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HEALTH AND SAFETY PLAN FOR PHASE I REMEDIAL INVESTIGATION FOR POTENTIAL
SOURCE OF CONTAMINATION 38 (PSC38) AND 45 (PSC45) AND SITE INVESTIGATION
POTENTIAL SOURCE OF CONTAMINATION 55 (PSC55) NAS JACKSONVILLE FL

5/1/2011

TETRA TECH



Tetra Tech NUS, Inc.
 8640 Philips Hwy, Ste 16
 Jacksonville, FL 32256

LETTER OF TRANSMITTAL

Tel: (904) 636-6125
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DATE: 07 June 11	JOB NO.: 112G02686/2098

TO Ms. Adrienne Wilson, NAVFAC SE (hard copy/CD)
 Mr. Tim Curtin, NAS Jacksonville (hard copy/CD)
 Mr. David Grabka, FDEP (CD only)
 Mr. Pete Dao, EPA (CD only)

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
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1	May 2011		Health and Safety Plan for PSCs 38, 45, and 55
1	May 2010		Health and Safety Plan for PSCs 5, 8, 9, 29, 31, 32, and 50

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REMARKS:

SIGNED Mark Peterson (904)730-4669 ext 213

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62470-08-D-1001



**Health and Safety Plan
for
Phase I Remedial Investigation
for
PSC 38 Torpedo Rework Facility and
PSC 45 Former Building 200 Wash Rack
Disposal Pit and
Site Investigation PSC 55
at
Naval Air Station Jacksonville
Jacksonville, Florida**

Contract Task Order JM19

May 2011



NAS Jacksonville
Jacksonville, Florida 32212-0030

HEALTH AND SAFETY PLAN
FOR
PHASE I REMEDIAL INVESTIGATION
FOR
POTENTIAL SOURCE OF CONTAMINATION (PSC) 38
TORPEDO REWORK FACILITY
AND
POTENTIAL SOURCE OF CONTAMINATION 45
FORMER BUILDING 200 WASH RACK DISPOSAL PIT
AND
SITE INVESTIGATION
POTENTIAL SOURCE OF CONTAMINATION 55
AT

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command Southeast
NAS Jacksonville
Jacksonville, Florida 32212-0030

Submitted by:
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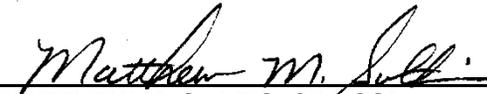
CONTRACT NO. N62470-08-D-1001
CONTRACT TASK ORDER JM19

MAY 2011

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1.0 INTRODUCTION

The objective of this Health and Safety Plan (HASP) is to provide the safety and health requirements, restrictions, practices, and procedures for Tetra Tech NUS, Inc. (Tetra Tech) personnel participating in the remedial and site investigations at Potential Source of Contamination (PSC) 38, 45 and 55 at the Naval Air Station (NAS) Jacksonville, Florida.

This HASP is to be used in conjunction with the Tetra Tech Health and Safety Guidance Manual (HSGM). The HSGM provides detailed information pertaining to hazard recognition and control, and Tetra Tech standard operating procedures (SOPs). This HASP and the contents of the HSGM were developed to comply with the requirements stipulated in 29 Code of Federal Regulations (CFR) 1910.120 Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (HAZWOPER). Both documents must be present at the site to satisfy these requirements.

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. Should the proposed work site conditions and/or suspected hazards change, or if new information becomes available, this document will be modified. Changes to the HASP will be made with the approval of the Tetra Tech Site Safety Officer (SSO) and the Tetra Tech Health and Safety Manager (HSM). Requests for modifications to the HASP will be directed to the SSO who will determine whether to make the changes. The SSO will notify the Project Manager (PM), who will notify the affected personnel of changes.

1.1 AUTHORITY

This work is authorized under the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract, administered through the Naval Facilities Engineering Command Southeast, as defined under Contract No. N62470-08-D-1001 Contract Task Order (CTO) JM19.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibilities for site safety and health for Tetra Tech employees conducting the hand augering, sampling, and other supporting field activities under this field effort. Personnel assigned to participate in the field work 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 in 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.

- The Tetra Tech PM is responsible for the overall direction and implementation of health and safety for this work.
- The Tetra Tech Field Operations Leader (FOL) is responsible for implementation of this HASP. The FOL manages field activities, executes the Work Plan, and enforces safety procedures as applicable to the Work Plan. Specifically, the FOL will:
 - Verify training and medical status of on-site personnel in relation to site activities.
 - Assist and represent Tetra Tech with emergency services (if needed)
 - Provide elements of site-specific training for on-site personnel.
- The Tetra Tech SSO or his/her representative supports the FOL concerning the aspects of health and safety including, but not limited to:
 - Coordinating health and safety activities.
 - Selecting, applying, inspecting, and maintaining personal protective equipment (PPE).
 - Establishing work zones and control points.
 - Implementing air monitoring procedures.
 - Implementing hazard communication, respiratory protection, and other associated safety and health programs.
 - Coordinating emergency services.
 - Providing elements of site-specific training.
- Compliance with these requirements is monitored by the Project Health and Safety Officer (PHSO) and is coordinated through the HSM.

1.3 STOP WORK AUTHORIZATION

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

1.4 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Potential Source of Contamination
(PSC) 38, 45 and 55

Address: Jacksonville, Florida

NAVFAC SE Engineer in Charge: Adrienne Wilson

Phone Number: (904) 542-6160

Site Contact: Tim Curtin

Phone Number: (904) 542-4228

Purpose of Site Visit: Tetra Tech will perform a remedial and site investigation at Potential Source of Contamination (PSC) 38, 45 and 55.

Proposed Start-up Date: May 2011 until completion

Project Team:

Tetra Tech Personnel:

Discipline/Tasks Assigned:

Mark Peterson

PM

Alan Pate

FOL/SSO

Matthew M. Soltis, CIH, CSP

HSM

Clyde Snyder

PHSO

Hazard Assessment (for purposes of 29 CFR 1010.132) for HASP preparation has been conducted 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 emergency. In the event of an emergency, the field team will primarily evacuate and assemble to an area unaffected by the emergency and notify the appropriate local emergency response personnel/agencies. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured or ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. The Navy Remedial Project Manager will be notified if outside response agencies are contacted.

Tetra Tech personnel may participate in minor event response and emergency prevention activities 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 or illness requiring only first-aid level support
- Provision of site control and security measures as necessary

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are the types of emergencies that could be encountered during site activities. To minimize or eliminate the potential for these emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating with the base fire protection and emergency services prior to commencement of work to ensure that Tetra Tech emergency action activities are compatible with existing emergency response procedures.

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

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

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

2.3 EMERGENCY RECOGNITION AND PREVENTION

2.3.1 Recognition

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. Visual observation will also play a role in detecting potential exposure events to some chemical hazards. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with the principle site contaminants of concern as presented in this HASP. Tasks to be performed at the site, potential hazards associated with those tasks, and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. The FOL and/or the SSO will be responsible for performing surveys of work areas prior to initiating site operations and periodically while operations are being conducted. Survey findings are documented by the FOL and/or the SSO in the Site Health and Safety logbook; however, site personnel will be responsible for reporting hazardous situations. Where potential hazards exist, Tetra Tech will initiate control measures to prevent adverse effects to human health and the environment.

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

2.3.2 Prevention

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

2.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE

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

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

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required.

Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

2.5 EMERGENCY CONTACTS

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

As soon as possible, Navy contact Tim Curtin will be informed of any incident or accident that requires medical attention.

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

**TABLE 2-1
 EMERGENCY CONTACTS
 NAS JACKSONVILLE, FLORIDA**

CONTACT	PHONE NUMBER
EMERGENCY Station 911* (Police, Fire, and Ambulance Services)	911
Jacksonville Sheriff's office (non-emergency)	(904) 630-0500
Florida Highway Patrol	(904) 695-4115
Jacksonville Fire & Rescue (non-emergency)	(904) 630-2472
Orange Park Medical Center (primary hospital)	(904) 276-8580
NAS Jacksonville Naval Hospital (for life threatening emergencies only)	(904) 542-4530
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
Florida Poison Control Center	(800) 222-1222
Sunshine State One Call of Florida – Utility Clearance	811
NAVFAC SE Engineer In Charge - Adrienne Wilson	(904) 542-6160
Navy On-site Representative - Tim Curtin	(904) 542-4228
FOL/SSO – Alan Pate	(904) 730-4669-office (904) 535-8787-cell
Field Technician – Zack Scribner	(904) 730-4669-office (217) 556-5078-cell
PHSO – Clyde Snyder	(412) 921-8904-office (724) 516-0907-cell
PM – Mark Peterson	(904) 730-4669 Ext 216
HSM - Matthew M. Soltis, CIH, CSP	(412) 921-8912

* State if the incident is at NAS Jacksonville or for transfer to NAS Jacksonville Fire/Rescue.

2.6 EMERGENCY ROUTE TO HOSPITAL

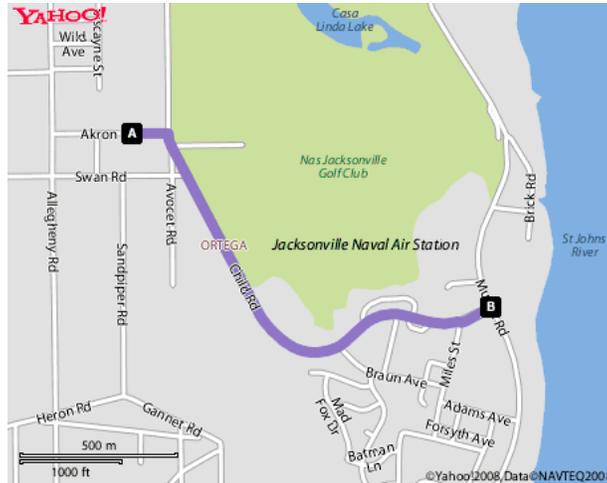
Life-threatening medical emergencies will be handled by the NAS Jacksonville Naval Hospital. Others will be referred to the Orange Park Medical Center. Maps to these two facilities are provided in Figure 2-1.

FIGURE 2-1
DIRECTIONS AND MAPS TO HOSPITALS

Directions to NAS Jacksonville Hospital

2080 Child Street
Jacksonville, Florida

Take Child Street toward Mustin Street. Naval Hospital Jacksonville is an eight-story building on the banks of the St. Johns River at the corner of Mustin Road and Child Street.



Directions to Orange Park Medical Center

2001 Kingsley Avenue Orange Park, Florida

Go West on Yorktown or Birmingham Dr. and proceed through the guard gates off the base. Turn left onto US-17 South Roosevelt Blvd. Turn right onto Kingsley Ave. Turn right onto Professional Center Drive.



2.7 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Tetra Tech personnel will be working in close proximity to each other at NAS Jacksonville and other work sites associated with the installation of wells and sampling activities. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency.

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

- Initiate the evacuation via hand signals, voice commands, or line of site communication.
- Report to the designated refuge point where the FOL will account for site personnel.
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (who will serve as the Incident Coordinator) pertinent incident details.

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

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

2.8 PPE AND EMERGENCY EQUIPMENT

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

2.9 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT

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

Tetra Tech personnel will perform rescue operations for emergency situations and may provide initial medical support for injury/illnesses requiring only "Basic First-Aid" level support, and only within the limits of training obtained by site personnel. At least two people will be trained in First-Aid will be on site during task operations. Basic First-Aid is considered treatment that can be rendered by a trained first aid provider at the injury location and not requiring follow-up treatment or examination by a physician (for example; minor cuts, bruises, stings, scrapes, and burns). Not included as Basic First-Aid are second or third degree burns, cuts, lacerations requiring stitches or butterfly bandaging, heat exhaustion, severe poisonous plant or insect bite reactions. Personnel providing medical assistance are required to be trained in First-Aid and in the requirements of OSHA's Bloodborne Pathogen Standard (29 CFR 1910.1030). Medical attention above First-Aid level support will require assistance from the designated emergency response agencies.

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 on site. If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel.

2.10 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 II) must be followed. Following this procedure is necessary for documenting of the information obtained at the time of the incident.

2.10.1 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 II. 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 tool for H&S professionals to track incidents, analyze root causes, implement corrective action plans, and share lessons learned.

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 affected dependent upon outside factors such as connection, signal strength, etc. Enter the system using your network user name and password. The user name should be in the following format - TT\nickname.lastname.

2.11 DRILL/INCIDENT AFTER ACTION CRITIQUE

The FOL will conduct a drill or exercise to test the Emergency Action Plan. A critique with the site personnel after each drill or incident will be conducted. This critique provides a mechanism to review the incidents and exercises or drills to determine where improvements can be made. For incidents recorded in TOTAL, the FOL will utilize the Lessons Learned component for the critique.

3.0 SITE BACKGROUND

NAS Jacksonville is located in Jacksonville, Duval County, Florida. The land incorporated into NAS Jacksonville has been used for Navy operations since approximately 1940. NAS Jacksonville was placed on the United States Environmental Protection Agency's (USEPA's) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List as a result of pollution resulting from past waste disposal practices that predate CERCLA. The Navy has entered into a Federal Facilities Agreement with the USEPA to define the overall extent of contamination.

3.1 PSC 38 SITE DESCRIPTION

PSC 38, the Torpedo Rework Facility, encompasses approximately 2.5 acres within the restricted Magazine Area in the central-western portion of NAS Jacksonville. The site is surrounded by an 8-foot-high fence and is accessible from Allegheny Road via a paved driveway, but access is limited to Navy personnel with weapons clearance. There are three buildings within PSC 38: Building 327, the Torpedo Rework Facility; Building 367, the Bulk Waste Storage Area; and Building 330, a storage building for paint and hazardous materials. In general, the topography at PSC 38 is flat and gently slopes to the south and east. An unlined ditch parallels the eastern and southern boundaries of PSC 38 and then flows westward under Allegheny Road. Surface drainage eventually discharges into the tributaries of the Ortega River, which is located about 1 mile west of PSC 38. Work in support of the Base mission that is carried out at PSC 38 includes the repair and cleaning of propulsion systems, the addition of Otto fuel to torpedoes, and inspection of torpedoes. A variety of materials are used as part of the maintenance and support activities at PSC 38, which resulted in chemical releases to the environment. Specifically, processes for reworking torpedoes generated approximately one 55-gallon drum of solid waste material per day (gloves and rags containing Otto fuel). Additionally, unmonitored USTs, lead acid battery disposal areas, and gravel sumps may have contributed contaminants to the site.

3.2 PSC 45 SITE DESCRIPTION

Building 200 is a ground support equipment facility and is located on the northern industrialized part of NAS Jacksonville near the flight line. A covered wash rack with a floor drain leading to an overflow pipe from the oil/water separator was connected to a cylindrical concrete disposal pit located approximately 2 feet east of the covered wash rack area. The pit was a French drain design that leached directly into the subsurface soil. The pit was gravel lined filled with an earthen bottom and a concrete lid approximately 4 feet in diameter. A small grassy area surrounded the former disposal pit and a paved parking lot is located north of this grassy area. The Building 200 Wash Rack Disposal Pit was identified as a PSC 45 by NAS Jacksonville in 1991. In the past, ground support equipment was cleaned in the wash rack and

while in the wash rack, solvents were used to strip paint off the equipment. For an unknown period of time (up to 1991), the disposal pit received overflow from an oil-water separator in the wash rack. No maintenance was ever performed on the oil/water separator. The disposal pit was discovered in 1991 during plumbing repair work at Building 200. After the pit was discovered, the connection from the oil/water separator to the pit was plugged and waste from the pit was removed and disposed of as hazardous waste. A new oil/water separator was installed within the excavation area. The old oil/water separator is still operational in the wash rack room; however, to further safeguard against the accidental release of oil and solvents, effluent from the old separator is directed through plumbing to the new separator rather than before going directly to the sanitary sewer.

3.3 PSC 55 SITE DESCRIPTION

The suspected sludge disposal area that makes up PSC 55 is located northeast of Building 201. This building is located on the east side of Catapult Road. The St. Johns River is to the immediate east and north of PSC 55, the main runway is to the west, and PSC 08 is to the immediate south. The area associated with PSC 55 is heavily wooded, relatively flat, and contains some vegetation that may be associated with wet low-lying areas that drain into the St. Johns River.

4.0 SCOPE OF WORK

This section of the HASP addresses proposed site activities that are to be conducted while performing these investigations and associated tasks. The specific tasks anticipated to be involved with this effort include the following:

- Mobilization/demobilization
- Direct push technology (DPT) well installation
- Multimedia sampling
 - Surface soil via hand augering
 - Sub-surface soil
 - Groundwater
- Decontamination
 - Personnel
 - DPT
 - Hand tools
 - Sampling equipment
- Investigation derived waste (IDW) Management
- GPS survey

No other activities are anticipated to be necessary. If it becomes apparent that additional or modified tasks must be performed beyond those listed above, the work is not to proceed until the FOL or SSO notifies the PM and the HSM, so that any appropriate modifications to this HASP can first be developed and communicated to the intended task participants.

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

The purpose of this section is to identify the anticipated hazards and appropriate hazard prevention/hazard control measures that are to be observed for each planned task or operation. These topics have been summarized for each planned task through the use of task-specific Activity Hazard Analysis, which are to be reviewed in the field by the SSO with the task participants prior to initiating any task. Additionally, potential hazard and hazard control matters that are relevant, but are not necessarily task-specific are addressed in 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 Activity Hazard Analysis provided as Attachment III 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.
- If a source of potable water is not available at the work site that can be used for hands-washing, the use of waterless hands cleaning products will be used, followed by actual hands-washing as soon as practicable upon exiting the site.
- Avoid contact with potentially contaminated substances including puddles, pools, mud, or other such areas.
- Avoid, kneeling on the ground or leaning or sitting on equipment.
- Keep monitoring equipment away from potentially contaminated surfaces.
- Plan and mark entrance, exit, and emergency evacuation routes.

- Rehearse unfamiliar operations prior to implementation.
- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.
- Establish appropriate safety zones including support, contamination reduction, and exclusion zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the exclusion zone). Non-essential vehicles and equipment should remain within the support zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report 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.

6.0 HAZARD ASSESSMENT AND CONTROLS

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

6.1 CHEMICAL HAZARDS

The primary objective of this site inspection is to determine the extent of contamination and fully characterize sites (PSC 38, 45 and 55). General contaminants of concern expected to be associated with these sites include metals antimony, arsenic, barium, beryllium, chromium, cobalt, lead, manganese, mercury, nickel, selenium, vanadium, zinc and the volatile organic compounds 1,1-dichloroethene and naphthalene. Low levels of these contaminants are expected to be found. It is not anticipated that levels will be encountered that are of concern to field crews. Otto Fuel II was used at PSC 38 sampling data does not indicate a large presence of otto fuel field crews need to be aware of the use of this material at the site. Info on Otto Fuel II can be found in Section 6.1.3 and the MSDS in Attachment IV. It is recommended that exposure (via inhalation, ingestion, or skin contact) to these contaminants be minimized through the use of PPE and good work hygiene practices.

Table 6-1 shows the Chemicals of Potential Concern (COPCs) in comparison to current Occupational Exposure Limits (OELs) from the OSHA Personal Exposure Limits (OSHA PEL) and the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values.

**TABLE 6-1
 COMPARISON OF WORST-CASE LEAD AIR CONCENTRATIONS
 WITH CURRENT OCCUPATIONAL EXPOSURE LIMITS**

Contaminant of Concern	Highest Concentration in Soils Necessary to Reach PEL	Amount of Dust-in-Air that would have to be generated before PEL/TLV would be reached	Current OSHA PEL
Arsenic	7 mg/kg	3.57 mg/m ³	TWA 0.010 mg/m ³
Barium	87 mg/kg	1,436.78 mg/m ³	TWA 0.5 mg/m ³
Beryllium	8.8 mg/kg	5.68 mg/m ³	TWA 0.002 mg/m ³
Chromium	.0009 mg/kg	1.45 mg/m ³	TWA 1 mg/m ³
Cobalt	200 mg/kg	25 mg/m ³	TWA 0.1 mg/m ³
Lead	.087 mg/kg	1.44 mg/m ³	TWA 0.05 mg/m ³
Manganese	40 mg/kg	1,250 mg/m ³	C 5 mg/m ³
Mercury	8 mg/kg	7.81 mg/m ³	TWA 0.1 mg/m ³
Nickel	280 mg/kg	892.86 mg/m ³	TWA 1 mg/m ³
Selenium	.001 mg/kg	4.17 mg/m ³	TWA 0.2 mg/m ³
Vanadium	.005 mg/kg	2.36 mg/m ³	C 0.5 mg V ₂ O ₅ /m ³
Zinc	560 mg/kg	2,232.14 mg/m ³	TWA 15 mg/m ³

VOCs MAXIMUM CONCENTRATION IN SOIL AND WATER

Contaminant of Concern	Highest Concentration in Soil	Worst Case Scenario Concentration	Current OSHA PEL
Napthalene	52 mg/kg	11.98 ppm	TWA 10 ppm STEL 15 ppm

Contaminant of Concern	Highest Concentration in Water	Worst Case Scenario Concentration	Current OSHA PEL
1,1-Dichloroethene	860 ug/l	231.5 ppm	TWA 100 ppm

Table Notes:

TWA₈: Time-weighted average exposure concentration for a conventional 8-hour work period that is not to be exceeded.

mg/m³: milligrams per cubic meter

C: Ceiling is a concentration that must not be exceeded during any part of the working exposure

STEL: Short Term Exposure Limit is an exposure above the TWA up to the STEL should not be longer than 15 minutes and should not occur more than four times per day.

Information for these substances is summarized below.

6.1.1 Metals

Heavy metals are chemical elements with a specific gravity that is at least 5 times the specific gravity of water. Heavy metals become toxic when they are not metabolized by the body and accumulate in the soft tissues. Metal toxicity usually occurs from a sudden or unexpected exposure to a high level of the heavy metal (e.g., from careless handling, inadequate safety precautions, or an accidental spill or release of toxic material). Symptoms of metal toxicity include damaged or reduced mental and central nervous function, lower energy levels, and damage to blood composition, lungs, kidneys, liver, and other vital organs. Long-term exposure may result in slowly progressing physical, muscular, and neurological degenerative processes that mimic Alzheimer's disease, Parkinson's disease, muscular dystrophy, and multiple sclerosis.

6.1.2 Volatile Organic Compounds (VOCs)

The majority of VOCs are often related to chlorinated solvents and associated degradation products, paint thinners, dry cleaning solvents, constituents of petroleum fuels (e.g. gasoline and natural gas), and crude oil tanking. Symptoms of acute exposure to VOCs can include abdominal pain, irritation of the skin, eyes,

nose, and throat, dizziness, tremors, vomiting, GI bleeding, enlarged liver, pallor of the extremities, and frostbite like-symptoms.

Short-term exposure to VOCs can cause irritation of the nose and throat and central nervous system (CNS) depression, with symptoms such as drowsiness, dizziness, giddiness, headache, loss of coordination. High concentrations have caused numbness and facial pain, reduced eyesight, unconsciousness, irregular heartbeat and death. Very high concentrations have produced death due to CNS effects, and, in rare cases, irregular heart beat. Permanent nervous system damage and/or liver injury have resulted from severe overexposure.

6.1.3 Otto Fuel II

PSC 38 performed the repair and cleaning of propulsion systems, which included the use of Otto fuel for torpedoes. Otto Fuel II is a monopropellant used to drive torpedoes and other weapon systems. This distinct-smelling, reddish-orange, oily liquid is a mixture of three synthetic substances: propylene glycol dinitrate, 2-nitrodiphenylamine, and dibutyl sebacate. It does not need exposure to any oxidant to ignite and release energy, as its three components will react between themselves whenever vaporized and heated. Needing no oxidants and being a stable substance makes Otto fuel ideal for use in the constrained environment of a submarine. Although the fuel can be made to explode, this requires extreme conditions (such that it can be regarded as practically stable). The vapor pressure of the fuel is low (i.e., it is not volatile), minimizing toxic hazards. Named after its inventor, Dr Otto Reitlinger, Otto Fuel II consists of the nitrated ester explosive propellant propylene glycol dinitrate (PGDN), to which a desensitizer (dibutyl sebacate) and a stabilizer (2-nitrodiphenylamine) have been added. The chief component, propylene glycol dinitrate, accounts for approximately 75% of the mixture, while dibutyl sebacate and 2-nitrodiphenylamine account for approximately 23% and 2%, respectively. Sampling data does not indicate the presence of Otto Fuel in quantities sufficient to be a hazard to site personnel. Field personnel should be aware of its use in this area. The MSDS for Otto Fuel can be found in Attachment IV.

6.1.4 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 COPCs 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 wearing the proper PPE and practicing good hygiene.

Ingestion and Skin Contact: Potential exposure concerns to these COPC 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 hygiene and standard good sample collection/sample handling practices, and wear appropriate PPE as specified in this HASP. Examples of onsite practices that are to be observed that will protect workers from exposure via ingestion or skin contact include the following:

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

6.2 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.

- Physical hazards associated with DPT operations
- Injury due to overexertion from operating the hand auger
- Slip, trips, and falls
- Contact with underground (electric lines, gas lines, water lines, etc.)
- Strain/muscle pulls from heavy lifting
- Heat stress
- Pinch/compression points
- Natural hazards (snakes, ticks, poisonous plants, etc.)
- Vehicular and equipment traffic
- Inclement weather

These hazards are discussed further below, and are presented relative to each task in the task-specific Activity Hazard Analysis.

6.2.1 Injury Due to Hand Augering

Operating a hand auger can be physically demanding depending on factors such as the conditions of the soil, the conditions of the auger tools, and the physical capabilities of the operator(s). Potential injuries such as muscle strains, tendon or ligament sprains, or back or other soft-tissue injuries, as well as bruises, abrasions or cuts from handling or operating the hand auger tools.

Other potential injuries that could be presented from physical threats during this task include foot injuries, eye injuries, and injury from unintentional contact with underground utilities.

As part of the site-specific training, site personnel shall be advised of the hazards associated with working this equipment. Prior to beginning any soil-disturbance activities, the FOL/SSO shall be responsible for assuring that the intended location is clear of any underground utilities by following the Tetra Tech Utility Locating And Excavation Clearance SOP attached to this HASP.

Additional safety measures used to prevent injury during this task include: assuring that only persons who are confident that they can physically perform this activity without injuring themselves participate in operating a hand auger, performing simple stretches prior to beginning the task, ensuring that the hand auger tools is maintained in effective working order, avoiding injury by stopping if strong resistance is encountered (such as if impassable rocky conditions are encountered), getting assistance if needed, and wearing appropriate PPE (i.e., work gloves, steel toe shoes, and safety impact eye protection).

6.2.2 Slips, Trips, and Falls

During various site activities there is a potential for slip, trip, and fall hazards associated with wet, steep, or unstable work surfaces. To minimize hazards of this nature, personnel required to work in and along areas prone to these types of hazards will be required to exercise caution, and use appropriate precautions (e.g., restrict access, guardrails, life lines and/or safety harnesses) and other means suitable for the task at hand. Site activities will be performed using the buddy system.

6.2.3 Contact with Underground Utilities

Underground utilities such as pressurized lines, water lines, telephone lines, buried utility lines, and high voltage power lines are known to be present throughout the facility. Clearance of underground utilities for each hand auger location will be coordinated Sunshine State One Call of Florida. The Tetra Tech Utility Locating and Excavation Clearance SOP is located in the Tetra Tech HSGM Section 7.0.

6.2.4 Strain, Sprains, and Muscle Pulls from Heavy Lifting

During execution of planned activities there is some potential for strains, sprains, and/or muscle pulls due to the physical demands and nature of this site work. To avoid injury during lifting tasks, personnel are to lift with the force of the load carried by their legs and not their backs. When lifting or handling heavy material or equipment use an appropriate number of personnel. Keep the work area free from ground clutter to avoid unnecessary twisting or sudden movements while handling loads.

6.2.5 Heat Stress

Because of the geographical location of the planned work, the likely seasonal weather conditions that will exist during the planned schedule, and the physical exertion that can be anticipated with some of the planned tasks, it will be necessary for the field team to be aware of the signs and symptoms and the measures appropriate to prevent heat stress. This is addressed in detail in section 4.0 of the Tetra Tech HSGM, which the SSO is responsible for reviewing and implementing as appropriate on this project.

In general, early signs of heat-related disorders include heat rash, cramps, heavy sweating which may be followed by the complete shutdown of a person's ability to sweat, pale/clammy skin, headaches, dizziness, incoordination, and other maladies. To prevent heat stress disorders, the following preventive measures are to be implemented by the SSO:

- When possible, schedule the most physically-demanding tasks so that they are performed during cooler periods of the day such as early morning or late afternoon.
- Educate the field staff in heat stress signs and symptoms so that they can monitor themselves and their co-workers.
- Schedule frequent breaks during the hottest parts of the day (such as a few minutes each hour). Breaks should be in shaded areas, and in a location where workers can remove PPE, wash their hands, and drink fluids.
- Drinking fluids should be cool and non-caffeinated. Sports-drinks with electrolytes are acceptable provided that they do not contain alcohol. Water is also acceptable.

For more information on heat stress recognition and prevention, consult section 4.0 of the Tetra Tech HSGM.

6.2.6 Pinch/Compression Points

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

6.2.7 Natural Hazards

Natural hazards such as poisonous plants, bites from poisonous or disease carrying animals or insects (e.g., snakes, ticks, mosquitoes) are often prevalent at sites that are being investigated as part of hazardous waste site operations. Given the geographic location and the environment (marshes and lakes), alligators are also assumed to be potentially present at the NAS Jacksonville facility. To minimize the potential for site personnel to encounter these hazards, nesting areas in and about work areas will be avoided to the greatest extent possible. Work areas will be inspected to look for any evidence that dangerous animals may be present. Based on the planned location for the work covered by this HASP, encountering alligators is not a likely probability.

During warm months (spring through early fall), tick-borne Lyme Disease may pose a potential health hazard. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots and taped) will prevent initial tick attachment, while performing frequent body checks will help prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures and symptoms of exposure, consult Section 4.0 of the HSGM.

Contact with poisonous plants and bites or stings from poisonous insects are other potential natural hazards. Long sleeved shirts and long pants (tucked into boots), and avoiding potential nesting areas, will minimize the potential for exposure. Additionally, insect repellents may be used by site personnel. Personnel who are allergic to stinging insects (such as bees, wasps, and hornets) must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet (see Attachment I of this HASP), and the FOL or SSO notified.

6.2.9 Vehicular and Equipment Traffic

Hazards associated with vehicular and equipment traffic are likely to exist during various site activities and whenever site personnel perform work on or near roadways. Additionally, site personnel will be instructed to maintain awareness of traffic and moving equipment when performing site activities. When working near roadways, site personnel will wear high visibility vests.

6.2.10 Inclement Weather

Project tasks under this scope of work will be performed outdoors. As a result, inclement weather may be encountered. In the event that adverse weather (electrical storms, tornadoes, etc.) conditions arise, the

FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

Tropical Storms and Hurricanes

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

During the early summer to late fall months, typically from the first of June through the end of November, disturbances migrating off the West Coast of Africa move into the Atlantic Ocean and develop into tropical cyclones known as tropical storms and hurricanes. Many of these cyclones become strong enough to threaten life and property along the Eastern Seaboard and Gulf Coast. There are three main threats associated with tropical storms and hurricanes:

- High winds
- Excessive rainfall
- Storm surge

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

High Winds

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

**TABLE 6-2
 TROPICAL STORM/HURRICANE RATING SCALE**

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

Based on the Saffir-Simpson scale

NA – Not Applicable

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

Excessive Rainfall

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

Storm Surge

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

TABLE 6-3
TROPICAL STORM/HURRICANE
WATCH AND WARNING

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

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

7.0 AIR MONITORING

It is possible that the site contaminants (VOC's and metals) could be present in concentrations to present an inhalation hazard during planned site activities. A direct reading instrument will be used to monitor worker exposures to VOC's present at the site. For this project a Photoionization Detector (PID) or a Flame Ionization Detector (FID) will be used to monitor the air. For the identified contaminants the use of personal protective equipment and the observance of the other control requirements have been selected to minimize potential for personnel exposures to hazardous concentrations (known or unknown) of site contaminants. Site metals are within the visible spectrum, and for visible dust use area wetting methods to suppress dust with the exception of lead and chromium at PSC 45 Building 200 where a dust monitor will be required.

7.1 INSTRUMENTS AND USE

Instruments will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. The SSO shall obtain and document the daily background (BG) reading at an upwind, unaffected area and observe for readings above that BG level. The SSO shall monitor source areas (e.g., auger bore hole locations and above collected soil samples) for the presence of any reading above the daily-established BG level. If elevated readings are observed, the SSO shall monitor the workers breathing zone (BZ) areas with the PID. If the appropriate instrument Action Level is exceeded (see below), the following process will be followed:

- The SSO shall order all personnel to stop work and retreat upwind to a safe, unaffected area, where they will remain until further directed by the SSO.
- The SSO shall allow at least 5 minutes to pass so that the work area can ventilate, and will then re-approach the work area while continuously monitoring the BZ areas.
- Only when BG levels are regained in BZ areas will work be permitted to resume.
- If BG levels are not regained, the SSO will contact the HSM for additional direction.

For PSC 45 Building 200, as a precautionary measure to assure that dust exposures are avoided and documented, plus the metals may be below the visible spectrum. For these reasons a dust particulate monitor will be used to monitor worker dust particulate exposures present at the site. Real-time monitoring instrumentation, action levels, and identified PPE will be used to control exposures to

potentially contaminated media. According to the OSHA standard for Particulates Not Otherwise Regulated (PNOR) the PEL for total dust is 15 mg/m³.

Generation of dusts should be minimized. If the PEL is achieved, use area wetting methods. Site contaminants may adhere to or be part of airborne dusts or particulates. The generation of dusts should be minimized to avoid inhalation of contaminated dusts or particulates.

7.2 PARTICULATE MONITORING

For this project, evaluation of dust concentrations will be performed by using a MiniRAM (or equivalent) dust particulate meter and by observing work conditions for visible dust. The MiniRAM is a portable, nephelometric, airborne particle monitor/dust monitor. The instrument measures the concentration of airborne particles (both solid and liquid). The ranges are 0.01 to 10 mg/m³ and 0.1 to 100 mg/m³. It is powered by a 10-hour internal rechargeable battery.

This instrument will be used to the worker breathing zone (BZ), while observing instrument action levels. The SSO shall obtain and document the daily background reading at an upwind, unaffected area and observe for readings above that background level. The SSO shall monitor source areas (e.g., above collected samples and confined areas, etc.) for the presence of any reading above the daily-established background level.

If elevated readings are observed above the PEL of 15 mg/m³, the SSO shall monitor the workers' BZ areas with the dust monitor. If elevated readings are observed, the following process will be followed:

- The SSO shall order site personnel to stop work and retreat upwind to a safe, unaffected area, where they will remain until further directed by the SSO.
- The SSO shall begin wetting procedures to control dust and then re-approach the work area while continuously monitoring the BZ areas.
- Only when levels are below the PEL standard in BZ areas will work be permitted to resume.
- If background levels are not regained, the SSO will contact the HSM for additional direction.
- Workers can only be exposed to lead at concentrations less than 50 micrograms per cubic meter of air averaged over an 8-hour period.

In addition, area wetting techniques will be employed, when necessary, to suppress dust and the Tetra Tech Air Monitoring Program (Attachment V) will be reviewed prior to beginning work and followed, to prevent exposure to metals-containing dust.

If a change in site conditions should occur (i.e., are wetting techniques are insufficient to control dust generated during heavy activities) field personnel will withdraw from the site, immediately notify the SSO, and wait for further instructions. The SSO will then make the determination if any upgrade in protective equipment (including the use of respirators) is necessary.

Instrument Action Levels: The use of either a PID or an FID will be acceptable, provided that the following action levels are observed:

- PID Action Level: Any sustained reading of 95 ppm above background for 4 exposures of 5 minutes each in any one work day.
- FID Action Level: Any sustained reading of 45 ppm above background for 4 exposures of 5 minutes each in any one work day.

7.3 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the equipment provider (i.e., rental agency used). Operational checks and field calibration will be performed on site instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations. These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer standard operating procedure (which the SSO must assure are included with the instrument upon its receipt onsite). Field calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that the information specified in Figure 7-1 is recorded. This required information includes the following:

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

7.4 DOCUMENTING INSTRUMENT READINGS

The SSO is responsible for ensuring that air monitoring instruments are used in accordance with the specifications of this HASP and with manufacturer's specifications/recommendations. In addition, the SSO is also responsible for ensuring that all instrument use is documented. This requirement can be satisfied either by recording instrument readings on pre-printed sampling log sheets or in a field log book.

This includes the requirement for documenting instrument readings that indicate no elevated readings above noted daily background levels (i.e., no-exposure readings). At a minimum, the SSO must document the following information for each use of an air monitoring device:

- Date, time, and duration of the reading
- Site location where the reading was obtained
- Instrument used (e.g., PID, FID, etc.)
- Personnel present at the area where the reading was noted
- Other conditions that are considered relevant to the SSO (such as weather conditions, possible instrument interferences, etc.)

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section is included to specify health and safety training and medical surveillance requirements for Tetra Tech personnel participating in on-site activities. Tetra Tech personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NAS Jacksonville. Tetra Tech personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within the past 12 months before being cleared for site work. In addition, 8-hour supervisory training will be required for site supervisory personnel.

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 SSO will provide site-specific training to Tetra Tech employees who will perform work on this project. Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities. This training documentation will be employed to identify personnel who, through record review and attendance of the site-specific training, are cleared for participation in site activities. This document shall be maintained at the site to identify and maintain an active list of trained and cleared site personnel.

The Tetra Tech SSO will also conduct a pre-activities training session prior to initiating site work. This will consist of a brief meeting at the beginning of each day to discuss operations planned for that day, and a review of the appropriate Activity Hazard Analysis with the planned task participants. A short meeting may also be held at the end of the day to discuss the operations completed and any problems encountered.

8.3 MEDICAL SURVEILLANCE

Tetra Tech personnel participating in project field activities will have had a physical examination meeting the requirements of Tetra Tech's medical surveillance program. Documentation for medical clearances will be maintained in the Tetra Tech Pittsburgh office and made available, as necessary, and will be documented using Figure 8-1 for every employee participating in on-site work activities.

9.0 SITE CONTROL

This section outlines the means by which Tetra Tech will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. 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.

9.1 EXCLUSION ZONE

The exclusion zone will be considered the areas of the site of known or suspected contamination. Therefore, the exclusion zones for this project will be limited to those areas of the site where active work (DPT rig 25 feet from rig and 15 feet area around hand augering and sample collection points) is being performed. Exclusion zones will be delineated as deemed appropriate by the FOL, through means such as erecting visibility fencing, barrier tape, cones, and/or postings to inform and direct personnel.

A pre-startup site visit will be conducted by members of the identified field team in an effort to identify proposed subsurface investigation locations, conduct utility clearances, and provide upfront notices concerning scheduled activities within the facility.

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 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 delineated using barrier tape, cones, and postings to inform and direct facility personnel. Decontamination will be conducted at a central location. Equipment potentially contaminated will be bagged and taken to that location for decontamination.

9.3 SUPPORT ZONE

The support zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The support zones will be

established at areas of the site away from potential exposure to site contaminants during normal working conditions or foreseeable emergencies.

9.4 ACTIVITY HAZARD ANALYSIS

Exclusion Zone work conducted in support of this project will be performed using Activity Hazard Analysis to guide and direct field crews on a task by task basis. Completed Activity Hazard Analysis for the work to be performed are provided in Attachment III. These AHAs were completed as part of the development of this HASP. It is the SSO's responsibility to review the completed AHA's 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's, 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 Activity Hazard Analysis requires the signature of the FOL or SSO.

9.5 SITE VISITORS

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

- Personnel invited to observe or participate in operations by Tetra Tech
- Regulatory personnel (i.e., DOD, USEPA, OSHA)
- Authorized Navy Personnel
- Other authorized visitors

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

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

- Site visitors will be directed to the FOL or SSO, who will sign them into the field logbook.
- Information to be recorded in the logbook will include the individual's name (proper identification required), the entity which they represent, and the purpose of the visit.

- Site visitors wishing to enter the exclusion zone will be required to produce the necessary information supporting clearance to the site.
- This shall include information attesting to applicable training and medical surveillance as stipulated in Section 8.0 of this document.
- In addition, to enter the site operational zones during planned activities, visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this HASP.

Once the site visitors have completed the above items, they will be permitted to enter the operational zone. Visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. Visitors entering the exclusion zones during ongoing operations will be accompanied by a Tetra Tech representative. Visitors not meeting the requirements, as stipulated in this plan, for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of on-site activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from base security personnel.

9.6 SITE SECURITY

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

9.7 SITE MAP

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

9.8 BUDDY SYSTEM

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

9.9 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

Tetra Tech and subcontractor personnel will provide MSDS 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 HSGM. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request.

9.10 COMMUNICATION

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

External communication will be accomplished by using cellular telephones at approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities at the site, it is strongly recommended that cell signal strength be checked in the work areas and the relevant project phone numbers are programmed on site worker cell phones. Emergency numbers listed in Table 2-1 should be entered into site cell phones prior the beginning of work. The FOL will determine and arrange for telephone communication procedures.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that bulk hazardous materials (over 55-gallons) will be handled at any given time as part of this scope of work. It is also not anticipated that such spillage would constitute a danger to human health or the environment. However, as the job progresses, the potential may exist for accumulating IDW such as decontamination fluids in a central staging area. As needed, 55-gallon drums will be used to contain decontamination fluids generated during field activities. Once the fluids and other materials have been characterized, they can be removed from this area and properly disposed. Because these fluids and soils remained uncharacterized while in the staging area, a spill containment program will be developed and instituted as part of this HASP.

10.2 POTENTIAL SPILL AREAS

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

- Resource deployment
- Waste transfer
- Central staging

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

10.3 LEAK AND SPILL DETECTION

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

10.4 PERSONNEL TRAINING AND SPILL PREVENTION

Personnel will be instructed in the procedures for 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.

10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

The following represents the types of equipment that should be maintained at the staging areas for the purpose of supporting this Spill Prevention/Containment Program.

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)
- Drums [55-gallon U.S. Department of Transportation (DOT) 1A1 or 1A2]
- Shovels, rakes, and brooms
- Container labels

10.6 SPILL CONTROL PLAN

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

- Notify the SSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove non-essential personnel.
- Employ the PPE stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
- 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 impacted by the spill. Await test results for treatment or disposal options.

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

11.0 CONFINED-SPACE ENTRY

It is not anticipated under the proposed scope of work that confined space and permit-required confined space activities will be conducted. Therefore, personnel under the provisions of this HASP are not allowed under any circumstances to enter 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 (tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

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

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

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

12.0 MATERIALS AND DOCUMENTATION

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

- A complete copy of this HASP
- HSGM
- Incident Reports
- Medical Data Sheets
- MSDS for chemicals brought on site, including decontamination solutions, fuels, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailer)
- Training/Medical Surveillance Documentation Form (Blank)
- First-Aid Supply Usage Form
- Emergency Reference Form (Section 2.0, extra copy for posting)
- 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 (Attachment VII) 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 8 1/2 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. A copy of this sheet or a wallet card will be given to site personnel to be carried on their person.
- **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 AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
CERCLA	Comprehensive Environmental Response, Compensation, and Liabilities Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-Term Environmental Action Navy
CSP	Certified Safety Professional
CTO	Contract Task Order
DOD	Department of Defense
DOT	Department of Transportation
DPT	Direct Push Technology
DRI	Direct Reading Instrument
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HIPAA	Health Insurance Portability and Accountability Act
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
MSDS	Material Safety Data Sheet
NAS	Naval Air Station
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	permissible exposure limit
PHSO	Project Health and Safety Officer
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	parts per million
SOP	Standard Operating Procedure
SSO	Site Safety Officer
STEL	short term exposure limit
TLV	threshold limit value
PM	Project Manager
TWA ₈	time weighted average 8-hours
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

ATTACHMENT I

MEDICAL DATA SHEET

MEDICAL DATA SHEET

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

Project _____

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Person to notify in the event of an emergency: Name: _____

Phone: _____

Drug or other Allergies: _____

Particular Sensitivities: _____

Do You Wear Contacts? _____

What medications are you presently using? _____

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

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

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

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:	
Tt 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 Tt personnel)?

Full Name

Company (if not Tt employee)

Street Address, City, State and Zip Code

Address Type

Home address (for Tt employees)

Business address (for subcontractors)

Telephone Numbers

Work: _____

Home: _____

Cell: _____

Occupation (regular job title)

Department

Was the individual performing regular job duties?

Yes No

Time individual began work

_____ AM PM OR Cannot be determined

Safety equipment

Provided? Yes No

Used? Yes No If no, explain why

Type(s) provided: Hard hat Protective clothing
 Gloves High visibility vest
 Eye protection Fall protection
 Safety shoes Machine guarding
 Respirator Other (list)

NOTIFICATIONS

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

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

Yes No

Date of report

H&S Personnel Notified

Time of report

Time of Report

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

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

INJURY / ILLNESS DETAILS

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

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"

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".

MEDICAL CARE PROVIDED

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

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

Name of physician or health care professional

Facility Name

Street Address, City State and Zip Code

Type of Care?

Was individual treated in emergency room? Yes No

Was individual hospitalized overnight as an in-patient? Yes No

Telephone Number

Did the individual die? Yes No If yes, date: _____

Will a worker's compensation claim be filed? Yes No

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

SIGNATURES

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

Affected individual (print)

Affected individual (signature)

Telephone Number

Date

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

INSTRUCTIONS:

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

Incident Report Number: (From the IR Form)

TYPE OF INCIDENT (Check all that apply)

INCIDENT DETAILS

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

Response Actions Taken:

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

Agency(s) Contact Name(s)

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

Item:	Extent of damage:	Estimated repair cost

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

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

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

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

NOTIFICATIONS

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

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

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

INSTRUCTIONS:

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

Incident Report Number: (From the IR Form)							
INCIDENT DETAILS							
Name of road, street, highway or location where accident occurred				Name of intersecting road, street or highway if applicable			
County		City			State		
Did police respond to the accident?				Did ambulance respond to the accident?			
Yes <input type="checkbox"/> No <input type="checkbox"/>				Yes <input type="checkbox"/> No <input type="checkbox"/>			
Name and location of responding police department				Ambulance company name and location			
Officer's name/badge #							
Did police complete an incident report? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, police report number: _____ Request a copy of completed investigation report and attach to this form.							
VEHICLE INFORMATION							
How many vehicles were involved in the accident? _____ (Attach additional sheets as applicable for accidents involving more than 2 vehicles.)							
Vehicle Number 1 – Tetra Tech Vehicle				Vehicle Number 2 – Other Vehicle			
Vehicle Owner / Contact Information				Vehicle Owner / Contact Information			
Color				Color			
Make				Make			
Model				Model			
Year				Year			
License Plate #				License Plate #			
Identification #				Identification #			
Describe damage to vehicle number 1				Describe damage to vehicle number 2			
Insurance Company Name and Address				Insurance Company Name and Address			
Agent Name				Agent Name			
Agent Phone No.				Agent Phone No.			
Policy Number				Policy Number			

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

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED

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

ATTACHMENT III

ACTIVITY HAZARD ANALYSIS



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: Potential Source of Contamination (PSC) 38, 45 and 55 at NAS Jacksonville, Jacksonville, Florida.

Task: Mobilization / Demobilization

Prepared by	C.J. Snyder	Date	5/20/2011	FOL	
Reviewed by	J. K. Laffey	Date	5/22/2011	SSO	

Task Steps	Hazards	Critical Safety Procedures and Controls
<ul style="list-style-type: none"> • Assembling equipment and supplies • Performing initial/exit inspections of the intended work areas • Arranging for utilities, site access, notifying appropriate client contacts • Performing equipment inspections of vehicles and equipment arriving/preparing to depart the site • Collecting and confirming applicable worker training and medical compliance documentation 	<ol style="list-style-type: none"> 1. Direct Push Technology (DPT) rig 2. Minor cuts, abrasions or contusions 3. Heavy lifting (muscle strains and pulls) 4. Vehicular traffic when moving large equipment to the support area 5. Intermittent high noise levels 	<ol style="list-style-type: none"> 1. Conduct DPT rig initial site acceptance inspection. This must be completed prior to performing any work at this site. Use the equipment inspection checklist for drill rigs in Attachment VI. Once the equipment passes inspection the AHA for Direct Push Technology (DPT) will be followed. 2. Wear cut-resistant gloves when handling items with sharp or rough edges. 3. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel, good grasp on object, perform "test lift" to gauge ability to safely make the lift, lift with legs not back, obtain help when needed to lift large, bulky, or heavy items). 4. Designate/demarcate vehicle and equipment staging areas. Inform all site personnel of heavy equipment areas and of their responsibility to stay clear of moving vehicles. In high traffic areas, wear high-visibility vests. 5. Operators/nearby personnel are to wear hearing protection 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. SSO is responsible for determining and designating when hearing protection is required. Hearing protection is to consist of either ear muffs or plugs that have a noise reduction rating (NRR) of at least 25 dB. 6. Ensure that workers are thoroughly trained and competent

Task Steps	Hazards	Critical Safety Procedures and Controls
	<p>6. Equipment moving parts</p> <p>7. Striking overhead utility lines when moving or positioning large equipment.</p>	<p>to perform their assigned task with the equipment used in investigation. Ensure that back-up alarms are functional on equipment. The equipment operators and on-site Supervisors responsible for the equipment are to ensure that the equipment has been inspected and accepted for onsite use. Check/test all emergency stop controls.</p> <p>7. Pre-inspect vehicle moving lanes noting overhead utilities. Do not approach within 20' of any overhead electric lines. Follow Tetra Tech Standard Operating Procedures (SOP) Utility Location and Excavation Clearance located in Section 4.0 of the HSGM.</p>
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Hand tools (dollies, hand carts, hand knives, etc.)	Visual inspection prior to use by user.	Review of AHA during pre-task tailgate safety briefing with all intended task participants.
<p>Personal Protective Equipment: Minimum: Safety toe boots, safety glasses. <u>Optional items:</u> Hardhat, hearing protection. HTRW: None anticipated for this task.</p>	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in any onsite activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: Potential Source of Contamination (PSC) 38, 45 and 55 at NAS Jacksonville, Jacksonville, Florida.

Task: Soil Boring

Prepared by	C.J. Snyder	Date	5/20/2011	FOL	
Reviewed by	J. K. Laffey	Date	5/22/2011	SSO	

Task Steps	Hazards	Critical Safety Procedures and Controls
DPT Rig Site Set Up	<ol style="list-style-type: none"> 1. Struck By 2. Tip Over 3. Backing 4. Contact/striking underground or overhead utilities 5. Slips, Trips, Falls 	<ol style="list-style-type: none"> 1. Site equipment, augers, rods and tools will be properly secured during transport. 2. Site vehicles and equipment must comply with DOT requirements. Only move the DPT rig with the mast down and secure. Set hydraulic leveling jacks before raising the mast. Ensure the drilling site foundation is stable and as level as possible. 3. Use a ground guide along with a functioning back-up alarm during equipment backing. 4. Inspect for buried and overhead utilities in the vicinity of the drilling location. Verify the location of utility lines in accordance with the Tetra Tech SOP Utility Location and Excavation Clearance located in Section 4 of the HSGM. Pre-plan the move with the local utility companies if utility lines must be moved. Pre-survey the height of equipment and height of utility lines to determine which lines must be removed or raised. Equipment should not come within 20 feet of existing overhead utility lines. 5. Clear trees, roots, weeds, limbs and other ground hazards from the drilling location. 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.

Task Steps	Hazards	Critical Safety Procedures and Controls
DPT Rod / Auger / Tool Handling	<ol style="list-style-type: none"> 1. Struck By 2. Back Strain 	<ol style="list-style-type: none"> 1. DPT rods and augers stored and transported in racks shall be blocked to prevent shifting. Unload DPT rods and augers layer by layer. Be prepared for sudden shifting when tailing rod sections. Keep a wide base and secure footing. 2. Use proper lifting techniques when manually handling rods, augers and tools. Use mechanical equipment during lifting whenever possible. Use the buddy system when lifting heavy tools and supplies.
Hoisting Operations	<ol style="list-style-type: none"> 1. Struck By 2. Back Strain 3. Vehicle brake failure 	<ol style="list-style-type: none"> 1. Do not walk under suspended objects. Only engage the DPT rig when personnel and equipment are clear. Stay by the controls when engaged or operating. 2. DPT rods and auger sections should not be picked up or dropped suddenly. Only lift or move less than 10 feet stage rods near drilling location. 3. Test the brakes daily. Use caution when drilling in wet or damp conditions.
DPT drilling and Groundwater sampling	<ol style="list-style-type: none"> 1. Airborne Particulates and Debris 2. Chemical exposure to concentrations of metals, and VOCs. 	<ol style="list-style-type: none"> 1. Use water as necessary to control dust in area 2. Wear surgeons gloves when handling potentially-contaminated media and samples, avoid contact with potentially-contaminated media to the extent possible, follow good decontamination and practice good personal hygiene (hands and face washing) when exiting work area, hand-to-mouth activities in the work area will be prohibited (eating, drinking, smoking, etc.). <p>NOTE: Inhalation exposure concerns could be anticipated hazard. Exposure via dermal contact and ingestion represent concern during this task.</p> <p>Exposure via dermal contact and ingestion represent some limited concern during this task. Periodically screen sample with PID or FID. If readings above daily-established background levels (BGLs) are noted in borehole, monitor worker breathing zone (BZ) areas. If readings in worker BZ areas exceed:</p> <ul style="list-style-type: none"> • PID Action Level: 95 ppm above BG in BZ areas for no more than 4 exposures of 5 minutes in one work day. • FID Action Level: 45 ppm above BG in BZ areas for no more than 4 exposures of 5 minutes in one work day. • For PSC 45 Building 200 dust concentrations will be monitored for dust using a MiniRAM (or equivalent) dust particulate meter and by observing work conditions for visible dust. The instrument measures the concentration of

Task Steps	Hazards	Critical Safety Procedures and Controls
		<p>airborne particles (both solid and liquid). The ranges are 0.01 to 10 mg/m³ and 0.1 to 100 mg/m³</p> <p>After at least 5 minutes, SSO will approach from upwind direction screening BZ areas. Work may resume when readings in the BZ return to BGLs.</p>
Surface soil sampling via hand augering	1. Muscle strains, tendon or ligament sprains, back or other soft-tissue injuries	<ol style="list-style-type: none"> 1. Operating a hand auger can be physically demanding depending on the conditions of the soil, the auger tools, and the physical capabilities of the operator. 2. Only personnel who are confident that they can physically perform this activity without injury should operate a hand auger.
	2. Bruises, abrasions, cuts, foot or eye injuries,	<ol style="list-style-type: none"> 1. Ensure that the hand auger tool is properly maintained. 2. Avoid injury by stopping if strong resistance is encountered (such as if impassable rocky conditions are encountered). 3. Secure assistance when needed. 4. Wear appropriate PPE (work gloves, safety toe shoes, and safety impact eye protection)
	3. Contact with utilities	<ol style="list-style-type: none"> 1. Inspect for buried and overhead utilities in the vicinity of the augering location. 2. Verify the location of utility lines in accordance with Tetra Tech SOP Utility Location and Excavation Clearance in the HSGM Section 7.0.
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
DPT Rig, hand tools, drill rods, PID/FID	Visual inspection prior to use by user. PID or FID must be calibrated as per the manufacturer's recommendations and documented on each use.	Review of AHA during pre-task tailgate safety briefing with all intended task participants.
<p>Personal Protective Equipment: <u>Minimum</u>: Hardhat, safety toe boots, hearing protection, safety glasses.</p> <p><u>Optional items</u>: Tyvek coveralls if necessary to protect from soiling clothing.</p> <p><u>HTRW</u>: Nitrile surgeon's style gloves, PID or FID</p>	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in any onsite activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: Potential Source of Contamination (PSC) 38, 45 and 55 at NAS Jacksonville, Jacksonville, Florida.

Task: Sampling and monitoring well purging and development

Prepared by	C.J. Snyder	Date	5/20/2011	FOL	
Reviewed by	J. K. Laffey	Date	5/22/2011	SSO	

Task Steps	Hazards	Critical Safety Procedures and Controls
Groundwater site set up	<ol style="list-style-type: none"> 1. Minor cuts, abrasions or contusions 2. Slips, Trips, Falls 3. Insect bites, snake bites, and contact with poisonous plants. 	<ol style="list-style-type: none"> 1. When handling equipment and tools wear cut-resistant gloves when handling items with sharp or rough edges. 2. Clear intended work areas and walking paths of roots, weeds, limbs and other ground hazards. Practice good housekeeping to keep the site clear of obstructions, materials, equipment and other tripping hazards. Ensure that work boots have adequately-aggressive sole design. Use caution when working on uneven and wet ground. 3. Shake out boots before donning. Use insect repellants (products containing DEET should be applied to exposed skin, products containing Permethrin should be applied to clothing only. Follow manufacturer's recommendations. Tape up pants leg to work boot joints with duct tape. Wear light-colored clothing to better see and remove any insects. Perform close body inspections at least daily upon leaving the site. Avoid potential nesting areas (brush, deadfall, etc.) where insects or snakes may be present. Review Natural Hazards information in section 4.0 of the Tetra Tech H&S Guidance Manual with field team as appropriate based on site observations and conditions.
Taking samples using a small battery-operated pump and placing into sample containers	<ol style="list-style-type: none"> 1. Chemical exposure to low concentrations of metals, and VOCs. 	<ol style="list-style-type: none"> 1. Wear surgeons gloves when handling potentially-contaminated media and samples, avoid contact with potentially-contaminated media to the extent possible, follow good decontamination and practice good personal hygiene (hands and face washing) when exiting work area, hand-to-mouth activities in the work area will be prohibited (eating, drinking, smoking, etc.). NOTE: Inhalation exposure concerns are not an anticipated hazard. Exposure via dermal contact and ingestion represent some limited concern during this task.

Task Steps	Hazards	Critical Safety Procedures and Controls
		<p>Exposure via dermal contact and ingestion represent some limited concern during this task. Periodically screen sample with PID or FID. If readings above daily-established background levels (BGLs) are noted in borehole, monitor worker breathing zone (BZ) areas. If readings in worker BZ areas exceed:</p> <ul style="list-style-type: none"> • PID Action Level: 95 ppm above BG in BZ areas for no more than 4 exposures of 5 minutes in one work day. • FID Action Level: 45 ppm above BG in BZ areas for no more than 4 exposures of 5 minutes in one work day. <p>After at least 5 minutes, SSO will approach from upwind direction screening BZ areas. Work may resume when readings in the BZ return to BGLs.</p>
Surface soil sampling via hand augering	<ol style="list-style-type: none"> 1. Muscle strains, tendon or ligament sprains, back or other soft-tissue injuries 2. Bruises, abrasions, cuts, foot or eye injuries, 3. Contact with utilities 	<ol style="list-style-type: none"> 3. Operating a hand auger can be physically demanding depending on the conditions of the soil, the auger tools, and the physical capabilities of the operator. Only personnel who are confident that they can physically perform this activity without injury should operate a hand auger. 4. Ensure that the hand auger tool is properly maintained. Avoid injury by stopping if strong resistance is encountered (such as if impassable rocky conditions are encountered). Secure assistance when needed. Wear appropriate PPE (work gloves, safety toe shoes, and safety impact eye protection). 5. Inspect for buried and overhead utilities in the vicinity of the augering location. Verify the location of utility lines in accordance with Tetra Tech SOP Utility Location and Excavation Clearance in the HSGM Section 7.0.

EQUIPMENT	INSPECTION	TRAINING
Peristaltic pump, tubing, sample collection tools and containers (jars, spatulas, spoons, etc.)	Visual inspection prior to use by user.	Training/experience in proper sample collection, handling and chain of custody requirements.
Personal Protective Equipment: Minimum: nitrile surgeon's type gloves, safety toe boots, safety glasses Optional items: Hardhat, hearing protection. If sampling done concurrently with DPT, observe DPT AHA PPE as well. HTRW: Nitrile gloves, PID/FID monitoring.	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users. PID/FID to be subjected to calibration and operational checks in accordance with manufacturer's recommendations (but not less than daily).	OSHA 40 Hazardous Waste Operations and Emergency Response (HAZWOPER) training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. ALSO: Review of AHA during pre-task tailgate safety briefing with all intended task participants. 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. SSO trained in proper calibration, use, and care of air monitoring devices used (PID/FID). This is a general component of 40 hour HAZWOPER training, and SSO must become very familiar with the Operator's Manual for any instrument used.

I have read and understand this AHA:

Name (Printed)	Signature	Date



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: Potential Source of Contamination (PSC) 38, 45 and 55 at NAS Jacksonville, Jacksonville, Florida.

Task: Decontamination

Prepared by	C.J. Snyder	Date	5/20/2011	FOL	
Reviewed by	J. K. Laffey	Date	5/22/2011	SSO	

Task Steps	Hazards	Critical Safety Procedures and Controls
Personal Decontamination <ul style="list-style-type: none"> • Equipment drop • Segregated removal of PPE (wash and rinse reusable items, dispose of non-reusable items) 	<ol style="list-style-type: none"> 1. Slips, Trips, Falls 2. Exposure to contaminated media 	<ol style="list-style-type: none"> 1. Clear intended decon area location of roots, weeds, limbs and other ground hazards. Practice good housekeeping to keep the site clear of obstructions, materials, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces. 2. Follow good decontamination practices (work from top down and outside in). Nitrile gloves are to be the last item of PPE removed. Wash hands and face following personal decontamination and prior to performing any hand-to-mouth activity.
Decontamination of heavy equipment and large tooling (e.g., vehicles, etc.) using pressure washer	<ol style="list-style-type: none"> 1. Noise 2. Flying projectiles 3. Falling objects 4. Strains/sprains from heavy lifting 	<ol style="list-style-type: none"> 1. Pressure washer operator must wear hearing protection (muffs or plugs with NRR of at least 25 dB) 2. Restrict other personnel from decon pad 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. Pressure washer operator must wear full face shield over safety glasses with side shields and brow protection. At SSO discretion, additional PPE consisting of hardhat, rainsuit, apron, and or boot covers may be required during heavy equipment decon operations - depending on observations indicating that significant contact with decon overspray and/or windy conditions during washing activities. 3. 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. 4. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel,

Task Steps	Hazards	Critical Safety Procedures and Controls
	<p>5. Slips/trips/falls</p> <p>6. Exposure to contaminated media</p>	<p>good grasp on object, perform "test lift" to gauge ability to safely make the lift, lift with legs not back, obtain help when needed to lift large, bulky, or heavy items).</p> <p>5. Keep decon areas orderly, maintain good housekeeping, spread light coating of sand on decon pad liner to increase traction.</p> <p>6. Follow good decontamination practices (work from top down and outside in). Surgeon's gloves are to be the last item of PPE removed. Wash hands and face following personal decontamination and prior to performing any hand-to-mouth activity.</p>
Equipment	Inspection	Training
<p>Hand tools (hand brushes, garden sprayers, etc.)</p> <p>Pressure washer</p> <p>PID/FID for screening to ensure effective decontamination</p>	<p>Visual inspection prior to use by user. Check wooden handles for cracks or splinters.</p> <p>Inspect pressure washer prior to putting into service to ensure that it is in good working order, and ensure that fittings are secure.</p> <p>PID/FID to be calibrated and operated in accordance with manufacturer's recommendation (daily)</p>	<p>None required.</p> <p>Review manufacturers instructions and safety guidelines prior to use..</p> <p>SSO trained in proper calibration, use, and care of air monitoring devices used (PID/FID). This is a general component of 40 hour HAZWOPER training, and SSO must become very familiar with the Operator's Manual for any instrument used. Review manufacturers operating and maintenance manual for monitoring instruments used.</p>
<p>Personal Protective Equipment: Minimum: Safety toe boots, safety glasses Optional items: Hardhat, hearing protection. HTRW: Decontamination pad pressure washer operators are to wear full face shield over safety glasses with side shields and brow protection, hearing protection, and nitrile gloves. If contact with overspray cannot be avoided, rain suit or moisture-repellant disposable</p>	<p>Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.</p>	<p>OSHA 40 Hazardous Waste Operations and Emergency Response (HAZWOPER) training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. Also Review of AHA during tailgate safety briefing with the intended task participants.</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>

Equipment	Inspection	Training
coveralls may be specified by the SSO.		

I have read and understand this AHA:

Name (Printed)	Signature	Date



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: Potential Source of Contamination (PSC) 38, 45 and 55 at NAS Jacksonville, Jacksonville, Florida.

Task: IDW Management

Prepared by	C.J. Snyder	Date	5/20/2011	FOL	
Reviewed by	J. K. Laffey	Date	5/22/2011	SSO	

Task Steps	Hazards	Critical Safety Procedures and Controls
Filling, moving 55-gallon drums of IDW	<ol style="list-style-type: none"> 1. Heavy lifting 2. Struck by/pinches compressions 3. Falling objects (drums) 4. Slips, Trips, Falls 5. Foot hazards 6. Strains/sprains due to heavy lifting 7. Minor contusions, abrasions, cuts 	<ol style="list-style-type: none"> 1. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel, good grasp on object, perform "test lift" to gauge ability to safely make the lift, lift with legs not back, obtain help when needed to lift large, bulky, or heavy items). 2. Exercise caution when handling drums. Position drums so that there is adequate room between them for placement and repositioning. 3. Do not stack drums on top of each other. Do not place more than 4 drums to a pallet. Leave at least 4 ft. of clearance between pallets for clear access. 4. Maintain good housekeeping in IDW storage areas, keeping it clear of loose debris and other potential tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces. 5. Safety toe foot protection will be required for IDW container handling activities. 6. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel, good grasp on object, lift with legs not back, and obtain help when needed to lift large, bulky, or heavy items). 7. Wear cut-resistant gloves when handling items with sharp or rough edges.
EQUIPMENT	INSPECTION	TRAINING
Hand tools (drum dollies, wrenches, etc.)	Visual inspection prior to use by user. Check wooden handles for cracks or splinters.	All personnel participating in this activity must be current with HAZWOPER training requirements.

EQUIPMENT	INSPECTION	TRAINING
<p>Personal Protective Equipment: Minimum: Safety toe boots, safety glasses Optional items: Hardhat, cotton or leather work gloves.</p> <p>HTRW: If contact with IDW is likely, wear chemical-resistant coveralls (e.g., Tyvek) or aprons and surgeon's nitrile gloves under leather/cotton work gloves.</p>	<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>

I have read and understand this AHA:

Name (Printed)	Signature	Date

ATTACHMENT IV

MSDS OTTO FUEL II

NAVAL SURFACE WARFARE CENTER -- OTTO FUEL II -- 1356-00-842-0630

=====
Product Identification
=====

Product ID:OTTO FUEL II
MSDS Date:12/20/1995
FSC:1356
NIIN:00-842-0630
MSDS Number: CFSYC
=== Responsible Party ===
Company Name:NAVAL SURFACE WARFARE CENTER
Address:101 STRAUSS AVE
City:INDIAN HEAD
State:MD
ZIP:20640-5035
Country:US
Info Phone Num:301-743-4659
Emergency Phone Num:301-743-4438
CAGE:JO160

=== Contractor Identification ===
Company Name:NAVAL SURFACE WARFARE CENTER
Address:CODE 7600, BUILDING 1959
Box:10
City:YORKTOWN
State:VA
ZIP:23691-5076
Country:US
Phone:804-887-4930
CAGE:JO160
Company Name:NAVAL SURFACE WARFARE CTR
Address:101 STRAUSS AVE
Box:City:INDIAN HEAD
State:MD
ZIP:20640-5035
Country:US
Phone:301-743-4924
CAGE:14083

=====
Composition/Information on Ingredients
=====

Ingred Name:1,2-PROPANEDIOL, DINITRATE; (PROPYLENE GLYCOL DINITRATE
(PGDN))
CAS:6423-43-4
RTECS #:TY6300000
Fraction by Wt: 76%
OSHA PEL:0.05 PPM
ACGIH TLV:0.05 PPM, S

Ingred Name:2-NITRODIPHENYLAMINE (2-NDPA)
Fraction by Wt: 1.5%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:SEBACIC ACID, DIBUTYL ESTER; (DI-N-BUTYL SEBACATE (DBS))
CAS:109-43-3
RTECS #:VS1150000
Fraction by Wt: 22.5%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:EFTS OF OVEREXP:STIMULI, LOW BLOOD PRESS, DIZZ, ABDOM
CRAMPS & VOMIT. CHRONIC:ALTHOUGH EPIDEMIOLOGIC EVID IS LTD,(ING 5)
RTECS #:9999999ZZ

Ingred Name:ING 4:CHRONIC OVEREXP MAY BE ASSOC W/INCR RISK OF CVS

DISEASE, INCL HEART ATTACKS & HEART PAIN. TARGET EFTS OF (ING 6)
RTECS #:9999999ZZ

Ingred Name:ING 5:EXPOSURE TO OTTO FUEL II INCLUDE CENTRAL NERVOUS
SYSTEM DEPRESSION, VASODILATION & METHEMOGLOBIN FORMER.
RTECS #:9999999ZZ

Ingred Name:FIRST AID PROC:DO NOT INDUCE VOMIT. QUALIFIED MED PERS
SHOULD CONSIDER USE OF ACTIVATED CHARCOAL/GASTRIC LAVAGE. (ING 8)
RTECS #:9999999ZZ

Ingred Name:ING 7:SEEK PROMPT MEDICAL ATTENTION. EMERGENCY MEDICAL
TREATMENT PROCEDURES:TREAT SYMPTOMATICALLY & SUPPORTIVELY.
RTECS #:9999999ZZ

Ingred Name:SPILL PROC:SPILL. CONTAINERIZE ALL CONTAM MATL FOR PROPER
DISP. MINOR SPILL:CONFINE SPILL. USE CLEAN SAWDUST, (ING 10)
RTECS #:9999999ZZ

Ingred Name:ING 9:RAGS/OTHER ABSORB MATL TO ABSORB BULK OF SPILLED
FUEL. WIPE CONTAM AREA W/CLOTH OR SPONGE DAMPENED W/ETHYL(ING 11)
RTECS #:9999999ZZ

Ingred Name:ING 10:OR ISOPROPYL ALCOHOL OR ACETONE. CLEAN AREA W/SOAP &
WATER. CERCLA:REPORT SPILLS PER 40 CFR 302.6.
RTECS #:9999999ZZ

=====
===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:ACUTE:INHAL:HDCH, NASAL CONGESTION,
NAUS, DIZZ, DILATION OF BLOOD VESSELS, HYPOTENSION, DFCLTY
W/BALANCE, POSS HYPOTENSION, NARROWED PULSE PRESS & OTHER SYMPS OF
NARCOS. EYE CONT:LOC IRRIT, DECR VISUA L ACUITY & MAY BE ABSORBED
TO CAUSE SYSTEMIC EFTS OF HDCH, NAUS, DIZZ, VOMIT & OTHER SYMPS
NOTED UNDER (EFTS OF OVEREXP)

Explanation of Carcinogenicity:NOT RELEVANT

Effects of Overexposure:HLTH HAZ:INHAL. SKIN CONT:LOC IRRIT & MAY BE
ABSORBED TO CAUSE SYSTEMIC EFTS OF HDCH, NAUS, DIZZ & OTHER SYMPS
NOTED UNDER INHAL. A YELLOWISH DISCOLORATION IN EXPOS AREAS IS
INDICATIVE OF POOR WORK PR ACTICES & SUGGESTS SIGNIFICANT DERMAL
CONT MAY HAVE OCCURRED. INGEST:LETHARGY, REDUCED RESPONSE TO
EXTERNAL (ING 4)

Medical Cond Aggravated by Exposure:PERS W/INCR RISK TO EXPOS ARE:PERS
W/HYPOTENSION, ANEMIA, HYPERTHYROIDISM & CVS DISEASE. PERS
W/UNDERLYING HEART DISEASE MAY DEVELOP CHEST PAIN/SUFFER HEART
ATTACKS WHEN REMOVED FROM CHRONIC EXPOSURE.

=====
===== First Aid Measures =====

First Aid:INHAL:REMOVE TO FRESH AIR IMMED. IF BRTHG HAS STOPPED, GIVE
ARTF RESP. SEEK PROMPT MED ATTN. EYES:WASH IMMED W/LG AMTS OF
WATER/SALINE SOLN, OCCAS LIFTING UPPER & LOWER LIDS, FOR AT LST 15
MINS. SEEK PROMPT MED ATTN. SKIN:REMOVE CONTAM CLTHG IMMED. WASH
AFFECTED AREAS W/SOAP & WATER FOR AT LST 15 MINS. SEEK PROMPT MED
ATTN IF IRRIT PERSISTS. DO NOT USE SOLVS TO REMOVE OTTO FUEL II.
INGEST: (ING 7)

=====
===== Fire Fighting Measures =====

Flash Point Method:COC
Flash Point:265F,129C
Extinguishing Media:FLOOD W/WATER; IF NO WATER IS AVAILABLE, USE DRY

CHEMICAL OR DIRT.

Fire Fighting Procedures:USE NIOSH APPRVD SCBA & FULL PROT EQUIP . DO NOT MOVE CNTNRS IF EXPOS TO HEAT HAS OCCURRED. DO NOT FIGHT FIRE WHEN IT REACHES STOR AREA. AVOID (SUPP DATA)

Unusual Fire/Explosion Hazard:FIRE & EXPLOSION HAZARD. LOW FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

===== Accidental Release Measures =====

Spill Release Procedures:MAJOR SPILL:SHUT OFF IGNIT SOURCES. NO SMOKING, FLAMES/FLARES IN HAZ AREA. EVACUATE AREA FOR 250 FT IN ALL DIRECTIONS. KEEP UNNEC PEOPLE AWAY. REQ USE OF NIOSH APPRVD RESP PROT & IMPERVIOUS CLTHG. CON FINE SPILL. USE SAME METH AS FOR MINOR (ING 9)

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:AVOID CONTACT W/HEAT, SPARKS, FLAMES OR OTHER SOURCES OF IGNITION. STORE AWAY FROM INCOMPATIBLE MATERIALS.

Other Precautions:OBSERVE ALL FEDERAL, STATE & LOCAL REGULATIONS WHEN STORING THIS MATERIAL.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH APPROVED FULL-FACE PRESSURE DEMAND SCBA IS REQUIRED IF AIRBORNE CONCENTRATION LEVELS EXCEED LIMITS ESTABLISHED BY THE NAVY.

Ventilation:LOCAL EXHAUST VENT SYSTEM TO MEET EXPOSURE LIMITS. CONTACT LOCAL INDUSTRIAL HYGIENIST FOR GUIDANCE.

Protective Gloves:NITRILE BUNA-RUBBER GLOVES

Eye Protection:ANSI APPRVD CHEM WORKERS GOGGS &(SUPDAT)

Other Protective Equipment:ANSI APPRVD EYE WASH FOUNTAIN & DELUGE SHOWER . IMPERVIOUS APRON MAY BE REQD FOR SOME OPERATIONS. WEAR (SUPP DATA)

Work Hygienic Practices:THERE SHOULD BE NO SMOKING OR EATING IN WORKPLACE. THOROUGHLY CLEAN/LAUNDER CLOTHING SEPARATELY PRIOR TO REUSE.

Supplemental Safety and Health

FIRE FIGHT PROC:BRTHG DUSTS & FUMES. HAZ DECOMP PROD:DEPEND UPON CIRCUMSTANCES & CNDTNS OF COMBUST. EYE PROT:FULL LGTH FSHLD . OTHER PROT EQUIP:FLAME-RESISTANT COVERALLS, CONDUCTIVE-SOLED SHOES & FLAME-RESISTANT CAP FOR PROD MFG OPERATIONS. DURING HNLDG OPERATIONS, WEAR CLTHG WHICH IS IMPERVIOUS TO PROD.

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:>250F,>121C

Melt/Freeze Pt:M.P/F.P Text:-18F,-28C

Vapor Pres:0.0877@77F

Vapor Density:1.232

Spec Gravity:1.232 (H*20=1)

Solubility in Water:INSOLUBLE

Appearance and Odor:REDDISH-ORANGE LIQUID W/DISAGREEABLE ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

ACIDS, OXIDIZERS & COMBUSTIBLES.

Stability Condition to Avoid:AVOID HEAT, SPARKS, OPEN FLAME & OTHER SOURCES OF IGNITION.

Hazardous Decomposition Products:DECOMP PRODS INCL CARBON MONOXIDE, HYDROGEN CYANIDE, OXIDES OF NITROGEN & POSSIBLY OTHER MATLS. CONCS GENERATED (SUPDAT)

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL REGULATIONS . CONTAINERIZED SPILLED MATERIAL MUST BE DISPOSED OF AS A HAZARDOUS WASTE PER 40 CFR 262. RCRA:OTTO FUEL II IS A REACTIVE HAZARDOUS WAST E & HAS AN EPA WASTE NUMBER OF D003.

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

ATTACHMENT V

TETRA TECH AIR MONITORING PROGRAM

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The purpose of the Tetra Tech, Inc. (Tetra Tech), air monitoring program is to set forth the criteria necessary to conduct air monitoring as part of a comprehensive site evaluation that accomplishes the following:

- Identifies work areas and activities that require the use of engineering or work technique controls or require the use of personal protective equipment (PPE);
- Provides data to confirm that levels of protection afforded by the assigned PPE and engineering or work technique controls are adequate to protect workers;
- Provides data to ensure that all necessary controls and precautions are being taken to protect the public and the environment; and
- Complies with Title 29 of the *Code of Federal Regulations* (CFR), Part 1910.120(c)(6) and (h).

1.0 SCOPE

This Program applies to hazardous waste operations and emergency response (HAZWOPER) sites as defined in OSHA 29 CFR 1910.120 and 29 CFR 1926.65. Tetra Tech subcontractors must adhere to an air monitoring program that meets or exceeds the requirements of this program.

2.0 RESPONSIBILITIES

The site safety coordinator (SSC), appointed by the project manager (PM) for each site, shall be responsible for implementation of the air monitoring program at the site. The PM is responsible for ensuring that a site-specific health and safety plan, which includes an air monitoring program for the site, is prepared and approved prior to field work beginning on a site. The air monitoring program section of the HASP shall include the identification of known or potential hazards, the implementation of sound industrial hygiene monitoring practices, equipment calibration, and analytical operations, as appropriate. The SSC will take all steps necessary to ensure that the appropriate monitoring equipment and supplies are available during hazardous materials projects. Air monitoring equipment will be used by the SSC or individuals trained in the operation, calibration, care, and limitations of the equipment under the supervision of the SSC.

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The criteria for selecting air monitoring equipment, instrumentation, calibration, monitoring implementation, and air monitoring documentation are discussed below.

3.0 CRITERIA FOR SELECTING AIR MONITORING EQUIPMENT

Priorities for monitoring should be based on information gathered during initial site characterization (see Document Control No. 3-5). This information serves as the basis for selecting the appropriate monitoring equipment and PPE to use when conducting site monitoring. Depending on site conditions, activities, the length of time spent on site, and project goals, the air monitoring program can vary from simply monitoring for immediately dangerous to life or health (IDLH) conditions and other dangerous circumstances to more extensive monitoring, such as personal exposure monitoring, perimeter monitoring, and community monitoring. Thus, not all types of monitoring described in this program will be conducted for every project.

The air monitoring requirements for a particular project must be specified in the site-specific health and safety plan (HASP). The types of field instruments to be used for a particular project shall also be discussed in the HASP. This list shall include specific equipment, models, accessories, frequency of use, procedures for calibration, and frequency of checks.

4.0 INSTRUMENTATION

Air monitoring equipment may include, but is not limited to the following:

- **Photoionization Detector (PID):** This instrument is generally used for the determination of trace concentrations of hydrocarbons (except methane gas) and other photoionizable organic and inorganic contaminants in work zones and ambient air. It is a “real-time” or direct indicating instrument nonspecific in its detection capability and has a response that varies for different chemical contaminants. A data logging feature on some PIDs can be used when a permanent record of monitoring results is desired.
- **Flame Ionization Detector (FID):** This instrument is used for surveying work zones and ambient air for the presence of organic vapors. Organic materials in the air are burned in a hydrogen fueled flame. It is also a real-time instrument nonspecific in its detection capability and has a response that varies for

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different chemical contaminants. An audible alarm warns the user when a preset level is exceeded. Data logging is also available with some FIDs.

- **Personal Air Sampling Pumps:** These devices may be used in conjunction with ongoing, real-time monitoring. When an air sampling plan calls for exposure and ambient air concentration monitoring of contaminants for 8-hour (or another specified period), time-weighted averages (TWA), these pumps are used for sample collection onto specified sample media (such as filter cassettes, sorbent tubes, and grab sample bags). The pump typically provides air flow from 0.5 to 5 liters of air per minute. Samples collected on the media are analyzed in a laboratory and therefore do not provide results or readings at the time the sample was collected. Samples shall be analyzed only by laboratories successfully participating in and meeting the requirements of the American Industrial Hygiene Association's Proficiency Analytical Testing or Laboratory Accreditation programs.
- **Hand Pump and Colorimetric Indicator Tubes:** The hand pump draws a measured quantity of air through a colorimetric indicator tube. The chemical "bed" inside the tube undergoes a characteristic color change in the presence of specific contaminants. The degree or length of color change as measured and observed through the glass tube surrounding the chemical bed yields a semiquantitative measurement of the concentration of a given contaminant or class of contaminants. Colorimetric indicator tubes are available for a wide variety of chemical gases or vapors.
- **Combustible Gas Indicators (CGI):** These instruments are capable of detecting the presence of flammable gases and are used to determine the potential for explosive atmospheres. Concentrations are expressed as a percent of the lower explosive limit. Nearly all CGIs are based on the catalytic combustion of gases on a filament. Flammable gases actually burn on the filament. The resulting change in temperature produces an increase in electrical current resistance and decreases current flow. This change in current is translated by the Wheatstone bridge circuit into a meter reading.
- **Oxygen Meter:** This instrument is capable of measuring the concentration of oxygen. The sensor employs an electrolyte to detect the presence and concentration of the gas.

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- **Meteorological Instrumentation:** Meteorological instruments provide data on wind speed and direction, precipitation, humidity, and other environmental conditions and are used on site as an adjunct in determining perimeter and off-site monitoring or sampling locations and may be used for interpretation of air monitoring results.
- **Noise Monitoring Instrumentation:** Noise monitoring may consist of taking spot readings with a sound-level meter or full-shift measurements using dosimeters. All noise monitoring shall be conducted in compliance with procedures detailed in the Tetra Tech Hearing Conservation Program in Document Control No. 2-4.
- **Radiation Monitoring Instrumentation:** A radiation survey is necessary when there is reason to suspect the presence of radioactive material or contamination. All radiological survey equipment shall be used in accordance with the guidelines detailed in the Safe Work Practice Document 6-21.

5.0 CALIBRATION

The SSC or a designee under the SSC's direction will calibrate monitoring equipment in accordance with manufacturers' instructions. Frequency of calibration varies with the instrument. Some instruments require calibration before use and after each use. Other instruments are less prone to response drift and may require less frequent checks of instrument response. The user should verify the calibration frequency before use. Factory servicing of the monitoring instruments will be conducted periodically as recommended by the manufacturers. The SSC will make provisions for replacement equipment when factory service of an instrument is needed.

Documentation of instrument calibration is required. A calibration logbook is recommended. Each calibration event should be noted in the logbook. For portable monitoring instruments such as the PID or FID, the information recorded should include the following:

- Instrument type, brand, model, and serial numbers and other information such as lamp specifications;
- Date of calibration;
- Time of calibration;

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- Concentration and source of calibration gas standard;
- Instrument scale range; and
- Name of person calibrating instrument.

For personal air sampling pumps, pump flow calibration results will be documented. A copy of the current calibration curve for the rotameter used for calibration will be filed with the pump calibration data. Documentation of any field servicing or repair of an instrument will be documented in the calibration logbook.

Any and all user comments regarding instrument operation, problems, questionable readings, misuse, or other issues will be fully documented in the field logbook. Certifications of analysis for calibration gas standards and span gases will be maintained on file by the SSC. Any and all factory or manufacturer communications regarding the instruments will be documented in the field logbook. Primary calibration documents for flow meters calibrated by the manufacturer or equipment technician will be maintained with the calibration documentation (especially the calibration curves).

6.0 MONITORING IMPLEMENTATION

Monitoring for airborne hazards at a work site will fall into four categories: screening and periodic monitoring, personal exposure monitoring, perimeter (work zone or work site) monitoring, and community monitoring. Before commencement of site work, background air monitoring should be conducted by the SSC at locations representative of and consistent with work zones proposed in the HASP. The prestartup or background sampling locations will be determined by the SSC, who will consider such factors as wind direction, terrain, and building locations. The four categories of monitoring are discussed below.

6.1 Screening and Periodic Monitoring

Site characterization is used to identify primary health and safety concerns associated with a work site (see Document Control Number (DCN) 3-5). Once site work has begun, screening monitoring should be conducted to evaluate the potential threats associated with air contaminant sources identified. Screening should be performed with the instrument and detector appropriate for the contaminant to evaluate the actual sources and concentrations of contaminants released in the immediate area of site personnel. Information from the

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screening will help determine the need for periodic monitoring of site conditions or personal exposure monitoring.

Periodic monitoring of ambient air in the work area is necessary when screening has demonstrated an air contaminant source that may persist as a hazard to personnel. Periodic monitoring is also necessary when a new task has begun or a change in procedures has occurred. Periodic monitoring should be conducted using direct reading instrumentation to fully evaluate the work area. The HASP should provide information on which concentration, indicated as action levels, will trigger specific employee protection actions such as donning of respirators or evacuation of the work area.

6.2 Personal Exposure Monitoring

Personal exposure monitoring will be conducted whenever routine, real-time screening or periodic monitoring has determined that an action level requiring PPE upgrade has been reached. Personal worker exposure monitoring related to hazardous work activities will also be conducted whenever personnel voice concerns regarding hazardous substance exposure based on qualified symptoms confirmed by the SSC or documented by a physician.

Personal exposure monitoring may include both worker breathing zone and ambient work zone air. The monitoring should be conducted during each hazardous, task-specific activity. Samples can be collected to determine the 8-hour TWA or short-term exposures represented by the specific task at hand. Initial samples will be collected for workers with the highest likelihood of exposure. The number of initial determination samples will be determined by the SSC based on the extent and conditions of the new task-specific activity. Sampling may include survey or real-time monitoring with the PID or FID supplemented by filter cassette (for dusts and metals), sorbent tube (organics), and badge (organics) sampling media data. Colorimetric indicator tube readings can also be used.

Specific hazard exposure will be monitored on or around personnel engaged in unique work activities (such as electric arc welding, torch cutting or welding, and plastic pipe cement use) and where there exists a concern for exposure over an Occupational Safety and Health Administration (OSHA) permissible exposure limit.

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6.3 Perimeter Monitoring

Perimeter monitoring needs will be determined by the SSC based on site and contaminant characteristics. Perimeter monitoring will be conducted during all active phases of a hazardous materials operation until sufficient documentation has established either no hazard or a constant known hazard level unlikely to change. Work zone perimeter monitoring may additionally involve any of the previously discussed passive, active, or real-time, or other specialized monitoring techniques as necessary, based on the SSC's determination.

6.4 Community Monitoring

Monitoring of nuisance dust, metals, and organics at the site perimeter may be necessary when hazardous activities likely to be a source of fugitive emissions are in progress. These samples will be taken at the site perimeter or just outside the perimeter downwind of work in progress. These samples will be taken using normal occupational exposure sampling strategies as discussed in Section 4.0.

To comply with requirements of the California Air Quality Control Regions defined in the Clean Air Act or with other state and local requirements, periodic high-volume sampling for dusts may need to be conducted at the site perimeter. The SSC may also use real-time aerosol monitoring as appropriate and within the requirements of applicable regulations.

7.0 AIR MONITORING DOCUMENTATION

All air monitoring data should be logged daily by the SSC in a field logbook or on forms developed for the project. All other documents (such as strip chart records or printouts from data logging instruments) will be collected and maintained with the monitoring records. All calibration- and instrument-related documentation will be maintained with the monitoring records. Chain-of-custody forms will accompany all analytical samples to the laboratory.

When personal exposure monitoring has been conducted, results will be documented and provided to the employees monitored. A copy of this information will also be filed in the employee's medical surveillance record.

All monitoring documents will be kept secure by the SSC for inclusion in the project file.

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Revision Date	Document Authorizer	Revision Details
10/1/2008	Chris McClain	Update from 1998 format

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ATTACHMENT VI

EQUIPMENT INSPECTION CHECKLIST

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) 	

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"/> <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"/> <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 4

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"/> <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 - Safety cans available? - Fire extinguisher (Type/Rating - _____) 	

Approved for Use Yes No See Comments

 Site Health and Safety Officer

 Operator

ATTACHMENT VII

OSHA POSTER

Job Safety and Health

It's the law!

OSHA

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

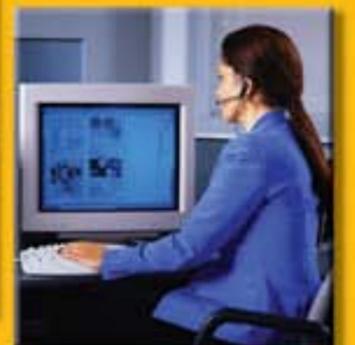
EMPLOYEES:

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

EMPLOYERS:

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

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



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

1-800-321-OSHA
www.osha.gov

OSHA 3185-12-06R