employee where injuries result in total or partial permanent disability ▪ Property damage in excess of \$75,000 ▪ When requested by senior management 			
Level - 2	<p>Definition: 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"> ▪ OSHA recordable lost time incident ▪ Near miss incident that could have triggered a Level 1 RCA ▪ When requested by senior management 			
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.				
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 Tetra Tech personnel)? []

Full Name

Company (if not Tetra Tech employee)

Street Address, City, State and Zip Code

Address Type

Home address (for Tetra Tech employees) []

Business address (for subcontractors) []

Telephone Numbers

Work: [] Home: [] Cell: []

Occupation (regular job title)

Department

Was the individual performing regular job duties?

Yes [] No []

Time individual began work

[] 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 Tetra Tech 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"

Three horizontal lines for text entry.

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"

Four horizontal lines for text entry.

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".

Two horizontal lines for text entry.

MEDICAL CARE PROVIDED

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

One horizontal line for text entry.

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

Table with 2 columns: Name of physician or health care professional, Facility Name, Street Address, City State and Zip Code, Telephone Number, Type of Care? (Was individual treated in emergency room?, Was individual hospitalized overnight as an in-patient?, Did the individual die?, Will a worker's compensation claim be filed?)

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

Table with 4 columns: 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)

Table with 3 columns: Item, Extent of damage, Estimated repair cost

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

Table with 3 columns: Substance, Estimated quantity and duration, Specify Reportable Quantity (RQ)

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

Firefighting equipment used? Yes [] No [] If yes, type of equipment: _____

NOTIFICATIONS

Table with 4 columns: Required notifications, Name of person notified, By whom, Date / Time

Who is responsible for reporting incident to outside agency(s)? Tetra Tech [] 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.

Form with sections: Incident Report Number, INCIDENT DETAILS (Name of road, County, City, State, Police/Ambulance response), and VEHICLE INFORMATION (Vehicle 1 and 2 details, Insurance, Agent info).



DRIVER INFORMATION

Table with 4 columns for Driver Information: Vehicle Number 1 - Tetra Tech Vehicle, Vehicle Number 2 - Other Vehicle, Driver's Name, Driver's Address, Phone Number, Date of Birth, Driver's License #, Licensing State, Gender, Was traffic citation issued to Tetra Tech driver?, Citation #, Citation Description.

PASSENGERS IN VEHICLES (NON-INJURED)

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

Table with 4 columns for Passengers: Vehicle Number 1 - Tetra Tech Vehicle, Vehicle Number 2 - Other Vehicle, How many passengers (excluding driver) in the vehicle?, Non-Injured Passenger Name and Address.

INJURIES TO NON-TETRATECH EMPLOYEES

Table with 7 columns for Injuries: 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?.

OTHER PROPERTY DAMAGE

Describe damage to property other than motor vehicles. Property Owner's Name, Property Owner's Address.



TETRA TECH, INC.

Safety Excellence

TETRA TECH, INC.
INCIDENT FORM IR-C

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED

A large, empty rectangular area with a thin black border, intended for drawing a diagram depicting an incident. The area is currently blank.

ATTACHMENT II

MEDICAL DATA SHEET

MEDICAL DATA SHEET

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

Project _____ NSA Crane, PCB Capacitor Burial/Pole Yard, SWMU 17 _____

Name _____ Home phone: _____ Cell: _____

Address _____

Occupation: _____ Age: _____ Height: _____ Weight: _____

Person to notify in the event of an emergency:

Name: _____ Relationship: _____

Home phone: _____ Cell: _____ Work: _____

Drug allergies/other Allergies (Bee stings, etc.): _____

Doctor prescribed antidotes: _____

Do you have these onsite: _____

Particular Sensitivities/Medical conditions that can be aggravated by conducting elements defined in the scope of work: _____

Do You Wear Contacts (circle one)? Yes No

What medications are you presently using? _____

Name of personal physician/Health care provider: _____

Phone number: _____

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

HIPAA took effect in approximately 1996 and was amended 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 they 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 III

HEAVY EQUIPMENT INSPECTION CHECKLISTS

Equipment Inspection Checklist for Drill Rigs

Company: _____

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____ Time: ____ :

Equipment Type: _____
(e.g, Drill Rigs Hollow Stem, Mud Rotary, Direct Push, HDD)

Project Name: _____

Project No#: _____

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"/>	Emergency Stop Devices <ul style="list-style-type: none"> • Emergency Stop Devices (At points of operation) • Have all emergency shut offs identified been communicated to the field crew? • Has a person been designated as the Emergency Stop Device Operator? 	
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Highway Use <ul style="list-style-type: none"> • Cab, mirrors, safety glass? • Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use? • Seat Belts? • Is the equipment equipped with audible back-up alarms and back-up lights? • Horn and gauges • Brake condition (dynamic, park, etc.) • Tires (Tread) or tracks • Windshield wipers • Exhaust system • Steering (standard and emergency) • Wheel Chocks? • Are tools and material secured to prevent movement during transport? Especially those within the cab? • Are there flammables or solvents or other prohibited substances stored within the cab? • Are tools or debris in the cab that may adversely influence operation of the vehicle (in and around brakes, clutch, gas pedals) 	
<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"/>	Fluid Levels: <ul style="list-style-type: none"> • Engine oil • Transmission fluid • Brake fluid • Cooling system fluid • Hoses and belts • Hydraulic oil 	

Equipment Inspection Checklist for Drill Rigs
Page 2

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

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"/>	High Pressure Hydraulic Lines <ul style="list-style-type: none"> • Obvious damage • Operator protected from accidental release • Coupling devices, connectors, retention cables/pins are in good condition and in place 	
<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"/>	Mast Condition <ul style="list-style-type: none"> • Structural components/tubing • Connection points • Pins • Welds • Outriggers • Operational • Plumb (when raised) 	
<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"/>	Hooks <ul style="list-style-type: none"> • Are the hooks equipped with Safety Latches? • Does it appear that the hook is showing signs of wear in excess of 10% original dimension? • Is there a bend or twist exceeding 10% from the plane of an unbent hook? • Increase in throat opening exceeding 15% from new condition • Excessive nicks and/or gouges • Clips • Number of U-Type (Crosby) Clips (cable size 5/16 - 5/8 = 3 clips minimum) (cable size 3/4 - 1 inch = 4 clips minimum) (cable size 1 1/8 - 1 3/8 inch = 5 clips minimum) 	

Equipment Inspection Checklist for Drill Rigs

Page 3

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power cable and/or hoist cable <ul style="list-style-type: none"> Reduction in Rope diameter π (5/16 wire rope > 1/64 reduction nominal size -replace) (3/8 to 1/2 wire rope > 1/32 reduction nominal size-replace) (9/16 to 3/4 wire rope > 3/64 reduction nominal size-replace) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Number of broken wires (6 randomly broken wires in one rope lay) (3 broken wires in one strand) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> Number of wire rope wraps left on the Running Drum at nominal use (≥ 3 required) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- Lead (primary) sheave is centered on the running drum	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Lubrication of wire rope (adequate?)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Kinks, bends - Flattened to > 50% diameter	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hemp/Fiber rope (Cathead/Split Spoon Hammer) <ul style="list-style-type: none"> Minimum $\frac{3}{4}$; maximum 1 inch rope diameter (Inspect for physical damage) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Rope to hammer is securely fastened	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Guards - <ul style="list-style-type: none"> Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Hot pipes and surfaces exposed to accidental contact?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• High pressure lines	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Nip/pinch points	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operator Qualifications <ul style="list-style-type: none"> Does the operator have proper licensing where applicable, (e.g., CDL)? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Does the operator, understand the equipment's operating instructions?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Is the operator experienced with this equipment?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	• Is the operator 21 years of age or more?	

Equipment Inspection Checklist for Drill Rigs
Page 4

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PPE Required for Drill Rig Exclusion Zone <ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Chemical resistant gloves _____ • Steel toed Work Boots • Chemical resistant Boot Covers • Apron • Coveralls Tyvek, Saranex, cotton) _____ 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other Hazards <ul style="list-style-type: none"> • Excessive Noise Levels? _____ dBA • Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.) <ul style="list-style-type: none"> - MSDSs available? • Will On-site fueling occur <ul style="list-style-type: none"> - Safety cans available? - Fire extinguisher (Type/Rating - _____) 	
<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"/>		

Approved for Use Yes No See Comments

 Site Health and Safety Officer

 Driller/Operator

Heavy Equipment Inspection Checklist

Company: _____

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

Time: _____ :

Equipment Type: _____

(e.g, earthmoving equipment - tractors backhoes, bulldozers, etc.)

Project Name: _____

Project No#: _____

Yes	No	NA	Requirements	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Seat Belts <ul style="list-style-type: none"> • Are available for intended operator and passengers (where applicable) • Seat Belts are operational? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Roll-Over Protection (ROPS) <ul style="list-style-type: none"> • Roll-over protection structures (ROPS) are provided on vehicles and heavy equipment (including scrapers, tractors, loaders, bulldozers, carryalls, etc.) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Brakes <ul style="list-style-type: none"> • Brake systems capable of stopping and holding fully loaded equipment • Parking Brake functions properly • Wheel Chocks available (where and as applicable) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Access <ul style="list-style-type: none"> • Non-slip steps • Grab Handles (3-Point Grab/Step Mounting Points) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Audible Alarms <ul style="list-style-type: none"> • Audible alarms –Bidirectional machines, such as rollers, compacters, front-end loaders, bulldozers, and similar equipment, shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. - Back up Alarms –Self propelled equipment with an obstructed view to the rear will be equipped with a reverse gear signal alarm distinguishable from the surrounding noise level. • Horn functioning properly 	

Equipment Inspection Checklist for Heavy Equipment
Page 2

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

Yes	No	NA	Requirements	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"/> <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"/> <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>Highway Use</p> <ul style="list-style-type: none"> • Fenders for equipment that can exceed 15mph • Fire Extinguisher • Are exhaust emissions directed away from the Operator? • Cab <ul style="list-style-type: none"> - Clean, free from debris, tools or equipment that can interfere with foot Control. - Free from storage of flammable material/solvents • Mirrors, • Safety glass <ul style="list-style-type: none"> - Equipped with defrosters - Windshield wipers • Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use? • Gauges functioning properly • Tires (Tread) or tracks • Steering (standard and emergency) • Are tools and material secured to prevent movement during transport? 	
<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>Fluid Levels:</p> <ul style="list-style-type: none"> • Engine oil • Transmission fluid • Brake fluid • Cooling system fluid • Hoses and belts • Hydraulic oil 	
<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>Fueling</p> <ul style="list-style-type: none"> • Fueling of vehicles and heavy equipment is done with the engine off. • No smoking is permitted at or near the fuel storage or refueling area. A sign is posted stating: NO SMOKING WITHIN 50 FEET. • No sources of ignition are present near the fuel storage or refueling area. • A dry chemical or carbon dioxide fire extinguisher (rated 6:BC or larger) is in a location accessible to the fueling area, no closer than 50-feet. • Safety cans available? 	

Equipment Inspection Checklist for Heavy Equipment
Page 3

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

Yes	No	NA	Requirements	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Guards - <ul style="list-style-type: none"> • Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) the points of operations protected from accidental contact? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Hot pipes and surfaces are protected from accidental contact? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • High pressure pneumatic lines have safety cable to prevent thrashing should it become disconnected? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Attachments <ul style="list-style-type: none"> • Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operator Qualifications <ul style="list-style-type: none"> • Does the operator have proper licensing where applicable, (e.g., CDL)? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Does the operator, understand the equipment's operating instructions? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Is the operator experienced with this equipment? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Is the operator 21 years of age or more? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PPE Required <ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Chemical resistant gloves _____ • Steel toed Work Boots • Chemical resistant Boot Covers • Apron • Coveralls Tyvek, Saranex, cotton) _____ 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Key(s)?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operating Manual?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other Hazards <ul style="list-style-type: none"> • Excessive Noise Levels _____ dBA • Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.) - MSDSs available? 	

Approved for Use Yes No See Comments

 Site Health and Safety Officer

 Operator

ATTACHMENT IV

ACTIVITY HAZARD ANALYSES (AHAs)

ACTIVITY HAZARD ANALYSIS
Site Mobilization/Demobilization
Page 2 of 8

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		<p>phone use while driving is only permitted when a hands-free device is used. If you receive a call, let it go to voice mail or pull over and answer it.</p> <ul style="list-style-type: none"> • Ensure you have an Orange Vest and a Reflective Triangle in your vehicle at all times, a disposable camera, Tetra Tech Incident Form (IR-C). • Practice defensive driving whenever traveling in a vehicle. Always permit adequate room between you and the driver in front of your vehicle. Use the 4-second rule. • Follow the direction of posted signs (speed limits, etc.). You will be responsible for all moving and parking violations. • Exercise extra caution when moving through school and work zones. • All items in and on your vehicle should be secured to prevent movement or loss from the vehicle potential causing an accident. <p>If you are in an accident:</p> <ul style="list-style-type: none"> • Move you vehicle if possible from the travel lanes. • Turn on your emergency flashers. • Do not step into traffic when exiting your vehicle. • Place your warning triangle (100-feet behind your vehicle) and put on your Orange vest. • Contact the FOL and the SSO. • Be respectful to the Local authorities. • Do NOT attempt to argue whose fault. • DO NOT admit to fault. • Secure all valuables. Take the keys from the ignition if you leave your vehicle for any reason. (Be aware there will be a fee for towing, traffic citations, etc.). • Complete the IR-C form to make sure you have gathered all pertinent information 	
<p>2. Preparatory tasks, such as: Assembling, packing, unpacking equipment and supplies.</p>	<p>2. Minor cuts, abrasions or contusions handling equipment and tools</p>	<p>2. Wear cut-resistant gloves when handling items with sharp or rough edges or when using knives to cut open packages. A cut resistant glove should at least be worn on the non-knife hand:</p> <ul style="list-style-type: none"> • Exercise caution when unpacking boxes. Make sure you can see clearly into the box and do not reach in and contact broken glass (possibly damaged in shipment) or sharp articles. • Always cut away from yourself and others. • Do not place items to be cut on your hand and/or knee • Always use a sharp cutting instrument. Many accidents result from struggling with dull cutting implements. • Secure work pieces to be cut. • Carry and transport glassware in a hard sided container. That way if you 	<p>L</p>

ACTIVITY HAZARD ANALYSIS
Site Mobilization/Demobilization
Page 3 of 8

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		<p>fall, you will not fall on broken glass.</p> <ul style="list-style-type: none"> If there is broken glass place, it in a hardsided container for disposal. Placement in a soft sided container may result in cuts and lacerations if the bag is penetrated by shards of glass during carrying. <p>See Section 4.13 of the HSGM for additional safe work practices as it pertains cuts/lacerations.</p>	
<p>3. Unpacking; assembling; inspecting equipment before use</p>	<p>3. Strains or sprains during manual lifting and carrying activities</p>	<p>3. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible), and plan each lift:</p> <ul style="list-style-type: none"> Inspect/clear the intended path of travel and areas where loads will be deposited, test lift each object to ensure you can without injuring yourself, ensure good grasp is obtainable on object, keep back straight and lift with legs not back, obtain help when needed to lift large, bulky, or heavy items. <p>Remember: Your muscles, tendons, and ligaments are not as flexible in the early morning hours. Stretch before physical taxing activities. In the later afternoon, your muscles, tendons, and ligaments maybe stressed from fatigue. Take breaks as necessary to avoid injury.</p> <p>See Section 4.4 of the HSGM for additional safe lifting practices.</p>	L
<p>3A. Performing Equipment inspections of vehicles and equipment arriving/preparing to depart the site</p> <ul style="list-style-type: none"> Equipment Inspection DPT drill rig(s); excavation – heavy equipment; and hand tools 	<p>3A. The following potential hazards may be encountered during the equipment inspection process</p> <ul style="list-style-type: none"> Flying projectiles – Pressurized systems –High pressure hydraulics Cuts and lacerations Pinch/compressions Struck by Injuries due to faulty equipment <p>As part of this effort, compressed nitrogen will be secured, brought onto, and most likely stored on base. The nitrogen will be employed for groundwater sampling.</p>	<p>3A. The purpose of the following inspections is to prevent possible injury from faulty equipment. However, as the equipment has to operate to test personnel may also be exposed to inherent hazards such as those described.</p> <p>DPT Drill Rigs:</p> <ul style="list-style-type: none"> Complete Equipment Inspection Checklist for the Drill Rigs and associated drilling components using Attachment IV. All emergency stop devices will be tested initially, then daily from that point on. Do not place hands or fingers within pinch or compression points. If this is necessary (which it should never be) use blocking or tools intended for that purpose to secure potential energy sources. <p>Inspector or selected Qualified person should employ hardhat, safety glasses, and leather work gloves during the inspection activity. All potential and kinetic energy sources will be secured or controlled during inspection.</p> <p>Excavation Equipment – See Test Pitting AHA.</p> <p>Sampling devices:</p> <ul style="list-style-type: none"> Threads of sampling devices will be examined. If they are washed out difficult to assemble and disassembled have them replaced. Connectors, pins, associated attachments will not show signs of 	L

ACTIVITY HAZARD ANALYSIS
Site Mobilization/Demobilization
Page 4 of 8

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		<p>excessive wear. This will also pertain to wrenches employed to construct/disassemble pump assemblies. Check teeth and gripping surfaces to minimize the potential for slip.</p> <ul style="list-style-type: none"> Exercise caution when handling machine (drive tubes, drive rods, cutting shoes, etc.) components due to the potential for sharp edges 	
Equipment Inspection (continued)	3B. High pressure air lines – Struck by hazards	<p>3B. Struck by hazards – To prevent hazards of this nature the following measures will be employed:</p> <ul style="list-style-type: none"> All high pressure air lines that do not have mechanical threaded connections will have connections pinned and will be equipped with a whip check to minimize the lines thrashing should they become disconnected. 	L
Equipment Inspection (continued)	<p>3C. Spills Prevention –</p> <ul style="list-style-type: none"> Hydraulic fluid release – A hydraulic line that ruptures can release hydraulic fluid Thermal Burns 	<p>3C. During the Equipment Inspection additional attention will be focused to the condition of the hydraulic lines to avoid a potential rupture and/or release. This will include:</p> <ul style="list-style-type: none"> Attention will be focused on connection points Condition of the hoses <ul style="list-style-type: none"> Damaged steel braids Areas of friction wear patterns Damage or deterioration to the rubber protective outer coating (indicative of overheating) <p>In all cases, suspect hoses will be replaced.</p> <p>It is recommended where possible, that plastic be placed on the ground in the area under the rig to capture incidental spills and releases should they occur. Care should be taken not to extend the plastic beyond the rig proper as such creating a slip trip and fall hazard.</p>	L
4. Hazard Communication - Receiving chemicals, storing chemicals, preparing to use chemicals, collecting Material Safety Data Sheets completing chemical Inventory;	4. Chemical Exposure	<p>4. Chemical hazards – It is not anticipated that site personnel will encounter chemical hazards as it pertains to mobilization as no direct encounter is planned. However, it will be the responsibility of the FOL and/or the SSO to implement the Onsite Hazard Communication Program (See Section 5.0 of the HSGM). In this effort all chemicals brought onsite (compressed gases (calibration gases), decontamination fluids; sample preservatives, well construction supplies, etc.) will:</p> <ul style="list-style-type: none"> All chemicals will have an accompanying Materials Safety Data Sheet (MSDS) that has been reviewed and approved for use by the SSO. <ul style="list-style-type: none"> The SSO will review the HASP to ensure emergency equipment and/or associated PPE necessary to ensure the safety of the workers are equal or better than that listed in the MSDS. All incoming containers will be properly labeled, will be in English and not defaced. If the materials will be transferred to temporary containers, these too will be appropriately labeled by the SSO or the person using the materials. All materials received onsite will be added to the Chemical Inventory 	L

ACTIVITY HAZARD ANALYSIS
Site Mobilization/Demobilization
Page 5 of 8

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		List. Included in this information is the volume and location stored and primary hazards. <ul style="list-style-type: none"> All materials will be stored as prescribed with compatible chemicals. As necessary employ spill prevention pans or like equipment to capture or contain spills within the storage area. 	
<p>5. Initial Site Surveys - Access/egress into Controlled areas</p> <p>Initial site survey of the intended work areas</p>	<p>5. Coordinate efforts with facility personnel</p> <ul style="list-style-type: none"> Inherent hazards or restrictions <p>Emergency Prevention – This component will be critical in identifying potential emergencies that may be task associated. These are as follows:</p> <ul style="list-style-type: none"> Utility strike – Overhead power lines; buried utilities; gas, sewage, and/or water. Physical hazards – Steep embankments, sink holes; poisonous vegetation. 	<p>5. In order to address the potential hazards associated with the initial entry:</p> <ul style="list-style-type: none"> The FOL and/or the SSO will meet with the restricted area personnel/operators to ensure they are aware of planned activities. As part of these discussions Inquire of the potential hazard in the area and areas to avoid. Inquire as to what the facilities Emergency Action Requirements are should there be an emergency and where you should go as an assembly point. What security measures are required PPE requirements for location (such as flame retardant clothing) Restriction boundaries If persons must enter the restricted area local requirements will prevail. These include: <ul style="list-style-type: none"> Signing in PPE minimum requirements for the location The FOL and/or the SSO will survey the area to ensure areas prone to slip, trip, and fall hazards are flagged or removed. <ul style="list-style-type: none"> Entry/access routes will be determined as well as schedules. <p>All workers are to wear sturdy work shoes that are outfitted with slip resistant aggressive tread and steel toe and shank when foot hazards exist.</p> <p>All exits and selected access pathways will be maintained free of obstructions to allow free movement of site personnel, equipment, and if necessary emergency equipment.</p> <p>Utility strikes –</p> <ul style="list-style-type: none"> Overhead power lines – In the areas in which the mast will be raised will be examined for the existence of overhead power lines or obstructions. Personnel will perform walkovers to examine the surface for surface monuments including: <ul style="list-style-type: none"> Valve or meter boxes Manhole covers Direction cable boxes Utilities entering or exiting buildings. 	L

ACTIVITY HAZARD ANALYSIS
Site Mobilization/Demobilization
Page 6 of 8

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
	<p>Determining site control boundaries</p> <p>Emergency preparation</p> <ul style="list-style-type: none"> • Selecting evacuation routes and assembly points; determining emergency equipment requirements 	<p>The FOL/SSO will determine the necessary boundary at each work location:</p> <ul style="list-style-type: none"> • DPT drilling operations – 35-feet or the height of the mast + 10-feet, whichever is greater. During this time, the FOL and/or the SSO will determine if physical hazards exists, terrain challenges and the necessary amount of vegetation to be removed (where applicable) to allow access and a sufficient size work area. • High pressure decontamination 35-feet surrounding the point of operation. • Low pressure decontamination 10-feet surrounding point of operation. <p>The Emergency Evacuation point will be selected as part of the initial site survey. Tentatively this location is at the driveway intersection where emergency response crews will approach from. Dependent on the location of the hazard escape may have to occur in the opposite direction. A secondary point will be determined in the field and communicated as part of the Daily Tail-Gate meeting.</p>	
<p>6. Preparing the site for work activities.</p>	<p>6. Site set up hazards:</p> <ul style="list-style-type: none"> • Struck By • Tip Over • Backing • Electrocution / Explosion • Slips, Trips, Falls 	<p>6. Struck by/ Tip Over:</p> <ul style="list-style-type: none"> • All equipment, augers, rods and tools will be properly secured during transport. • All vehicles and equipment to be employed on roads and highways will comply with DOT requirements. • Never move the drilling rig with the mast upright. Set hydraulic leveling jacks before raising the mast. Ensure the drilling site foundation is stable and as level as possible. • Use a ground guide along with a functioning back-up alarm during equipment backing to avoid striking objects or backing into pits and/or ditches. This is especially critical as this is within a process area and movement is tight. <p>Utility damage prevention:</p> <ul style="list-style-type: none"> • Inspect for buried and overhead utilities in the vicinity of the drilling location. A drilling clearance permit shall be obtained from base personnel or utility companies prior to initiating intrusive operations. <p>Slip, trips, and falls:</p> <ul style="list-style-type: none"> • Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment and other tripping hazards. • Wear appropriate foot protection to prevent slips and trips. • Use caution when working on uneven and wet ground surfaces. 	<p>L</p>

ACTIVITY HAZARD ANALYSIS
Site Mobilization/Demobilization
Page 7 of 8

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p>DPT Drill Rig; Sampling attachments; Hand tools (dollies, hand carts, hand knives, carpenter tools, fixed and portable ladders, etc.)</p>	<p>Visual inspection of hand and power tools will be performed by the SSO. Tools will be tagged with colored electrical tape. Green tape ok for use. Red tape do not use. All red taped items should be repaired or removed from the site. Each time a tool is used it will undergo a cursory inspection by the user. Noted damage (mushroomed head, splintered handle, etc.) will require removal from service.</p> <p>FOL and SSO to perform regular (e.g., daily) inspections for housekeeping issues. The results of these efforts will be documented in the Field Logbook</p>	<p>All personnel:</p> <ul style="list-style-type: none"> • 40-Hour General Site Worker Training [OSHA 29 CFR 1910.120 (e)] • 8-Hour General Site Worker Refresher Training [OSHA 29 CFR 1910.120 (e)(8)] • Site Specific Training – All personnel shall review this Abbreviated Health and Safety Plan prior to the commencement of on-site activity. • Participate in a Medical Clearance/Surveillance Program as described in OSHA 29 CFR 1910.120 (f). • Complete a Medical Data Sheet • Review applicable MSDSs if you are unaware of the hazards and recommended control measures for diesel fuel and grout. <p>Supervisory personnel: 8-Hour General Site Worker Supervisory Training [OSHA 29 CFR 1910.120 (e)(4)]</p>
<p>Personal Protective Equipment: <u>Minimum</u>: Steel toed work boots; hardhats, safety glasses, work gloves; suitable work attire (long pants; sleeved shirts. <u>Optional items:</u> High visibility vest, Hearing protection and flame retardant protective clothing; may be required in the area the work will be conducted. HTRW: None anticipated for this task. Note: Personnel may be required to meet location specific PPE requirements.</p>	<p>Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.</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 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.</p> <p>The SSO will be responsible for the implementation of the following Site Specific Health and Safety Programs:</p> <ul style="list-style-type: none"> • Hazard Communication • Hearing Conservation <p>AHA Assessment - During the initial walk through the FOL and/or the SSO shall review the AHA to determine applicability or information that will need added given site specific conditions.</p>

Chemical/Product Name/Synonym	Owner	Quantity	Location	Hazards	Supplier/Manufacturer
Alconox/Liquinox Synonym: Anionic Detergent	Tetra Tech NUS, Inc.	1-gallon	Field Office Support Trailer Note: Smaller amounts are maintained at work sites.	<ul style="list-style-type: none"> - Irritating to the eyes. - May cause drying of the skin. 	Alconox, Inc. 215 Park Avenue South New York, New York 10003 (212) 473-1300
Isobutylene/Air Synonym: Isobutene Methylpropene	Tetra Tech NUS, Inc.	()Cylinders	Field Office Support Trailer	<p>Inhalation hazard – May act as a simple asphyxiant in closed or confined spaces.</p> <p>Pressurized cylinder hazard – Containers may rupture in a fire</p>	<p>Scott Specialty Gases 6141 Easton Road Plumstaedville, PA 18949 (215) 766-8861</p> <p>Liquid Carbonic 135 South LaSalle Street Chicago Illinois 80603-4282 (504) 673-8831 Chemtrec (800) 424-9300</p>
2- Propanol Synonym: Isopropanol	Tetra Tech NUS, Inc.	4-liters (1.05 gallons)	Field Office Support Trailer Note: Smaller amounts are maintained at work sites.	<ul style="list-style-type: none"> - Flammable - Eyes, skin, and respiratory irritant 	Fisher Scientific 1 Reagent Lane Fairlawn, New Jersey 07410 Emergency #: (201)796-7100

Chemical/Product Name/Synonym	Owner	Quantity	Location	Hazards	Supplier/Manufacturer

Equipment Inspection Checklist for DPT Rigs

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"/>	Emergency Stop Devices <ul style="list-style-type: none"> • Emergency Stop Devices (At points of operation) • Have all emergency shut offs identified been communicated to the field crew? • Has a person been designated as the Emergency Stop Device Operator? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Highway Use <ul style="list-style-type: none"> • Cab, mirrors, safety glass? • Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use? • Seat Belts? • Is the equipment equipped with audible back-up alarms and back-up lights? • Horn and gauges • Brake condition (dynamic, park, etc.) • Tires (Tread) or tracks • Windshield wipers • Exhaust system • Steering (standard and emergency) • Wheel Chocks? • Are tools and material secured to prevent movement during transport? Especially those within the cab? • Are there flammables or solvents or other prohibited substances stored within the cab? • Are tools or debris in the cab that may adversely influence operation of the vehicle (in and around brakes, clutch, gas pedals) 	

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"/> <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"/>	Fluid Levels: <ul style="list-style-type: none"> • Engine oil • Transmission fluid • Brake fluid • Cooling system fluid • Hoses and belts • Hydraulic oil 	
<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"/>	High Pressure Hydraulic Lines <ul style="list-style-type: none"> • Obvious damage • Operator protected from accidental release • Coupling devices, connectors, retention cables/pins are in good condition and in place 	
<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"/>	Mast Condition <ul style="list-style-type: none"> • Structural components/tubing • Connection points • Pins • Welds • Outriggers • Operational • Plumb (when raised) 	
<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"/>	Safety Guards – <ul style="list-style-type: none"> • Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? • Hot pipes and surfaces exposed to accidental contact? • High pressure lines • Nip/pinch points 	
<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"/>	Operator Qualifications <ul style="list-style-type: none"> • Does the operator have proper licensing where applicable, (e.g., CDL)? • Does the operator, understand the equipment’s operating instructions? • Is the operator experienced with this equipment? • Is the operator 21 years of age or more? 	

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"/> <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"/>	PPE Required for Drill Rig Exclusion Zone <ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Chemical resistant gloves_____ • Steel toed Work Boots • Chemical resistant Boot Covers • Apron • Coveralls Tyvek, Saranex, cotton)_____ 	
<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"/>	Other Hazards <ul style="list-style-type: none"> • Excessive Noise Levels? _____dBA • Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.) <ul style="list-style-type: none"> - MSDSs available? • Will On-site fueling occur <ul style="list-style-type: none"> - Safety cans available? - Fire extinguisher (Type/Rating - _____) 	

Approved for Use Yes No See Comments

Site Health and Safety Officer

Driller/Operator



ACTIVITY HAZARD ANALYSIS (AHA)

Activity/Work Task: Soil boring with DPT		Overall Risk Assessment Code (RAC) (Use highest code)			L		
Project Location: : NSA Crane, Crane, Indiana							
Site: PCB Capacitor Burial/Pole Yard (SWMU 17). Area Southwest of Building 2721; Boggs Creek Segment 1; Ditch 3 Segment 2; Previous Excavation Areas near Building 357; Ditch 3 Segment 6; Dump Area Southwest of Building 3072		Severity	Probability				
Date Prepared: April 2012			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Clyde Snyder		Catastrophic	E	E	H	H	M
Reviewed by: Jennifer Carothers, PhD.		Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
FOL:							
SSO:							
Notes: (Field Notes, Review Comments, etc.)		<p>Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)</p> <p>“Probability” is the likelihood to cause an incident, near miss, or accident and Identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.</p> <p>“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p> <p>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.</p>					
		RAC Chart					
		E= Extremely High Risk					
		H= High Risk					
		M= Moderate Risk					
		L = Low Risk					
ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS					RAC
1. DPT Drill rig - Unit Mobilization / Site Set Up) Tetra Tech personnel vehicle operation and mobilization.	<ul style="list-style-type: none"> Accidents and injuries resulting from the transport of the drill rig and associated equipment to the site. Materials falling from the drill rig during transport. Equipment failure – leading to a potential accident or hazardous 	<ol style="list-style-type: none"> 1. The vehicle operator will perform a walk around inspection to ensure • All equipment, augers, rods and tools will be properly secured for/during transport. • Vehicle components – Turn signals brake lights, etc. all function properly. • There are no materials carried or stored in the cab that will interfere with the safe operation of this motor vehicle on the highways (garbage in and around the pedals). • All critical fluid levels (brake fluid, motor oil, anti-freeze) are at their recommended levels. • Seat belts are functioning properly. • Mirrors are properly adjusted. 					L

ACTIVITY HAZARD ANALYSIS
Soil Boring with DPT
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ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
	situation. <ul style="list-style-type: none"> • Improper operation • Unqualified operator Vehicle accidents	<ul style="list-style-type: none"> • Cell phone use during driving is prohibited unless a hands free device is used. • If the vehicle GVWR is greater than 26,001 pounds, the operator will have a Commercial Driver's License (CDL). • If the vehicle has air brakes, the CDL will have an air brake endorsement. • The vehicle will be operated within DOT or facility specific guidelines including adhering to the speed limit obeying all posted signs. • Where necessary, use escort vehicles with flashing lights to warn and control local traffic when moving large equipment to support area. • Practice defensive driving whenever traveling in a vehicle • Ensure you have an Orange Vest and a Reflective Triangle in your vehicle at all times along with an Incident Reporting Form IR-C and a disposable camera (phone cameras are acceptable). • Keep a safe distance between cars (Use the 4-second rule). 	
2. Preparing the Drill Rig for Use	2. Injury due to the failure of faulty equipment	2. Injury due to the failure of faulty equipment – To combat this hazard, the FOL, SSO, and/or a designated “Qualified Person” will determine the operating integrity of the drill rig through the completion of an Equipment Inspection Checklist for Drill Rigs provided in Attachment IV Site mobilization/demobilization AHA. These checklists will be used to ensure that back-up alarms are functional, that all moving parts are guarded if such parts are exposed, that all emergency stop controls on equipment have been tested and are functional. These checklists provide a consistent platform to examine these types of equipment. While not all lists cannot be all inclusive, expertise in these areas can add additional categories as needed.	L
3. Personnel qualifications/ equipment integrity	3. Injury due to Improper operation	3. Injury due to control improper operation - Ensure the driller or driller's helper responsible for the transport and/or operation are qualified to do so. This will be determined through the examination of <ul style="list-style-type: none"> • Licenses or certification indicating they are thoroughly trained and competent to perform their assigned task with the equipment used in investigation. • Oversight and monitoring of active operations. Where deficiencies are noted, these will be identified, and corrected immediately. If necessary these conditions will also be reviewed during the Tail-Gate Training sessions conducted periodically. • If consistent poor work habits are employed personnel will be removed and replaced as determined to be necessary to protect onsite personnel, property, and the environment. 	M
4. Positioning Unit	4. Struck by/ Rig stability	4. Struck by – When moving the drill rig into place:	M

ACTIVITY HAZARD ANALYSIS
Soil Boring with DPT
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ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
(engaging outriggers. etc.)		<ul style="list-style-type: none"> • Prior to committing personnel and/or resources, the FOL and/or the SSO will examine the intended work area to select travel route, placement of the drill rig, and to ensure any potential hazards within the designated work area are eliminated or at least demarcated. • The operator in concurrence with the FOL and/or the SSO should select the best possible approach vantages to move the unit up the slope or around physical obstructions to the selected boring location. • Preview travel paths and set up location for subsurface utilities, soft spots, curbs, etc. These items may affect the stability of the rig during operation. Use pads for outriggers to avoid potentially damaging subsurface utilities or to control subsidence during drilling. • Operate the unit at a suitable rpm for the terrain and conditions. Furthermore, • Ground spotters will be used to move the rig into place to avoid damaging subsurface process lines or overhead power lines. • During the time of directing equipment into place <ul style="list-style-type: none"> ○ Do not place yourself between the rig and an immovable object. ○ Stay within the operators line of sight. ○ Keep all non-essential personnel out of the area. ○ Do not create distractions when placing the rig by requesting information or the attention of the spotter. ○ Only one person will direct the actions of the operator. <p>5. The DPT Drill Rig Outriggers (where applicable – depending on manufacturer) that is equipped with outriggers to provide stability to the unit during drilling operations. There are a number of factors that can influence the outriggers ability to provide this stability including:</p> <ul style="list-style-type: none"> • Are the outriggers fully extended? • Are outrigger pads used to increase the area in which the outriggers are applying pressure? If not cribbing can be used to increase the foot print size. • Is the ground surface in the area of the outrigger placement adequately compacted to support the drill rig? If not materials can be haul in and compacted to add additional stability. This may be prevalent where soil borings and test pitting locations overlap. • Ensure the drilling site foundation is stable and as level as possible. • The drill rig is never to be moved unless the mast is fully down and the outriggers are fully retracted. 	
5. Emergency Preparation - Assembling equipment and supplies	5. Emergency preparation - Fire Spill Response	5. A number of measures will be employed to prepare for potential emergency conditions. These include: Fire - <ul style="list-style-type: none"> • Portable Fire Extinguisher(s) – 2A:10B:C extinguisher will be made available 	L

ACTIVITY HAZARD ANALYSIS
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ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
	Injury Response	<p>for all general support activities. Travel distances greater than 50-feet will require additional fire extinguishers. If portable extinguishers are provided then training in their use must be provided for the employees who are to use them. Fire extinguishers will be initially inspected then monthly thereafter. Fire extinguishers will be immediately accessible. If they are stored in tool boxes, the box will be labeled as such.</p> <p>Spill Response -</p> <ul style="list-style-type: none"> • Spills – As we recognize the release of hydraulic lines associated with the drill rig operation can cause environmental damage, then rapid response through having spill kit provisions at the ready at the rig. Prophylactic measures such as placing plastic under the drill rig that would be effected by a spill and/or release but not extending into the work area in which it would create a slip, trip, and fall hazard. Additional measures include: <ul style="list-style-type: none"> ○ Having spill pads at the ready. ○ Using spill pads during incidental fueling operations. ○ Use of safety cans and ○ Periodic monitoring of potential spill or release areas such as IDW management marshaling areas. <p>Injury Response -</p> <ul style="list-style-type: none"> • Responding to Injury – Per 1910.151 in the absence of an infirmary, clinic. Or hospital a person or persons will be made available and trained to provide first-aid. Adequate first aid supplies will be provided to render assistance. Within these provisions, additional supplies to support Blood Borne Pathogen Universal precaution (CPR Masks; surgeons gloves, safety glasses; dust masks to offer shielding against potentially contaminated body fluids. <p>Note: During normal working hours, the use of the facility medical clinic is permitted. See Figure 2-1.</p>	
6. Pre – Drilling Excavation clearance	6. Utility Damage – Injury, property damage	<p>6. Utility Damage - An excavation or dig permit will be required anytime the ground surface is broken using a mechanized piece of equipment. To obtain a Dig Permit</p> <ul style="list-style-type: none"> • Mark the areas to be drilled in White Paint – Also identify it as the area for One-Call or whatever the clearance designation is for that state. • Contact the Indiana Underground Plant Protection Service at (800) 382 - 5544 or use 811 that is the National Clearinghouse contact point. • Where possible provide drawings and/or coordinates. • The typical timeline required is 2-3 days. • Upon receipt of your permit, make sure all utility owners in the area have responded back. If not, contact them. This is especially critical when dealing with electrical and gas lines. 	L

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ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		<ul style="list-style-type: none"> • During site preparation the discussion was provided concerning the site walk over to inspect for surface monuments that would be indicative of buried utilities • During this site walk over you are also examining the area for overhead utilities. The dig permit has NOTHING to do with overhead power lines. DO NOT approach overhead power lines closer than 20-feet. • Follow NSA Crane Utility Clearance Procedures. The Tetra Tech SOP Utility Location and Excavation Clearance can be found in Section 7.0 of the HSGM. 	
7. Tool and material handling (cont.)	7. Lifting – Due to the weights of the various drill tooling the potential for back related injuries are significant.	<p>7. Lifting hazards – The auger flights weigh in excess of 100 lbs. Due to the physically demanding nature of handling these devices back injuries as well as smashed fingers often result. To control these hazards</p> <ul style="list-style-type: none"> • Use proper lifting techniques when manually handling rods, augers and tools. Use mechanical equipment during lifting whenever possible (hoisting devices). Use the buddy system when lifting tools and supplies. Stretch in the morning to limber your muscles, tendons, and ligaments prior to engaging in heavy lifting activities. Take more breaks in the afternoon to guard against fatigue related injuries. • Review Section 4.4 of the HSGM for additional safe lifting practices. 	L
8. Drill Rig Operation	8. Excessive Occupational Noise	<p>8. Excessive Occupational Noise – Noise levels associated with DPT drilling rigs have ranged from 92 to 107dBA during percussion hammering. Due to the magnitude of these levels provisions for hearing protection is required. These measures are as follows:</p> <ul style="list-style-type: none"> • Unit operator and helper(s) are to wear hearing protection. Other persons who must be nearby (within the 35-foot exclusion zone) to perform their job duties are to also wear hearing protection. • Onsite personnel may use the general rule of thumb when determining if noise levels are excessive <i>If noise levels are such that they must raise their voice in order to communicate with someone who is within arm's reach (approx. 2') of them then noise levels are becoming excessive and hearing protection should be employed.</i> <p>Based on accumulated data, operations requiring hearing protection will be specified in the site specific health and safety plan.</p> <ul style="list-style-type: none"> • The SSO responsible for monitoring the use of hearing protection, ensuring the hearing protection selected have a sufficient noise reduction rating (at 	L

ACTIVITY HAZARD ANALYSIS
Soil Boring with DPT
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ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		<p>following measures will be incorporated:</p> <ul style="list-style-type: none"> • All motors must be shut off during refueling. Smoking in the vicinity of the drill rig, within the exclusion zones, or areas of the facility are not permitted. Smoking will only be permitted in designated areas. • Fuel containers will not be stored within 10' of the unit motor or other elevated temperature application. Fuel will be stored in UL approved safety containers with contents clearly labeled. • Fire suppression devices including <ul style="list-style-type: none"> ○ Water source ○ Portable fire extinguisher(s) – 2:A-B-C fire extinguisher must be maintained onsite and on associated motorized equipment. The number of fire extinguishers will be determined by the SSO. <p>All combustible materials will be removed from the intended work area.</p>	
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<p>Drill Unit Sampling tools and attachments Hand tools</p> <p>Work Areas</p>	<p>Drill Rig Inspection</p> <ul style="list-style-type: none"> • Inspect unit as part of site mobilization, after maintenance/repair. • Visual examination daily. • Test all Kill switches daily, where applicable <p>FOL and/or the SSO will conduct initial site surveys of all work areas prior to committing personnel and/or equipment. Hazards will be eliminated or demarcated. All hazards identified will be discussed at the Tail Gate training session prior to entering the work site.</p>	<p>SSO or designated "Qualified Person" must be sufficiently experienced and familiar with units to conduct a detailed inspection concerning the units operating integrity. The Driller will carry the necessary certification or licensing as required by the Commonwealth of Pennsylvania. This license/certification will be maintained onsite.</p> <p>For drilling activities employed to determine levels of contamination in the soils and/or groundwater</p> <ul style="list-style-type: none"> • 40-Hour General Site Worker Hazardous Waste Operations Training • 8-Hour General Site Worker Refresher Training - If it has been greater than 12 months since receiving the 40-hour training or last refresher training. • 8-Hour Supervisory Training [29 CFR 1910.120 (e)(4)] for all personnel operating within the supervisory capacity. • Site-Specific Training – All personnel performing work within designated exclusion zones will have gone through site specific training including <ul style="list-style-type: none"> ○ Reviewing the contents of the site specific Health and Safety Plan ○ Applicable sections of the HSGM. ○ Work Plan • Tail Gate Training Sessions 	
<p>Hand tools (dollies, hand carts, hand knives, shovels, etc.)</p> <p>Emergency Equipment –</p> <p>Fire Extinguishers</p>	<p>Visual inspection prior to use by user.</p> <p>Upon receipt then monthly thereafter</p> <p>The SSO will be responsible for</p>	<p>None required</p> <p>All personnel will have received fire extinguisher training for the types of extinguishers to be employed. This will be through their respective companies or as part of the site-specific training.</p>	



ACTIVITY HAZARD ANALYSIS (AHA)

Activity/Work Task: Test Pitting-Trench Excavation and Sampling		Overall Risk Assessment Code (RAC) (Use highest code)				L																																				
Project Location: : NSA Crane, Crane, Indiana		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%; padding: 5px;">Severity</th> <th colspan="5" style="padding: 5px;">Probability</th> </tr> <tr> <td style="padding: 5px;"></td> <th style="padding: 5px;">Frequent</th> <th style="padding: 5px;">Likely</th> <th style="padding: 5px;">Occasional</th> <th style="padding: 5px;">Seldom</th> <th style="padding: 5px;">Unlikely</th> </tr> <tr> <td style="padding: 5px;">Catastrophic</td> <td style="text-align: center; background-color: red;">E</td> <td style="text-align: center; background-color: red;">E</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: yellow;">M</td> </tr> <tr> <td style="padding: 5px;">Critical</td> <td style="text-align: center; background-color: red;">E</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: green;">L</td> </tr> <tr> <td style="padding: 5px;">Marginal</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: green;">L</td> <td style="text-align: center; background-color: green;">L</td> </tr> <tr> <td style="padding: 5px;">Negligible</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: green;">L</td> </tr> </table>					Severity	Probability						Frequent	Likely	Occasional	Seldom	Unlikely	Catastrophic	E	E	H	H	M	Critical	E	H	H	M	L	Marginal	H	M	M	L	L	Negligible	M	L	L	L	L
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Site: Area Southwest of Building 2721; Boggs Creek, Segment 1; Ditch 3, Segment 2; Previous Excavation Areas near Building 357; Ditch 3, Segment 6; Dump Area, Southwest of Building 3072																																										
Date Prepared: April 2012																																										
Prepared by: Clyde Snyder																																										
Reviewed by: Jennifer Carothers, PhD.																																										
FOL:																																										
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Notes: (Field Notes, Review Comments, etc.)		<p>Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)</p> <p>“Probability” is the likelihood to cause an incident, near miss, or accident and Identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.</p> <p>“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p> <p>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <th style="text-align: center; padding: 5px;">RAC Chart</th> </tr> <tr> <td style="text-align: center; background-color: red; padding: 5px;">E= Extremely High Risk</td> </tr> <tr> <td style="text-align: center; background-color: orange; padding: 5px;">H= High Risk</td> </tr> <tr> <td style="text-align: center; background-color: yellow; padding: 5px;">M= Moderate Risk</td> </tr> </table>					RAC Chart	E= Extremely High Risk	H= High Risk	M= Moderate Risk																																
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ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS				RAC																																				
1. Preparation for Test Pitting	1. Faulty equipment – Potential for injury, property damage, or environmental contamination due to faulty equipment.	<p>1. The following measures will be conducted to ensure</p> <ul style="list-style-type: none"> Equipment Inspection - As part of the mobilization/demobilization task, all equipment arriving onsite will be inspected to ensure it is in safe operating condition. An Equipment Inspection Checklist for Heavy Equipment has been provided in Attachment III and at the end of this AHA. Maintenance – All maintenance will be performed using manufacturer approved parts. <p>PPE: The following PPE will be required for this initial activity:</p> <ul style="list-style-type: none"> Hard hat Safety Glasses High Visibility gloves Suitable field attire – Sleeved shirt, long pants (avoid loose or bagging clothing) Steel toed/shank over the ankle workboots 				L																																				
2. Performing Equipment inspections of vehicles and equipment	2. The following potential hazards may be encountered during the equipment inspection	<p>2. The purpose of the following inspections is to prevent possible injury from faulty equipment. However, as the equipment has to operate to test personnel may also be exposed to inherent hazards such as those described:</p> <ul style="list-style-type: none"> Do not place hands, fingers, or bodies within pinch or compression points. If this is 				L																																				

ACTIVITY HAZARD ANALYSIS

Test Pitting – Trench Excavation and Sampling

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ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
arriving/preparing to depart the site <ul style="list-style-type: none"> Equipment Inspection of the excavator/back-hoe 	process <ul style="list-style-type: none"> Flying projectiles – Pressurized systems – High pressure hydraulics Cuts and lacerations Pinch/compressions Struck by 	necessary (which it should never be) use blocking or tools intended for that purpose to secure potential energy sources. <ul style="list-style-type: none"> Inspector or selected Qualified person should employ hardhat, safety glasses, and leather work gloves or High Visibility gloves during the inspection activity. See Item #1. All potential and kinetic energy sources will be secured or controlled during inspection. 	
2A. Equipment Inspection (continued)	2A. High pressure hydraulic lines – Struck by hazards	2A. Struck by hazards – To prevent hazards of this nature the following measures will be employed: <ul style="list-style-type: none"> All high pressure air and hydraulic lines that do not have mechanical threaded connections will have connections pinned and will be equipped with a whip check to minimize the lines thrashing should they become disconnected. Maintain adequate clearance (fully extended boom + 10-feet during operational checks and demonstration. 	M
2B. Equipment Inspection (continued)	2B. Spills Prevention – <ul style="list-style-type: none"> Hydraulic fluid release – A hydraulic line that ruptures can release hydraulic fluid Thermal Burns 	2B. During the Equipment Inspection additional attention will be focused to the condition of the hydraulic lines to avoid a potential rupture and/or release. This will include: <ul style="list-style-type: none"> Attention will be focused on connection points Condition of the hoses <ul style="list-style-type: none"> Damaged steel braids Areas of friction wear patterns Damage or deterioration to the rubber protective outer coating (indicative of overheating) <p>In all cases, suspect hoses will be replaced. Oil spill pads will be carried on the excavator/back-hoe or in the support vehicle immediately accessible.</p>	L
2C. Equipment Inspection (continued)	2C. Equipment configuration – Utility damage	2C. To avoid potential utility damage: <ul style="list-style-type: none"> If the terrain permits, the use of a sand bar or similar flat cutting edge on the bucket is recommended to avoid snagging potential buried utilities. If utilities are in the general area, within 5-feet or intersect the trench, move the trench. If there is no choice, then hand digging is required when working within the diameter of the utility + 5-feet to locate the utility also known as pot-holing. 	L
3. Personnel qualifications	3. Dangerous operation – Struck by	3. To minimize potential injury or property damage: <ul style="list-style-type: none"> Operator will provide certification of competency (training certification, union card, etc.) in the equipment type to be operated; attested by an officer of the company that he/she is competent in that type of equipment, and will demonstrate operator competency in the field. The operator will be fully responsible for his/her actions resulting in injury or property damage resulting from erratic or unsafe operation. The operator will be medically qualified to operate the equipment. Deficiencies in eyesight, hearing or overall health will restrict using this person if others are put at risk. 	L
4. Pre-Excavation Site Preparation	4. Utility Contact or Damage	4. Utility strikes – <ul style="list-style-type: none"> A utility clearance will be completed for the area in which the test pits are to be 	L

ACTIVITY HAZARD ANALYSIS

Test Pitting – Trench Excavation and Sampling

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
	<p>Subsurface and overhead power lines</p> <p>These entries have been marked RED as should this take place, this is considered an emergency and will require public works assistance from NSA Crane</p>	<p>installed. This will included</p> <ul style="list-style-type: none"> ○ notification of NSA Crane Public Works ○ Pit locations and dimensions painted on the ground using white paint and or flags to delineate the boundaries. ○ Passive methods for anomaly and utility detection will be employed as discussed in Section 7.0 of the HSGM. <ul style="list-style-type: none"> ● These passive methods include personnel will perform site walkovers to examine the surface, for surface monuments including: <ul style="list-style-type: none"> ○ Valve or meter boxes ○ Manhole covers ○ Direction cable boxes ○ Utilities entering or exiting buildings. ○ Storm water manhole covers ● Overhead power lines – In the areas in which the boom and superstructure will be rotated will be examined for the existence of overhead power lines or obstructions (buildings, signs, foundations, etc.). <p>The FOL/SSHO will determine the necessary boundary at each work location:</p> <ul style="list-style-type: none"> ● Site control boundary for the Excavator/Back-Hoe Operations – The length of a fully extended boom + 10 feet. The boom will be fully extended to determine distance. Cones, caution tape, or other suitable markers will be employed. <p>The Emergency Evacuation point will be selected as part of the initial site survey. Tentatively this location is at the driveway intersection where emergency response crews will approach from. Dependent on the location of the hazard escape may have to occur in the opposite direction. A secondary point will be determined in the field and communicated as part of the Daily Tail Gate meeting.</p>	
<p>5. Initial Site Surveys - Access/egress into Controlled areas</p>	<p>5. Coordinate efforts with facility personnel</p> <ul style="list-style-type: none"> ● Inherent hazards or restrictions 	<p>5. In order to address the potential hazards associated with the initial entry and subsequent operations:</p> <ul style="list-style-type: none"> ● The FOL and/or the SSHO will meet with the restricted area personnel/operators to ensure they are aware of planned activities. ● As part of these discussions inquire of the potential hazard in the area and areas to avoid. ● Inquire as to what the facilities Emergency Action Requirements are, should there be an emergency and where you should go to as an assembly point. ● What security measures are required ● PPE requirements for location (such as flame retardant clothing) ● If persons must enter the restricted area local requirements will prevail. These may include <ul style="list-style-type: none"> ○ Signing in ○ PPE minimum requirements for the location 	<p>L</p>

ACTIVITY HAZARD ANALYSIS

Test Pitting – Trench Excavation and Sampling

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
Initial site survey of the intended work areas		<ul style="list-style-type: none"> • The FOL and/or the SSHO will survey the area to ensure areas prone to slip, trip, and fall hazards are flagged or removed. <ul style="list-style-type: none"> ○ Entry/access routes will be determined as well as schedules. <p>Remember: We are guests and professionals, act accordingly.</p> <p>PPE: The following PPE will be required for this initial activity:</p> <ul style="list-style-type: none"> • Hard hat • Safety Glasses • Leather work gloves • Suitable field attire – Sleeved shirt, long pants (avoid loose or bagging clothing) • Steel toed/shank over the ankle workboots <p>Optional:</p> <ul style="list-style-type: none"> • High Visibility Vests • High Visibility gloves • Taped and insect spray if the area is vegetated and unmaintained <p>All exits and selected access pathways will be maintained free of obstructions to allow free movement of site personnel, equipment, and if necessary emergency equipment.</p>	
6. Preparing the site for work activities.	<p>6. Site set up hazards</p> <ul style="list-style-type: none"> • Struck By • Tip Over • Backing • Electrocutation / Explosion • Slips, Trips, Falls 	<p>6. Struck by/ Tip Over</p> <ul style="list-style-type: none"> • Equipment that can be moved over the road will be equipped with slowing moving triangle or emblem for such activity. • All equipment moved using truck and transport will be <ul style="list-style-type: none"> ○ Sufficiently chained and ratcheted ○ Driver will be qualified to operate the vehicle combination weight including CDL endorsement with air brakes. • All vehicles and equipment to be employed on roads and highways will comply with DOT requirements. • Use a ground guide along with a functioning back-up alarm during equipment backing to avoid striking objects or backing into pits and/or ditches (over embankments). <p>Slip, trips, and falls:</p> <ul style="list-style-type: none"> • Practice good housekeeping to keep the ground around the excavation area. • Use caution when working on uneven and wet ground surfaces. 	L
7. Digging test trenches – This activity will include <ul style="list-style-type: none"> • Sampling soils • Examining artifacts from test trenches 	7. Struck by/ caught between	<p>7. To avoid struck by/ caught between hazards</p> <ul style="list-style-type: none"> • Personnel will remain a distance of the fully extended boom + 10 feet during excavation. • Personnel will not place themselves between operating equipment and immovable objects. The control zone will incorporate the super structure. <p>During soil sampling:</p> <ol style="list-style-type: none"> 1. The sampler will signal the operator to collect soils from a specified area in the trench. 	L

ACTIVITY HAZARD ANALYSIS

Test Pitting – Trench Excavation and Sampling

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
	<p>Chemical contact - PCBs</p>	<p>The operator will collect the soils and swing the bucket to the left side of the trench and set it on the ground.</p> <ol style="list-style-type: none"> 2. At this time the operator will disengage the controls and signal the sampler to approach and collect the sample. 3. Upon completion of the sample collection, the sampler will move outside the zone. The operator will not re-engage the controls until such time the operator is outside of the exclusion zone boundary. <p>Soil sampling from the spoils pile will proceed in the same manner. During which time the samples are being collected the operator will cease excavating until such time the samples are collected and the sampler is outside of the exclusion zone.</p> <p>Artifacts – During excavation, the operator will swing to the right side of the trench to deposit spoils. During this activity, the operator will shake out the bucket. The purpose of this action will be to allow artifacts to separate from the spoils. Where these are seen the operator will be signaled to stop and the artifact will be gathered for examination outside of the exclusion zone.</p> <p>Chemical contact - During the handling of any artifact (pieces of capacitors or transformers), personnel will wear at a minimum nitrile surgeons gloves due to the potential for direct contact with PCBs.</p> <p>The artifacts will be segregated and placed back into the trench during backfilling operations. The artifacts will be segregated so they maybe retrieved easily should it be desired sometime in the near future.</p>	
<p>7A. Digging test trenches (continued)</p>	<p>7A. Noise – Noise levels have been greatly reduced in the recent years through better design. Things that may impact the noise levels experienced by the operator</p> <ul style="list-style-type: none"> • Closed cab • Year of the equipment • Maintenance quality 	<p>7A. Occupational Noise levels exceeding 85dB – The following measures will be taken to control occupational noise:</p> <ul style="list-style-type: none"> • Keep the cab closed, this will reduce external input. • Wear hearing protection for units without cabs (not recommended) or during the operation of excessively loud machinery or machinery with loose connections (resulting in banging) of the steel components. • Operating at excessively high rpms. <p>Use the general rule of thumb – <i>If you must raise your voice to be heard by someone standing at arm's length away, then excessive levels are being approached and hearing protection should be employed.</i></p> <p>The SSO will complete the onsite hearing conservation program when hearing protection is employed. See section 6.0 of the HSGM</p>	<p>L</p>
<p>7B. Digging test trenches (continued)/</p>	<p>7B. Chemical exposure through:</p>	<p>7B. Controlling potential exposure –</p> <ul style="list-style-type: none"> • Airborne dust clouds will be controlled through area wetting to knock down dust 	<p>L</p>

ACTIVITY HAZARD ANALYSIS

Test Pitting – Trench Excavation and Sampling

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
Site restoration	<ul style="list-style-type: none"> • Dust and particulate contact • Ingestion • Inhalation 	<p>clouds and through the operators ability to place the bucket into the spoils pile and empty thereby not dumping from above creating dust plumes.</p> <ul style="list-style-type: none"> • As the operator is of primary concern as he/she cannot move, the following measures will also be employed: <ul style="list-style-type: none"> ○ Position where possible the back-hoe/excavator upwind. Use a wind sock or similar wind direction indicating device to determine the wind direction. ○ Close the cab, use area wetting ○ Request that the cab filter be changed prior to excavation. ○ Keep the equipment clean especially inside the cab – Vacuum or wet clean the inside. ○ No eating drinking or associated hand to mouth activities while in the machine. ○ Employ good work hygiene practices; diligent decontamination to minimize contaminant exposure. • During back filling, replace soils into the trenches in the lifts in which it was removed. This will permit soils to be placed back in intervals where contamination may have existed without mixing levels/intervals. That way if removal action is required minimal materials at specified depths can be removed. • If area wetting is insufficient to control airborne dusts, source measurements of airborne dusts will be recorded using HazDust IV aerosol monitor. This will provide information concerning Total Dust (must be maintained less than 10 mg/m³ and respirable dust concentrations that must be maintained below 5mg/m³). <ul style="list-style-type: none"> ○ Source concentrations over these action levels will require the use of HazDust IV will also allow the collection of a sample through a cyclone to permit size differentiation as well as determining potential exposure to PCBs utilizing NIOSH Method #5503. Samples will be sent to an approved Industrial Hygiene Laboratory for analysis. Results will be provided to the PHSO for interpretation. • Action levels - If readings in worker BZ areas exceed: <p>Total dust -</p> <ul style="list-style-type: none"> ○ HAZ Dust IV Total Dust 10mg/m³ – Increase water volume to source and during activities such as dumping that may exacerbate airborne dust concentrations. ○ Place screening areas and the back-hoe/excavator upwind. This should be done as a general practice. <p>Respirable Dust -</p> <ul style="list-style-type: none"> ○ HAZ Dust IV Total Dust utilizing the interchangeable head will be employed for inhalable fractions. Action level 5mg/m³ ○ Monitoring will be conducted in the breathing zone of the job classification considered most at risk employee (ground support or excavator operator – open cab). ○ Air sampling – NIOSH method #5503 – PCBs – Consistent readings above these action levels will require an air sample to be collected using a Fluorasil tube at a flow rate of 0.2ml/min 	

ACTIVITY HAZARD ANALYSIS

Test Pitting – Trench Excavation and Sampling

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
7C. Digging test trenches (continued)	7C. Utility strike	<p>7C. Utility strike – As indicated in previous text, all elements will be performed to identify and demarcate subsurface utilities as part of the pre-excavation activities. However, should a utility be encountered, the following measures will be employed:</p> <ul style="list-style-type: none"> • Electrical – Call - (812)854-3300 or (812) 854-1333 Stay in the machine, DO NOT make contact with the ground and the machine. If possible move the machine away from the strike area. <ul style="list-style-type: none"> ○ If you must exit the machine due to other life-threatening circumstances, jump away from the machine keeping both feet closely together. • Gas – Shut the machine off, quickly exit the area, contact NSA Crane Emergency Dispatch. • Water/Sewage – Notify NSA Emergency Dispatch; move the excavator away from the damage area to allow examination 	L
8. Digging test trenches; Site Restoration	8. Excavation collapse	<p>8. To minimize the potential for collapse:</p> <ul style="list-style-type: none"> • Stack/place spoils at least 2-feet from the excavation edge. This will aid in minimizing sidewall loading. • Dig the trench as plumb as possible to avoid, overhanging/loading of a sidewall may cause a collapse. Where necessary to support the excavation stability, bench the top four feet back to permit greater stability. • Persons will remain at least 2-feet from unsupported edges, unless, a supported platform with hand rails are employed. • If possible, the excavation will not proceed any closer than 5-feet to a utility, foundation, or other surface encumbrance to avoid collapse and damage to these structures. • Personnel will examine the excavation for zones of weak (class C soils); evidence of fractures or fissures; horizontal longitudinal cracks and previously disturbed soils indicating potential collapse. • Vibration or traffic control in and around the excavation that may predispose sidewalls to collapse. To the extent possible this will be minimize through creating alternate traffic patterns should it be required. • Weather conditions that may affect the sidewall stability through excessive rains or dryness. • A ladder sufficient length to provide emergency exit should someone fall in will be maintained onsite. 	L
8A. Digging test trenches; Site Restoration (continued)	8A. Slip, trip, and fall	<p>8A. To minimize slip, trip, and fall hazards, the following measures will be incorporated:</p> <ul style="list-style-type: none"> • During back filling the replacement materials will be placed in approximately 1-foot to 1.5 feet lifts and compacted with the bucket. This will minimize settling that may create slip, trip, and fall hazards. • Test Trenches will not be left unattended. If they are, construction fencing will be installed supporting closure on all sides. • If trenches are left open over night, the trench will be fenced on all sides with low intensity blinking lights on all approach routes. • Signs will be placed on all approach routes indicating – OPEN EXCAVATION – Signs will be black and yellow. • If trenches are left open the ends will be sufficiently sloped to allow egress. 	L

ACTIVITY HAZARD ANALYSIS

Test Pitting – Trench Excavation and Sampling

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
8B. Digging test trenches; Site Restoration (continued)	8B. Confined spaces/ excavation safety	8B. Confined space hazards: <ul style="list-style-type: none"> Any excavation deeper than 4-feet will be considered a confined space. UNDER NO CIRCUMSTANCES ARE PERSONNEL PERMITTED TO ENTER A CONFINED SPACE OR AN OPEN EXCAVATION. 	L
9. Decontamination – In this task, the boom and bucket will be rinsed over the excavation that was just dug, back filled and restored. This will be completed prior to moving to the next test pit location	9. Decontamination – High pressure rinsing – removal of visible soils Cross contamination	9. See decontamination AHA for control measures to permit safely conducting decontamination using a pressure washer. Where possible, work from the areas considered to be least contaminated. This would include outer test pits to delineate burial boundaries, working towards those areas where previous analytical information supports to be more elevated contaminant levels.	L
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
Excavator/back-hoe Fence post driver and fence posts and construction fencing Hand tools (hand knives, carpenter tools, fixed and portable ladders, zip ties, etc.)	Complete Heavy Equipment Checklist and any hand tools to be used. Tools will be tagged with colored electrical tape. Green tape ok for use. Red tape do not use. All red taped items should be repaired or removed from the site. Each time a tool is used it will undergo a cursory inspection by the user. Noted damage (mushroomed head, splintered handle, etc.) will require removal from service. FOL and SSO to perform regular (e.g., daily) inspections for housekeeping issues. The results of these efforts will be documented in the Field Logbook	All personnel: <ul style="list-style-type: none"> 40-Hour General Site Worker Training [OSHA 29 CFR 1910.120 (e)] 8-Hour General Site Worker Refresher Training [OSHA 29 CFR 1910.120 (e)(8)] Site Specific Training – All personnel shall review this Abbreviated Health and Safety Plan prior to the commencement of on-site activity. Participate in a Medical Clearance/Surveillance Program as described in OSHA 29 CFR 1910.120 (f). Complete a Medical Data Sheet Review applicable MSDSs if you are unaware of the hazards and recommended control measures for diesel fuel and grout. Supervisory personnel: 8-Hour General Site Worker Supervisory Training [OSHA 29 CFR 1910.120 (e)(4)] Certification of Equipment Operation – Training documentation; letter from the company; union qualification It is recommended that personnel review potential excavation hazards, so they may recognize and avoid.	
Personal Protective Equipment: Minimum: Steel toed	Initial PPE inspection performed by SSO. Ongoing (prior to each use)	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	

Heavy Equipment Inspection Checklist

Company: _____

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____ Time: ____ : ____

Equipment Type: _____

(e.g, earthmoving equipment - tractors backhoes, bulldozers, etc.)

Project Name: NSA Crane - PCB Capacitor Burial/Pole Yard (SWMU 17)

Project No#: 112G01573

Yes	No	NA	Requirements	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Seat Belts <ul style="list-style-type: none"> • Are available for intended operator and passengers (where applicable) • Seat Belts are operational? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Roll-Over Protection (ROPS) <ul style="list-style-type: none"> • Roll-over protection structures (ROPS) are provided on vehicles and heavy equipment (including scrapers, tractors, loaders, bulldozers, carryalls, etc.) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Brakes <ul style="list-style-type: none"> • Brake systems capable of stopping and holding fully loaded equipment • Parking Brake functions properly • Wheel Chocks available (where and as applicable) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Access <ul style="list-style-type: none"> • Non-slip steps • Grab Handles (3-Point Grab/Step Mounting Points) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Audible Alarms <ul style="list-style-type: none"> • Audible alarms –Bidirectional machines, such as rollers, compacters, front-end loaders, bulldozers, and similar equipment, shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. - Back up Alarms –Self propelled equipment with an obstructed view to the rear will be equipped with a reverse gear signal alarm distinguishable from the surrounding noise level. • Horn functioning properly 	

Yes	No	NA	Requirements	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Attachments <ul style="list-style-type: none"> Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? 	
<input type="checkbox"/> <input type="checkbox"/> <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"/>	Operator Qualifications <ul style="list-style-type: none"> Does the operator have proper licensing where applicable, (e.g., CDL)? Does the operator, understand the equipment's operating instructions? Is the operator experienced with this equipment? Is the operator 21 years of age or more? 	
<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"/>	PPE Required <ul style="list-style-type: none"> Hardhat Safety glasses Work gloves Chemical resistant gloves _____ Steel toed Work Boots Chemical resistant Boot Covers Apron Coveralls Tyvek, Saranex, cotton) _____ 	
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Key(s)? Operating Manual?	
<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"/>	Other Hazards <ul style="list-style-type: none"> Excessive Noise Levels _____ dBA Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.) <ul style="list-style-type: none"> - MSDSs available? 	

Approved for Use Yes No See Comments

Site Safety and Health Officer

Operator



ACTIVITY HAZARD ANALYSIS (AHA)

Activity/Work Task: Decontamination – Hand tools and associated equipment. This is a low pressure application	Overall Risk Assessment Code (RAC) (Use highest code)	L				
Project Location NSA Crane, Crane, Indiana	Risk Assessment Code (RAC) Matrix					
Site: Area Southwest of Building 2721; Boggs Creek Segment 1; Ditch 3 Segment 2; Previous Excavation Areas near Building 357; Ditch 3 Segment 6; Dump Area Southwest of Building 3072						
Contract Number:	Severity	Probability				
Date Prepared: April 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Clyde Snyder	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
Reviewed by: Jennifer Carothers, PhD.	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)					
	“Probability” is the likelihood to cause an incident, near miss, or accident and Identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.				RAC Chart	
	“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E= Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				H= High Risk	
				M= Moderate Risk		

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
1. Site set up Decontamination of non-dedicated hand tools and equipment can take place onsite or at a centralized location.	1. Slips trips and fall	1. Slips trips and falls – To prevent these types of hazards the following measures will be incorporated: <ul style="list-style-type: none"> • Station placement – Keep the decon station far enough back from the operation to allow room to work. • Practice Good housekeeping – Keep tubing and tools gathered and organized to prevent a tripping hazard. • Do not lay items around on the floor or ground where someone could step 	L

ACTIVITY HAZARD ANALYSIS

Decontamination – Hand Tools And Associated Equipment

Page 2 of 4

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
	1A. Struck by	on them and go down. • Clear other obstructions in the area that may present trip hazards. 1A. Allow sufficient room to handle tooling without inadvertently striking someone.	
2. Washing and rinsing process	2. Contaminant accumulation - Contaminant exposure • Particulates – PCBs, PAHs	2. Based on reported source concentrations the contaminant levels are not anticipated to be extremely elevated. To minimize exposure • Wear nitrile gloves, safety glasses, and an impermeable apron to prevent saturation of clothing. • Change out the wash water frequently to insure adequate decontamination but also protect from overloading contaminants. • Personnel involved in the decontamination process will themselves wash reusable garments (impermeable aprons); Follow good decontamination practices (work from top down and outside in). Surgeon’s gloves are to be the last item of PPE removed; change gloves regularly and wash hands and face before any hand to mouth activities. • Keep decon areas orderly, maintain good housekeeping.	L
3. Decon procedure Decontamination will include: a) Flushing tubing using a soap/water solution prior to disposal as general refuse.	4. Hazard Communication a., b. - Incidental spills - Slips, Trips, Falls c. Contaminant exposure	4. The SSO will complete the Site Specific Hazard Communication Program. This includes • Recording chemicals employed onsite for decontamination onto a Chemical Inventory List • MSDSs are available to all personnel and they are aware of the hazards associated with each. • The SSO has reviewed the documents for completeness and have also determined if there are additional equipment (PPE and/or Emergency equipment) that is needed. a., b. - Incidental spills - Slips, Trips, Falls - The decontamination will employ 5 gallon buckets with soap and water and rinse water contained in mortar tubs to serve as secondary containment to control incidental spills. Wash waters will be containerized in buckets with the lids on to control spills and off gassing into the transport vehicles.	L

ACTIVITY HAZARD ANALYSIS

Decontamination – Hand Tools And Associated Equipment

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
Decontamination – High Pressure			
Decontamination of heavy equipment and large tooling (e.g., vehicles, etc.) using pressure washer	1. Noise	1. Pressure washer operator must wear hearing protection (muffs or plugs with NRR of at least 25 dB)	L
	2. Flying projectiles/water lacerations	2. Control measures include <ul style="list-style-type: none"> • Restrict other personnel from decon pad or over the test pit where decontamination is occurring during pressure washing operations. • Pressure washer operator must exercise care when directing the wand so that it is not pointing at himself/herself or at any other worker. • Restrict pressure washer to 3000psi with not less than 15° deflection tip • Pressure washer operator must wear full face shield over safety glasses with side shields, hardhat, rainsuit, apron, and or boot covers may be required during heavy equipment decon operations 	M
	3. Falling objects	3. Control measures include: <ul style="list-style-type: none"> • Place items to be decontaminated on ground or on washing/drying racks in a manner that they are secure and will not fall. • Wear safety toe safety footwear. 	L
	4. Slips, trips, and falls	4. To control slips , trips, and falls <ul style="list-style-type: none"> • Keep hoses gathered when not in use. • Configure decon pad so the hoses maybe be run in an area not employed by pedestrian (employee) traffic. • As a tarp or plastic containment will be placed on the ground to serve as a containment, this may become slippery. Where necessary apply a light coating of sand to enhance traction. • Keep waters collected in the pad pumped to a minimal level as not to disguise trip hazards. 	L
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS		TRAINING REQUIREMENTS
Hand tools (hand brushes, garden sprayers, hoses, etc.) Pressure washer	When decontaminating equipment check equipment for deficiencies report to the SSO.		All personnel participating in this activity must be current with HAZWOPER training requirements as specified in Mobilization/Demobilization.
Personal Protective	Initial PPE inspection		PPE training in proper use, care, storage, and limitations. It is anticipated that



ACTIVITY HAZARD ANALYSIS (AHA)

Activity/Work Task: IDW Management		Overall Risk Assessment Code (RAC) (Use highest code)			L		
Project Location: NSA Crane, Crane, Indiana		Risk Assessment Code (RAC) Matrix					
Site: PCB Capacitor Burial/Pole Yard (SWMU 17). Area Southwest of Building 2721; Boggs Creek Segment 1; Ditch 3 Segment 2; Previous Excavation Areas near Building 357; Ditch 3 Segment 6; Dump Area Southwest of Building 3072							
Contract Task Number: CTO F271		Probability					
Date Prepared: April 2012		Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Clyde Snyder		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Jennifer Carothers, PhD.		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
		"Probability" is the likelihood to cause an incident, near miss, or accident and Identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.					RAC Chart
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E= Extremely High Risk
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.					H= High Risk
		M= Moderate Risk					
ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS					RAC
1. Storage Area set up	1. Traffic hazards; Material handling hazards	1. Traffic hazards/Material Handling hazards – This area should be easily accessible in order to place and remove the drums accumulated. To further reduce material handling hazards, support spill containment and control, and sampling when necessary, the IDW storage area should be structured as follows: <ul style="list-style-type: none"> • Maximum 4-drums to a pallet with retaining ring bolt and label on the outside for 					L

ACTIVITY HAZARD ANALYSIS

IDW Management

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		<p>easy access/reference.</p> <ul style="list-style-type: none"> • Maintain a minimum of 4-feet between each row of pallets. This is the minimum distance necessary to wheel drums on a drum dolly. • If the site is not secured, the satellite storage area shall be fenced and signs placed indicating the following: <ol style="list-style-type: none"> a. Primary Point of Contact (make sure they know they been identified as the primary point of contact). b. Phone Number c. Emergency Contact (If different from the primary) • Provide a Drum/Container Inventory to the Primary Point of Contact and to Emergency Services, if they deem it necessary. The inventory should contain: <ol style="list-style-type: none"> a. Each drum shall be assigned a unique identification number. This number shall be placed on the label and drum shell using a paint marker (Note: Do not paint the number on the lid as these have a tendency to get exchanged from time to time.) b. Types of waste materials (decontamination waters; purge waters, etc.) c. Volumes (Full or level associated with the container after completion of the project location) d. Where it was derived from (The site and/or wells) e. Dates (When filling began) f. Contact – For more information <p>Ensure all lids are secured.</p>	
2. Material Handling	2. Lifting (strain/muscle pulls)	<p>2. Lifting (strain/muscle pulls):</p> <ul style="list-style-type: none"> • Use mechanical means (i.e. dollies, etc.) to move and handle containers. Use proper lifting techniques described in Section 4.4 of the Health and Safety Guidance Manual (HSGM). • Fill drums and buckets only to 80% to minimize some of the weight and incidental spill issues. • Use help to move and place drums <p>Reminder: The drums you are attempting to move, lift and/or relocate may weigh on the average of</p> <ul style="list-style-type: none"> • 55-Gallon container of purge or decontamination waters = ~500 lbs. (including the container) 	L

ACTIVITY HAZARD ANALYSIS

IDW Management

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
3. Placing the drums	3. Pinches and compressions	3. Pinches and compressions – During placement of drums/containers on pallets use machinery or assistance from another person where possible. Keeps hand out of the area between drums during placement. It is best to place the drums and pallets then transport buckets to fill the drums already placed. Wear steel toed shoes with adequate lug to support traction when moving heavy containers. Use machinery where possible to place drums.	L
4. Spill prevention and protection • Staging and Labeling Containers.	4. Chemical contaminants exposure	<p>4) Chemical hazards – Generally encountering contaminants during this activity is low unless the contents of a container must be transferred due to a faulty container [leak(s)]. The outside of containers should be cleaned of residual waters (e.g. splashes, etc.) to avoid potentially exposing all who come in contact. The FOL and/or the SSO will:</p> <ul style="list-style-type: none"> • Ensure the outsides of all drums moved to the staging area are washed/wiped clean. 	L
<p>Spill Containment - Within this scope of work the primary area of concern regarding spills and/or releases are associated with</p> <ul style="list-style-type: none"> • Collection point – This is being addressed through using mortar tubs as secondary containment. • Moving/Handling the drums/containers of waste materials. This can be minimized based on the method of picking these drums up and the method of transport. <ul style="list-style-type: none"> ○ Use the proper lifting appliances such as drum grapplers, drum dollies, etc.,. Secure containers for movement over long distances. ○ Care should also be exercised when using a backhoe or similar device to lift the drums. This sometimes results in a bucket tooth into the drum again resulting in a release. ○ Place the drums onto a lift gate and flat bed with removable sides for transport to the staging area. <p>This section describes the procedures the Tetra Tech NUS field personnel will employ upon the detection of a spill or leak.</p> <ul style="list-style-type: none"> • Initiate incidental response measures, including <ul style="list-style-type: none"> ○ Employ the personal protective equipment (see below). Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel (for containers). Spread the absorbent material in the area of the spill, covering it completely. ○ Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options. • Re-containerize spills, including 2-inch of top cover (if over soils) impacted by the spill. Await test results for treatment or disposal options. • Notify the SSO or FOL immediately upon detection of a leak or spill and actions taken or employed. <ul style="list-style-type: none"> • Personal Protective Equipment 			

**INVESTIGATIVE DERIVED WASTE INVENTORY
NSA CRANE, SWMU 17**

Drum/ Container Number #	Drum/ Container Type	Media (Contents)	Location (SWMU and Well #, etc.)	Estimated Volume	Date Filling Began	Comments
1	5-Gallon Bucket 55-Gallon Drum (UN1A2)	Purge/Development Water Decontamination Wash Waters		()- Gallons	/ /	
2				()- Gallons	/ /	
3				()- Gallons	/ /	
4				()- Gallons	/ /	

**INVESTIGATIVE DERIVED WASTE INVENTORY
NSA CRANE, SWMU 17**

Drum/ Container Number #	Drum/ Container Type	Media (Contents)	Location (SWMU and Well #, etc.)	Estimated Volume	Date Filling Began	Comments

Field Operations Leader: _____

Phone Number: _____

NSA CRANE POINT OF CONTACT: _____

Phone Number: _____



ACTIVITY HAZARD ANALYSIS (AHA)

Activity/Work Task: Geophysical and Land Surveying

Overall Risk Assessment Code (RAC) (Use highest code)

Project Location: NSA Crane, Crane, Indiana

Risk Assessment Code (RAC) Matrix

Site: PCB Capacitor Burial/Pole Yard (SWMU 17). Area Southwest of Building 2721; Boggs Creek Segment 1; Ditch 3 Segment 2; Previous Excavation Areas near Building 357; Ditch 3 Segment 6; Dump Area Southwest of Building 3072

Severity

Probability

Date Prepared: April 2012

Frequent	Likely	Occasional	Seldom
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Prepared by: Clyde Snyder

Catastrophic	E	E	H	H
Critical	E	H	H	M
Marginal	H	M	M	L
Negligible	M	L	L	L

Reviewed by: Jennifer Carothers, PhD.

Notes: (Field Notes, Review Comments, etc.)

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and Identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
Geographical Surveying will utilize Handheld GPS to mark the final coordinates on each sample location. In this practice, the handheld	1) Flying projectiles/Struck by	1) Flying projectiles/Struck by: <ul style="list-style-type: none"> When hammering wooden hubs into the ground there is a possibility that shards may break off. To protect from potential eye injury during this activity personnel will wear safety glasses. Crack or damage hubs will not be used. 	L

ACTIVITY HAZARD ANALYSIS

Surveying

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
<p>GPS will also annotate a fixed known survey position such as a monitoring well or similar point as a reference.</p> <p>Professional Surveyors will survey the horizontal position and vertical elevations of the monitoring wells tying to established benchmarks/control points.</p> <p>Steps include Mobilization to the site. Parking/placement of the vehicle. Location of control points Incidental vegetation removal to obtain line of sight. Shooting points. Carry control to benchmarks or control points.</p>	<p>2) Slips/Trips/Falls</p> <p>3) Poisonous Plants/Insect Bites</p>	<ul style="list-style-type: none"> • Use a suitable hammer to drive the hubs. The hammer shouldn't be so heavy that and additional person must hold the hub while you drive it into the ground. • Inspect the hammer to ensure the head is attached tightly and there are no indication of mushrooming head that could also become a flying projectile should it break off. • Use a hub cover to eliminate this hazard while also removing hands and fingers from the potential strike area. <p>2) Slips, trips, and falls:</p> <ul style="list-style-type: none"> • Remove/identify trip hazards from the work area so they may be avoided. • Maintain good housekeeping within the work area. • Place the hubs in a bucket or similar device. That way should you fall you are less likely to impale yourself. <p>3) Poisonous plants/Insect Bites – There are areas that are not well maintained (Grass is cut, etc.) and therefore poisonous plants and insects may be encountered. The following measures should take place when this hazard is imminent:</p> <ul style="list-style-type: none"> • Poisonous Plants – Within the work area we have Poison Ivy, Poison Oak, and Poison Sumac. An irritating, allergic reaction can occur after direct contact with the plant or indirect contact through some piece of equipment or clothing article. Oils are transferred from the plant to exposed skin, clothing, or piece of equipment. The degree of the irritation or allergic reaction can vary significantly from one person to the next. To control exposure to these plants <ul style="list-style-type: none"> ○ Know the plants. Avoid if at all possible. If not wear protective clothing that maybe thrown away when the task is complete. ○ Wear barrier creams or PPE, prior to entry into heavy brush. ○ Wash with cool water and soap or an over the counter solutions to remove these oils from the skin. Wash your contaminated clothes separate from your other clothes. • Insects – Use repellants applied liberally to skin and clothing per the Manufacturers requirements. 	

ACTIVITY HAZARD ANALYSIS

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
<p>4. Removal of Vegetation – Cutting site lines</p> <p>5. Traffic hazards</p>	<p>4. Cuts/lacerations; Struck by</p> <p>5. Traffic hazards – Struck by</p>	<ul style="list-style-type: none"> ○ Wear light colored clothing – This will assist in controlling heat stress as well as seeing crawling insects on your body easier to detect. ○ Tape pant legs to boots to control insect (Ticks) access into clothing. ○ See Section 4.0 of the HSGM regarding biological hazards and the removal of ticks as well as conducting close body inspection. ● Snake chaps should be worn in heavy vegetation or areas of reported stings. <p>4. Cuts/lacerations; Struck by:</p> <ul style="list-style-type: none"> ● See Hand tool use for removal of vegetation – Cutting site lines ● Wear Hard hat, safety glasses, and leather gloves when cutting and removing vegetation. ● Keep cutting tools within their sheath during periods of travel or non-use. ● Keep a 15-foot boundary during vegetation removal (by hand). <p>5. To minimize potential Vehicle Traffic Hazards:</p> <ul style="list-style-type: none"> ● Be extremely cautious around heavy and/or fast-moving equipment. ● DO NOT place obstructions along the sides of the service or access roads that may cause personnel to move into the flow of traffic. Provide a required Free Space of Travel. ● Required “Free Space”: Maintain at least 6-feet of space between you and moving traffic. ● Where this is not possible, use flaggers and/or signs to warn oncoming traffic of activities near or within the travel lanes. ● Face Traffic: Whenever feasible, if you must move within the 6-foot of required space, or into traffic attempt to face moving traffic at all times. Always leave yourself an escape route. ● Wear High Visibility Vests to increase visual recognition by motorist. ● Do not rely on the operator’s visibility, judgment, or ability. Make eye contact with the driver. 	

ACTIVITY HAZARD ANALYSIS

Surveying

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		<ul style="list-style-type: none"> • Carefully and deliberately use hand signals so they will not startle or confuse motorists or be mistaken for a flagger’s direction before moving into traffic. • Move Deliberately: Do not make sudden movements that might confuse a motorist. • Avoid where possible interrupting Traffic Flow: Minimize crossing traffic lanes. • People can’t stand it they have to look to see what is going on, what you are doing. As a result many fender benders occur within work areas. Where possible move traffic through the work area but keep them separated to the extent possible that they do not collide with the car in front of them. • Warning signs shall be placed indicating surveyors working from all approach venues where applicable. <p>Distraction – One of the most hazardous conditions persons will encounter during this activity is distraction. Drivers take their eyes and mind off of the task or hazard at hand. Surveyors place themselves into traffic in some instances by mistake when they become wrapped in their job.</p> <p>In situations due to the complexity of the task; multiple concurrent information points utilize traffic control to protect those individuals involved. Restrict flow and reduce speed associated with traffic. Minimize activities during high traffic periods or when visibility maybe affected such as early morning and near dusk.</p>	
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
Machetes; brush axes; sledge hammers; Survey equipment.	Inspect handles; heads; cutting implements	General operating/demonstrated skill of the survey personnel.	
Personal Protective Equipment: <u>Minimum:</u> Safety Glasses; footwear with adequate Lug and ankle support; leather/canvas work gloves.	Inspect PPE to ensure it is in adequate condition	All personnel: <ul style="list-style-type: none"> • Site Specific Training – All personnel shall be instructed and attest to the review and understanding of this SSHP prior to the commencement of on-site activity. • Periodically, Tailgate Training Sessions will be conducted to review activities in progress, results of site surveys, and upcoming tasks. It is recommended that AHAs be reviewed prior to conducting the identified task. 	

ACTIVITY HAZARD ANALYSIS

Surveying

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p>Optional items: High visibility vests are recommended for these activities in high traffic areas.</p> <p>Emergency Equipment</p> <ul style="list-style-type: none"> - First Aid Kit - Fire Extinguisher - Map to Hospital - Emergency Contact List 		<ul style="list-style-type: none"> • Complete a Medical Data Sheet <p>Survey License and/or Certification Proof</p> <p>Decontamination Procedures: Not required. Good personal hygiene practices are to be employed prior to breaks lunch or other period when hand to mouth contact occurs. This will minimize potential ingestion exposures.</p> <p>Inclement Weather – Use the 30/30 Rule – If there is 30 seconds or less between thunder and lightning go inside for 30 minutes or more since the last thunder.</p>

All persons working within the operational will sign this AHA indicating that they have reviewed the document and are aware of their responsibilities as stated in the AHA.

Name (Printed)	Signature	Occupation	Date Reviewed/Training



ACTIVITY HAZARD ANALYSIS (AHA)

Activity/Work Task: Vegetation Management		Overall Risk Assessment Code (RAC) (Use highest code)			M		
Project Location: NSA Crane, Crane, Indiana		Risk Assessment Code (RAC) Matrix					
Site: PCB Capacitor Burial/Pole Yard (SWMU 17). Area Southwest of Building 2721; Boggs Creek Segment 1; Ditch 3 Segment 2; Previous Excavation Areas near Building 357; Ditch 3 Segment 6; Dump Area Southwest of Building 3072							
Contract Number: CTO F271		Severity	Probability				
Date Prepared: April 2012			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by: Clyde Snyder		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by: Jennifer Carothers, PhD.		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
		"Probability" is the likelihood to cause an incident, near miss, or accident and Identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.					RAC Chart
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E= Extremely High Risk
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JHA. Annotate the overall highest RAC at the top of JHA.					H= High Risk
		M= Moderate Risk					
ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS					RAC
Vegetation Management	<p>Chemical hazards:</p> <p>Physical hazards:</p>	<p>Chemical hazards are anticipated as part of this activity.</p> <p>All equipment will be:</p> <ul style="list-style-type: none"> - Inspected in accordance with Federal safety and transportation guidelines, OSHA and manufacturers design and documented as such using Equipment Inspection Checklist provided in Attachment ____. - Only manufacturer approved parts may be used in repair of site 					L

ACTIVITY HAZARD ANALYSIS

Vegetation Management

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	RAC
		hazards to the SSO. <ul style="list-style-type: none"> - A backhoe or hand tools (rakes, pitch forks, etc.) will be used to pull brush away from piles to avoid nesting areas. Do not use hands or feet for this purpose. - Traffic considerations: <ul style="list-style-type: none"> Establish safe zones and routes of approach to the operation. All personnel working among equipment traffic are required to wear reflective vests. Secure all loose clothing articles to avoid possible entanglement. Boundaries will be established based on the size of trees give sufficient space to keep personnel away from hazards (noise, flying projectiles, etc.) 	
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
tools (Chainsaws, hand tools/knives, backhoes, chippers etc.) Equipment Inspection	Visual inspection of hand and power tools will be performed by the SSO. Tools will be tagged with colored electrical tape. Green tape ok for use. Red tape do not use. All red taped items should be repaired or removed from the site. Each time a tool is used it will undergo a cursory inspection by the user. Noted damage (mushroomed head, splintered handle, etc.) will require removal from service. FOL and SSO to perform regular (e.g., daily) inspections for housekeeping issues. The results of these efforts will be documented in the Field Logbook Hazards from faulty equipment	All personnel <ul style="list-style-type: none"> • 40-Hour General Site Worker Training [OSHA 29 CFR 1910.120 (e)] • 8-Hour General Site Worker Refresher Training [OSHA 29 CFR 1910.120 (e)(8)] • Site Specific Training – All personnel shall review this Abbreviated Health and Safety Plan prior to the commencement of on-site activity. • Participate in a Medical Clearance/Surveillance Program as described in OSHA 29 CFR 1910.120 (f). • Complete a Medical Data Sheet • Review applicable MSDSs if you are unaware of the hazards and recommended control measures for diesel fuel and grout. Supervisory personnel: 8-Hour General Site Worker Supervisory Training [OSHA 29 CFR 1910.120 (e)(4)] <ol style="list-style-type: none"> 1. Ensure that workers are thoroughly trained and competent to perform their assigned task with the equipment used in investigation. 2. Ensure that back-up alarms are functional on equipment. 3. The equipment operators and Site Supervisors are responsible to ensure 	

ACTIVITY HAZARD ANALYSIS
Vegetation Management
Page 5 of 5

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
		<p>that the equipment is properly inspection prior to being permitted onsite. (see Equipment Inspection Checklist Attachment ___) Ensure that all moving parts are guarded if such parts are exposed. Check/test all emergency stop controls.</p>
<p>Personal Protective Equipment: <u>Minimum:</u> Steel toed work boots; hardhats, safety glasses, flame retardant protective clothing; work gloves. <u>Optional items:</u> High visibility vest, Hearing protection HTRW: None anticipated for this task.</p>	<p>Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.</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 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.</p> <p>The SSO will be responsible for the implementation of the following Site Specific Health and Safety Programs:</p> <ul style="list-style-type: none"> • Hazard Communication <p>AHA Assessment - During the initial walk through the FOL and/or the SSO shall review the AHA to determine applicability or information that will need added given site specific conditions.</p>

All persons working within the operational will sign this AHA indicating that they have reviewed the document and are aware of their responsibilities as stated in the AHA.

Name (Printed)	Signature	Occupation	Date Reviewed/Training

Hand and Power Tool Checklist

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all tools and equipment (both company and employee owned) used by employees at their workplace in good condition?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Any loose parts?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Missing pins and/or bolts?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are broken or fractured handles on hammers, axes and similar equipment replaced promptly?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are hand tools such as chisels and punches, which develop mushroomed heads during use, reconditioned or replaced as necessary?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are worn or bent wrenches replaced regularly?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are appropriate handles used on files and similar tools?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are employees made aware of the hazards caused by faulty or improperly used hand tools?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are jacks checked periodically to ensure they are in good operating condition?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are tool handles wedged tightly in the head of all tools?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are tool cutting edges kept sharp so the tool will move smoothly without binding or skipping?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are tools stored in dry, secure locations where they won't be tampered with?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are appropriate safety glasses, face shields, etc. used while using hand tools or equipment which might produce flying materials or be subject to breakage?	
Power Tool Inspection Checklist				
Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are grinders, saws and similar equipment provided with appropriate safety guards?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are power tools used with the correct shield, guard, or attachment, recommended by the manufacturer?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are portable circular saws equipped with guards above and below the base shoe? Are circular saw guards checked to assure they are not wedged up, thus leaving the lower portion of the blade unguarded?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are rotating or moving parts of equipment guarded to prevent physical contact?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all cord-connected, electrically operated tools and equipment effectively grounded or of the approved double insulated type?	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are effective guards in place over belts, pulleys, chains, sprockets, on equipment such as concrete mixers, and air compressors?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are portable fans provided with full guards or screens having openings ½ inch or less?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is hoisting equipment available and used for lifting heavy objects, and are hoist ratings and characteristics appropriate for the task?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods of construction?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are pneumatic and hydraulic hoses on power operated tools checked regularly for deterioration or damage?	
<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"/>	Air compressor: <ul style="list-style-type: none"> • Is the air compressor equipped with a Surge Check Valve? • Pressure regulator gauge and valve? • Pressure relief valve? • Water trap and filter? 	
Chainsaws				
Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the chain sharp, well oiled, and properly adjusted (Chain tension)?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the Bar straight? <ul style="list-style-type: none"> • Are there indications of excessive wear? 	
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Does the chain brake lever move freely? Does chain brake stop the chain when applied?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does the chain move when idling?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are the cans used to fuel the chainsaw safety cans?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does the on/off switch function properly?	
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	Does the throttle lock function properly? Is the chainsaw equipped with continuous pressure throttle control?	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PPE: Is the following PPE in serviceable condition?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hardhat with mesh visor and ear muffs?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety glasses?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chainsaw chaps?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gloves with protection also on the back of the hands?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency Equipment:	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a Fire extinguisher (3A:B:C) available for immediate use?	
			Is a First-Aid Kit immediately available for use? Does it contain the minimum content as required in the HASP?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Communication – Is an acceptable means of communication available (Hand signals, radios, air horns, etc.) that will support communication over the engine noise? Type?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are MSDSs available for the fuels, fuel additives, and lubricating oils?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the operator trained in proper operation of the chainsaw?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does the operator demonstrate knowledgeable operation?	

ATTACHMENT V

POSTINGS

TETRA TECH HEALTH AND SAFETY POLICY

OSHA POSTER

Job Safety and Health

It's the law!



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

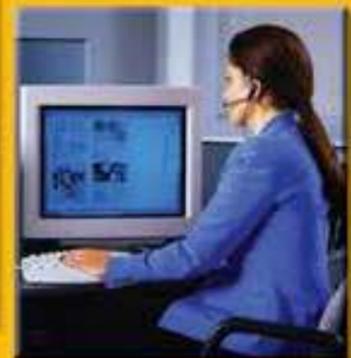
EMPLOYEES:

- 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

OSHA 3165-12-06R

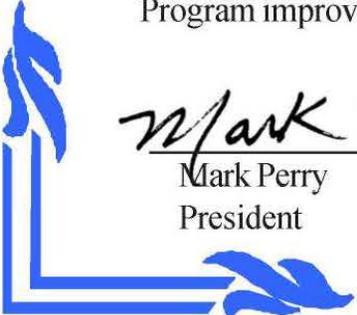


TETRA TECH NUS, INC. HEALTH AND SAFETY POLICY

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