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HEALTH AND SAFETY PLAN FOR QUARTERLY GROUNDWATER SAMPLING AT SITE 4
GOLF COURSE LANDFILL NCBC GULFPORT MS
6/1/2011
TETRA TECH

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62470-08-D-1001



Health and Safety Plan for Quarterly Groundwater Sampling At Site 4 – Golf Course Landfill

Naval Construction Battalion Center
Gulfport, Mississippi

Contract Task Order JM48

June 2011



NAS Jacksonville
Jacksonville, Florida 32212-0030



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June 17, 2011

Project Number 112G03334

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Attn: Charles Cook (Code OPC6)
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Jacksonville, Florida 32213-0030

Reference: CLEAN Contract Number N62470-08-D-1001
Contract Tack Order Number JM48

Subject: Revised Health and Safety Plan, Site 4 – Golf Course Landfill
Naval Construction Battalion Center Gulfport, Mississippi

Dear Mr. Cook:

Tetra Tech NUS, Inc. (Tetra Tech) is pleased to submit the Revised Health and Safety Plan (HASP) for Site Investigation at Site 4 – Golf Course Landfill at the Naval Construction Battalion Center (NCBC) Gulfport, Mississippi for review.

If you have any questions with regard to this submittal, please feel free to contact me at (904) 730-4669, extension 215, or via e-mail at Gregory.Roof@TetraTech.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gregory Roof', written over the typed name and title.

Gregory Roof, P.E.
Task Order Manager

GSR/lc

c: Bobby Mitchell, Health and Safety Manager, FEAD, NCBC Gulfport
CTO JM48 Project File

**HEALTH AND SAFETY PLAN
FOR
QUARTERLY GROUNDWATER SAMPLING
AT SITE 4 – GOLF COURSE LANDFILL
NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI
COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION-NAVY (CLEAN) CONTRACT**

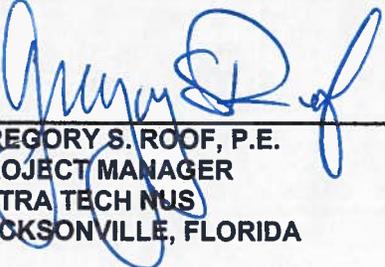
**Submitted to:
Naval Facilities Engineering Command Southeast
NAS Jacksonville, Building 103
Jacksonville, Florida 32212**

**Submitted by:
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234 Mall Boulevard, Suite 260
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**CONTRACT NUMBER N62470-08-D-1001
CONTRACT TASK ORDER JM48**

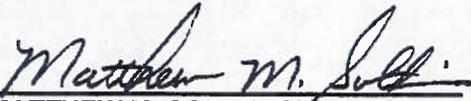
JUNE 2011

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TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 INTRODUCTION.....	1-1
1.1 AUTHORITY	1-1
1.2 KEY PROJECT PERSONNEL AND ORGANIZATION.....	1-1
1.3 STOP WORK AUTHORITY	1-2
1.4 SITE INFORMATION AND PERSONNEL ASSIGNMENTS.....	1-3
2.0 EMERGENCY ACTION PLAN	2-1
2.1 INTRODUCTION.....	2-1
2.2 EMERGENCY PLANNING.....	2-1
2.3 EMERGENCY RECOGNITION AND PREVENTION	2-2
2.3.1 Recognition	2-2
2.3.2 Prevention	2-3
2.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE	2-3
2.5 EMERGENCY CONTACTS	2-4
2.6 EMERGENCY ROUTE TO HOSPITAL	2-6
2.7 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES.....	2-7
2.8 PPE AND EMERGENCY EQUIPMENT.....	2-7
2.9 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT.....	2-8
2.10 INJURY/ILLNESS REPORTING.....	2-9
2.10.1 TOTAL Incident Reporting System	2-9
3.0 SITE BACKGROUND.....	3-1
4.0 SCOPE OF WORK	4-1
5.0 IDENTIFYING AND COMMUNICATING TASK-SPECIFIC HAZARDS AND GENERAL SAFE WORK PRACTICES.....	5-1
5.1 GENERAL SAFE WORK PRACTICES.....	5-1
5.2 DRILLING OPERATIONS SAFE WORK PRACTICES	5-2
6.0 HAZARD ASSESSMENT AND CONTROLS.....	6-1
6.1 CHEMICAL HAZARDS	6-1
6.2 PHYSICAL HAZARDS	6-4
6.2.1 Slips, Trips, and Falls.....	6-4
6.2.2 Contact with Overhead and Underground Utilities.....	6-4
6.2.3 Strain/Muscle Pulls from Heavy Lifting	6-4
6.2.4 Heat Stress	6-5
6.2.5 Pinch/Compression Points.....	6-5
6.3 NATURAL HAZARDS	6-6
6.3.1 Insect/Animal/Snake Bites and Stings	6-6
6.3.2 Ambient Temperature Extremes (Heat Stress).....	6-8
6.3.3 Inclement Weather	6-9
7.0 AIR MONITORING.....	7-1
7.1 INSTRUMENTS AND USE	7-1
7.2 INSTRUMENT MAINTENANCE AND CALIBRATION	7-2
7.3 DOCUMENTING INSTRUMENT READINGS	7-2
8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS.....	8-1
8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING	8-1
8.2 SITE-SPECIFIC TRAINING	8-1
8.3 MEDICAL SURVEILLANCE.....	8-1

TABLE OF CONTENTS (Continued)

<u>SECTION</u>		<u>PAGE</u>
9.0	SITE CONTROL	9-1
9.1	EXCLUSION ZONE	9-1
9.2	CONTAMINATION REDUCTION ZONE	9-1
9.3	SUPPORT ZONE	9-1
9.4	ACTIVITY HAZARD ANALYSIS	9-2
9.5	SITE VISITORS	9-2
9.6	SITE SECURITY	9-3
9.7	SITE MAP.....	9-3
9.8	BUDDY SYSTEM.....	9-3
9.9	MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS	9-3
9.10	COMMUNICATION	9-3
10.0	SPILL CONTAINMENT PROGRAM	10-1
10.1	SCOPE AND APPLICATION	10-1
10.2	POTENTIAL SPILL AREAS	10-1
10.3	LEAK AND SPILL DETECTION.....	10-1
10.4	PERSONNEL TRAINING AND SPILL PREVENTION.....	10-1
10.5	SPILL PREVENTION AND CONTAINMENT EQUIPMENT	10-2
10.6	SPILL CONTROL PLAN	10-2
11.0	CONFINED-SPACE ENTRY	11-1
12.0	MATERIALS AND DOCUMENTATION	12-1
13.0	ACRONYMS / ABBREVIATIONS	13-1
ATTACHMENT I	MEDICAL DATA SHEET	
ATTACHMENT II	INCIDENT REPORT FORM	
ATTACHMENT III	ACTIVITY HAZARD ANALYSIS	
ATTACHMENT IV	EQUIPMENT INSPECTION CHECKLIST	
ATTACHMENT V	OSHA POSTER	

TABLE OF CONTENTS (Continued)

LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
2-1	Emergency Contacts NCBC Gulfport.....	2-5
6-1	Comparison Of Worst-Case Air Concentrations With Current Occupational Exposure Limits	6-1
6-2	Tropical Storm/Hurricane Rating Scale.....	6-10
6-3	Tropical Storm/Hurricane Watch and Warning	6-11

LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
2-1	Route to Hospital.....	2-6
7-1	Documentation of Field Calibration.....	7-3
8-1	Site-Specific Training Documentation.....	8-3

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 conducting monitoring well installation and media sampling activities in support of Site Evaluation activities at the Naval Construction Battalion Center NCBC located in Gulfport, Mississippi.

This HASP is to be used in conjunction with the Tetra Tech NUS Health and Safety Guidance Manual. The Guidance Manual provides detailed information pertaining to hazard recognition and control and Tetra Tech standard operating procedures. This HASP and the contents of the Guidance Manual 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). 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 U.S. Navy Southeast, Naval Facilities Engineering Command, as defined under Contract Number N62470-08-D-1001; Contract Task Order Number JM48.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibilities for site safety and health for Tetra Tech employees conducting sampling and other supporting field activities under this field effort. The 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 perform the following:
 - 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 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 the following:
 - Coordinating health and safety activities.
 - Selecting, applying, inspecting, and maintaining personal protective equipment.
 - 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 AUTHORITY

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

1.4 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Construction Battalion Center Gulfport

Site Contact: Gordon Crane **Phone:** (228) 871-2485

Site Address: 5200 NCBC 2nd Street, Gulfport, Mississippi 39501-5000

Purpose of Site Visit: Tetra Tech will conduct monitoring well installation and groundwater sampling activities in support of Site Evaluation activities.

Proposed Start-up Date: June 2011

Project Team:

Tetra Tech Personnel:

Discipline/Tasks Assigned:

Gregory Roof
To be determined (TBD)
Matthew M. Soltis, CIH, CSP
Clyde Snyder
TBD

Project Manager
Field Operations Leader
Health and Safety Manager
Project Health and Safety Officer
Site Safety Officer

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

Prepared by: Clyde Snyder

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an 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. Tetra Tech personnel are not authorized to participate in any emergency response activities. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time.

Tetra Tech personnel may participate in minor event response and emergency prevention activities such as the following:

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

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are the types of emergencies which could be encountered during site activities. To minimize 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 NCBC Gulfport and/or local emergency response personnel 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 onsite), with Material Safety Data Sheets.
- Onsite personnel medical records (Medical Data Sheets).
- A log book identifying personnel onsite each day.
- Hospital route maps with directions (these should also be placed in each site vehicle).
- Emergency Notification - phone numbers.

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

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- 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 instigate 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 Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, by the FOL and/or the SSO will also assist in prevention of illness/injuries when hazards are recognized early and control measures initiated.

2.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE

An evacuation will be initiated whenever 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 onsite (on a daily basis) in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

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

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

2.5 EMERGENCY 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.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite (see Attachment I). If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

**TABLE 2-1
EMERGENCY CONTACTS
NCBC GULFPORT, MISSISSIPPI**

AGENCY	TELEPHONE
EMERGENCY	9-1-1
Police	(228) 871-2222
Fire/Hazardous Materials Release	(228) 871-2333
Ambulance Services	(228) 871-2444
Base Contact	(228) 871-2485
Mr. Gordon Crane	(800) 343-3472 – pager
Memorial Hospital at Gulfport 4500 13 th Street Gulfport, Mississippi 39501-2569	(228) 867-4000
Project Manager, Gregory Roof, P.E.	(904) 636-6125
CLEAN Health and Safety Manager Matthew Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer, Clyde Snyder	(412) 921-8904
Utilities (On Base Utility Clearances and Emergencies)	(228) 871-2244
Public Works Maintenance Division	
Public Utility Locating Service Mississippi One Call System Inc.	8-1-1
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
Mississippi Regional Poison Control Center	(800) 222-1222
Tetra Tech NUS, Jacksonville Office	(904) 636-6125
Tetra Tech NUS, Pittsburgh Office	(412) 921-7090
Tetra Tech NUS, Gulfport, Mississippi Office	(228) 575-6287

2.6 EMERGENCY ROUTE TO HOSPITAL

Directions from NCBC Gulfport are as follows. See Figure 2-1 for a route map.

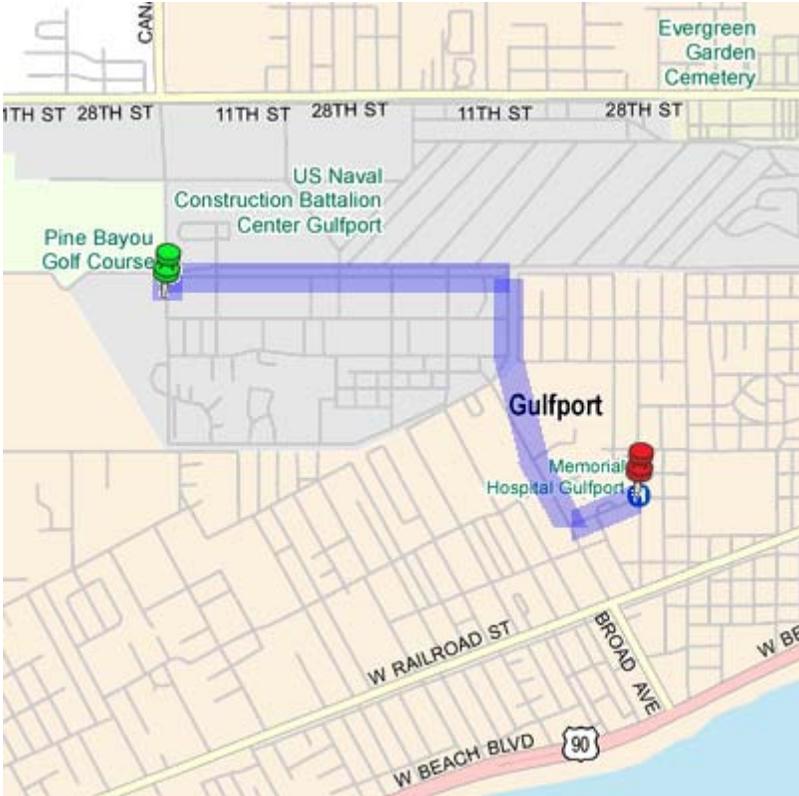
Distance: 2 miles

- Start out heading North on Colby Ave. towards 6th St. 0.1 miles.
- Turn Right onto 6th St. 0.9 miles.
- Turn Right onto Decatur Ave. 0.2 miles.
- Decatur Ave. becomes 49th Ave 0.1 miles.
- Turn Left onto Broad Ave. 0.5 miles.
- Turn Left onto 13th St. 0.2 miles.
- Destination is on the Left

Arrive:

Memorial Hospital at Gulfport
4500 13th Street
Gulfport, Mississippi 39501-2569

**FIGURE 2-1
ROUTE TO HOSPITAL**



2.7 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Tetra Tech personnel will be working in close proximity to each other at NCBC Gulfport. 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 the personnel.
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (FOL will serve as the Incident Coordinator) pertinent incident details.

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

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

2.8 PPE AND EMERGENCY EQUIPMENT

Personal protective equipment (PPE) selected must be adequate to protect employees from the specific hazards that they are likely to encounter during their work onsite for the duration they are likely to encounter these hazards. PPE will be selected based on the tasks to be performed, the anticipated physical and chemical hazards associated with the site, and the conditions at that work site. Selection of appropriate PPE is a complex process that needs to take into consideration a variety of factors. Key factors involved in this process are as follows:

- Identification of the hazards, or suspected hazards.
- Routes of potential exposure (inhalation, skin absorption, ingestion, and eye or skin contact).
- Performance of the PPE material in providing a barrier to these hazards. The amount of protection provided by a particular type of PPE material is dependent upon the type of contaminant of concern and the work that is going to be performed. The durability of PPE materials, such as tear strength

and seam strength as well as breakthrough time, must be considered in relation to the employee's task.

The SSO will evaluate conditions that may allow the refinement of the level of PPE required at a site. As conditions at the site may change; therefore, the on-going level of personal protection will be evaluated on a regular basis to determine the need for change and the extent or level of that change.

It is anticipated that initial protective levels will be Level D protection consisting of the following:

- Hard hat.
- Safety glasses equipped with side shields or wrap around.
- Standard field attire to meet ambient conditions (long sleeve shirt and full-length pants).
- Safety Shoes.
- Standard work gloves.
- High visibility vest to increase visual recognition when working near traffic patterns.
- Hearing protection noise reduction rate of 25dB (minimum) for use during high noise operations.

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the site vehicle. At least one first aid kit supplied with equipment to protect against bloodborne pathogens will also be available on site. At least two First Aid/CPR trained personnel will be identified and part of the field crew and 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 be postponed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur that would require workers to evacuate the site without first performing the necessary decontamination procedures.

Tetra Tech personnel will perform rescue operations from emergency situations and may provide initial medical support for injury/illnesses requiring only "Basic First-Aid" level support only within the limits of training obtained by site personnel. Basic First-Aid is considered treatment that can be rendered by a trained first aid provider at the injury location and not requiring follow-up treatment or examination by a physician (i.e.,; 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,

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

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

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

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 appears the same as 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 powerful tool for Health and Safety professionals, and will help Tetra Tech to more effectively track incidents, analyze root causes, implement corrective action plans, and share lessons learned. The ultimate result is a more safe and healthy working environment for us all.

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

3.0 SITE BACKGROUND

NCBC Gulfport is located in the City of Gulfport, in Harrison County, in the southeast corner of the State of Mississippi. The site is bounded by Building 383 and Fifth Street to the north, Colby Avenue to the west, Simms Avenue to the east, and Building 391 to the south.

SITE 4

Site 4 is approximately 4 acres and is a former landfill located in the western section of NCBC Gulfport, northeast of the intersection of 7th Street and Canal No. 1. The drainage ditch known as Canal No. 1, which is the only surface water body within the site boundaries, defines the western boundary. Since the early 1990s, the southern portion of the site was covered by the greens of the 9th and 18th holes of the Pine Bayou Golf Course. Site 4 is planned to be used for recreational purposes as part of the “golf experience” operated by Morale, Welfare, and Recreation at NCBC Gulfport. The Site 4 landfill operated from 1966 to 1972 and was the only operating landfill on the base during this time. Solid waste, such as construction debris and general refuse, made up the bulk of the materials disposed of at Site 4.

According to previous investigations, nearly 16,000 tons of solid waste, including building and infrastructure debris from damage due to Hurricane Camille (in 1969), were disposed of at the landfill. Additionally, as much as 20,000 gallons of waste liquids were disposed of at the site including fuels, oils, solvents, paints, and paint thinners. After waste disposal activities ceased, the site was covered with 4 to 6 feet of fine- to medium-grained sand.

For further information on the site, refer to the Sampling and Analysis Plan.

4.0 SCOPE OF WORK

This section of the HASP addresses proposed site activities that are to be conducted at Site 6 that include the following:

- Mobilization/demobilization
- Groundwater sampling
- Monitoring well Installation and development via direct push technology (DPT)
- Decontamination of personnel, hand tools, and associated sampling equipment
- Investigation derived waste (IDW) management

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 (AHAs), 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 the following portions of this section.

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

5.1 GENERAL SAFE WORK PRACTICES

In addition to the task-specific work practices and restrictions identified in the AHAs in Attachment III, 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.

5.2 DRILLING OPERATIONS SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working in or around drilling operations.

- Identify underground utilities and buried structures before drilling.
- Drilling rigs (DPT) will be inspected by a competent person (the SSO or designee) prior to the acceptance of the equipment at the site and prior to the use of the equipment. Repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment IV. Inspection frequencies will be once every 10 day shift or following repairs.
- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding operating equipment.
- The driller's helper will establish an equipment staging and lay-down plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects, such as drill flights, will be provided to avoid the collapse of stacked equipment.
- Potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.

- Prior to drilling, one member of the crew will be identified as the person with primary responsibility for engaging the emergency shut-off device in the event of an emergency. This person will be responsible for visually verifying that the area is clear and for verbally alerting site personnel prior to engaging the equipment.
- Minimize contact to the extent possible with contaminated tooling and environmental media.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the drilling rig of the height of the mast plus 5 feet to remove these activities from within physical hazard boundaries.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.
- In order to minimize contact with potentially contaminated tooling and media and to minimize lifting hazards, multiple personnel should move heavy tooling, where necessary.
- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone. Site visitors will be escorted.
- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the SSO to determined cleanliness prior to moving to the next location, exiting the site, or down time for maintenance.
- Motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations, equipment will be shutdown and bonded to the fuel provider.
- When not in use, drill rigs will be shutdown, emergency brakes set, and wheels chocked. Areas subjected to subsurface investigative methods will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be removed, these areas will be barricaded to minimize the impact on field crews working in the area.

6.0 HAZARD ASSESSMENT AND CONTROLS

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

6.1 CHEMICAL HAZARDS

Based on an evaluation of previous groundwater and soil sampling conducted at the site, the primary containments of concern are volatile organic compounds (VOCs) and various metals. From a worst case scenario, only vinyl chloride could potentially reach concentrations that exceed Threshold Limit Values (TLV) or Personal Exposure Limits (PEL). The metals are present only in potential concentrations that would be visible to the naked eye through dust generation. Area wetting methods will be used to suppress dust generation, if necessary. These results are summarized in Table 6-1.

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

Contaminant of Concern	Highest Concentration Previously Detected in Groundwater ($\mu\text{g}/\text{kg}$)	Worst-Case Air Concentration That Could Be Encountered (ppm)	Current OSHA PEL And ACGIH TLV
Vinyl Chloride	190 $\mu\text{g}/\text{l}$	84.51 ppm	OSHA: 1 ppm, TWA ₈ 5 ppm STEL ACGIH: 1 ppm TWA ₈

CURRENT PARTICULATE MATTER OEL

Contaminant of Concern	Current OEL
Metals	OSHA & ACGIH TWA ₈ : 0.05 mg/m^3 (particulate matter)

Table Notes:

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

OSHA STEL: Concentration in air that is not to be exceeded for more than 5 minutes in any 3 hour period

ACGIH STEL: Concentration in air that is not to be exceeded for more than 15 minutes more than 4 times per day

ppm = part per million

As indicated in the table for Vinyl chloride, from a worst-case scenario, concentrations immediately above a captured air phase above contaminated groundwater (such as in the head space of a monitoring well or

borehole) could reach concentrations that exceed permissible limits. In regarding the results of this data evaluation, it is important to recognize the following:

- The planned work area is outdoors, with ample natural ventilation that will reduce any airborne VOCs through dilution and dispersion.
- The groundwater value used in this evaluation was the *highest* concentration detected during the most recent monitoring event.

It is possible that workers participating in this activity could encounter airborne concentrations of Vinyl chloride that would represent an occupational exposure concern; however, as a result of the above factors, it is unlikely. To monitor this route, real-time direct reading monitoring instruments will be used (as described in Section 7.0). This will be performed during the intrusive tasks of groundwater sampling, DPT, and IDW management activities, as these tasks are the most likely to involve encountering/releasing any VOCs into the airphase.

Volatile Organic Compounds

VOCs are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands. Examples include paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, office equipment (such as copiers and printers), correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions. Health effects include eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system (CNS). Some organics can cause cancer in animals; some are suspected or known to cause cancer in humans. Key signs or symptoms associated with exposure to VOCs include conjunctival irritation, nose and throat discomfort, headache, allergic skin reaction, dyspnea, declines in serum cholinesterase levels, nausea, emesis, epistaxis, fatigue, and dizziness.

Vinyl Chloride

Vinyl chloride's production and use in the manufacture of polyvinyl chloride (PVC) and other chlorinated compounds may result in its release to the environment through various waste streams.

ACUTE EXPOSURE - In acute exposure, deaths are most often due to CNS and respiratory depression. The primary toxic hazard is exposure to vinyl chloride monomer gas rather than to PVC products (except during pyrolysis). There may be a long latent period between exposure and symptom onset. The nervous

system is the primary target of acute vinyl chloride exposure. Signs and symptoms following ingestion include weakness, ataxia, inebriation, headache, fatigue, numbness, tingling and pallor or cyanosis of the extremities, nausea, abdominal pain, GI bleeding, visual disturbances, cardiac dysrhythmias, narcosis, and death. Vinyl chloride is a severe irritant of the eyes, skin, and mucous membranes.

Metals

Heavy metals are chemical elements with a specific gravity that is at least five 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 CNS, 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.

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

- No hand-to-mouth activities on site (eating, drinking, smoking, etc.).
- Washing hands upon leaving the work area and prior to performing any hand to mouth activities.
- Wearing surgeon's-style gloves whenever handling potentially-contaminated media including groundwater and any potential free product, sampling equipment, and sample containers.
- The physical effects of poisoning from the heavy metals tend to be a very slow process and occur over a long period of continued exposure to the source of the toxic metal. The physical symptoms that are typically induced by the presence of toxic metals in the body tend to be very vague and can include symptoms such as persistent fatigue, the appearance of splitting and blinding headaches, the presence of an upset stomach, disorders such as colic, and even anemia in some cases. The CNS is the main part of the human body likely to be affected by the presence of toxic metals. Symptoms of a disrupted CNS include the appearance of muscular tremors, the development of spells of dizziness, the presence of insomnia, the poor concentration abilities in the person, and a sudden lack of muscular coordination in the body.

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:

- Contact with heavy equipment and tools.
- Slip, trips, and falls.
- Contact with overhead electric lines and telephone lines.
- 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 AHAs.

6.2.1 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 (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.

6.2.2 Contact with Overhead and Underground Utilities

If heavy equipment such as drill rigs are used for well abandonment activities, the potential exists for contact with overhead power lines and underground utilities such as pressurized lines, water lines, telephone lines, buried utility lines, and high voltage power lines. Clearance of underground utilities for each well abandonment location will be coordinated through NCBC Public Works Maintenance Division. The Tetra Tech Utility Locating and Excavation Clearance Standard operating Procedure is attached to this HASP.

6.2.3 Strain/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.

6.2.4 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 Health and Safety Guidance Manual, 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 that 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 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 NUS Health and Safety Guidance Manual.

6.2.5 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.

6.3 NATURAL HAZARDS

Dressing properly provides your best protection against pests, insects, bugs, mosquitoes, etc. Wear long-sleeved shirts and tuck your pant legs inside heavy wool socks or boot tops to protect your ankles. A hat provides excellent protection from the summer deerflies and horseflies. Wear light-colored clothing and avoid dark colors, especially in the blue and green range, as they tend to attract insects more than other colors. Insect repellents also are very useful.

6.3.1 Insect/Animal/Snake Bites and Stings

Fire Ants

Various insects and animals may be present and should be considered. For example, fire ants present a unique situation when working outdoors in Florida. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The sting injects venom (formic acid) that causes an extreme burning sensation. Pustules form which can become infected if scratched.

Allergic reactions of people sensitive to the venom include dizziness, swelling, shock, and in extreme cases unconsciousness and death. People exhibiting such symptoms should see a physician. Fire ants can be identified by their habitat. They build mounds in open sunny areas sometimes supported by a wall or shrub. The mound has no external opening. The size of the mound can range from a few inches across to some which are in excess of 2 feet or more in height and diameter. When disturbed, they defend it by swarming out and over the mound, even running up grass blades and sticks.

Site personnel who are allergic to stinging insects such as bees, wasps, hornets, and ants must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet and the FOL and SSO notified.

Mosquito-Borne Illness

Mosquitoes may carry diseases including St. Louis encephalitis, Eastern equine encephalitis, La Crosse encephalitis, and West Nile virus.

Mosquitoes become infected after biting infected birds. The symptoms for mosquito-borne illnesses may include headache, moderate to high fever, stiff neck, and confusion. In serious cases coma, seizures or paralysis can result. Symptoms usually appear between 5 to 15 days after exposure to infected mosquitoes. Mosquito-borne illnesses may be mild or serious and can lead to death.

West Nile Virus - Encephalitis is an inflammation of the brain and can be caused by bacteria and viruses. West Nile encephalitis is caused by a virus transmitted to humans by mosquitoes. The mosquito becomes infected by feeding on birds infected with the West Nile virus. Infected mosquitoes then transmit the West Nile virus to humans and animals when biting (or taking a blood-meal).

West Nile encephalitis is NOT transmitted from person-to-person. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling any dead animals, including dead birds. Ticks have not been implicated as vectors of West Nile-like virus. Mild infections are common and include fever, headache, and body aches, often with skin rash and swollen lymph glands. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions, paralysis and, rarely, death (especially in the elderly and very young). The incubation period of West Nile encephalitis is usually 3 to 12 days.

Eastern Equine Encephalitis - Eastern Equine Encephalitis (EEE) is spread to horses and humans through the bite of an infected mosquito. The mosquito becomes infected after biting an infected bird. EEE can cause severe complications and even death. Symptoms for EEE in humans begin with high fever, chills, sore throat, nausea, and vomiting. The illness can affect the CNS, cause sudden fever, severe headache, mental confusion, seizures, and coma. Symptoms usually appear between 5 to 15 days after exposure to infected mosquitoes. There is no cure for EEE in humans.

Precautions include the following:

- Limit outdoor activities during peak mosquito times – at dusk and dawn.
- Avoid standing water.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Apply insect repellent according to manufacturer's instruction to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). Avoid products containing more than 30% DEET.

- Spray clothing with repellents containing permethrin (such as Permanone) or DEET; mosquitoes can bite through thin clothing.

6.3.2 Ambient Temperature Extremes (Heat Stress)

Given the geographic location of the site and the project schedule, overexposure to high ambient temperatures (heat stress) may exist during performance of this work depending on the project schedule. Work performed when ambient temperatures exceed 70°F may result in varying levels of heat stress (heat rash, heat cramps, heat exhaustion, and/or heat stroke) depending on variables such as wind speed, humidity, and percent sunshine, as well as physiological factors such as metabolic rate and skin moisture content. Additionally, work load and level of protective equipment will affect the degree of exposure. Site personnel will be encouraged to drink plenty of fluids to replace those lost through perspiration. Additional information such as Work-Rest Regimens and personnel monitoring may be found in Section 4.0 of the Health and Safety Guidance Manual.

Temperature extremes are considered inclement weather. Steps should be taken to the extent possible protect site personnel from the effects of heat stress and the sun. Control measures include the following:

- Watch for signs of heat stress/exhaustion.
- Provide fluid replacement.
- Provide adequate number of breaks within a cooler environment.

Sunburn

Care should be exercised when working outdoors due to harmful effects of the sun. To reduce the potential for sunburn and melanoma the following measures should be employed:

- Wear a hat that shades the face, neck, and ears.
- Apply sunscreen with a SPF of 15 or higher liberally on any exposed skin at least 15 minutes before going outside, then at least every 2 hours, more if you are sweating a lot.
- Plan/provide suitable equipment to offer shade to avoid the midday sun since the sun's ultraviolet rays are most intense between 10 A.M. and 4 P.M. and can damage your skin even on hazy days. Portable canopies over the sample station are an example of this.
- Wear wrap-around sunglasses to protect the eyes and delicate skin around them.

6.3.3 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 conditions arise (electrical storms, hurricanes, etc.), the FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

Tropical Storms and Hurricanes

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

- 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.

In preparation for high winds and storms – Secure loose articles. Lash empty drums or associated containers together contained within storage areas. During electrical storms/high winds lower mast evacuate to a safe refuge location.

Excessive Rainfall

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

Storm Surge

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

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

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

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

7.0 AIR MONITORING

Although not probable, it is possible that vinyl chloride could be present in concentrations above the current Occupational Exposure Limits (OELs). As a precautionary measure to assure that such exposures are avoided and documented, a direct reading instrument will be used to monitor worker exposures to chemical hazards present at the site. For this project, based on the properties of the primary contaminant of concern, either a Photoionization Detector (PID) with a 10.6 ev lamp or a Flame Ionization Detector (FID) may be used to monitor the air.

7.1 INSTRUMENTS AND USE

Instruments will be used primarily to monitor source points and worker breathing zone (BZ) 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., monitoring wells) for the presence of any reading above the daily-established BG level. If elevated readings are observed, the SSO shall monitor the workers BZ areas with the PID/FID. If the appropriate instrument Action Level is exceeded (see below), 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 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.

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: The maximum a worker can be exposed to is a 7 ppm for four 5 minute exposures in any one work day.
- FID Action Level: The maximum a worker can be exposed to is 1.25 ppm for four 5 minute exposures in any one work day.
- For metals, area wetting methods will be used for visible dust, if necessary.

7.2 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 number, source concentration, supplier)
- Any relevant comments or remarks

7.3 DOCUMENTING INSTRUMENT READINGS

The Site Safety Officer (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 SHSO is also responsible for ensuring that the 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 SHSO 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 SHSO (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 NCBC Gulfport. 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 in accordance with 29 CFR 1910.120(e)(4) 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 AHAs 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 onsite work activities at this site.

Each field team member, including visitors, entering the exclusion zone(s) shall be required to complete and submit a copy of the Medical Data Sheet (see Attachment I of this HASP). This shall be provided to the SSO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

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. It is anticipated that the areas around groundwater monitoring wells will have the potential for contaminants to be brought to the surface. These areas will be marked and personnel will maintain safe distances. Once groundwater monitoring activities have been completed and any surface contamination has been removed, the potential for exposure is again diminished and the area can then be reclassified as part of the contamination reduction zone. Therefore, the exclusion zones for this project will be limited to those areas of the site where active work (sample collection) is being performed plus a designated area of at least 15 feet surrounding the work area. 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.

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 where away from potential exposure to site contaminants during normal working conditions or foreseeable emergencies.

9.4 ACTIVITY HAZARD ANALYSIS

Work conducted in support of this project will be performed using AHAs to guide and direct field crews on a task by task basis. See Attachment III. It is the SSO's responsibility to review the AHAs with the task participants as part of a pre-task tail gate briefing session.

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., Department of Defense [DoD], United States Environmental Protection Agency and OSHA)
- Property owners
- Authorized Navy personnel
- Other authorized visitors

Non-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 Project Manager. 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/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 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 for site clearance, as stipulated in this plan, will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of on site activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from local law enforcement personnel.

9.6 SITE SECURITY

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

9.7 SITE MAP

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

9.8 BUDDY SYSTEM

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

9.9 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

Tetra Tech and subcontractor personnel will provide MSDSs for chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of the chemicals used on site will be developed using the Health and Safety Guidance Manual. 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 the telephones at predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities at the NCBC Gulfport, the FOL will determine and arrange for telephone communications.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that bulk hazardous materials (over 55-gallons) will be generated or 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, some potential may exist for accumulating IDW such as decontamination fluids, soil cuttings, disposable sampling equipment, and PPE.

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 include the following:

- 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 an area which has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, tanks, manholes, sewers, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

Additionally, a Permit-Required Confined Space must also have one or more of the following characteristics:

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

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

12.0 MATERIALS AND DOCUMENTATION

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

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident reports
- Medical Data Sheets
- MSDSs for chemicals brought on site including decontamination solutions, fuels, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (Attachment V)
- 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

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 and Health Protection Poster (posted)** - This poster should be conspicuously posted in places where notices to employees are normally posted, as directed by 29 CFR 1903.2 (a)(1). Each FOL shall ensure that this poster is not defaced, altered, or covered by other material. The law also states that reproductions or facsimiles of the poster shall be at least 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.
- **Personnel Monitoring (maintained)** - The results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.
- **Placards and Labels (maintained)** - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable [Hazard Communication 29 CFR 1910.1200(f)] labels.

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

13.0 ACRONYMS / ABBREVIATIONS

AHA	Activity Hazard Analysis
BG	Background
BZ	Breathing Zone
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-term Environmental Action Navy
CNS	Central Nervous System
DoD	Department of Defense
DOT	Department of Transportation
DPT	Direct Push Technology
EEE	Eastern Equine Encephalitis
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
MSDS	Material Safety Data Sheet
NA	Not Applicable
NCBC	Naval Construction Battalion Center
NOAA	National Oceanic and Atmospheric Administration
OSHA	Occupational Health and Safety Administration
PEL	Personal Exposure Level
PHSO	Project Health and Safety Officer
PID	Photoionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
ppm	Part per Million
PVC	Polyvinyl Chloride
SSO	Site Safety Officer
TBD	To Be Determined
Tetra Tech	Tetra Tech NUS, Inc.
TLV	Threshold Limit Value
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? <input type="checkbox"/> TetraTech subcontractor employee (directly supervised by Tt personnel)? <input type="checkbox"/>		
Full Name		Company (if not Tt employee)
Street Address, City, State and Zip Code		Address Type
_____		Home address (for Tt employees) <input type="checkbox"/>
_____		Business address (for subcontractors) <input type="checkbox"/>
Telephone Numbers		
Work: _____	Home: _____	Cell: _____
Occupation (regular job title)		Department
Was the individual performing regular job duties?		Time individual began work
Yes <input type="checkbox"/> No <input type="checkbox"/>		_____ AM <input type="checkbox"/> PM <input type="checkbox"/> OR Cannot be determined <input type="checkbox"/>
Safety equipment		
Provided? Yes <input type="checkbox"/> No <input type="checkbox"/>	Type(s) provided:	<input type="checkbox"/> Hard hat <input type="checkbox"/> Protective clothing
Used? Yes <input type="checkbox"/> No <input type="checkbox"/> If no, explain why		<input type="checkbox"/> Gloves <input type="checkbox"/> High visibility vest
_____		<input type="checkbox"/> Eye protection <input type="checkbox"/> Fall protection
_____		<input type="checkbox"/> Safety shoes <input type="checkbox"/> Machine guarding
_____		<input type="checkbox"/> Respirator <input type="checkbox"/> 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 <input type="checkbox"/> No <input type="checkbox"/>	
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 <input type="checkbox"/> No <input type="checkbox"/> 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)

Property Damage Equipment Damage Fire or Explosion Spill or Release

INCIDENT DETAILS

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

Response Actions Taken:

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

Agency(s) Contact Name(s)

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

Item:	Extent of damage:	Estimated repair cost

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

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

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

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

NOTIFICATIONS

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

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

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

INSTRUCTIONS:

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

Incident Report Number: (From the IR Form)							
INCIDENT DETAILS							
Name of road, street, highway or location where accident occurred				Name of intersecting road, street or highway if applicable			
County			City			State	
Did police respond to the accident?				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)

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

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: Site 4 Gulfport

Task: Mobilization / Demobilization

Prepared by C.J. Snyder

Date 6/2011

FOL

Reviewed by J. Carothers

Date 6/2011

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 IV. 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 to perform their assigned task with the equipment used in

ACTIVITY HAZARD ANALYSIS
Mobilization / Demobilization
Page 2 of 2

Task Steps	Hazards	Critical Safety Procedures and Controls
	6. Equipment moving parts 7. Striking overhead utility lines when moving or positioning large equipment.	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. 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.
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Hand tools (dollies, hand carts, hand knives, etc.)	1. Visual inspection prior to use by user.	1. Review of AHA during pre-task tailgate safety briefing with all intended task participants.
Personal Protective Equipment: Minimum: Safety toe boots, safety glasses. <u>Optional items:</u> Hardhat, hearing protection. HTRW: None anticipated for this task.	1. Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	1. 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: Site 4 Gulfport

Task: Soil Boring via DPT and monitoring well installation

Prepared by	C.J. Snyder	Date	6/2011	FOL	
Reviewed by	J. Carothers	Date	6/2011	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.

ACTIVITY HAZARD ANALYSIS

Soil Boring via DPT and Monitoring Well Installation

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 Vinyl Chloride. 	<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>

ACTIVITY HAZARD ANALYSIS
Soil Boring via DPT and Monitoring Well Installation
 Page 3 of 3

Task Steps	Hazards	Critical Safety Procedures and Controls
		<ul style="list-style-type: none"> PID Action Level: 7 ppm above BG in BZ areas for no more than 4 exposures of 5 minutes in one work day. FID Action Level: 1.75 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>
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
DPT Rig, hand tools, drill rods, PID/FID	1. Visual inspection prior to use by user. PID or FID must be calibrated as per the manufacturer's recommendations and documented on each use.	1. 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. <u>Optional items</u>: Tyvek coveralls if necessary to protect from soiling clothing. HTRW: Nitrile surgeon's style gloves, PID or FID</p>	1. Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	1. 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: Site 4 Gulfport

Task: Groundwater sampling and monitoring well purging and development

Prepared by C.J. Snyder **Date** 5/20/2011 **FOL**

Reviewed by J. Carothers **Date** 5/22/2011 **SSO**

ACTIVITY HAZARD ANALYSIS

Groundwater Sampling and Monitoring Well Purging and Development

Task Steps	Hazards	Critical Safety Procedures and Controls
		<p>some limited 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: 7 ppm above BG in BZ areas for no more than 4 exposures of 5 minutes in one work day. • FID Action Level: 1.75 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>
EQUIPMENT	INSPECTION	TRAINING
<p>Peristaltic pump, tubing, sample collection tools and containers (jars, spatulas, spoons, etc.)</p>	<p>1. Visual inspection prior to use by user.</p>	<p>1. Training/experience in proper sample collection, handling and chain of custody requirements.</p>
<p>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.</p>	<p>1. Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.</p> <p>2. PID/FID to be subjected to calibration and operational</p>	<p>1. 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.</p> <p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.</p> <p>2. SSO trained in proper calibration, use, and care of air monitoring devices used (PID/FID). This is a general</p>

ACTIVITY HAZARD ANALYSIS
Groundwater Sampling and Monitoring Well Purging and Development
Page 3 of 3

EQUIPMENT	INSPECTION	TRAINING
	checks in accordance with manufacturer's recommendations (but not less than daily).	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: Site 4 Gulfport

Task: Decontamination

Prepared by	C.J. Snyder	Date	6/2011	FOL	
Reviewed by	J. Carothers	Date	6/2011	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, 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

ACTIVITY HAZARD ANALYSIS

Decontamination

Task Steps	Hazards	Critical Safety Procedures and Controls
	5. Slips/trips/falls 6. Exposure to contaminated media	heavy items). 5. Keep decon areas orderly, maintain good housekeeping, spread light coating of sand on decon pad liner to increase traction. 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.
Equipment	Inspection	Training
Hand tools (hand brushes, garden sprayers, etc.) Pressure washer PID/FID for screening to ensure effective decontamination	1. Visual inspection prior to use by user. Check wooden handles for cracks or splinters. 2. Inspect pressure washer prior to putting into service to ensure that it is in good working order, and ensure that fittings are secure. 3. PID/FID to be calibrated and operated in accordance with manufacturer's recommendation (daily)	1. None required. 2. Review manufacturers instructions and safety guidelines prior to use.. 3. 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.
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 coveralls	1. Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	1. 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. 2. 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.

ACTIVITY HAZARD ANALYSIS

Decontamination

Page 2 of 3

Equipment	Inspection	Training
may be specified by the SSO.		

I have read and understand this AHA:

Name (Printed)	Signature	Date



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: Site 4 Gulfport

Task: IDW Management

Prepared by	C.J. Snyder	Date	6/2011	FOL	
Reviewed by	J. Carothers	Date	6/2011	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.)	<ol style="list-style-type: none"> 1. Visual inspection prior to use by user. Check 	<ol style="list-style-type: none"> 1. All personnel participating in this activity must be current with HAZWOPER training requirements.

ACTIVITY HAZARD ANALYSIS
IDW Management
Page 2 of 2

EQUIPMENT	INSPECTION	TRAINING
	wooden handles for cracks or splinters.	
Personal Protective Equipment: Minimum: Safety toe boots, safety glasses Optional items: Hardhat, cotton or leather work gloves. 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.	1. Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	1. PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date

ATTACHMENT IV

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

Equipment Inspection Checklist for Drill Rigs

Page 2

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

Yes	No	NA	Requirement	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	High Pressure Hydraulic Lines <ul style="list-style-type: none"> • Obvious damage • Operator protected from accidental release • Coupling devices, connectors, retention cables/pins are in good condition and in place 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Mast Condition <ul style="list-style-type: none"> • Structural components/tubing • Connection points • Pins • Welds • Outriggers • Operational • Plumb (when raised) 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Hooks <ul style="list-style-type: none"> • Are the hooks equipped with Safety Latches? • Does it appear that the hook is showing signs of wear in excess of 10% original dimension? • Is there a bend or twist exceeding 10% from the plane of an unbent hook? • Increase in throat opening exceeding 15% from new condition • Excessive nicks and/or gouges • Clips • Number of U-Type (Crosby) Clips (cable size 5/16 – 5/8 = 3 clips minimum) (cable size 3/4 – 1 inch = 4 clips minimum) (cable size 1 1/8 – 1 3/8 inch = 5 clips minimum) 	

Equipment Inspection Checklist for Drill Rigs
Page 3

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

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

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"/>	<p>PPE Required for Drill Rig Exclusion Zone</p> <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"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Other Hazards</p> <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

Equipment Inspection Checklist for DPT Rigs

Company: _____

Unit/Serial No#: _____

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

Equipment Type: _____

Project Name: _____

Project No#: _____

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency Stop Devices	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<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? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Has a person been designated as the Emergency Stop Device Operator? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Highway Use	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Cab, mirrors, safety glass? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Seat Belts? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Is the equipment equipped with audible back-up alarms and back-up lights? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Horn and gauges 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Brake condition (dynamic, park, etc.) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Tires (Tread) or tracks 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Windshield wipers 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Exhaust system 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Steering (standard and emergency) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Wheel Chocks? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Are tools and material secured to prevent movement during transport? Especially those within the cab? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Are there flammables or solvents or other prohibited substances stored within the cab? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • 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 DPT 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"/>	Safety Guards – <ul style="list-style-type: none"> • Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? • Hot pipes and surfaces exposed to accidental contact? • High pressure lines • Nip/pinch points 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Operator Qualifications <ul style="list-style-type: none"> • Does the operator have proper licensing where applicable, (e.g., CDL)? • Does the operator, understand the equipment’s operating instructions? • Is the operator experienced with this equipment? • Is the operator 21 years of age or more? 	

Equipment Inspection Checklist for DPT Rigs
Page 3

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____

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

Approved for Use Yes No See Comments

 Site Health and Safety Officer

 Site Health and Safety Officer

 Operator

ATTACHMENT V

OSHA POSTER

Job Safety and Health

It's the law!

OSHA

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

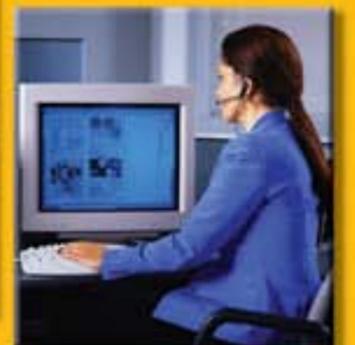
EMPLOYEES:

- 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