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WORK PLAN ADDENDUM 1 EXCAVATION OF PETROLEUM CONTAMINATED SOIL AT  
UNDERGROUND STORAGE TANK SITE 1363 NS MAYPORT FL  
12/1/2003  
CH2M HILL

**Work Plan Addendum No. 01  
Excavation of Petroleum-Contaminated Soil at  
Underground Storage Tank Site 1363,  
Building 1363, Medical Dispensary**

**Naval Station Mayport  
Mayport, Florida**

**Revision No. 00**

**Contract No. N62467-01-D-0331  
Contract Task Order No. 0011**

Submitted to:

**U.S. Naval Facilities  
Engineering Command  
Southern Division**

Prepared by:



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December 2003

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U.S. Navy Responsible Authority

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Date

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- B Site Specific Health and Safety Plan
- C Quality Control Attachments
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  - Contractor Daily Production Report
  - Contractor Daily Quality Control Report
  - Preparatory Phase Report
- D Project QC Manager Appointment Letters

# Acronyms

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AALA	American Association of Laboratory Accreditation
AASHTO	American Association of State Highway and Transportation Officials
AHA	Activity Hazard Analysis
AFCEE	Air Force Center for Environmental Excellence
bls	below land surface
BTEX	benzene, ethylbenzene, toluene, and xylenes
CCI	CH2M HILL Constructors, Inc.
CD	Certificate of Disposal
CFR	Code of Federal Regulations
CO	Contracting Officer
COC	chemical of concern
CTO	Contract Task Order
DOT	Department of Transportation
EISOPQAM	Environmental Investigative Standard Operating Procedure and Quality Assurance Manual
EPP	Environmental Protection Plan
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FL-PRO	Florida Petroleum Residual Organic
GAG	Gasoline Analytical Group
IRCDQM	Installation Restoration Chemical Data Quality Manual
J.A. Jones	J.A. Jones Environmental Services Company
KAG	Kerosene Analytical Group
l/min	liters per minute
LDR	Land Disposal Restriction
mil	millimeter
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl tert butyl ether
NAVFAC EFD SOUTH	U.S. Naval Facilities Engineering Command, Southern Division
NIST	National Institute of Standards and Technology
NS	Naval Station
NTU	nephelometric turbidity unit
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
OVA/FID	organic vapor analyzer with flame ionization detector
PAHs	polynuclear aromatic hydrocarbons
ppm	parts per million
PSI	pounds per square inch
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control

QCR	Quality Control Report
ROICC	Resident Officer in Charge of Construction
SAP	Sampling and Analysis Plan
SCTLs	Soil Cleanup Target Levels
SOPs	Standard Operating Procedures
TAT	turnaround time
T & D	transportation and disposal
TRPH	total recoverable petroleum hydrocarbons
TSSDS	Tri-service Spatial Data Standards
TtNUS	Tetra Tech NUS, Inc.
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compounds

# 1.0 Introduction

---

CH2M HILL Constructors, Inc. (CCI) has been contracted by the U.S. Naval Facilities Engineering Command, Southern Division (NAVFAC EFD SOUTH), to prepare this Work Plan Addendum, under the Response Action Contract No. N62467-01-D-0331, Contract Task Order (CTO) No. 0011. The purpose of this Work Plan Addendum is to outline the procedures to be used to perform the excavation of petroleum-contaminated soil at underground storage tank (UST) Site 1363, Building 1363, located at Naval Station (NS) Mayport, Mayport, Florida.

Petroleum-contaminated soil excavation activities at UST Site 1363, Building 1363 will include the following:

- Mobilization and site preparation
- Pre-excavation confirmation soil screening, sampling, and analyses
- Pre-excavation site survey
- Excavation; transportation and disposal (T&D); and backfill of the petroleum-contaminated soil
- Monitoring well abandonment/installation
- Site restoration
- Decontamination
- Post-excavation site survey
- Demobilization
- Post-excavation groundwater sampling and analyses
- Preparation and submittal of a Source Removal Report

This Work Plan Addendum is organized into six sections of text and three appendices as follows.

**Section 1.0 Introduction** includes the site history and project objectives.

**Section 2.0 Project Execution Plan** details the required scope of work, the project schedule, the communications plan, and the traffic control plan. A detailed project schedule is provided in Appendix A of this Work Plan Addendum. The NS Mayport Basewide Work Plan (CCI, 1999) provides a brief description of the reporting requirements under this Contract.

**Section 3.0 Sampling and Analysis Plan (SAP)** provides project sample locations, sample collection frequency, and the required laboratory analyses for samples collected during project activities. The NS Mayport Basewide Work Plan (CCI, 1999) and Florida Department of Environmental Protection (FDEP) Standard Operating Procedures (SOPs) outline the

sample collection methodology including sample handling, labeling, and required collection of quality assurance (QA)/quality control (QC) samples.

**Section 4.0 Waste Management Plan** discusses the characterization, disposal, onsite management, and transportation of wastes (i.e., petroleum-contaminated soil) encountered or generated during project activities.

**Section 5.0 Environmental Protection Plan** contains site-specific environmental provisions and references the NS Mayport Basewide Work Plan (CCI, 1999), which contains the Environmental Protection Plan for all work completed at NS Mayport.

**Section 6.0 Quality Control Plan** includes the testing requirements for work described in this Work Plan Addendum. The site-specific project organization for this CTO is also included in this section. The QC attachments (i.e., the submittal register, testing plan and log, etc.) are provided in Appendix C.

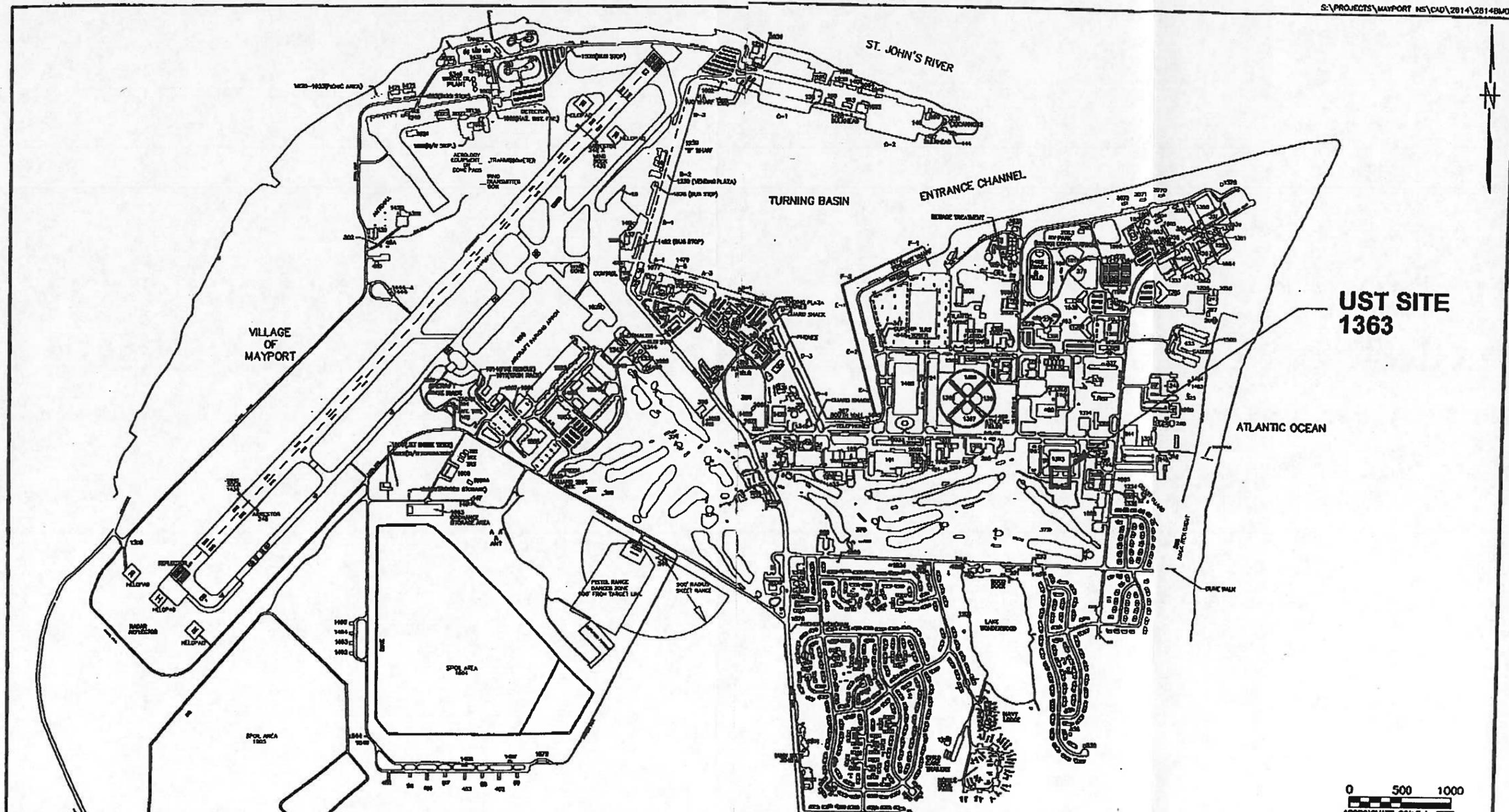
The site-specific health and safety plan that addresses the work described in this Work Plan Addendum is included in Appendix B. Section 5.0 Site Health and Safety Plan of the NS Mayport Basewide Work Plan (CCI, 1999) addresses project-specific health and safety issues for the remedial activities to be completed at NS Mayport.

## 1.1 Site Description

UST Site 1363 is located south of Building 1363, the Medical Dispensary, in the northeast area of NS Mayport on Massey Avenue. Figures 1-1 and 1-2 show the location and layout of UST Site 1363, respectively. The land surface at the site is relatively flat, sloping slightly to the southwest. The surface drainage flows toward ditches to the south and east. A drainage ditch separates the site and the golf course, which is located south of the USTs. An asphalt access road and parking area are located between Building 1363 and the USTs.

Two USTs and associated piping were removed and replaced from a location approximately 80 feet south of Building 1363 in April 1995. Tank G-1363 was a 2,500-gallon UST that contained diesel fuel for an emergency generator. Tank 1363 was a 7,500-gallon UST that contained fuel oil for a heating boiler. During the UST closure, approximately 325 tons of excessively contaminated soil was removed. Two new USTs, Tank NG-1363 and Tank N-1363, were installed at the same location. Petroleum-contaminated soil and groundwater remained at the site following UST removal and installation.

The chemicals of concern (COCs) at UST Site 1363 are volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and total recoverable petroleum hydrocarbons (TRPH). Figures 1-3 through 1-5 show the areas of petroleum-contaminated soil and groundwater and the concentrations of the chemicals of concern.



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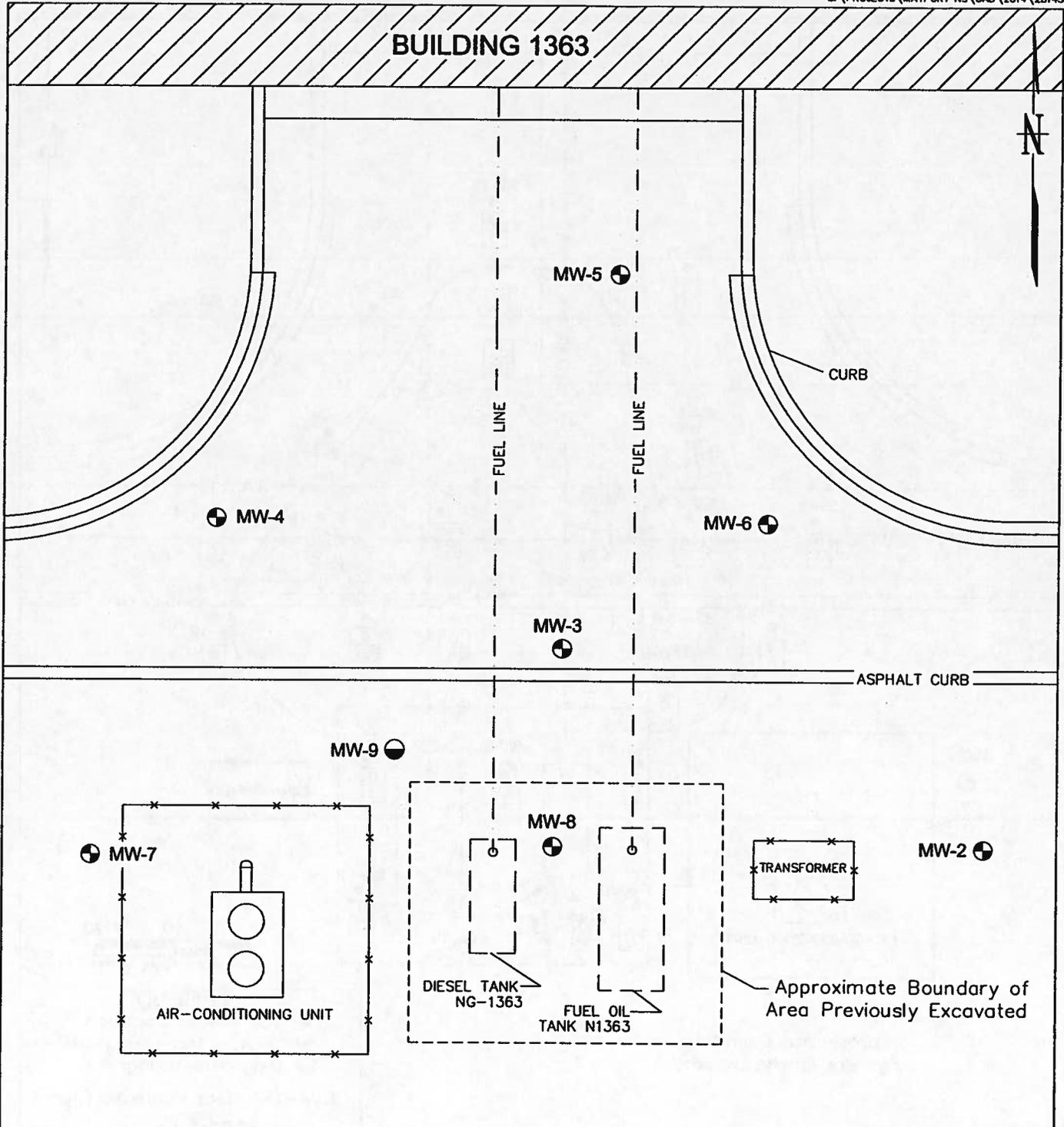
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SITE VICINITY MAP  
UST SITE 1363  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

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**BUILDING 1363**

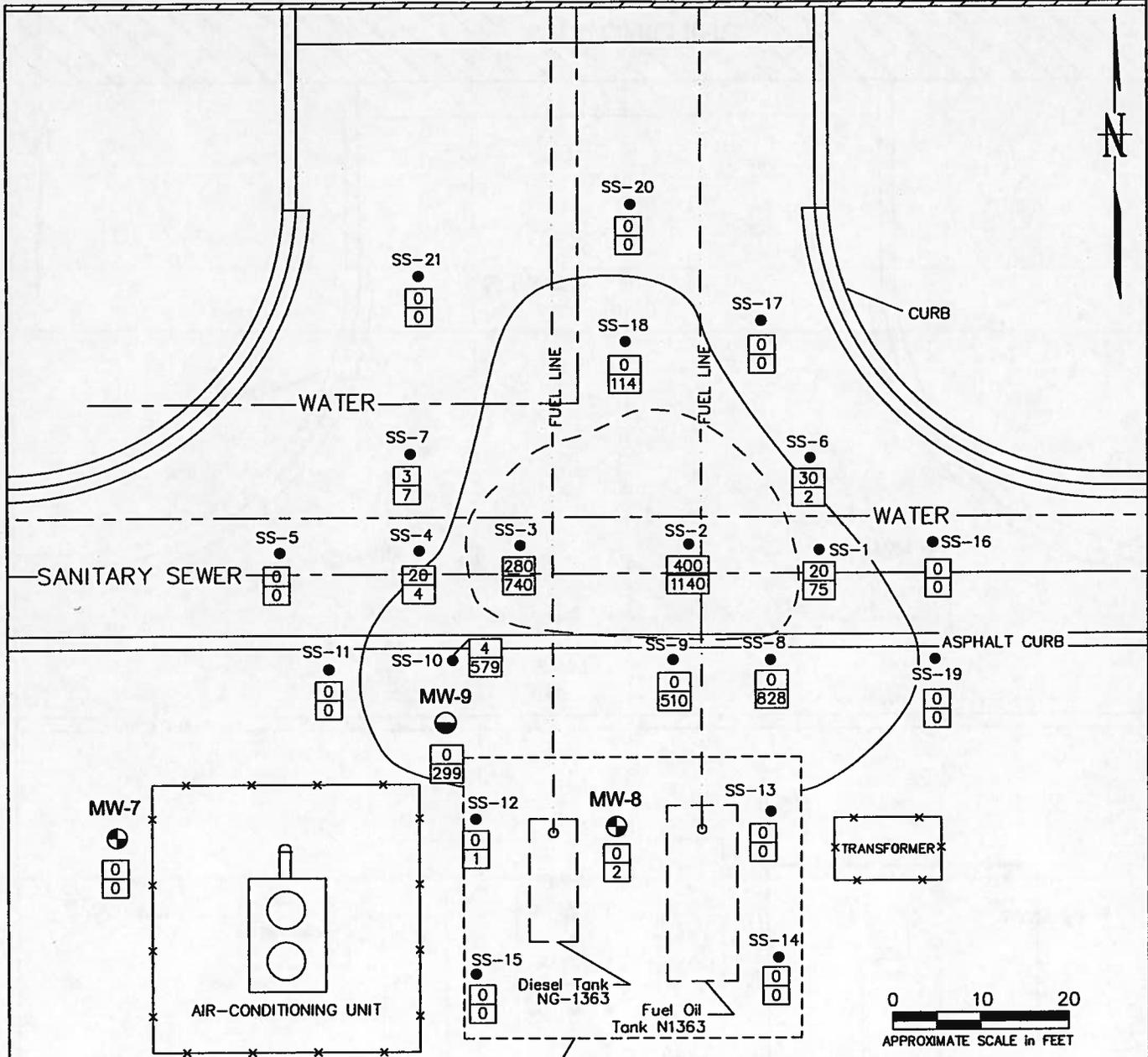


NOTE: Information shown was obtained from maps generated by others during previous investigations. Distances and dimensions are not based upon a professional survey and should be considered approximate

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SITE PLAN SHOWING  
MONITORING WELL LOCATIONS  
UST SITE 1363  
MAYPORT NAVAL STATION  
MAYPORT, FLORIDA

<b>LEGEND</b>	
⊕	Shallow Monitoring Well
⊙	Deep Monitoring Well
<p>APPROXIMATE SCALE in FEET</p>	
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Approximate Boundary of Area Previously Excavated

NOTE: Information shown was obtained from maps generated by others during previous investigations. Distances and dimensions are not based upon a professional survey and should be considered approximate.

OVA-FID = Organic Vapor Analyzer with Flame Ionization Detector  
 ppm = parts per million  
 ft bls = feet below land surface

**LEGEND**

- Soil Boring Location
- ⊕ Shallow Monitoring Well
- ⊖ Deep Monitoring Well

OVA-FID Measurements (ppm)

1 ft bls ▶ 4

3 ft bls ▶ 579

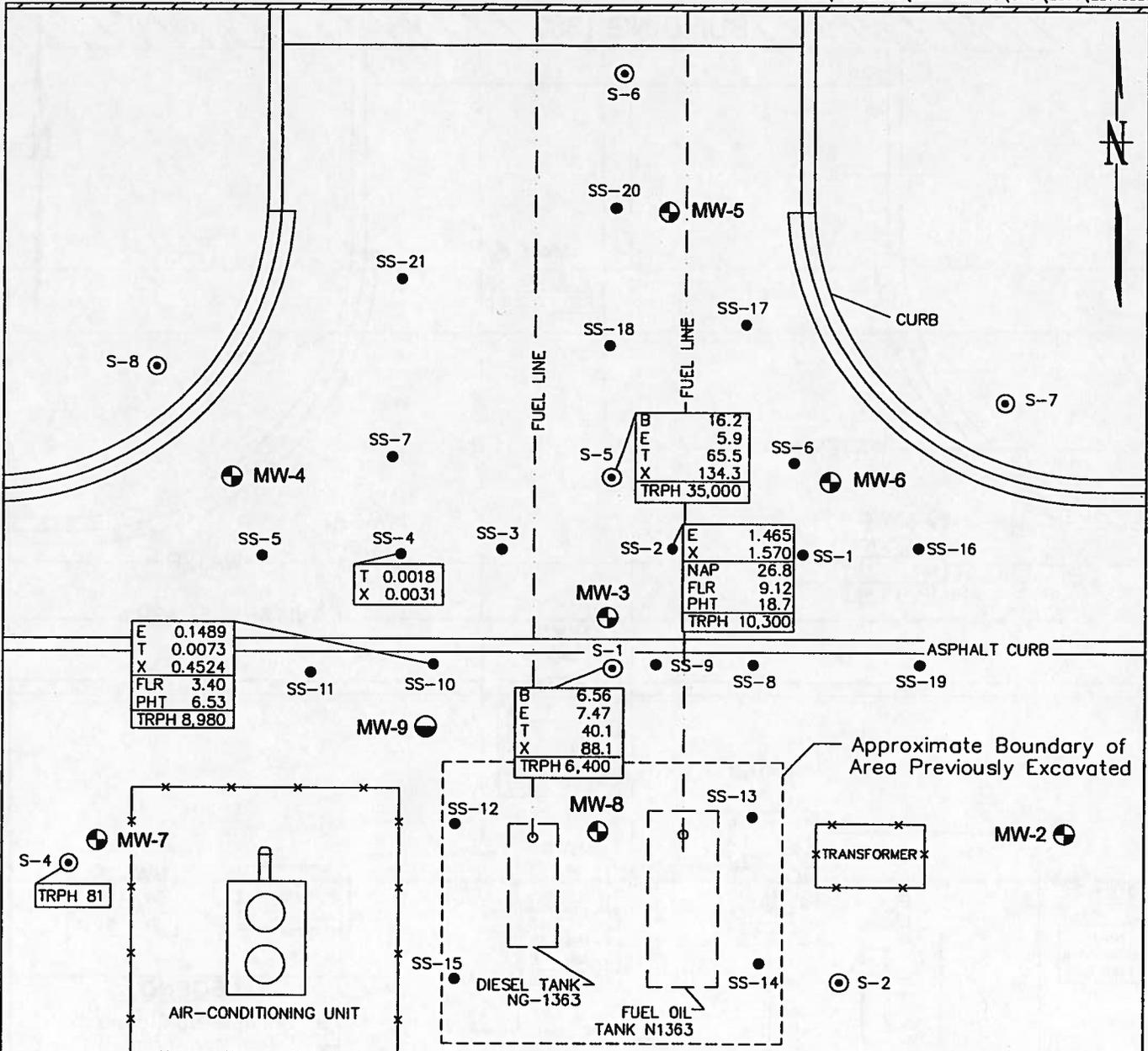
⬭ Approximate Area of Excessively Contaminated Soil 1 ft bls

⬭ Approximate Area of Excessively Contaminated Soil 3 ft bls

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OVA-FID MEASUREMENTS AND APPROXIMATE AREA OF EXCESSIVELY CONTAMINATED SOIL  
 UST SITE 1363  
 MAYPORT NAVAL STATION  
 MAYPORT, FLORIDA

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REV.	0



**NOTES:**

- 1) TRPH Concentrations shown at GeoProbe boring locations were reported on soil samples collected 4-6 ft bls
- 2) S = Soil samples collected in May 1997  
SS = Soil samples collected in June 1998.
- 2) Depths were not available for samples collected at soil boring (SS) locations
- 3) Information shown was obtained from maps generated by others during previous investigations. Distances and dimensions are not based upon a professional survey and should be considered approximate

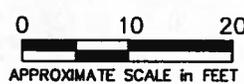
**LEGEND**

- ⊙ Geoprobe Boring Location
- Soil Boring Location
- ⊕ Shallow Monitoring Well
- ⊖ Deep Monitoring Well

Constituent **TRPH 81** Concentration (mg/kg)

E	ETHYLBENZENE
T	TOLUENE
X	TOTAL XYLENES
NAP	NAPHTHALENE
FLR	FLUORENE
PHT	PHENANTHRENE
TRPH	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

mg/kg = Milligrams per Kilogram



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SCALE  
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DETECTED CONSTITUENTS IN  
SOIL SAMPLES  
UST SITE 1363  
MAYPORT NAVAL STATION  
MAYPORT, FLORIDA

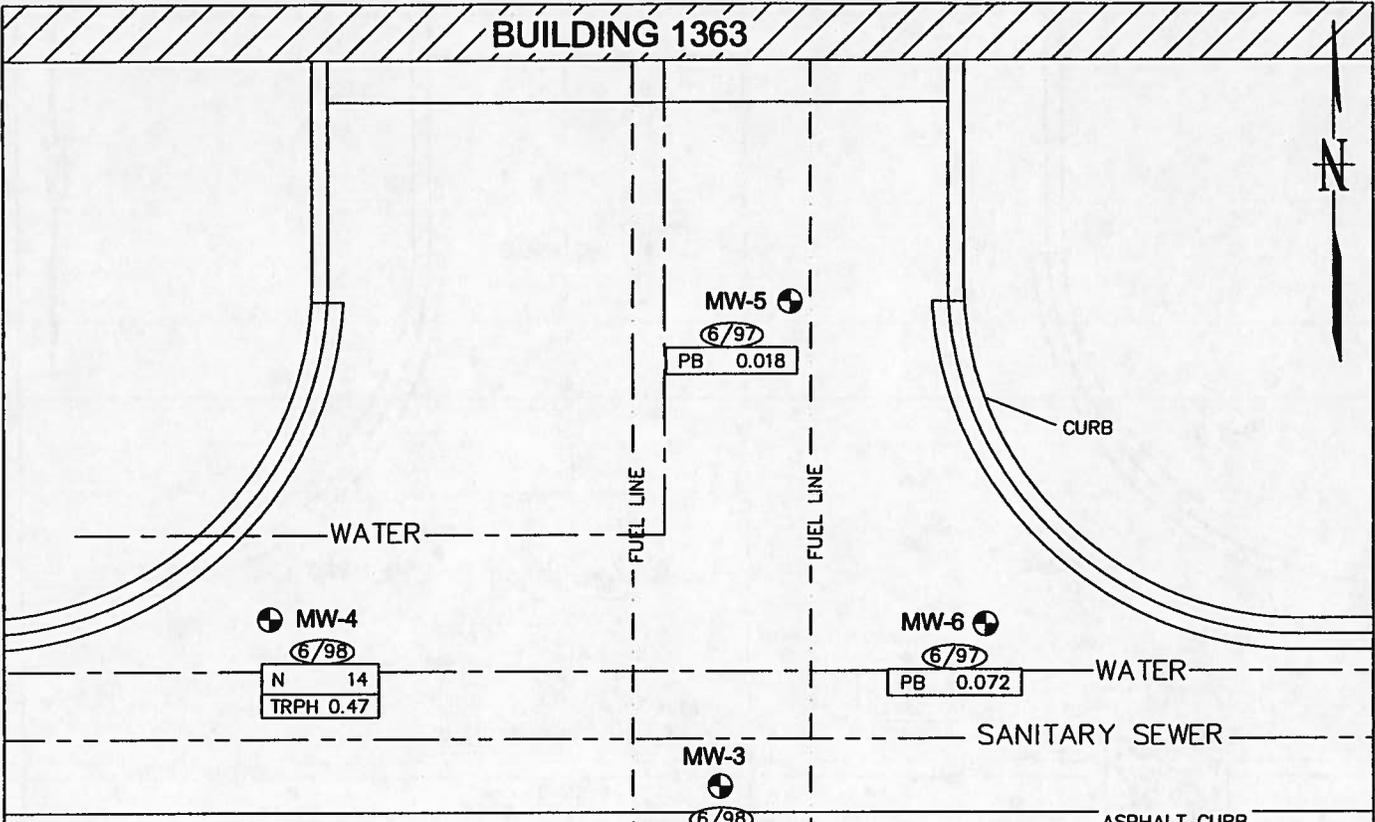
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**BUILDING 1363**



**MW-5**  
 (6/97)  
 PB 0.018

**MW-4**  
 (6/98)  
 N 14  
 TRPH 0.47

**MW-6**  
 (6/97)  
 PB 0.072

**MW-3**  
 (6/98)  
 E 6.4  
 N 78  
 1-MN 94  
 2-MN 58  
 TRPH 1.79

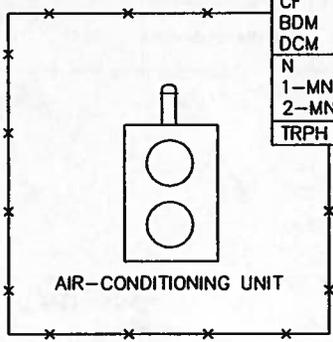
**MW-9**  
 (6/98)  
 CF 14.0  
 BDM 1.2  
 DCM 1.3  
 N 5  
 1-MN 10  
 2-MN 14  
 TRPH 1.62

**MW-7**  
 (6/98)  
 No  
 Constituents  
 Detected

**MW-8**  
 (6/98)  
 N 16  
 1-MN 15  
 2-MN 8  
 TRPH .036



**MW-2**  
 (6/97)  
 PB 0.041



**MW-1**  
 (6/97)  
 PB 0.036

**LEGEND**

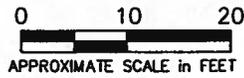
Shallow Monitoring Well  
 Deep Monitoring Well

(6/97) Mo./Yr. Sampled  
 PB 0.072 Concentration

Abbreviation	Constituent	Units
B	Benzene	µg/L
E	Ethylbenzene	µg/L
CF	Chloroform	µg/L
BDM	Bromodichloromethane	µg/L
DCM	Dibromochloromethane	µg/L
N	Naphthalene	µg/L
1-MN	1-Methylnaphthalene	µg/L
2-MN	2-Methylnaphthalene	µg/L
PB	Total Lead	mg/L
TRPH	Total Recoverable Petroleum Hydrocarbons	mg/L

µg/L = Micrograms per Liter  
 mg/L = Milligrams per Liter

NOTE: Information shown was obtained from maps generated by others during previous investigations. Distances and dimensions are not based upon a professional survey and should be considered approximate



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COST/SCHED-AREA

SCALE AS NOTED

DETECTED CONSTITUENTS IN  
 GROUNDWATER SAMPLES  
 UST SITE 1363  
 MAYPORT NAVAL STATION  
 MAYPORT, FLORIDA

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## 1.2 Project Objectives

The project objectives are to delineate, excavate, transport, and dispose of the area of petroleum-contaminated soil that exceeds FDEP Direct Exposure-Residential and Leachability Soil Cleanup Target Levels (SCTLs) as listed in Table II, Chapter 62-777, Florida Administrative Code (FAC). The chemicals of concern and their associated selected SCTLs are provided in Table 1-1.

**TABLE 1-1**  
Chemicals of Concern and Associated Selected SCTLs

Site Specific COC	Concentrations from Table II* (mg/kg)
Naphthalene	1.7
Benzene	0.007
Toluene	0.5
Ethylbenzene	0.6
Total Xylenes	0.2
TRPHs	340

\*Concentration is the lower of the residential direct exposure or leachability SCTLs based on groundwater criteria Table II, Chapter 62-777, FAC.

COC = chemical of concern

Concentrations reported in milligrams per kilogram (mg/kg).

## 2.0 Project Execution Plan

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The scope of work, project schedule, communications plan and traffic control plan are described in this section.

### 2.1 Scope of Work

The activities associated with the scope of work are as follows:

- Mobilization and site preparation
- Pre-excavation confirmation soil screening, sampling, and analyses
- Backfill material certification
- Pre-excavation survey
- Monitoring well abandonment
- Excavation of petroleum-contaminated soil and backfilling
- Waste characterization
- T&D of contaminated/uncontaminated materials
- Site restoration
- Monitoring well installation
- Decontamination
- Post-excavation survey
- Demobilization
- Post-excavation groundwater sampling and analyses
- Preparation and submittal of a Source Removal Report

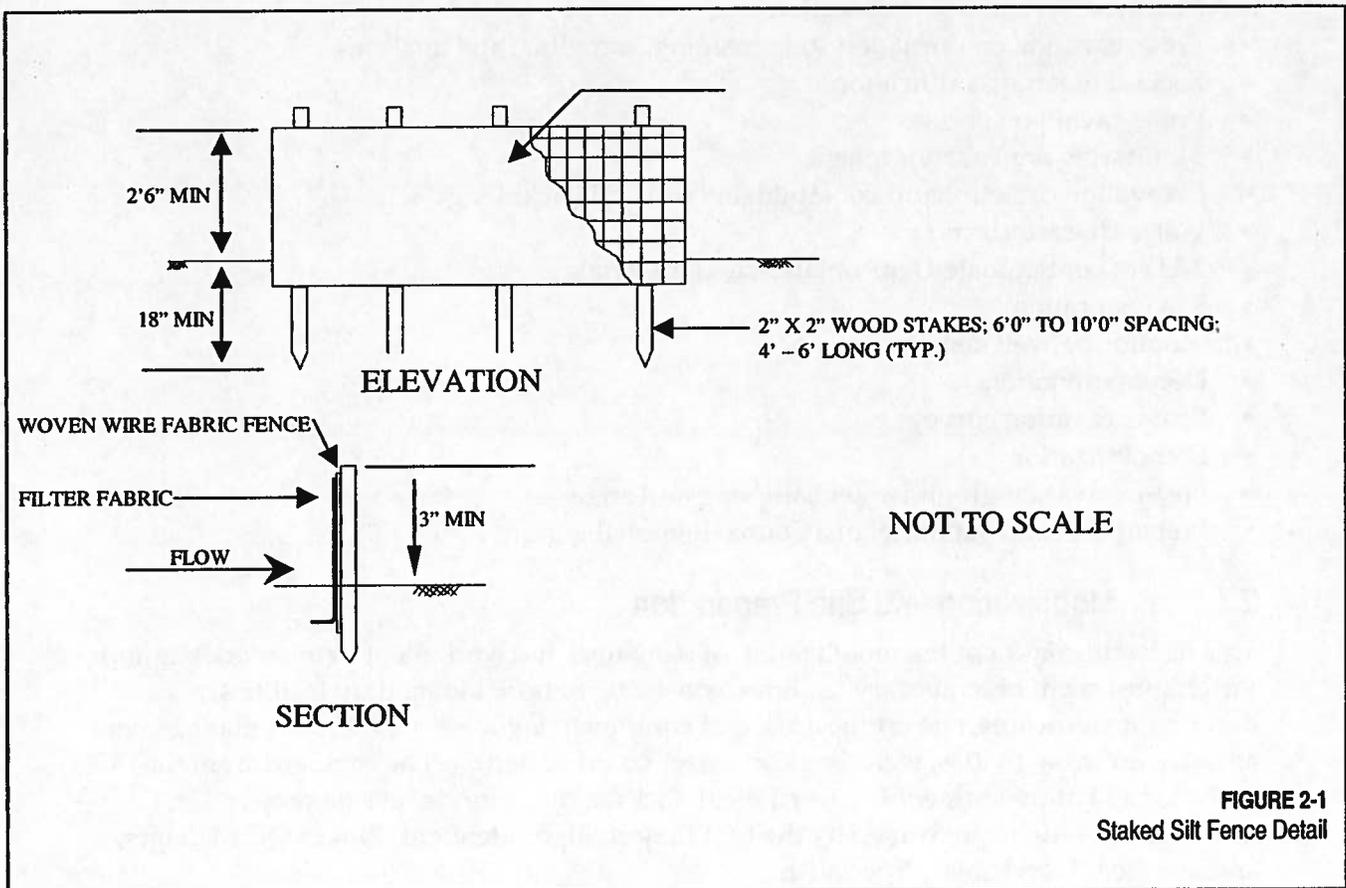
#### 2.1.1 Mobilization and Site Preparation

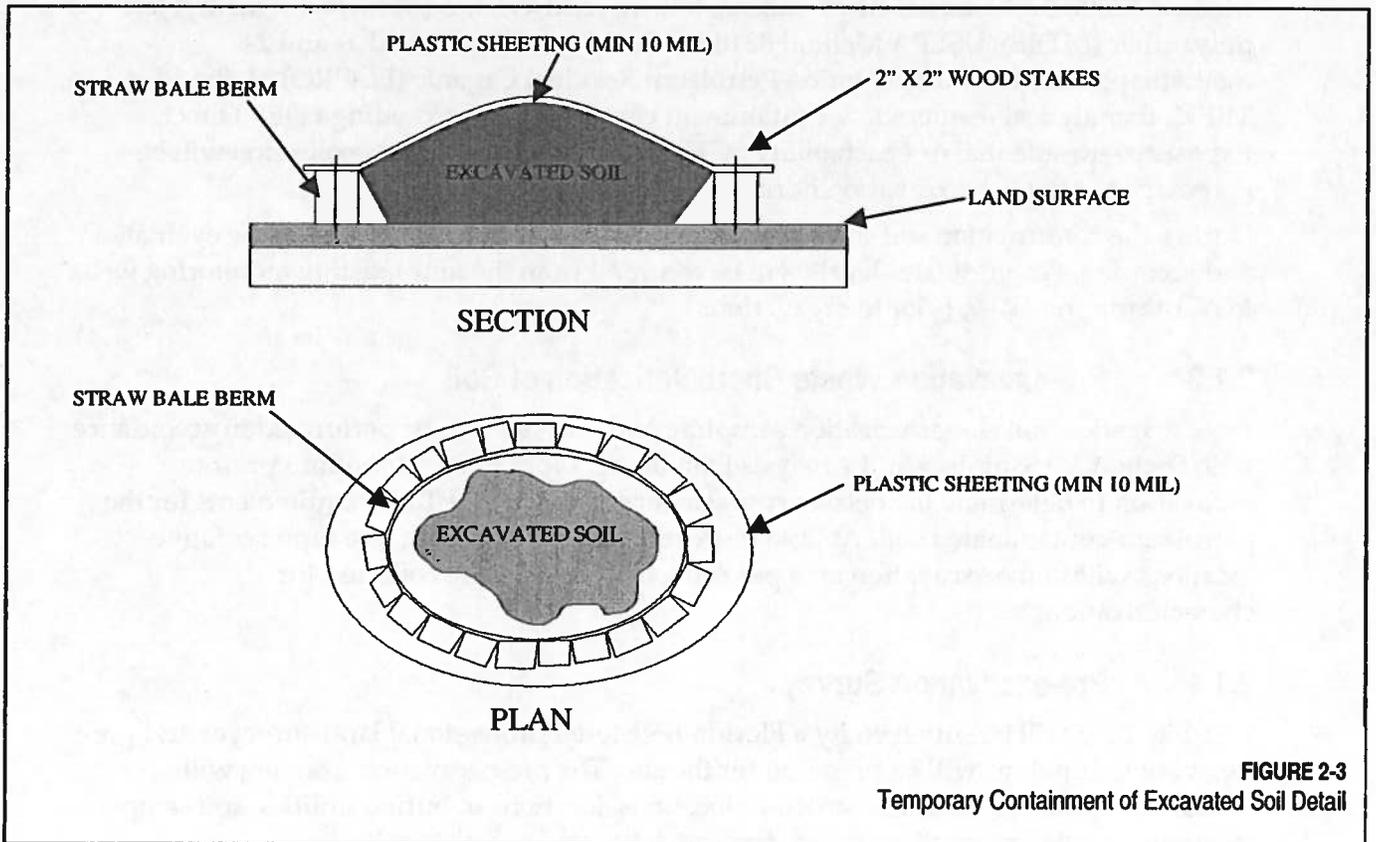
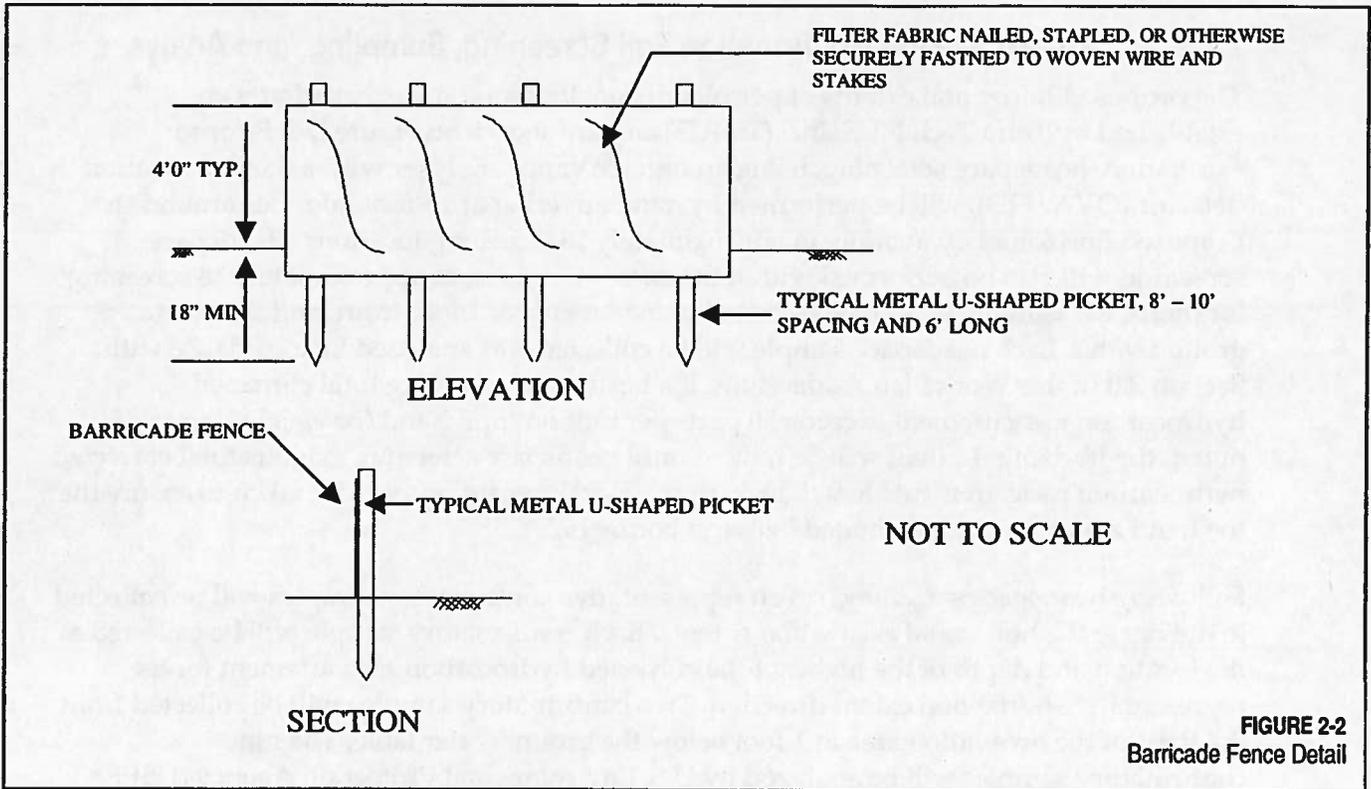
This task will consist of the mobilization of personnel and equipment to the work site and the establishment of temporary facilities, consisting of portable sanitary facilities, a decontamination area, site refuge area, and equipment laydown area. Project management and scheduling activities, including contractor coordination, will be achieved from the CCI office located at the former NAS Cecil Field, Jacksonville, Florida. Onsite project management will be performed by the CCI Project Superintendent, Project QC Manager, and Site Health and Safety Specialist.

Prior to the commencement of work, site controls including construction barricades and security fencing will be installed and the decontamination area and equipment laydown area prepared. CCI will coordinate with NS Mayport Environmental Division, Public Works Center, and the Resident Officer in Charge of Construction (ROICC) to acquire utility layout plans of the area and complete the excavation permit. Utilities in the work areas will be marked with paint and stakes, as appropriate. All marked utility lines in construction areas will be uncovered with handtools. In addition, the progress of subsurface work will be continuously monitored for evidence of obstructions or utilities.

Any damage to underground utilities or subsurface structures will be immediately reported to the ROICC and subsequently repaired by CCI via methods approved by the ROICC.

Erosion control measures will be implemented if soil is stockpiled or an excavation remains open overnight. Plastic sheeting, silt fencing, and hay bales will be available on site should weather conditions warrant covering and berming stockpiled material to control runoff or dust emissions. Figure 2-1 provides a detail of the staked silt fencing that will be installed around the perimeter of any open excavation and drainage feature. Figure 2-2 shows a detail of the temporary barricade fencing to be placed around any excavations that remain open overnight. Figure 2-3 presents a detail of the temporary containment of excavated soil in the event soil is staged at the site overnight. This temporary containment will consist of straw bales around the perimeter of the staging area and a polyethylene liner and cover.





### **2.1.2 Pre-excavation Confirmation Soil Screening, Sampling, and Analyses**

The proposed horizontal extents of petroleum-contaminated soil excavation were established by Tetra Tech NUS, Inc. (TtNUS) and are shown on Figure 2-4. Prior to excavation, headspace screening, using an organic vapor analyzer with a flame ionization detector (OVA/FID), will be performed by hand augering at 15-foot intervals around the proposed horizontal excavation, in approximately 13 screening locations. Headspace screening will also be performed within the excavation area, in approximately 18 screening locations. Measurements will be recorded in increments of 1 foot from land surface to groundwater. Each headspace sample will be collected and analyzed in accordance with Section 3.0 of this Work Plan Addendum. If a headspace screening total corrected hydrocarbon measurement exceeds 50 parts per million (ppm) and/or visible staining is noted, the horizontal extent will be moved until headspace screening exhibits total corrected hydrocarbon measurements less than 50 ppm. Extra precautions will be taken to ensure that the hand auger is decontaminated between boring holes.

Following headspace screening, seven representative confirmatory samples will be collected to delineate the horizontal excavation extents. Each confirmatory sample will be collected at the location and depth of the highest total corrected hydrocarbon measurement for its representative horizontal extent direction. Two confirmatory samples will be collected from the floor of the excavation area at 1 foot below the groundwater table. The nine confirmatory samples will be analyzed by U.S. Environmental Protection Agency (USEPA) Method 8260B for benzene, ethylbenzene, toluene, and xylenes (BTEX) with methyl tert butyl ether (MTBE), USEPA Method 8310 for the 16 listed PAHs and 1- and 2-methylnaphthalene, and the Florida Petroleum Residual Organic (FL-PRO) Method for TRPH. If analytical results show contaminant concentrations exceeding FDEP Direct Exposure – Residential or Leachability SCTLs, additional soil sample collection will be necessary to establish excavation horizontal extents.

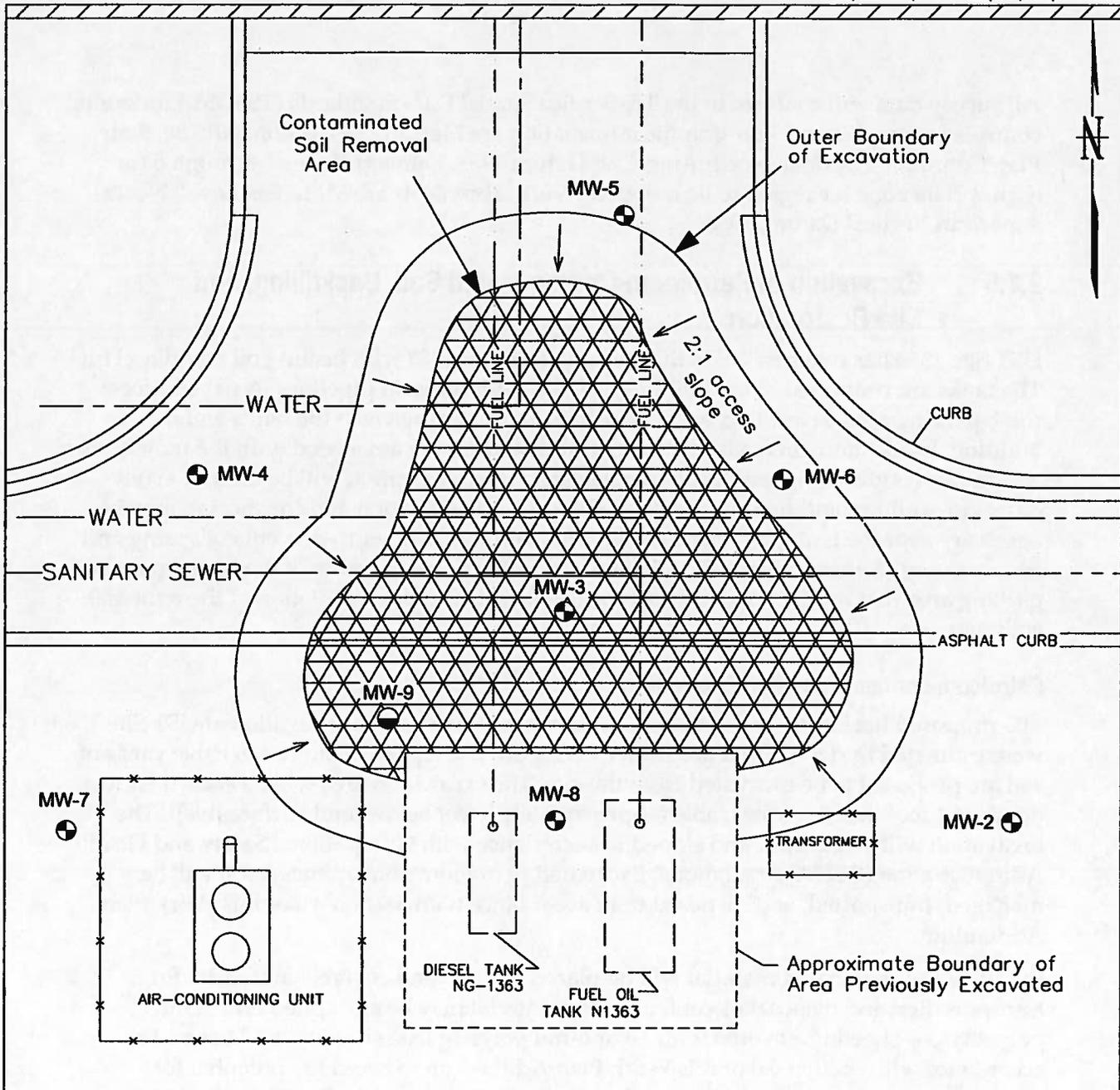
During the confirmation soil screening, the level of saturation of the soil will be evaluated and recorded. Groundwater levels will be recorded from the nine existing monitoring wells, MW-1 through MW-9, prior to excavation.

### **2.1.3 Pre-excavation Waste Characterization of Soil**

Pre-excavation soil characterization sampling and analysis will be performed in accordance with Section 3.0 Sampling and Analysis Plan of this Work Plan Addendum prior to excavation to determine the necessary waste management and T&D requirements for the petroleum-contaminated soil. At least one composite sample from five representative locations within the excavation area per 300 tons of soil will be collected for characterization.

### **2.1.4 Pre-excavation Survey**

UST Site 1363 will be surveyed by a Florida-registered professional land surveyor and pre-excavation drawings will be prepared for the site. The pre-excavation drawing will document surface/subsurface structure locations, locations of buried utilities, soil sample locations, monitoring well locations, and the delineated excavation limits.



NOTE: Information shown was obtained from maps generated by others during previous investigations. Distances and dimensions are not based upon a professional survey and should be considered approximate

**LEGEND**

- Shallow Monitoring Well
- Deep Monitoring Well
- Limits of Contaminated Soil Removal

0 10 20  
 APPROXIMATE SCALE in FEET

DRAWN BY	DATE
LLK	8/1/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	

LIMITS OF CONTAMINATED SOIL REMOVAL  
 UST SITE 1363  
 MAYPORT NAVAL STATION  
 MAYPORT, FLORIDA

CONTRACT NO.	2814
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	FIGURE 2-4
REV.	0

All survey data will conform to the Tri-Service Spatial Data Standards (TSSDS). Horizontal controls for graphic and non-graphic information are Mercator Projection, GRS 80, State Plan Coordinate System, North American Datum 1983, Lambert Zones 1 through 6 (or appropriate zone for region to be mapped). Vertical controls are Mean Sea Level, North American Vertical Datum, 1988.

### **2.1.5 Excavation of Petroleum-Contaminated Soil, Backfilling, and Site Restoration**

UST Site 1363 has two new USTs that supply Building 1363 with heating oil and diesel fuel. The tanks are connected to the building via two underground pipelines. A paved access road, parking area, sewer line, and water line are located between the tanks and the building. In addition, there also may be utilities and piping associated with the transformer and the air conditioning unit located at the site. Hand excavation will be used to avoid damaging utilities and fuel supply lines. Cut-and-fill excavation and/or shoring may be necessary near the tanks, air conditioning unit, and transformer to prevent collapsing and ensure safety. Automobile traffic will be routed away from the parts of the access road and parking area that will be removed and then replaced after the completion of the remedial activities.

#### **Petroleum-contaminated Soil Excavation**

The proposed horizontal extents of petroleum-contaminated soil excavation at UST Site 1363 were estimated by TtNUS and are shown on Figure 2-4. Approximately 446 cubic yards of soil are proposed to be excavated from the site. The excavation area will be excavated to a depth of 1 foot into the water table (approximately 5 feet below land surface [bls]). The excavation will be cut back and sloped in accordance with Occupational Safety and Health Administration (OSHA) regulations. Excavated petroleum-contaminated soil will be managed, transported, and disposed of in accordance with Section 4.0 of this Work Plan Addendum.

Excavated contaminated material will be placed in lined and covered containers for transportation and disposal or contaminated material may be stockpiled on 20-mil polyethylene sheeting, covered with 10 or 6-mil polyethylene sheeting, and bermed in accordance with Section 4.0 of this Work Plan Addendum to avoid the potential for contaminating surrounding soil or surface water. Soil characterization sampling and analysis will be performed in accordance with Section 3.0 of this Work Plan Addendum to determine the necessary handling and T&D requirements for the petroleum-contaminated soil.

#### **Backfilling**

The access road and parking area that is disturbed during excavation will be backfilled with certified "clean" American Association of State Highway and Transportation Officials (AASHTO) gradation No. 57 (3/4-inch) gravel fill (or approved equal) from an offsite source. This will serve as the base for the asphalt covering that will be used to repair the paved area. Since AASHTO gradation No. 57 gravel fill (or approved equal) will be used as a base, no compaction testing will be necessary in this area.

The grassed areas requiring excavation will be backfilled to original grade with certified "clean" granular fill material from an offsite source. Fill materials will be placed in maximum of 1-foot lifts and machine-compacted.

Clean granular fill and AASHTO gradation No. 57 gravel fill (or approved equal) will be furnished from an offsite source(s). Approved-laboratory analytical results from a representative sample of each fill material are required to certify clean fill. One sample from each fill source is required and the required analyses are specified in Section 3.0 of this Work Plan Addendum.

### **Site Restoration**

Any disturbed areas of asphalt or concrete caused by excavation operations will be restored to match pre-excavation conditions. Existing asphalt edges will be saw cut to ensure an even straight edge before paving takes place. Any curbs destroyed during excavation will be replaced and the end of the existing curbing will be properly cut using a concrete saw.

Any disturbed areas of vegetation caused by the excavation operations will be restored to match pre-excavation conditions. This will include grading to provide drainage and hydro-seeding to match the existing grass type.

### **2.1.6 Monitoring Well Abandonment/Installation**

Four monitoring wells MW-3, MW-5, MW-6, and MW-9 will be abandoned prior to excavation in accordance with all applicable State of Florida and local regulations by sealing and filling with grout from the bottom of the well to the ground surface using a tremie pipe. A Florida-registered/certified well driller will abandon each well. The monitoring well concrete vault, pad, or other surface completion will be removed and disposed of offsite in accordance with Section 4.0 of this Work Plan Addendum. Upon completion of monitoring well abandonment, the well locations will be marked for replacement once the excavation is complete. A Well Abandonment Record will be completed and submitted for the abandoned monitoring wells.

Following completion of the excavation and backfilling, abandoned monitoring wells MW-3, MW-5, MW-6, and MW-9 and two additional monitoring wells, MW-10 and MW-11, will be installed. Monitoring wells MW-10 and MW-11 will be installed in the northeast and northwest direction to provide geographic coverage. The wells will be constructed of 2-inch inside diameter flush threaded, Schedule 40 polyvinyl chloride (PVC) solid riser and 0.010-inch slot well screen with a silt trap and well bottom cap. Table 2-1 shows the depth and the screen interval for monitoring wells MW-3, MW-5, MW-6, MW-9, MW-10, and MW-11. The annulus will be filled to approximately 2 feet above the well screen with U.S. standard sieve size 10/30 silica sand. The 10/30 sand will be capped to approximately 1 foot bls with 30/65 sand. The remainder of the annulus will be grouted to the surface with a cement/bentonite grout. The monitoring well will be secured with a locking, watertight cap within an 8-inch diameter steel manhole. The manhole will be set within a 24-inch square concrete apron finished slightly above grade. A name plate with the well name, total depth of well, screen interval, date of installation, and well driller name will be attached to the well apron or placed inside the manhole cover.

Monitoring wells MW-3, MW-5, MW-6, MW-9, MW-10, and MW-11 will be installed and developed by a Florida-registered/certified well driller. The monitoring wells will be developed until the water is relatively free of sediment with a minimum of three well volumes of purge water. Drill cuttings and fluids (decontamination and development water) generated during well installation activities will be containerized in 55-gallon drums; sampled in accordance with Section 3.0 of this Work Plan Addendum; and managed, transported, and disposed in accordance with Section 4.0 of this Work Plan Addendum.

**TABLE 2-1**  
Monitoring Well Specifications

Monitoring Well	Diameter	Depth (ft bls)	Screen Interval (ft bls)
MW-3	2-inch ID	14 feet bls	4 –14 feet bls
MW-5	2-inch ID	13 feet bls	3 –13 feet bls
MW-6	2-inch ID	13 feet bls	3 –13 feet bls
MW-9	2-inch ID	25 feet bls	10 –25 feet bls
MW-10	2-inch ID	14 feet bls	4 –14 feet bls
MW-11	2-inch ID	14 feet bls	4 –14 feet bls

ID – inside diameter  
ft bls – feet below land surface

### 2.1.7 Transportation and Disposal of Petroleum-Contaminated Materials

Excavated soils will be direct-loaded into dump trucks for transportation and disposal or staged in a lined and bermed stockpile area before being loaded into dump trucks for transportation and disposal as outlined in Section 4.0 of this Work Plan Addendum.

Decontamination water, development water, and drill cuttings will be containerized in 55-gallon drums or portable tanks; sampled in accordance with Section 3.0 of this Work Plan Addendum; and managed, transported, and disposed in accordance with Section 4.0 of this Work Plan Addendum.

### 2.1.8 Decontamination

Personnel and equipment will be properly decontaminated to remove all contamination that may be adhering to personnel or equipment as a result of remedial activities. Any water accumulated during the decontamination process will be containerized in 55-gallon drums or portable tanks, sampled in accordance with Section 3.0 Sampling and Analysis Plan of this Work Plan Addendum, and managed, transported, and disposed in accordance with Section 4.0 Waste Management Plan of this Work Plan Addendum. Decontamination of personnel and equipment will be performed in accordance with the site-specific Health and Safety Plan provided in Appendix B and the applicable provisions of 29 Code of Federal Regulations (CFR) 1910.120.

### **2.1.9 Post-Excavation Survey**

On completion of the project, UST Site 1363 will be surveyed by a Florida-registered professional land surveyor and post-excavation as-built construction drawings prepared. The post-excavation drawings will document surface/subsurface structure locations; the limits of excavation, locations of buried utilities, monitoring well locations, and any deviations encountered.

All survey data will conform to the TSSDS. Horizontal controls for graphic and non-graphic information are Mercator Projection, GRS 80, State Plan Coordinate System, North American Datum 1983, Lambert Zones 1 through 6 (or appropriate zone for region to be mapped). Vertical controls are Mean Sea Level, North American Vertical Datum, 1988.

### **2.1.10 Demobilization**

During demobilization, temporary facilities, utilities, and equipment will be removed from the site. In addition, any debris or solid waste material remaining from construction activities will be removed and properly disposed of offsite in accordance with Section 4.0 Waste Management Plan of this Work Plan Addendum.

### **2.1.11 Post-Excavation Groundwater Sampling and Analyses**

The post-excavation groundwater sampling and analysis event will include a water level survey and the collection of groundwater samples for analysis by USEPA Method 8260B for BTEX with MTBE, USEPA Method 8310 for the 16-listed PAHs and 1- and 2-methylnaphthalene, and FL-PRO Method for TRPH from monitoring wells MW-1 through MW-11 in accordance with Section 3.0 of this Work Plan Addendum.

### **2.1.12 Source Removal Report**

A Source Removal Report will be prepared consistent with the requirements of Chapter 62-770.300, FAC. The report will summarize volumes removed, disposed or treated, and site activities and will include a signed and sealed as-built plan of the project area. The data collected during the post-excavation groundwater sampling event will be included in the Source Removal Report and a recommendation will be made to the FDEP regarding follow-up actions required for groundwater remediation.

## **2.2 Project Schedule**

The major project activities and estimated durations for each are outlined below.

- Pre-construction meeting/Submittal Preparation/Reviews 4 weeks
- Pre-excavation Confirmation Soil Screening, Sampling, Analyses, and Data Review 6 weeks
- Petroleum-contaminated Soil Excavation and T&D 5 weeks
- Site Restoration 1 week
- Post-excavation Groundwater Sampling Event and Data Evaluation 10 weeks
- Source Removal Report 8 weeks

CCI anticipates the total project duration (from pre-construction conference through submittal of the final completion report) will be approximately 34 weeks. This proposed schedule might vary depending on the actual conditions encountered in the field. Appendix A provides a schedule for the work to be performed.

## 2.3 Communications Plan

A communication matrix outlining the lines of communications for Southern Division, NAVFAC and CCI is presented in Table 2-2. Table 2-3 provides a project personnel directory.

**TABLE 2-2**  
Communications Matrix

CCI Position	Navy Direct Report
Ray Tyler, Executive Sponsor	Eva Clement, CO
R. Scott Newman, Program Manager	Jimmy Jones, COTR Richard Stanley, ACO
Scott Smith, Senior Project Manager	Jimmy Jones, COTR Richard Stanley, ACO
Michael Halil, CTO Project Manager	Beverly Washington, RPM Larry Blackburn, NTR/ROICC Cheryl Mitchell, NS Mayport

CO – Contracting Officer  
 ACO – Administrative Contracting Officer  
 NTR – Navy Technical Representative  
 RPM – Remedial Project Manager  
 COTR – Contracting Officer's Technical Representative

**TABLE 2-3**  
Project Personnel Directory

Contact	Company
R. Scott Newman, Program Manager Scott Smith, Senior Project Manager Joe Giandonato, Contracts Administration Manager Richard Rathnow, Health and Safety Manager Theresa Rojas, QA/QC Manager	CH2M HILL Constructors, Inc 115 Perimeter Center Place, N.E. Suite 700 Atlanta, GA 30346-1278 770/604-9095
Michael Halil, Project Manager Tracey Bennett, Project Engineer Garnet McCurdy, Project Superintendent Dave Keul, Project QA/QC Manager Bruce Johnson, Site Health and Safety Specialist	J.A. Jones Environmental Services Company 6219 Authority Avenue Jacksonville, FL 32221 904/777-4812
Eva Clement, CO	Southern Division NAVFAC P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5518
Richard Stanley, ACO	As above 843/820-5939
Jimmy Jones, COTR	As above 843/820-5544
Beverly Washington, RPM	As above 843/820-5581

**TABLE 2-3**  
Project Personnel Directory

<b>Contact</b>	<b>Company</b>
Larry Blackburn, NTR/ROICC	Southern Division NAVFAC Resident Officer in Charge of Construction P. O. Box 139, Building 13 NAS Jacksonville, FL 32212-0139 904/542-5571, ext. 260
Cheryl Mitchell, NS Mayport Environmental Manager	Staff Civil Engineer Environmental Division Building 1538 NS Mayport, FL 32227 904/270-6730

## 2.4 Traffic Control Plan

Traffic control will be the responsibility of the CCI Project Superintendent. CCI will minimize disturbance to NS Mayport traffic patterns during project activities. CCI will consult with onsite NS Mayport personnel to evaluate site access, placement of equipment, and traffic flow to minimize the impact of this work to NS Mayport operations.

## 3.0 Sampling and Analysis Plan

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This Sampling and Analysis Plan (SAP) describes CCI's tasks and responsibilities with respect to the sampling and analysis associated with the work effort described in Section 2.0. CCI intends this document to be a site-specific guide for use by the field team while performing the project-required sampling and analysis. Any changes to the activities described in this SAP must be documented as an addendum to this SAP and approved by the Project Manager and Project Chemist.

Samples will be collected in accordance with the USEPA Region IV Environmental Investigative Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), 2001 and the FDEP Standard Operating Procedures for Field Activities, DEP-SOP-001/01, January 1, 2002 (FDEP SOPs). Where the two contradict, the more stringent will apply.

The sampling team will be qualified under the Navy Installation Restoration Chemical Data Quality Manual (IRCDQM), 1999 sampling requirements.

### 3.1 Data Quality Levels for Measurement Data

The data quality levels for each sampling task described above are listed in Table 3-1. The sampling events, the sampling and analytical requirements, along with the required level of quality and data packages are listed in Table 3-2. The quantitation, project action, accuracy, precision, and completeness limits by which the data will be evaluated will be provided by the selected laboratory and approved by CCI's Quality Assurance Chemist.

**TABLE 3-1**  
Data Quality Levels

Sampling Activity	Data Quality Level Category
Headspace Soil Screening	Screening
Pre-Excavation Confirmation Soil Sampling (offsite laboratory analyses)	Definitive
Post-Excavation Groundwater Sampling (offsite laboratory analyses)	Definitive
Borrow Source characterization (offsite laboratory analyses)	Definitive
Waste and Disposal characterization (offsite laboratory analyses)	Definitive

A Navy-, U.S. Army Corps of Engineers (USACE)-, or Air Force Center for Environmental Excellence (AFCEE)-, and FDEP-approved laboratory will be used for all sample analyses. In addition, the laboratory will also follow FDEP SOPs for Laboratory Activities, DEP-DOP-002/01, January 1, 2002.

**TABLE 3-2**  
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT <sup>1</sup>	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers
<i>Pre-Excavation Soil Screening</i>													
Headspace Screening	13 Screening Locations @ 15-Foot Intervals around the proposed horizontal excavation; 18 Screening Locations within the excavation area	Soil	Once Prior to Excavation	31	Grab	OVA with FID	ASAP	Screening	Hydrocarbon	Direct Read Meter	ASAP	N/A	N/A
<i>Pre-Excavation Confirmation Soil Sampling</i>													
Confirmation Soil Sampling	Excavation Area (Horizontal samples collected at the location and depth of the highest total corrected hydrocarbon measurement for its representative horizontal extent direction. Floor samples collected at one-foot below the groundwater table.	Soil	Once	9 samples ( 7 Horizontal & 2 Floor Areas) + 1 Dup + 1 MS + 1 MSD = 12	Grab	Syringes, Prepared Vials, SS auger, SS spoon, SS bowl	7 days	CCI Level C	BTEX + MTBE	5035/8260B	14 day	Methanol; Sodium Bisulfite; H <sub>2</sub> O; Cool to 4°C	Disposable syringes, (3) Prepared 40 ml vials
									16 listed PAHs (including 1-and 2-Methylnaphthalene)	8310	14 day extraction / 40 day analysis	Cool to 4°C	(1) 4 oz amber glass
									TRPH	FL-PRO	7 day extraction / 10 day analysis	Cool to 4°C	(1) 4 oz amber glass
	Pre-Equipment Rinse Blank	Water	1 per set of pre-cleaned equipment (10%)	1	Prepared In Field	Analyte-free water, SS funnel	7 day	CCI Level C	BTEX + MTBE	8260B	14 day	HCL pH<2; Cool to 4°C	(2) 40 ml vials
									16 listed PAHs (including 1-and 2-Methylnaphthalene)	8310	14 day extraction / 40 day analysis	Cool to 4°C	(1) L amber glass
									TRPH	FL-PRO	7 day extraction / 10 day analysis	HCL pH<2; Cool to 4°C	(1) L amber glass

**TABLE 3-2**  
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT <sup>1</sup>	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers
	Post-Equipment Rinsate Blank	Water	1 per set of field-cleaned equipment (10%)	1 (or as needed for disposal)	Prepared in Field	Analyte-free water, SS funnel	7 day	CCI Level C	BTEX + MTBE	8260B	14 day	HCL pH<2; Cool to 4°C	(2) 40 ml vials
									16 listed PAHs (Including 1-and 2-Methylnaphthalene)	8310	14 day extraction / 40 day analysis	Cool to 4°C	(1) L amber glass
									TRPH	FL-PRO	7 day extraction / 10 day analysis	HCL pH<2; Cool to 4°C	(1) L amber glass
	Trip Blank	Water	1 Per cooler containing volatile samples	1	Prepared by Lab	(2) 40 mL vials	7 day	CCI Level C	BTEX + MTBE	8260B	14 day	HCL pH< 2; Cool to 4°C	(2) 40 mL vials
<b>Post-Excavation Groundwater Sampling</b>													
Groundwater Monitoring	Monitoring Wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11	Water	Once	11 + 1 Dup + 1 MS + 1MSD = 14 Total	Grab	Peristaltic pump, Teflon tubing	14 day	CCI Level C	BTEX + MTBE	8260B	14 day	HCL pH< 2; Cool to 4°C	(2) 40 mL vials
									16 listed PAHs (Including 1-and 2-Methylnaphthalene)	8310	14 day extraction / 40 day analysis	Cool to 4°C	(1) L amber glass
									TRPH	FL-PRO	14 day extraction / 40 day analysis	Cool to 4°C	(1) L amber glass
	Pre-Equipment Rinsate Blank	Water	1 per set of pre-cleaned equipment (10%)	1	Prepared in Field	Analyte-free water, SS funnel	7 day	CCI Level C	BTEX + MTBE	8260B	14 day	HCL pH<2; Cool to 4°C	(2) 40 ml vials
									16 listed PAHs (Including 1-and 2-Methylnaphthalene)	8310	14 day extraction / 40 day analysis	Cool to 4°C	(1) L amber glass
									TRPH	FL-PRO	7 day extraction / 10 day analysis	HCL pH<2; Cool to 4°C	(1) L amber glass
	Post-Equipment Rinsate Blank	Water	1 per set of field-cleaned equipment (10%)  (if equipment is decontaminated in the field)	1 (or as needed for disposal)	Prepared in Field	Analyte-free water, SS funnel	7 day	CCI Level C	BTEX + MTBE	8260B	14 day	HCL pH<2; Cool to 4°C	(2) 40 ml vials
									16 listed PAHs (Including 1-and 2-Methylnaphthalene)	8310	14 day extraction / 40 day analysis	Cool to 4°C	(1) L amber glass

ATLWPNAVY RAC IV/MAYPORTWP01/CTO 11 SAP Table 3-2 102903.xls

Notes:

1. Calendar days

**TABLE 3-2**  
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT <sup>1</sup>	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers		
									TRPH	FL-PRO	7 day extraction / 10 day analysis	HCl pH<2; Cool to 4°C	(1) L amber glass		
	Trip Blank	Water	1 Per cooler containing volatile samples	1	Prepared by Lab	(2) 40 mL vials	14 day	CCI Level C	BTEX + MTBE	8260B	14 day	HCl pH< 2; Cool to 4oC	(2) 40 mL vials		
<b>Backfill Characterization Sampling</b>															
Characterization of Backfill Material	Once per Off-Site Source	Soil/Rock	1 composite sample out of 5 grabs	2	Composite 5 random grabs into 1 sample (Do not composite VOCs)	SS spoon, SS bowl, Disposable syringes, (3) Prepared 40 ml vials (4 or 8 oz jar for stone)	7 day	CCI Level C	TCL Volatiles	5035/8260B	14 day	Methanol; Sodium Bisulfite; H2O; Cool to 4°C	Disposable syringes, (3) Prepared 40 ml vials and 4 or 8 oz jar for stone		
									TCL Semi-Volatiles	8270C	14 day extr; 40 day analysis			Cool to 4°C	(4) 8 oz glass
									PAHs (including 1- and 2-Methylnaphthalene)	8310	14 day extr; 40 day analysis				
									TCL Pesticides	8081A	14 day extr; 40 day analysis				
									TCL Herbicides	8151A	7 day extr; 40 day analysis				
									PCBs	8082	14 day extr; 40 day analysis				
									TRPH	FL-PRO	7 day extr; 40 day analysis				
									TAL Metals	6010E/7471	6 month; Hg 28 days				
	pH	9045B	ASAP												
	Trip Blank	Water	1 Per cooler containing volatile samples	1	Prepared by Lab	(2) 40 mL vials	14 days	CCI Level C	TCL Volatiles	8260B	14 day	HCl pH< 2; Cool to 4°C	(2) 40 mL vials		

**TABLE 3-2**  
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT <sup>1</sup>	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers	
<b>Soil Pre-excavation Characterization Sampling</b>														
Excavation Area Pre-characterization sampling and solid disposal sampling	Excavation Areas	Soil	1 per 300 tons or 1 per 10 drums	2 (or as needed for disposal)	Composite 5 grabs into 1 sample (Do not composite VOCs)	Hand Auger SS spoon, SS bowl	7 day	CCI Level B	TCLP Volatiles	1311/8260B	14 day TCLP extr; 14 day analysis	Cool to 4°C	(1) 4 oz amber glass	
									TCLP Semi-Volatiles	1311/8270C	14 day TCLP extr; 7 day extr; 40 day analysis			(4) 8 oz amber glass
									TCLP Metals	1311/6010B/7471A	6 month TCLP extr; 6 month analysis Hg: 28 day TCLP extr; 28 day analysis			
									TCLP Pesticides	1311/8081A	14 day TCLP extr; 7 day extr; 40 day analysis			
									TCLP Herbicides	1311/8151A	14 day TCLP extr; 7 day extr; 40 day analysis			
									PCBs	8082	14 day extr; 40 day analysis			
									Corrosivity	9045a	ASAP			
									Ignitability	1010/1020	ASAP			
									TPH	FL-PRO	14 day extr; 40 day analysis			
<b>Water Characterization Sampling</b>														
Characterization of Decontamination Water	Aqueous disposal material	Water	As Required	1 (or as needed for disposal)	Grab	Drum thief or dip jar	7 days	CCI Level B	TCL Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml viala	
									TCL Semi-volatiles	8270C	14 days ext; 40 days analysis	Cool to 4°C	(1) L amber glass	
									TCL Pesticides	8081A	14 days ext; 40 days analysis	Cool to 4°C	(1) L amber glass	
									TCL Herbicides	8151A	7 day extr; 40 day analysis	Cool to 4°C	(1) L amber glass	
									PCBs	8082	14 day extr; 40 day analysis	Cool to 4°C	(1) L amber glass	
									TRPH	FL-PRO	7 day extr; 40 day analysis	HCl pH< 2; Cool to 4°C	(1) L amber glass	
									TAL Metals	6010B/7470A	180 days; Hg = 28 days	HNO3 pH< 2; Cool to 4°C	(1) 500ml HDPE	
									ignitability	1010	ASAP	Cool to 4°C	(1) 250 mL amber glass	
									Corrosivity	9040B	ASAP	Cool to 4°C	(1) L amber glass	

ATLWPNVAVY RAC IVWVAYPORTWP01NCTO 11 SAP Table 3-2 102903.xls

Notes:

1. Calendar days

Pre-excavation confirmation soil and borrow source characterization sampling data will be evaluated against FDEP Direct Exposure-Residential and Leachability SCTLs. Specific COCs are listed in Table 1-1.

## 3.2 Sampling Objectives

The sampling objectives for this project will be as follows:

- Perform headspace screening from outside and within current excavation footprint
- Collect confirmation samples from the excavation area.
- Collect sample from the borrow source.
- Collect samples from the groundwater monitoring wells.
- Collect samples for waste characterization from the contaminated soil from the excavation area and the drummed well cuttings.
- Collect samples for water used in equipment decontamination, or well development/purging as necessary.

### 3.2.1 Pre-Excavation Soil Sampling

The proposed horizontal extents of petroleum-contaminated soil excavation are established by TtNUS and are shown on Figure 2-4. Prior to excavation, headspace screening, utilizing an OVA/FID, will be performed at 15-foot intervals around the proposed horizontal excavation extent resulting in approximately 13 screening locations. Headspace screening will also be performed within the excavation area resulting in approximately 18 screening locations. Measurements will be recorded in increments of 1 foot from land surface to groundwater. If a proposed horizontal extent exhibits a headspace screening total corrected hydrocarbon measurement greater than 50 ppm and/or visible staining is noted, the horizontal extent will be moved until headspace screening exhibits total corrected hydrocarbon measurements less than 50 ppm.

Each headspace sample will be brought (if necessary) to a temperature of between 20°C (68°F) and 32°C (90°F), and the reading obtained five minutes thereafter. Since an FID will be used, each soil sample must be split into two jars, and one of the readings must be obtained with the use of an activated charcoal filter unless the unfiltered reading is 10 ppm or less. The total corrected hydrocarbon measurement must be determined by subtracting the filtered reading from the unfiltered reading. Analytical instruments must be calibrated in accordance with the manufacturer's instructions. The headspace samples will be collected and analyzed using the following procedure:

1. From the sample location, remove the top 1 to 2 inches of soil using a decontaminated stainless steel spoon.
2. Fill ½ of two decontaminated 16-ounce mason jars with soil from the resulting hole using the stainless steel spoon.
3. Cover the jars immediately with aluminum foil and fasten the jar lids.

4. Allow the sample vapors to equilibrate in the jars (approximately 5 minutes).
5. Punch a hole in the aluminum foil with the tip of a calibrated FID.
6. Record the highest reading.
7. Repeat Steps 5 and 6 with the methane filter tip of a calibrated FID with the second jar.

Following headspace screening, seven representative confirmatory samples will be collected to confirm the horizontal excavation extents. The samples will be collected at the location and depth of the highest total corrected hydrocarbon measurement for its representative horizontal extent direction. Two confirmatory samples will be collected from the floor of the excavation area at one-foot below the groundwater table. The samples will be collected in the following manner and analyzed in accordance with Table 3-2.

#### *Procedure for Collecting Volatile Fractions for Soil*

1. Using an auger, split spoon, or other device retrieve a core from the sample point.
2. Remove the core from the auger, split spoon, or other device.
3. Open one of the disposable syringes.
4. Push the syringe directly into the center of the core, and fill to the 5 cc mark.
5. Take the syringe and push the contents into one of the three vials received from the laboratory.
6. Immediately cap the vial (note: ideally the entire operation; filling the syringe, pushing it into the vial, and capping the vial should not take more than one minute).
7. Repeat the process for the other two vials
8. Label the vials
9. Place in cooler for shipment to the lab.

#### *Procedure for Collecting Non-Volatile Samples*

1. Using an auger, split spoon, or other device retrieve a core from the sample point.
2. Remove the core from the auger, split spoon, or other device.
3. Fill the appropriate sample jars approximately three-fourths full with the sample, close the jar, label, and package the sample for shipment to the laboratory.

### **3.2.2 Borrow Source Confirmation Sampling**

In order to certify borrow source materials are uncontaminated, one sample for confirmation will be collected from each site and source used to provide borrow materials. It is anticipated that one granular fill and one No. 57 stone sample will be required. The samples will be collected in the following manner and analyzed in accordance with Table 3-2.

#### *Procedure for Collecting Volatile Fractions for Soil*

1. Using an auger, split spoon, or other device retrieve a core from the stockpile or borrow source area to be tested.
2. Remove the core from the auger, split spoon, or other device.
3. Open one of the disposable syringes.
4. Push the syringe directly into the center of the core, and fill to the 5 cc mark.
5. Take the syringe and push the contents into one of the three vials received from the laboratory.
6. Immediately cap the vial (note: ideally the entire operation; filling the syringe, pushing it into the vial, and capping the vial should not take more than 1 minute).
7. Repeat the process for the other two vials
8. Label the vials
9. Place in cooler for shipment to the lab.

#### *Procedure for Collecting Volatile Fractions for No. 57 Stone*

1. Select an area of the stone that has pieces that will fit into a 4- or 8-ounce jar.
2. Uncover stone in that area and select a piece that will fit into the sample jar from the freshly exposed material.
3. Using the stainless steel spoon, or a clean unused pair of sample gloves place the material in the jar and cap it.
4. Label and package the samples for shipment to the laboratory.

#### *Procedure for Collecting Non-Volatile Samples*

1. From four randomly selected sample locations, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the four grab samples by the quartering techniques using the stainless steel spoon.
3. Fill the appropriate sample jars approximately three-fourths full with the homogenized sample, close the jar, label, and package the sample for shipment to the laboratory.

### **3.3 Post-Excavation Groundwater Sampling**

Groundwater samples will be collected from monitoring wells MW-1 through MW-11. The sample will be collected in the following manner and analyzed in accordance with Table 3-2.

### 3.3.1 Pre-purging Activities

The following activities will be performed immediately prior to purging each well:

1. Check the well for proper identification and location.
2. Using the electronic water-level meter, measure and record the static water level from the reference point to an accuracy of 0.01 foot. Upon removing the water-level wire, rinse it with water from an approved water source and Alconox.
3. Inspect the well head for any signs of forced entry, which could invalidate the sampling data.

### 3.3.2 Monitoring Well Low-Flow Purging and Sampling

Collection of groundwater samples from monitoring wells is required to characterize the nature and extent of contamination. Because of concerns about turbidity in the wells and the effects on metals sampling results, the low-flow purge and sample method will be used.

#### Purging

The low-flow purge and sample method consists using a submersible or peristaltic pump to purge the well at a very low flow rate (less than 1 liter per minute [l/min]). The pump intake (dedicated Teflon® tubing) is set approximately in the middle of the well screen, with a stagnant water column over the top of the pump. The well is purged at the low-flow rate until the field parameters (temperature, pH, specific conductance, turbidity, dissolved oxygen (DO), and redox potential) have stabilized. The sample is then collected using the peristaltic pump. The following steps outline the purging and sampling activities.

1. The intake for the peristaltic pump should be set at approximately the middle of the screen. Be careful not to place the pump intake less than 2 feet above the bottom of the well because this may cause mobilization of any sediment present in the bottom of the well. Start pumping the well at less than 1 l/min.
2. The water level in the well should be monitored during pumping and, ideally, the pump rate should equal the well recharge rate with little or no water-level draw down in the well (the water level should stabilize for the pumping rate). There should be at least 1 foot of water over the pump intake so there is no risk of the pump suction being broken or entrainment of air in the sample. Record the pumping rate adjustments and depth(s) to water in the logbook. If the recharge rate of the well is very low and the well is purged dry, then wait until the well has recharged to a sufficient level and collect the appropriate volume of sample with the pump, or use standard purge-and-sample techniques.
3. The well should be purged at a low-flow rate (ideally, less than 1 l/min). During purging, monitor the field parameters (temperature, pH, turbidity, specific conductance, DO, and redox potential) using the flow through cell approximately every 3 to 5 minutes (or as often as practical) until the parameters have stabilized to within 10 percent (plus or minus 5 percent) over a minimum of three readings. Turbidity and DO are typically the last of the field parameters to stabilize. If turbidity readings are below 7 nephelometric turbidity units (NTUs), then the stabilization range can be amended

to 20 percent (plus or minus 10 percent) over a minimum of three readings. Wells should be purged a minimum of three well volumes and no more than five well volumes prior to sampling.

4. Record the *in situ* parameters (pH, temperature, specific conductance, turbidity, DO, and redox potential), along with the corresponding volume purged, on a Groundwater Sample Field Data Record or in a bound field logbook.

### Sampling Procedures

Once the field parameters have stabilized, collect the samples using the peristaltic pump. All sample bottles should be filled by allowing the water to flow gently down the inside of the bottle with minimal turbulence. Cap each bottle as it is filled. Volatiles and analytes that degrade by aeration must be collected first. Volatile samples will be collected by shutting off the pump, disconnecting the tubing, holding a thumb over the end of the tubing, and withdrawing the tubing from the well. The VOC sample containers will be filled by removing the thumb and allowing groundwater to flow, by gravity, into the containers containing preservatives.

Clean unused tubing should be used for each monitoring well. Used tubing will be disposed of as solid waste.

## 3.4 Pre-excavation Waste characterization

The excavation site will be pre-characterized for disposal determination, using hand augers. At least one composite sample from five representative locations within the excavation area per 300 tons of soil will be collected for characterization. The sample will be collected in the following manner and analyzed in accordance with Table 3-2.

Using a hand auger, five borings will be performed at each sample location within each area. Boring locations may be chosen using existing delineation data. The depths of the five borings should be varied, to represent the entire strata of contaminated material to be sampled. In addition, the borings should be spread about each sample area, to provide adequate representation of the area being sampled. **In no case should borings be taken from the overburden designated for backfill.** An OVA should be used to determine the highest reading from each of the five borings, and the volatile grab should be collected from that boring. The five borings will then be composited for the rest of the analyses required. The procedures for collecting the samples are outlined below.

#### *Procedure for Collecting Volatile Fractions*

1. Each of the five borings should be screened with an OVA, and using a stainless steel spoon, remove a grab from the boring that provided the highest reading.
2. Fill the appropriate sample jars completely full with the sample grab.
3. Close the jar, label, and package the sample for shipment to the laboratory.

#### *Procedure for Collecting Non-Volatile Samples*

1. From each of the five borings, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the five samples by the quartering techniques using the stainless steel spoon.
3. Fill the appropriate sample jars completely full with the homogenized sample, close the jar, label, and package the sample for shipment to the laboratory.

### **3.4.1 Other Solid Waste Characterization Sampling**

Solid waste from the site will be in the form of drummed drill cuttings from the installation of monitoring wells. One sample should be collected for approximately every ten drums. The samples will be collected in the following manner and analyzed in accordance with Table 3-2.

#### *Procedure for Collecting Volatile Fractions*

1. At the selected sample location (drum), and appropriate depth, using an auger, split spoon, or other similar device retrieve a core.
2. Fill the appropriate sample jars completely full with the sample from the core.
3. Close the jar, label, and package the sample for shipment to the laboratory.

#### *Procedure for Collecting Non-Volatile Samples*

1. From each of the ten drums, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the grab samples by the quartering techniques using the stainless steel spoon.
3. Fill the appropriate sample jars completely full with the homogenized sample.
4. Close the jar, label, and package the sample for shipment to the laboratory.

### **3.4.2 Liquid Waste Characterization Sampling**

Decontamination water, well development water, and purge water, will be contained in drums or frac tanks. One sample per approximately 10 drums will be collected. The samples will be collected in the following manner and analyzed in accordance with Table 3-2.

1. Using a bailer or dip jar collect a water sample from its containment.
2. The sample containers for volatile analyses will be filled first. The 40-ml vials will be filled so that there is no headspace in each vial.
3. The sample containers for the remaining analyses will then be filled.
4. Label and package the samples for shipment to the laboratory.

## 3.5 Sample Documentation

Sampling documentation will include the following:

- Numbered Chain-of-Custody Reports
- Sample Log Book which includes the following information:
  - Name of laboratories and contacts to which the samples were sent, turnaround time (TAT) requested, and data results, when possible
  - Termination of a sample point or parameter and reasons
  - Unusual appearance or odor of a sample
  - Measurements, volume of flow, temperature, and weather conditions
  - Additional samples and reasons for obtaining them
  - Levels of protection used (with justification)
  - Meetings and telephone conversations held with the Southern Division, NTR, regulatory agencies, project manager, or supervisor
  - Details concerning any samples split with another party
  - Details of QC samples obtained
  - Sample collection equipment and containers, including their serial or lot numbers
  - Details of QC samples obtained
  - Field analytical equipment, and equipment utilized to make physical measurements will be identified
  - Calculations, results, and calibration data for field sampling, field analytical, and field physical measurement equipment
  - Property numbers of any sampling equipment used, if available
  - Sampling station identification
  - Date and Time of sample collection
  - Description of the sample location
  - Description of the sample
  - Sampler(s)' name(s) and company
  - How the sample was collected
  - Diagrams of processes
  - Maps/sketches of sampling locations
  - Weather conditions that may affect the sample (e.g., rain, extreme heat or cold, wind, etc.)

- Sample Labels
- Custody Seals (minimum of two on each shipping container)

### 3.6 Field Quality Control

Field duplicate samples will be collected at a minimum frequency of 10 percent times the total number of samples collected for an analysis for each site and rounded to the nearest whole number. Pre-cleaned equipment blank samples will be collected at a minimum frequency of 5 percent times the total number of samples collected for an analysis for each site and rounded to the nearest whole number. Field-cleaned equipment blank samples will be collected at a minimum frequency of 5 percent times the total number of samples collected for an analysis for each site and rounded to the nearest whole number. One trip blank sample will be provided at a frequency of one per sample cooler containing volatile samples. Matrix spike/matrix spike duplicates (MS/MSD) will be required at a maximum frequency of one per sample event or a minimum frequency of one per twenty samples. Quantity and frequency are detailed in Table 3-2.

### 3.7 Analytical Methods

Samples will be collected for analytical methods summarized in Table 3-2.

Preliminary analytical results will be faxed to Bonnie Hogue at the following fax number per the turn-around-times listed in Table 3-2 from day of sample receipt. The final hardcopy data and electronic file will be delivered to Melissa Aycock within 14 days of sample receipt.

**Bonnie J. Hogue**  
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## 4.0 Waste Management Plan

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The scope of this waste management plan addresses the management and disposal requirements for wastes generated during soil excavation activities at UST Site 1363, Building 1363 located at NS Mayport, Mayport, Florida. It is anticipated that the following wastes will be generated during these activities:

- Petroleum-contaminated soil from excavation
- Cuttings/spoils from the installation of monitoring wells
- Wastewater from well development/purging and decontamination activities
- Debris including discarded materials generally considered to be not water-soluble, and materials used in decontamination (e.g., plastic sheeting, sampling-related waste including, but not limited to, sampling equipment, gloves, and protective clothing)
- Concrete and asphalt from the removal of the access road and parking area

### 4.1.1 Waste Characterization

Wastes will be characterized according to the SAP in Section 3.0 of this Work Plan Addendum. Waste characterization information typically will be included on a waste profile form provided by the offsite facility. Analytical data will be provided from the pre-excavation soil sampling and analysis event.

It is assumed that petroleum-contaminated soils that fail the Toxicity Characteristic test for the organic compounds associated with the D018 through D043 waste codes is not hazardous waste because it is a result of petroleum cleanup activities (40 CFR 261.4(b)(10)). However, petroleum contaminated soil that exhibits the Toxicity Characteristic for metals (D004 – D0011) or pesticides (D012 – D017) would be managed as hazardous wastes.

Waste characterization information for wastes shall be documented on a waste profile form provided by the offsite treatment or disposal facility as part of the waste acceptance process. The profile will be reviewed and approved by the CCI Waste Coordinator prior to submission to the Navy for generator signature. Where generator certification and/or signature are required, Navy personnel will provide. Signed profile will then be submitted to the disposal facility for acceptance approval.

The profile typically requires the following information including but not limited to:

- Generator (Navy) information including name, address, contact, and phone number
- Site name including street/ mailing address
- Process generating waste (e.g., soil removal and well installation)
- Source of contamination (e.g. petroleum-contaminated soil from underground storage tank (UST) containing diesel fuel and fuel oil, Building 1363)

- Historical use for area
- Waste composition (e.g., 95% soil, 5% debris)
- Physical state of waste (e.g., solid, liquid, etc.)
- Applicable hazardous waste codes

A facility approved copy of the waste profile shall be received prior to scheduling of offsite transportation of the waste.

## 4.2 Waste Management

### 4.2.1 Waste Storage Time Limit

Hazardous wastes will be removed from the site within 90 days from generation. Additionally, as required under F.A.C. 62-770, petroleum-contaminated soil (including excessively contaminated soil) shall not be stored or stockpiled on-site for more than 60 days. However, petroleum-contaminated soil (including excessively contaminated soil) may be containerized in watertight drums and stored onsite for 90 days, after which time proper treatment or proper disposal of the contaminated soil shall occur. Other wastes will be removed from the site as soon as possible.

The debris (concrete and asphalt) will be cleared of all soil and considered non-hazardous construction debris and will be removed from the site as soon as possible but before 90 days has expired.

The wastewater from well development/purging and decontamination activities will be containerized and sampled. The wastewater is considered non-hazardous petroleum contaminated water and will be removed from the site as soon as possible.

### 4.2.2 Labels

The labeling of waste containers will be in accordance with 49 CFR 172, 173 and 178. Labels will include the type of waste, location from which the waste was generated, and accumulation start date. Containers, and tanks used to store/accumulate waste (including soil and groundwater) will include one of the following labels:

- "Analysis Pending" or "Waste Material" - Temporary or handwritten label until analytical results are received and reviewed. This label will include the accumulation start date.
- "Hazardous Waste" - Pre-printed hazardous waste labels with the following information:
  - Accumulation start date
  - Generator Name
  - USEPA ID number
  - Waste codes
  - Prior to transport the Manifest number must be added (for containers of less than 110-gallon capacity)

- "Non-Hazardous Waste" - Preprinted labels with the following information:
  - Accumulation start date
  - Generator name:
  - USEPA ID number:
  - Waste-specific information (e.g., contaminated soil)

Where applicable, the major hazards (e.g., flammable, oxidizer, and carcinogen) will be included on the label.

### **4.2.3 General Waste Management Requirements**

Contaminated soil (soils exhibiting a total corrected hydrocarbon measurement greater than 50 ppm as analyzed utilizing an OVA/(FID and/or exhibiting visible staining) will be contained in stockpiles or direct loaded onto waiting trucks. Liquid wastes will be contained in drums or tanks for offsite disposal at an approved wastewater treatment facility.

Hazardous wastes will be segregated from non-hazardous wastes. Additionally, incompatible wastes (e.g., flammable and corrosive wastes) will be segregated. Wastes of the same matrix, contamination, and the same source may be aggregated to facilitate storage and disposal.

Wastes will be accumulated in an area identified or approved by the Navy. If an area is not designated, hazardous wastes will be accumulated in an area that is not accessible to the general public, and that can be secured.

Waste accumulation areas will contain appropriate emergency response equipment. The Health and Safety Plan (Appendix B) identifies the specific emergency response procedures and equipment. Hazardous waste accumulation areas will include fire extinguishers (in areas where wastes are known or suspected to be flammable or ignitable), decontamination equipment, and an alarm system (if radio equipment is not available to all staff working in accumulation area). Spill control equipment (e.g., sorbent pads) will be available in the waste accumulation areas, and where liquids are transferred from one vessel to another.

All containers, drums, and tanks will be inspected upon arrival at the site for equipment in disrepair and any contamination or contents. If container contains waste upon arrival or is in disrepair, it will be immediately rejected and documented.

#### **Drums/Small Containers**

The following guidelines relate to drums and small containers:

- Drums and small containers will be transported to the temporary accumulation areas on wood pallets and will be secured together with non-metallic banding.
- Drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (e.g., 30 inches) will be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Each drum will be provided with its own label, and labels will be visible.

- Drums will remain covered except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday.
- Drums will be disposed of with the contents. If the contents are removed from the drums for offsite transportation and treatment or disposal, the drums will be decontaminated prior to re-use or before leaving the site.
- Drums containing liquids or hazardous waste will be provided with secondary containment.

### **Tanks**

The following guidelines relate to tanks:

- Tanks will be inspected upon arrival onsite for signs of deterioration and contamination. Any tank arriving onsite with contents or in poor condition will be rejected.
- Tanks will be provided with covers and secondary containment.
- Only non-stationary tanks (such as a cargo tank or other wheeled tank) will be used to accumulate hazardous waste.
- Each tank will be labeled as discussed above.

### **Soil Stockpiles**

The following guidelines relate to soil stockpiles:

- Stockpiles of contaminated soil will be located near the excavation areas and within an area of existing contamination.
- Stockpiles will be provided with liner, cover, and perimeter berm to prevent release or infiltration of liquids.
  - Minimum 20-mil polyethylene sheeting will be used for liners and 10- and 6-mil polyethylene sheeting will be used for covers.
  - The perimeter berm will be constructed of clean materials (e.g., hay bales under the liner) and allow for collection of any free liquids draining from the stockpile.
  - Accumulated free liquids will be pumped-out to a container or tank.
- Covers and perimeter berms will be secured in-place when not in use and at the end of each workday, or as necessary to prevent wind dispersion or run-off from major precipitation events.
- Construction materials for the stockpiles that contact contaminated soil will be disposed of as contaminated debris.
- Accumulation start dates will be recorded on a log or a sign located at the stockpile.

### **Waste/Debris Stockpiles**

Where appropriate, debris and waste, or scrap equipment may be accumulated in stockpiles. These stockpiles will be managed in such a manner as to maintain good housekeeping, and to prevent the spread of contamination.

Contaminated debris stockpiles will be provided with containment as indicated for soil stockpiles. Damaged or leaking equipment shall be placed in containers, and may not be stored in storage piles.

Uncontaminated or decontaminated debris stockpiles, or intact equipment should be placed on a liner. These piles shall be covered as necessary to prevent storm water run-on and run-off.

### **Inspection of Waste Storage Areas**

Waste accumulation areas will be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release. The following inspection schedule will be followed:

- At least weekly inspection of containers, tanks and roll-off containers (for leaks, signs of corrosion, or signs of general deterioration).
- At least weekly inspection of stockpiles (for liner and berm integrity).

**If operations will be suspended for more than 7-days, contact the regulatory compliance manager and alternate inspection arrangements will be made. Prior to demobilization, all hazardous wastes will be removed from the site.**

**Inspections will be recorded in the daily Quality Control Report and include any deficiencies and how issue was rectified. Copies of the report will be maintained onsite, and available for review.**

Any deficiencies observed or noted during inspection will be rectified immediately. Appropriate measures may include transfer of waste from leaking container to new container, replacement of liner or cover, or repair of containment berm.

## **4.3 Shipping Documentation**

Prior to offsite disposal of any waste, a waste approval package shall be provided to the Navy for each waste stream. This package shall include a waste profile naming the U.S. Navy as the generator of the waste, analytical summary table(s) applicable to the waste, letter of approval from the proposed waste disposal facility to accept the waste, land disposal restriction (LDR) notification for any hazardous wastes, a completed waste manifest, and any other applicable information necessary for the Navy to complete its review of the disposal package and signature as the generator.

The signed profile will then be submitted to the disposal facility for acceptance approval. Once the approval letter is received from the disposal facility, transportation can be scheduled.

Each load of waste material will be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information including name, address, contact, and phone number, EPA ID number
- Transporter information including name, address, contact and phone number, USEPA ID number

- Facility information including name, address, phone number, USEPA ID number
- Site name including street/ mailing address
- U.S. Department of Transportation (DOT) Proper Shipping Name (e.g., Hazardous Waste Solid, n.o.s., 9, UN 3077, PG III (D008))
- Type and number of container
- Quantity of waste (volumetric estimate)
- CTO or job number
- Profile number
- 24-hour emergency phone number

Additionally, each shipment of waste will also have a haul ticket. An LDR Notification/Certification is also required for hazardous wastes. This form also requires the generator signature and submission to the disposal facility.

The generator (Navy) and the transporter must sign the manifest prior to the load of waste leaving the site. A copy of the manifest will be retained on site and included with the daily Quality Control Report. The original signed manifest will be returned to the address of the generator. The facility will provide a copy of this signed manifest to CCI for the final report. The final report will include copies of the facility signed manifest, haul ticket, LDR (if applicable), and the Certificate of Disposal/ Destruction/Recycle.

If the signed hazardous waste manifest from the designated offsite facility is not received within 35 days, CCI will contact the transporter or the designated facility to determine the status of the waste. If the signed hazardous waste manifest has not been received within 45 days, CCI, in coordination with the Navy, will issue an "Exception Report" to the state of Florida, as required under 40 CFR 262.42.

## 4.4 Transportation

Each transportation vehicle and load of waste will be inspected before leaving the site and documented. Dump trucks used to transport contaminated soil offsite will be inspected prior to loading for signs of deterioration and contamination. Any dump truck with contents or in poor condition will be rejected. The quantities of waste leaving the site will be recorded, at a minimum documented on the Transportation and Disposal Log (T&D Log). A contractor licensed for commercial transportation will transport non-hazardous wastes. In the event that wastes are hazardous, the transporter will have a USEPA Identification number, and will comply with transportation requirements outlined in 49 CFR 171-179 (Department of Transportation) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation). A copy of the documentation indicating that the selected transporter has appropriate licenses will be received and approved by CCI prior to transport of any waste.

#### **4.4.1 Transporter Responsibilities**

The transporter will be responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container, dump truck, or tanker truck. Disposal quantities will be based on the difference of weight measurements between the full and empty container, dump truck, or tanker truck. Weights will be recorded on the waste manifest. The transporter will provide copies of weight tickets to CCI.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to general public traffic.
- Repair road damage caused by construction and/or hauling traffic.
- Cleanup waste spilled in transit.
- Line and cover trucks/trailers used for hauling contaminated waste to prevent releases and contamination.
- Decontaminate vehicles prior to re-use, other than hauling contaminated waste.
- Seal trucks transporting liquids.
- All personnel involved in offsite disposal activities will follow safety and spill response procedures outlined in the Health and Safety Plan.
- No materials from other projects will be combined with materials from NS Mayport.

#### **4.4.2 Transportation and Disposal Log**

The T&D Log is used to track waste from generation to final disposition. Wastes will be logged into the T&D Log the day waste is generated and placed into containers. Transportation of wastes will be inventoried the day of transportation from the site using the T&D Log. Final disposal will be documented on the T&D Log using the Certificate of Disposal. A copy of the T&D Log is provided in Appendix C.

## **5.0 Environmental Protection Plan**

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The Environmental Protection Plan (EPP) of the Basewide Work Plan (CCI, 1999) addresses general procedures that will be implemented to prevent pollution and protect the environment. The purpose of this plan is to provide specific requirements/procedures to protect the environment during soil excavation at NS Mayport.

### **5.1 Regulatory Drivers**

The UST Site 1363, Building 1363 excavation activities are regulated under the State of Florida's Petroleum Program. All solid/hazardous waste and media will be characterized and managed according to the requirements of FAC Chapter 62-730, Hazardous Waste regulations. Management of petroleum contaminated wastes and excavation activities will comply with the provisions of FAC Chapter 62-770, Petroleum Contamination Site Cleanup Criteria, as appropriate.

### **5.2 Spill Prevention and Control**

The provisions for spill prevention and control establishes minimum site requirements. Refer to the Health and Safety Plan (Appendix B) for emergency response procedures and further reporting requirements.

### **5.3 Spill Prevention**

All fuel, chemical, and waste storage areas will be properly protected from on- and offsite vehicle traffic. All tanks (including fuel storage and waste storage) must be equipped with secondary containment. These tanks must be inspected daily for signs of leaks. Accumulated water must be inspected for signs of contamination (e.g., product sheen, discoloration, and odor) before being discarded. Fire protection provisions outlined in the Health and Safety Plan (Appendix B) must be adhered to.

Chemical products must be properly stored, transferred, and used. Should chemical product use occur outside areas equipped with spill control materials, adequate spill control materials must be maintained at the local work area.

### **5.4 Spill Containment and Control**

Spill control materials will be maintained in the support zone, at fuel storage and dispensing locations, and at waste storage areas. Incidental spills will be contained with sorbent and disposed of properly. Spilled materials must be immediately contained and controlled. Spill response procedures include:

- Immediately warn any nearby workers and notify supervisor.

- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Ensure any nearby ignition sources are immediately eliminated.
- Stop source of spill.
- Establish site control for spill area.
- Contain and control spilled material through use of sorbent booms, pads, or other material.
- Use proper personal protective equipment in responding to spills.

## 5.5 Spill Cleanup and Removal

All spilled material, contaminated sorbent, and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed of. Contaminated spill material will be managed as waste (see Waste Management Plan) and disposed of according to applicable, federal, state, and local requirements.

## 5.6 Endangered Species Protection

An endangered species survey was conducted by contacting Mr. Forest Penny of NS Mayport. No endangered species are present at or around UST 1363.

## 5.7 Erosion Control

During those excavation activities that have the potential to disturb the land, CCI will adhere to the following practices:

- The smallest practical area will be disturbed.
- Trees outside the excavation area will be protected from any construction activity. No ropes, cables, or guy lines will be fastened or attached to any existing trees.
- Temporary erosion and sediment controls will be used to prevent sediment from discharging to any ponds or wetland areas. Structural controls may include the use of straw bales, silt fences, earth dikes, drainage swales, sediment traps, and sediment basins.
- Material staging areas will be properly barricaded for containment and to control run-off.

## **6.0 Quality Control Plan**

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This site- and task- specific Quality Control Plan supplements the general quality control provisions provided in the Basewide Work Plan. This QCP details the quality administrators, the project organization for the work to be completed and the definable features of work for the excavation of petroleum-contaminated soil at UST Site 1363, Building 1363 located at NS Mayport, Mayport, Florida.

The Submittal Register, included in Appendix C of this Work Plan Addendum, documents submittals in accordance with Appendix B of CCI's Contract Management Plan (CCI, April 2003). CCI, the Navy, or others will approve submittals as identified in the Submittal Register. All approved submittals will be distributed by CCI to the appropriate Navy personnel (CO, ROICC [in duplicate], etc.); the project site; and the project file.

The site-specific project communication plan (Table 2-3 of this Work Plan Addendum) depicts the chain of command for this CTO and the individuals responsible for executing the work as indicated. Individual roles and responsibilities of CTO personnel are summarized in Table 6-1.

### **6.1 Project QC Manager**

The Project QC Manager will be Mr. Dave Keul. The alternate Project QC Manager will be Mr. Bruce Johnson. Both Mr. Keul and Mr. Johnson have performed previous oversight and management work at NS Mayport. The appointing letters for both individuals are included in Appendix D.

### **6.2 Testing Requirements**

This section describes construction testing and environmental analysis laboratories and their certifications; environmental sampling and analysis, and test control. The Testing Plan and Log is provided in Appendix C.

#### **6.2.1 Identification and Certification of Testing Laboratories**

The environmental testing laboratories utilized for this CTO project will function as a subcontractor or a lower tier subcontractor, and have not yet been identified.

#### **6.2.2 Construction**

Construction testing is not planned for petroleum-contaminated soil excavation activities under this CTO.

#### **6.2.3 Environmental**

Laboratories performing analytical analysis of environmental samples will be approved by the Navy, USACE, or AFCEE, and FDEP. The selected laboratory will possess an approved Quality Assurance Project Plan.

**TABLE 6-1**  
**Roles, Responsibilities, and Authorities of Individuals Assigned to NS Mayport**

<b>Role</b>	<b>Responsibility</b>	<b>Authority</b>
<b>Project Manager</b>	<ul style="list-style-type: none"> <li>• Management and Technical Direction of work</li> <li>• Communication with Southern Division RPM and NTR</li> <li>• Overview subcontractor performance</li> <li>• Select CTO staff</li> <li>• Develop CTO Work Plan and supporting plans</li> <li>• Meet CTO Performance Objectives</li> <li>• Prepare status reports</li> <li>• Prepare Field Change Requests</li> </ul>	<ul style="list-style-type: none"> <li>• Approve subcontractor selection</li> <li>• Approve invoices to Southern Division</li> <li>• Approve CTO baseline schedule</li> <li>• Stop work at the site for any reason</li> <li>• Approve payment to vendors and suppliers</li> <li>• Approve payment to subcontractors</li> <li>• Review technical qualifications of subcontractors</li> <li>• Respond to Design Change Notices</li> </ul>
<b>Site Superintendent</b>	<ul style="list-style-type: none"> <li>• Responsible for all site activities</li> <li>• Provide direction to subcontractors</li> <li>• Act for Project Manager</li> <li>• Provide daily status reports</li> <li>• Prepare CTO Work Plan</li> <li>• Conduct daily safety meetings</li> <li>• Review subcontractor qualifications</li> <li>• Stop work for unsafe conditions or practices</li> </ul>	<ul style="list-style-type: none"> <li>• Stop work for subcontractors</li> <li>• Approve corrective action for site work-arounds</li> <li>• Approve materials and labor costs for site operations</li> <li>• Resolve subcontractor interface issues</li> <li>• Approve daily and weekly status reports</li> </ul>
<b>Project QC Manager</b>	<ul style="list-style-type: none"> <li>• Monitor and oversee subcontractor compliance with scope of work</li> <li>• Review requests for changes in scope of work</li> <li>• Recommend improvements in work techniques or metrics</li> <li>• Recommend work-around to Site Superintendent</li> <li>• Monitor and report on subcontractor quality and quantities</li> <li>• Audit subcontractors offsite fabrication</li> <li>• Maintain Submittal Register</li> <li>• Participate in Incident-Free Operations conference call</li> </ul>	<ul style="list-style-type: none"> <li>• Complete daily compliance report</li> <li>• Stop work for non-compliant operations</li> <li>• Maintain Rework Items list</li> <li>• Stop work for non-compliant operations</li> </ul>
<b>Site Health and Safety Specialist</b>	<ul style="list-style-type: none"> <li>• Monitor and report on subcontractor safety and health performance</li> <li>• Record and report safety statistics</li> <li>• Conduct needed site safety and health orientation</li> <li>• Maintain Environmental Log</li> <li>• Stop work for unsafe practices or conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Approve subcontractor site specific health and safety plan</li> <li>• Set weekly safety objectives</li> <li>• Approve resumption of work for resolved safety issues</li> </ul>
<b>Subcontract Specialist</b>	<ul style="list-style-type: none"> <li>• Prepare bid packages</li> <li>• Purchase disposable materials</li> <li>• Maintain subcontract log</li> <li>• Approve payables for disposable items</li> <li>• Maintain government property records</li> </ul>	<ul style="list-style-type: none"> <li>• Provide project scheduling coordination</li> <li>• Responsible for site cost tracking and reporting</li> <li>• Maintain record of site purchases</li> </ul>

## 6.2.4 Testing and Sampling

Soil, water, and solids will be sampled under the direction of CCI or its subcontractors. No geophysical or geotechnical soil testing (grain size, standard proctor and compaction) is not and will not be performed. A Navy-, USACE-, or AFCEE- and FDEP-approved laboratory will be used for all chemical sample analyses.

## 6.3 Construction Inspection

The construction inspections anticipated for the remediation activities at NS Mayport will be performed in accordance with the three phases of control while performing the work. The definable features of work for activities included in this Work Plan Addendum are: mobilization and site preparation, pre- and post-field surveying, excavation/sampling/T&D, backfill of petroleum-contaminated soil, monitoring well abandonment/installation, site restoration, decontamination, demobilization, post-excavation monitoring well groundwater sampling and analyses. The construction inspections associated with the definable work items is described below.

### 6.3.1 Mobilization/Site Preparation

As part of the mobilization activity, a pre-construction meeting will be held to review the preparedness to begin the project and the procedures and schedule to complete the project. The preparedness check will verify that the permitting/approvals are in place for the planned remediation activities, and that the resources mobilized to the field have been inspected, are in conformance with the project specifications and are in good working condition for the completion of the remediation activities at the site. The site preparation task will include site clearing, relocation or protection of existing structures, preparation of lay-down and staging areas, installation of erosion and sediment transport controls and abandonment of four existing monitoring wells (MW-3, MW-5, MW-6, and MW-9) prior to commencement of excavation activities. Table 6-2 lists the quality controls that will be implemented during the mobilization and site preparation activities.

**TABLE 6-2**  
QC Procedures for Mobilization Site Preparation

Task	Procedures/Construction Details
Pre-construction Meeting	<ul style="list-style-type: none"><li>• Verification of well installation permit</li><li>• Verification of excavation permit and utility clearance from Environmental Division Public Works Center (PWC), NS Mayport</li><li>• Verification of designated locations of equipment layout, material and waste staging, and decontamination</li></ul>
Site Walk	<ul style="list-style-type: none"><li>• Verification of site layout plan</li><li>• Verification of Environmental Conditions Report</li></ul>
Pre-construction Submittals	<ul style="list-style-type: none"><li>• Subcontractor plans and specifications</li><li>• Subcontractor personnel qualification and certifications</li></ul>
Temporary Facilities	<ul style="list-style-type: none"><li>• Verification of temporary facilities for conformance with NS Mayport requirements</li><li>• Verification of temporary utility hookups for conformance with the utility and the base requirements</li></ul>

**TABLE 6-2**  
**QC Procedures for Mobilization Site Preparation**

<b>Task</b>	<b>Procedures/Construction Details</b>
Site Clearing	<ul style="list-style-type: none"> <li>• Verify utility location, marking, and protection</li> <li>• Verify the limits of site clearing</li> <li>• Verify implementation of environmental protection measures (erosion and sediment control)</li> <li>• Verify collection, staging and management of vegetative debris in accordance with the Waste Management Plan</li> </ul>
Pre and Post Field Surveying	<ul style="list-style-type: none"> <li>• Surveyor qualifications / license (Florida -registered professional land surveyor )</li> <li>• Verification of existing monuments and structures</li> <li>• Instrument calibration and accuracy</li> <li>• Surveying tolerances (horizontal, vertical, contours) (Horizontal controls Mercator Projection , GRS 80, State Plane Coordinate System, North American Datum 1983, Lambert Zones 1-6 (or appropriate zone for region to be mapped)(Vertical controls mean Sea Level, North American Vertical Datum, 1988)</li> <li>• Reference to applicable plane coordinates and vertical datum, information collected in English units (Tri-Service Spatial Data Standards)</li> <li>• Location and layout of petroleum-contaminated area, sampling points, MW locations , excavation limits, surface /subsurface structure locations and buried utilities</li> <li>• Electronic and hard copy data deliverables</li> </ul>

### **6.3.2 Monitoring Well Abandonment**

The site preparation task will include abandonment of four existing monitoring wells (MW-3, MW-5, MW-6, and MW-9) prior to commencement of excavation activities. The following quality controls will be implemented during monitoring well abandonment activities:

- Verify driller's qualifications (licensed in the State of Florida)
- Well identification/labeling
- Instrument calibration and accuracy
- Inspection of equipment and decontamination between wells
- Verify completion of well abandonment logs and records
- Verify well abandonment record submission
- Verify appropriate means, methods and materials used to abandon the well.
- Verify that well locations are marked for replacement once the excavation is complete.

### **6.3.3 Petroleum-Contaminated Soil Excavation/Sampling/Disposal**

The petroleum-contaminated areas will be excavated and cut back and sloped in accordance with OSHA regulations. The spoils from the excavation activities will be stockpiled in lined waste stockpiles and managed , transported , and disposed of in accordance with Section 4.0 of this Work Plan Addendum. Table 6-3 quality controls will be implemented during the excavation and sampling activities.

**TABLE 6-3**  
QC Procedures for Soil Excavation/Sampling/Disposal

<b>Task</b>	<b>Procedures/Construction Details</b>
Excavation	<ul style="list-style-type: none"> <li>• Verify vertical control, width and depth of excavation (1 ft into water table approximately 5 ft bls.)</li> <li>• Staging of excavated soils in approved staging areas</li> </ul>
Sampling	<ul style="list-style-type: none"> <li>• Waste characterization sampling (1 composite per 300 tons of soil)</li> <li>• Verify Confirmatory Samples (7 horizontal (walls) , 2 vertical ( floor)</li> <li>• Verify laboratory and credentials</li> <li>• Verify appropriate sampling equipment</li> </ul>
Transportation and Disposal	<ul style="list-style-type: none"> <li>• Verify waste profile completion (obtain Navy Signature )</li> <li>• Transporter and Disposal facility certificates</li> <li>• Verify stockpile and waste storage area inspection</li> </ul>

### 6.3.4 Backfilling

The access road and parking area that is disturbed during excavation will be backfilled with certified "clean" AASHTO gradation No. 57 (3/4-inch) gravel fill (or approved equal) from an offsite source. This will serve as the base for the asphalt covering that will be used to repair the paved area. Based on the fact that AASHTO gradation No. 57 gravel fill (or approved equal) will be used as a base, no compaction testing will be necessary in this area.

The excavated area in the grassed areas will be backfilled to original grade with certified "clean" granular fill material from an offsite source. Fill materials will be placed in maximum of 1-foot lifts and machine-compacted.

Clean granular fill and AASHTO gradation No. 57 gravel fill (or approved equal) will be furnished from an off site source(s). Approved-laboratory analytical results from a representative sample of each fill material are required to certify clean fill. Clean fill for this project is designated as meeting the FDEP Direct Exposure-Residential SCTLs as listed in Table II, Chapter 62-777, FAC. One sample from each fill source is required and the required analyses are specified in Section 3.0 of this Work Plan Addendum. Table 6-4 lists the quality controls will be implemented during the excavation backfilling activities.

**TABLE 6-4**  
QC Procedures for Backfilling

<b>Task</b>	<b>Procedures/Construction Details</b>
Access road and Parking Area Backfill	<ul style="list-style-type: none"> <li>• Verify material gradation (grain size) for compliance with specifications (No. 57 (3/4 inch) gravel fill (AASHTO)</li> <li>• Verify material analytical results to ensure it is "clean"</li> <li>• Lifts of 1-foot or less</li> <li>• Verify thickness of granular fill layer placed (1-2 feet)</li> </ul>
Grassed areas Backfill	<ul style="list-style-type: none"> <li>• Verify material analytical results to ensure it is clean</li> <li>• Lifts of 1-foot or less</li> <li>• Verify grading to transition to surrounding grades</li> </ul>

### **6.3.5 Monitoring Well Installation**

Following completion of the excavation and backfilling, two monitoring new wells (MW-10 and MW-11) will be installed and 4 wells (MW-3, MW-5, MW-6, and MW-9) re-installed. The well construction details are listed below:

- Verify driller's qualifications (licensed in the State of Florida)
- Drill rig and boring equipment inspection
- Instrument calibration and accuracy
- Inspection of equipment and decontamination between wells
- Well logs and development records
- Well identification/labeling
- Inspect well construction materials for compliance with construction details
- Verify 2-inch inside diameter flush threaded, Schedule 40 PVC solid riser
- Verify use of 0.010-inch slot well screen with a silt trap and well bottom cap

### **6.3.6 Site Restoration**

Any disturbed areas of asphalt or concrete caused by excavation operations will be restored to match pre-excavation conditions. QC procedures for site restoration are listed below:

- Restoration methods and limits
- Material/product quality (supplier certifications): seed, sod, sprigs, erosion control matting, mulch, fertilizer, vegetation
- Surface preparation
- Material application (casting) rates
- Mulching and fertilizing
- Watering and maintenance
- Damage (e.g. washout) repair

### **6.3.7 Site Inspection and Demobilization**

QC procedures for site inspection and demobilization are listed below:

- Pre-final site inspection and develop punch-list items
- Complete resolution of punch-list items
- Final site inspection
- Orderly site demobilization

## **6.4 Test Control**

Environmental samples will be collected in accordance with USEPA methods and procedures. Other controls will include, but are not limited to, maintaining a chain of custody; proper handling, packing, and shipping; and the use of qualified laboratories. The Project QC Manager will verify the following:

- Facilities and testing equipment are available and comply with testing standards.
- Existing well points are abandoned in accordance with the FDEP requirements and State and local regulations.
- The field instruments are calibrated in accordance with manufacturers' recommendations.
- Recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete.

The subcontractor will be required to follow CCI QA/QC standards throughout the project. Specific laboratory analytical standards are provided in the technical specifications. All deliverables will be submitted using standard transmittal forms and procedures.

## 7.0 Reference

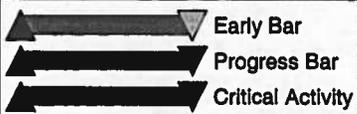
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CH2M HILL Constructors, Inc. 1999. Basewide Work Plan, Naval Station Mayport, Mayport, Florida, Contract No. N62467-98-D-0995. May.

**Appendix A**  
**Project Schedule**

Activity ID	WBS	% Comp	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	2003												2004											
								DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
<b>CTO #0011 - NAVSTA - Mayport, FL</b>																															
Subtotal		39		333	154	19MAR03A	05JUL04																								
<b>+ PHASE 1</b>																															
		100		3	0	19MAR03A	21MAR03A																								
<b>PHASE 2</b>																															
Subtotal		71		234	55	19MAR03A	17FEB04																								
<b>PHASE 2, TASK 1</b>																															
Subtotal		71		234	55	19MAR03A	17FEB04																								
<b>PROJECT MANAGEMENT</b>																															
AK20010399	20.01.03.99	76	Project Management (Phase 2)	181	48	19MAR03A	06FEB04																								
<b>COST PROPOSAL PREPARATION</b>																															
AK20010326	20.01.03.26	100	Develop Cost Estimate/Schedule	6	0	21MAR03A	28MAR03A																								
AK20010327		100	Submit Cost Proposal to Client	0	0		31MAR03A																								
AK 20187		100	Negotiate CTO with Client	1	0	21MAY03A	21MAY03A																								
AK 20199		100	Submit Final/Negotiated Estimate/Schedule	1	0	21MAY03A	21MAY03A																								
AK 2000001		100	Phase 3 Award	0	0		21MAY03A																								
<b>BID PACKAGE PREP/AWARD</b>																															
AK20010391	20.01.03.91	0	Prepare Bid Packages	11	11	24DEC03*	05JAN04																								
AK 20150		0	Issue RFB to Subcontractors	0	0		05JAN04																								
AK20010393	20.01.03.93	0	Subcontractor Pre-Bid Meeting/Site Visit	1	1	12JAN04	12JAN04																								
AK 20165		0	Subcontractor Bids Due	0	0		19JAN04																								
AK20010392	20.01.03.92	0	Evaluate Bid Packages	6	6	19JAN04	26JAN04																								
AK 20188		0	Issue Letter of intent to Award	0	0		27JAN04																								
AK 20181		0	Submit Subcontractor Plans & Submittals	6	6	29JAN04	05FEB04																								
AK 20211		0	Project Mobilization	0	0	02FEB04																									
AK 20180		0	Subcontractor Plans Due	0	0		05FEB04																								
AK 20189		0	Review Subcontractor Plans & Submittals	8	8	05FEB04	16FEB04																								
AK 20210		0	Award Subcontracts	0	0		17FEB04																								
<b>WORK PLANS PREPARATION</b>																															
AK20010301	20.01.03.01	89	Sampling and Analysis Plan	21	3	24OCT03A	03DEC03																								
AK20010304	20.01.03.04	89	Environmental Protection Plan	21	3	24OCT03A	03DEC03																								
AK20010306	20.01.03.06	89	Pollution Control Plan	21	3	24OCT03A	03DEC03																								
AK20010308	20.01.03.08	89	Site - Specific H&S Plan	21	3	24OCT03A	03DEC03																								

Start Date 18MAR03  
 Finish Date 05JUL04  
 Data Date 28NOV03  
 Run Date 10DEC03 11:45



RAC4 - CO11 Sheet 1 of 3

**CTO #0011 - NAVSTA - Mayport, FL**  
**CTO COMPLETION SCHEDULE**  
**NAVY RAC SOUTHERN DIVISION**







**Appendix B**  
**Site Specific Health and Safety Plan**

**Health and Safety Plan  
Excavation of Petroleum-Contaminated Soil at  
Underground Storage Tank Site 1363,  
Building 1363, Medical Dispensary**

**Naval Station Mayport  
Mayport, Florida**

**Contract No. N62467-01-R-0331  
Contract Task Order No. 0011**

**Revision 00**

**Submitted to:**

**U.S. Naval Facilities  
Engineering Command  
Southern Division**

**Prepared by:**



**CH2MHILL**  
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**December 2003**

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## Attachments

- 1 Employee Signoff Form – Field Safety Instructions
- 2 Project-Specific Chemical Product Hazard Communication Form
- 3 Chemical-Specific Training Form
- 4 Emergency Contacts
- 5 Project Activity Self-Assessment Checklists/Permits/Forms
- 6 Behavior Based Loss Prevention System Forms
- 7 Applicable Material Safety Data Sheets
- 8 Subcontractor H&S Plans/Procedures

# Acronyms

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°F	degrees Fahrenheit
AHA	Activity Hazard Analysis
ALARA	as low as reasonably achievable
APR	air-purifying respirator
ATL	Atlanta
BBLPS	Behavior Based Loss Prevention System
CCI	CH2M HILL Constructors, Inc.
CNS	central nervous system
CPR	cardiopulmonary resuscitation
CTO	Contract Task Order
dBA	decibel A-rated
DOT	Department of Transportation
FA	first aid
FID	flame ionization detector
GFCI	ground fault circuit interrupter
HAZCOM	hazard communication
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
IDW	investigation-derived waste
IRF	Incident Report Form
J.A. Jones	J.A. Jones Environmental Services
lb	pound
LEL	lower explosive limit
LPO	Loss Prevention Observations
mg/m <sup>3</sup>	milligrams per cubic meter
MSDS	Material Safety Data Sheet
mW/cm <sup>2</sup>	milliwatt per square centimeter
NAVFAC EFD SOUTH	U.S. Navy Facilities Engineering Command, Southern Division
NDG	nuclear density gauge
NLI	Near Loss Investigation
NS	Naval Station
NSC	National Safety Council
NTR	Navy Technical Representative
OSHA	Occupational Safety and Health Administration
PAHs	polynuclear aromatic hydrocarbons
PAHs	polynuclear aromatic hydrocarbons
PAPR	powered air-purifying respirator
PDF	personal flotation device
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million

PTSP	Pre-Task Safety Plan
RMSF	Rocky Mountain Spotted Fever
SAR	supplied-air respirator
SCBA	self-contained breathing apparatus
SHSS	Site Health and Safety Specialist
SOP	standard of practice
STEL	short-term exposure limit
SZ	support zone
T&D	Transportation and disposal
TBD	to be determined
TMCC	truck-mounted crash cushion
TRPHs	total recoverable petroleum hydrocarbons
TSDF	treatment, storage, and disposal facility
UST	underground storage tank
VOCs	volatile organic compounds

This Health and Safety Plan (HSP) will be kept on the site during field activities and will be reviewed as necessary. The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available. The plan adopts, by reference, the Standards of Practice (SOPs) in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual*, as appropriate. In addition, this plan adopts procedures in the project Work Plan. The Site Health and Safety Specialist (SHSS) is to be familiar with these SOPs and the contents of this plan. CH2M HILL Constructors Inc.'s (CCI's) personnel and subcontractors must sign Attachment 1.

# 1.0 Project Information and Description

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**CONTRACT TASK ORDER (CTO) No.:** CTO 0011

**CLIENT:** Southern Division, U.S. Navy Facilities Engineering Command (NAVFAC EFD SOUTH)

**PROJECT/SITE NAME:** Underground Storage Tank (UST) Site 1363, Building 1363, Medical Dispensary

**SITE ADDRESS:** Naval Station (NS) Mayport, Mayport, Florida

**CH2M HILL PROJECT MANAGER:** Tracey Bennett (J.A. Jones Environmental Services)

**CH2M HILL OFFICE:** Jacksonville FL

**DATE HEALTH AND SAFETY PLAN PREPARED:** December 2003

**DATE(S) OF SITE WORK:** December 2003- December 2004

**SITE BACKGROUND AND SETTING:** UST Site 1363 is located south of Building 1363, the Medical Dispensary in the northeast area of NS Mayport on Massey Avenue. The land surface at the site is relatively flat, sloping slightly to the southwest. The surface drainage flows toward ditches to the south and east. A drainage ditch separates the site and the golf course which is located south of the USTs. An asphalt access road and parking area are located between Building 1363 and the USTs.

Two USTs and associated piping were removed and replaced from a location approximately 80 feet south of Building 1363 in April 1995. Tank G-1363 was a 2,500-gallon UST that contained diesel fuel for an emergency generator. Tank 1363 was a 7,500-gallon UST that contained fuel oil for a heating boiler. During the UST closure, approximately 325 tons of excessively contaminated soil was removed. Two new USTs, Tank NG-1363 and Tank N-1363, were installed at the same location. Petroleum-contaminated soil and groundwater remained at the site following UST removal and installation.

The contaminants of concern at UST Site 1363 are volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and total recoverable petroleum hydrocarbons (TRPH).

**DESCRIPTION OF SPECIFIC TASKS TO BE PERFORMED:** The activities associated with the scope of work are as follows:

- Mobilization and site preparation
- Pre-excavation confirmation soil screening, sampling, and analyses
- Backfill material certification
- Pre-excavation survey
- Monitoring well abandonment
- Excavation of petroleum-contaminated soil and backfilling

- Waste characterization
- Transportation and disposal (T&D) of contaminated/uncontaminated materials
- Site restoration
- Monitoring well installation
- Decontamination
- Post-excavation survey
- Demobilization
- Post-excavation groundwater sampling and analyses
- Preparation and submittal of a Source Removal Report

## 2.0 Tasks to be Performed Under this Plan

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Refer to project documents (i.e., Work Plan) for detailed task information. A health and safety risk analysis (Table 2-1) has been performed for each task and is incorporated in this plan through task-specific hazard controls and requirements for monitoring and protection. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin.

### 2.1 Hazwoper-Regulated Tasks

- Mobilization and Site Preparation
- Pre-excavation Confirmation Soil Screening, Sampling, and Analyses
- Backfill Material Certification
- Pre-excavation Survey
- Monitoring Well Abandonment
- Excavation of Petroleum-Contaminated Soil and Backfilling
- Waste Characterization
- T&D of Contaminated/Uncontaminated Materials
- Site Restoration
- Monitoring Well Installation
- Decontamination
- Post-excavation Survey
- Demobilization
- Post-excavation Groundwater Sampling and Analyses

### 2.2 Non-Hazwoper-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state Hazwoper regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-Hazwoper-trained personnel. **Prior approval from the Health and Safety Manager (HSM) is required before these tasks are conducted on regulated hazardous waste sites.**

Tasks	Controls
<ul style="list-style-type: none"><li>• Preparation and Submittal of a Source Removal Report</li></ul>	<ul style="list-style-type: none"><li>• Brief on hazards, limits of access, and emergency procedures</li><li>• Post contaminant areas as appropriate</li><li>• Sample and monitor as appropriate</li></ul>

**TABLE 2.1**  
Hazard Analysis

(Refer to Section 3 for hazard controls)

Potential Hazards	Project Activities									
	Pre-excavation Confirmation Soil Screening, and Sampling, and Analyses	Monitoring Well Abandonment	Excavation of Petroleum-Contaminated Soil and Backfilling	T&D of Contaminated/Uncontaminated Materials	Site Restoration	Monitoring Well Installation	Decontamination	Post-excavation Groundwater Sampling and Analyses	Waste Characterization	Demobilization
Manual Lifting (HS-29)		X	X	X		X	X	X	X	X
Fire Prevention (HS-22)			X			X				X
Electrical Safety (HS-23)						X				X
Lockout /Tagout (HS-33)										
Ladders & Stairs(HS-25)										X
Compressed Gas Cylinders (HS-63)										
Buried Utilities			X							
Excavations (HS-32)			X	X	X					
Fall Protection (HS-31)										
Heavy Equipment ( HS-27)			X	X	X	X	X			
Confined Space Entry (HS-17)										
Concrete & Masonry Work (HS-43)										
Cranes and Hoisting (HS-44)										
Demolition (HS-45)										
Scaffolding(HS-73)										
Steel erection (HS-62)										
Welding and cutting (HS-22)										
Aerial Lifts (HS-41)										
Hand & Power Tools (HS-50)	X	X	X			X	X	X	X	X
Forklifts (HS-48)										X
Drilling (HS_35)		X				X				
Noise (HS-39)	X	X	X	X	X	X	X	X	X	X
Pressurized Lines/Equipment							X			
Pressure Washing/Equip Decon							X			
Vacuum Truck/Pumping Operations										
Suspended Loads										
Vehicle Traffic	X		X		X					X
Haul Truck Operations	X		X	X			X	X	X	
Visible Lighting	X	X	X	X	X	X	X	X	X	X
Mechanical Guarding Hazards				X		X				
Asbestos Hazard										
Lead Hazard										
Chemical Hazard-Dermal/Inhalation	X	X	X	X	X	X	X	X	X	
Dust Hazard (Silica/Metals)										
Fire/Explosion Hazards						X				

## 3.0 Hazard Controls

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This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CH2M HILL employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CCI employees and subcontractors who do not understand any of these provisions should contact the SHSS for clarification.

The health and safety hazards posed by field activities have been identified for each project activity and is provided in the Hazard Analysis Table (Table 2-1) in this section. Hazard control measures for project-specific and general H&S hazards are provided in 3.1 and 3.2 of this section.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in the HSP Attachments as a guide. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified. AHAs shall be submitted to the Navy Technical Representative (NTR) for review at least 15 days prior to the start of each project activity phase.

In addition to the controls specified in this section, **Project-Activity Self-Assessment Checklists** are contained in Attachment 5. These checklists are to be used to assess the adequacy of CCI and subcontractor site-specific safety requirements. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. Self-assessment checklists should be completed early in the project, when tasks or conditions change, or when otherwise specified by the HSM. The self-assessment checklists, including documented corrective actions, should be made part of the permanent project records.

Project-activity self-assessments checklist will be completed weekly by the SHSS during the course of the project, completing the applicable checklist depending on the work performed at the time on the project.

### 3.1 Project-Specific Hazards

#### 3.1.1 Drilling Safety

- The drill rig is not to be operated in inclement weather.
- The driller is to verify that the rig is properly leveled and stabilized before raising the mast.
- Personnel should be cleared from the sides and rear of the rig before the mast is raised.

- The driller is not to drive the rig with the mast in the raised position.
- The driller must check for overhead power lines before raising the mast. A minimum distance of 15 feet between mast and overhead lines (<50 kV) is recommended. Increased separation may be required for lines greater than 50 kV.
- Personnel should stand clear before rig startup.
- The driller is to verify that the rig is in neutral when the operator is not at the controls.
- Become familiar with the hazards associated with the drilling method used (cable tool, air rotary, hollow-stem auger, etc.).
- Do not wear loose-fitting clothing, watches, etc., that could get caught in moving parts.
- Do not smoke or permit other spark-producing equipment around the drill rig.
- The drill rig must be equipped with a kill wire or switch, and personnel are to be informed of its location.
- Be aware and stand clear of heavy objects that are hoisted overhead.
- The driller is to verify that the rig is properly maintained in accordance with the drilling company's maintenance program.
- The driller is to verify that all machine guards are in place while the rig is in operation.
- The driller is responsible for housekeeping (maintaining a clean work area).
- The drill rig should be equipped with at least one fire extinguisher.

If the drill rig comes into contact with electrical wires and becomes electrically energized, do not touch any part of the rig or any person in contact with the rig, and stay as far away as possible. Notify emergency personnel immediately

### **3.1.2 Welding/Cutting with Compressed Gas Cylinders**

(Reference CH2M HILL, SOP HS-22, *Welding and Cutting*)

- Complete hot work permit.
- Wear appropriate personal protective equipment.
- Remove or combustible materials in the immediate hot work area.
- Station fire watch with fire extinguisher.
- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must be secured in an upright position at all times.

- Cylinders must be positioned to avoid being struck or knock over; coming in contact with electrical circuits or extreme heat sources; and shielded from welding and cutting operations.
- Cylinders must be secured on a cradle, basket or pallet when hoisted; they may not be hoisted by choker slings.

### **3.1.3 Working around Material Handling Equipment**

- Never approach operating equipment from the rear. Always make positive contact with the operator, and confirm that the operator has stopped the motion of the equipment.
- Never approach the side of operating equipment; remain outside of the swing and turning radius.
- Maintain distance from pinch points of operating equipment.
- Because heavy equipment may not be equipped with properly functioning reverse signal alarms, never turn your back on any operating equipment.
- Never climb onto operating equipment or operate contractor/subcontractor equipment.
- Never ride contractor/subcontractor equipment unless it is designed to accommodate passengers; equipped with firmly attached passenger seat.
- Never work or walk under a suspended load.
- Never use equipment as a personnel lift; do not ride excavator buckets or crane hooks.
- Always stay alert and maintain a safe distance from operating equipment, especially equipment on cross slopes and unstable terrain.

### **3.1.4 Excavation Activities**

(Reference CH2M HILL, SOP HS-32, *Excavation and Trenching*)

- CCI personnel must notify and be granted authorization from the excavation competent person prior to entering any excavation. CCI personnel must follow all excavation requirements established by the competent person.
- The competent person must inspect the trench and/or excavation everyday and after everyday hazard increasing event. Documentation of this inspection must be maintained onsite at all times.
- Excavations must be protected from cave-ins by adequate protective systems unless the excavation is less than 5 feet in depth and a competent person determines there is no indication of cave-in or the excavation is made entirely in stable rock that is not fractured.
- Prior to excavating at a location, buried utilities in the area must be identified; refer to Section 2.2.8 "Procedures for locating buried utilities".

- CH2M HILL personnel must not enter any excavation where protective systems are deficient at any time, for any reason. The competent person must be notified of such conditions.
- Refer to CH2M HILL SOP HS-32 "Excavations and Trenching" for more specific details on excavation requirements.

### **3.1.5 Operating Heavy Equipment**

(Reference CH2M HILL, SOP HS-27, *Earthmoving Equipment*)

- CCI authorizes only those employees qualified by training or previous experience to operate material handling equipment.
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts and operating controls. All defects shall be corrected before the equipment is placed in service. Documentation of this inspection must be maintained onsite at all times.
- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls shall be in a neutral position, with the motors stopped and brakes set.
- Equipment which is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operators view is obstructed.
- When equipment is used near energized powerlines, the closest part of the equipment must be at least 10 feet from the powerlines < 50 kV. Provide an additional 4 feet for every 10 kV over 50 kV. A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead powerlines must be considered to be an energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins; refer to Section 3.2.11 "Procedures for Locating Buried Utilities."
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake shall be set whenever equipment is parked, wheels must be chocked when parked on inclines.

- When not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab. When equipment is unattended, power must be shut off, brakes set, blades/buckets landed and shift lever in neutral.
- Ladders, stairways or integral prefabricated scaffold ladders must be used to access the platform; scaffold crossbracing may not be used as a means of access.
- CCI personnel must have completed CCI's fall protection training when personal fall arrest systems (harness, lanyard, linelines, etc.) are required to be used on scaffolding.
- Personnel working from suspended scaffolding are required to wear a full body harness with lanyard attached to an independent lifeline.

### **3.1.6 Confined Space Entry Activities**

(Reference CH2M HILL, SOP HS-17, *Confined Space Entry*)

Project personnel are not anticipated to enter permit-required confined spaces during field activities. CCI personnel will enter confined spaces using the Alternative Procedure Permit attached to this plan for each entry.

- CCI personnel entering a confined spaces must have completed the 8-hour confined space entry training in the Recovery Center.
- Prior to entry, a confined space permit must be completed identifying entry requirements. Entrants must review the permit prior to each entry to verify the requirements have been satisfied.
- The atmosphere in the space must be tested with air monitoring equipment. CCI personnel must confirm the test results are consistent with acceptable entry conditions.
- Mechanical ventilation (portable blower) shall be applied to the space when these atmospheric conditions are not met during entries. Re-entry may only occur when the above atmospheric conditions are met and mechanical ventilation is continuously applied to maintain these conditions.
- CCI personnel entering confined spaces requiring respiratory protection must have completed respiratory protection training in the Basic program, received a respirator fit test and completed respirator wearer medical surveillance.
- Refer to CH2M HILL SOP HS-17 "Confined Space Entry" for more specific details on confined space entry requirements.

### **3.1.7 Forklift Operations**

Forklifts may be required for materials movement during project activities. Forklifts present the potential for damage to equipment, materials and personnel by impaling or striking personnel or materials with the forklift tines. Additionally, forklifts may tip if they are incorrectly loaded, driven at excessive speeds or operated with the forks too high.

The following rules apply whenever a forklift is used on the project:

- A rated lifting capacity must be posted in a location readily visible to the operator.
- A forklift truck must not be used to elevate employees unless a platform with guardrails, a back guard, and a kill switch is provided on the vehicle. When guardrails are not possible, fall arrest protection is required.
- The subcontractor operating the forklift must post and enforce a set of operating rules for forklift trucks.
- Only trained and authorized drivers will operate forklifts.
- Stunt driving and horseplay are prohibited.
- Employees must not ride on the forks.
- Employees must never be permitted under the forks (unless forks are blocked).
- The driver must inspect the forklift once a shift and document this inspection.
- The operator must look in the direction of travel and must not move the vehicle until all persons are clear of the vehicle.
- Forks must be carried as low as possible.
- The operator must lower the forks, shut off the engine, and set the brakes (or block the wheels) before leaving the forklift operator's position unless maintenance or safety inspections require the forklift to be running.
- Trucks must be blocked and have brakes set when forklifts are driven onto their beds.
- Extreme care must be taken when tilting elevated loads.
- Every forklift must have operable brakes capable of safely stopping it when fully loaded.
- Forklifts must have parking brakes and an operable horn.

When the operator is exposed to possible falling objects, industrial trucks must be equipped with overhead protection (canopy).

### **3.1.8 Exposure to Public Vehicular Traffic**

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a contractor.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.

- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route—behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic—never assume drivers are looking out for you
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a “buddy system” should be used, where one worker is looking towards traffic.
- When working on highway projects, obtain a copy of the contractor’s traffic control plan.
- Work area should be protected by a physical barrier—such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion (TMCC). All vehicles within 40 feet of traffic should have an orange flashing hazard light atop the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.
- Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

## 3.2 General Hazards

### 3.2.1 General Practices and Housekeeping

(Reference CH2M HILL- SOP HS-20, *General Practices*)

- Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness require enough illumination intensity to read a newspaper without difficulty.

- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.

### **3.2.2 Hazard Communication**

(Reference CH2M HILL-SOP HS-05, *Hazard Communication*)

The SHSS is to perform the following:

- Complete an inventory of chemicals brought on site by CCI using Attachment 2.
- Confirm that an inventory of chemicals brought on site by CCI subcontractors is available.
- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which CCI employees potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific HAZCOM training using Attachment 3.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

### **3.2.3 Shipping and Transportation of Chemical Products**

(Reference CH2M HILL's *Procedures for Shipping and Transporting Dangerous Goods*)

Chemicals brought to the site might be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive CCI training in shipping dangerous goods. All hazardous materials that

are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

### **3.2.4 Lifting**

(Reference CH2M HILL-SOP HS-29, *Lifting*)

- Proper lifting techniques must be used when lifting any object.
  - Plan storage and staging to minimize lifting or carrying distances.
  - Split heavy loads into smaller loads.
  - Use mechanical lifting aids whenever possible.
  - Have someone assist with the lift -- especially for heavy or awkward loads.
  - Make sure the path of travel is clear prior to the lift.

### **3.2.5 Fire Prevention**

(Reference CH2M HILL- SOP HS-22, *Fire Prevention*)

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
  - be maintained in a fully charged and operable condition,
  - be visually inspected each month, and
  - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

### **3.2.6 Electrical**

(Reference CH2M HILL-SOP HS-23, *Electrical*)

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.

- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.
- Extension cords must be:
  - equipped with third-wire grounding.
  - covered, elevated, or protected from damage when passing through work areas.
  - protected from pinching if routed through doorways.
  - not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

### **3.2.7 Stairways and Ladders**

(Reference CH2M HILL-SOP HS-25, *Stairways and Ladders*)

- Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails

- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials
- Straight and extension ladders must be tied off to prevent displacement
- Ladders that may be displaced by work activities or traffic must be secured or barricaded
- Portable ladders must extend at least 3 feet above landing surface
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder
- Stepladders are to be used in the fully opened and locked position
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder
- Fixed ladders > 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than 6 feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

### **3.2.8 Heat Stress**

(Reference CH2M HILL- SOP HS-09, *Heat and Cold Stress*)

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should be available. Under severe conditions, drink one to two cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).

- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SHSS to avoid progression of heat-related illness.

<b>Symptoms and Treatment of Heat Stress</b>					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
<b>Signs and Symptoms</b>	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
<b>Treatment</b>	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool—but not cold—water. Call ambulance, and get medical attention immediately!

### **Monitoring Heat Stress**

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress. The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

### **3.2.9 Cold Stress**

(Reference CH2M HILL- SOP HS-09, *Heat and Cold Stress*)

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-Chill Index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For

those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.

- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SHSS to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

<b>Symptoms and Treatment of Cold Stress</b>			
	<b>Immersion (Trench) Foot</b>	<b>Frostbite</b>	<b>Hypothermia</b>
<b>Signs and Symptoms</b>	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
<b>Treatment</b>	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm—but not hot—water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.

### 3.2.10 Compressed Gas Cylinders

- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

### 3.2.11 Procedures for Locating Buried Utilities

- Where available, obtain utility diagrams for the facility.
- Review locations of sanitary and storm sewers, electrical conduits, water supply lines, natural gas lines, and fuel tanks and lines.

- Review proposed locations of intrusive work with facility personnel knowledgeable of locations of utilities. Check locations against information from utility mark-out service.
- Where necessary (e.g., uncertainty about utility locations), excavation or drilling of the upper depth interval should be performed manually
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon).
- When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the SHSS should confirm that arrangement.

## 3.3 Biological Hazards and Controls

### 3.3.1 Snakes

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings.

### 3.3.2 Poison Ivy and Poison Sumac

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

### 3.3.3 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray **only outside** of clothing with permethrin or permethrin and spray skin with only DEET; and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bullseye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention.

### 3.3.4 Bees and Other Stinging Insects

Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform the SHSS and/or buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

### 3.3.5 Bloodborne Pathogens

(Reference CH2M HILL- SOP HS-36, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when coming into contact with landfill waste or waste streams containing potentially infectious material. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HS-36, *Bloodborne Pathogens*. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.

### 3.3.6 Mosquito Bites

Due to the recent detection of the West Nile Virus in the Southeastern United States it is recommended that preventative measures be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35 percent DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35 percent) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

#### Symptoms of Exposure to the West Nile Virus

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3-15 days.

If you have any questions or to report any suspicious symptoms, contact the project Health and Safety Manager.

### 3.4 Radiological Hazards and Controls

Refer to CH2M HILL's Corporate Health and Safety Program, Program and Training Manual, and Corporate Health and Safety Program, Radiation Protection Program Manual, for standards of practice in contaminated areas.

### 3.5 Contaminants of Concern

Contaminants of Concern are listed in Table 3-1.

**TABLE 3-1**  
Contaminants of Concern

Contaminant	Location and Maximum <sup>a</sup> Concentration (ppm)	Exposure Limit <sup>b</sup>	IDLH <sup>c</sup>	Symptoms and Effects of Exposure	PIP <sup>d</sup> (eV)
Benzene	SB: 0.007 mg/kg SS:	1 ppm	500 Ca	Eye, nose, skin, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness; staggered gait; bone marrow depression	9.24
Ethyl Benzene	SB: 0.6 mg/kg SS:	100 ppm	800	Eye, skin, and mucous membrane irritation; headache; dermatitis; narcotic; coma	8.76
Naphthalene	SB: 1.7 mg/kg SS:	10 ppm	250	Eye irritation, headache, confusion, excitement, nausea, vomiting, abdominal pain, bladder irritation, profuse sweating, dermatitis, corneal damage, optical neuritis	8.12
Toluene	SB: 0.5 mg/kg SS:	50 ppm	500	Eye and nose irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, excessive tearing, nervousness, muscle fatigue, paresthesia, dermatitis, liver and kidney damage	8.82
TRPH	SB: 340 mg/kg	100 mg/m <sup>3</sup>	1000	Eye, skin, and nose irritation; headache; dizziness; vomiting; dermatitis, burning sensation, in chest, weakness, chemical pneumonia	UK
Xylenes	SB: 0.2 mg/kg SS:	100 ppm	900	Irritated eyes, skin, nose, and throat; dizziness; excitement; drowsiness; incoherence; staggering gait; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; dermatitis	8.56
Footnotes: <sup>a</sup> Specify sample-designation and media: SB (Soil Boring). <sup>b</sup> Appropriate value of PEL, REL, or TLV listed. <sup>c</sup> IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen. <sup>d</sup> PIP = photoionization potential; NA = Not applicable; UK = Unknown.					

## 3.6 Potential Routes of Exposure

**Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 4.

**Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 4 and 5, respectively.

**Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

## 4.0 Project Organization and Personnel

### 4.1 CCI Employee Medical Surveillance and Training

(Reference CH2M HILL- SOPs HS-01, *Medical Surveillance*, and HS-02, *Health and Safety Training*)

The employees listed meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SHSS" have completed a 12-hour site safety coordinator course, and have documented requisite field experience. An SHSS with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. At least two FA-CPR trained employees must be available at each job site/operation. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL-SOP HS-04, *Reproduction Protection*, including obtaining a physician's statement of the employee's ability to perform hazardous activities before being assigned fieldwork.

Employee Name	Office	Responsibility	SHSS/FA-CPR
Mike Hall/ J.A. Jones	Jacksonville, FL	Program Manager	Level ____ SHSS; FA-CPR
Tracey Bennett/J.A. Jones	Jacksonville FL	Project Manager	

### 4.2 Field Team Chain of Command and Communication Procedures

#### 4.2.1 Client

Contact Name: ACO – Eva Clement, COTR – Jimmy Jones  
Phone: 843/820-5544

#### 4.2.2 CCI

Program Manager: Scott Newman/ATL  
Project Manager: Tracey Bennett/JA Jones  
Health and Safety Manager: Rich Rathnow/ORO  
Field Team Leader: TBD  
Site Health and Safety Specialist: Bruce Johnson / J.A. Jones

The CCI project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The PM has overall management responsibility for the tasks listed below. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this SOP:

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors)
- Select safe and competent subcontractors by:
  - obtaining, reviewing and accepting or rejecting subcontractor pre-qualification questionnaires
  - ensuring that acceptable certificates of insurance, including CH2M HILL as named additional insured, are secured as a condition of subcontract award
  - including HS&E submittals checklist in subcontract agreements, and ensuring that appropriate site-specific safety procedures, training and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations
- Maintain copies of subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel
- Provide oversight of subcontractor HS&E practices per the site-specific safety plan
- Manage the site and interfacing with 3rd parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The CCI HSM is responsible for:

- Review and accept or reject subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator (KA)
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations
- Support the SHSS's oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with on-site 3rd parties per the site-specific safety plan

The SHSS is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify this HSP remains current and amended when project activities or conditions change

- Verify CCI site personnel and subcontractor personnel read this HSP and sign Attachment 1 "Employee Signoff Form" prior to commencing field activities
- Verify CCI site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in Section 2
- Verify compliance with the requirements of this HSP and applicable subcontractor health and safety plan(s)
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in Section 2.2.2
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in Section 4
- Post OSHA job-site poster; the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established; posters can be obtained by calling 800/548-4776 or 800/999-9111
- Verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (e.g., as tasks or hazards change)
- Verify that project H&S forms and permits, found in Attachment 5, are being used as outlined in Section 2
- Perform oversight and/or assessments of subcontractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists, found in Attachment 5, are being used as outlined in Section 2
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations
- Manage the site and interfacing with 3rd parties in a manner consistent with our contract/subcontract agreements and the applicable standard of reasonable care
- Coordinate with the HS&E manager regarding CH2M HILL and subcontractor operational performance, and 3rd party interfaces
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The training required for the SHSS is as follows:

- SHSS 10 hour course
- OSHA 10 hour course for Construction
- First Aid and CPR

- Relevant Competent Person Courses (excavation, confined space, scaffold, fall protection, etc.)

The SHSS is responsible for contacting the Field Team Leader and Project Manager. In general, the Project Manager will contact the client. The Health and Safety Manager should be contacted as appropriate.

### **4.2.3 Subcontractors**

(Reference CH2M HILL- SOP HS-55, *Subcontractor, Contractor, and Owner*)

Certain subcontractors (drilling, remedial and construction contractors) are required to be pre-qualified for safety by completing the Subcontractor Safety Performance Questionnaire. The subcontractors listed above are covered by this HSP. However, this plan does not address hazards associated with the tasks and equipment that the subcontractor has expertise in (e.g., drilling, excavation work, electrical). Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit these procedures to CCI for review before the start of field work by following the Subcontractor Safety Procedure Criteria specific to their work.

Subcontractors are also required to prepare Activity Hazard Analysis before beginning each activity posing H&S hazards to their personnel using the AHA form provided in Attachment 6 as a guide. The AHA shall identify the principle steps of the activity, potential H&S hazards for each step and recommended control measures for each identified hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

Subcontractors must comply with the established health and safety plan(s). The CCI SHSS should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established plan(s). CCI oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

CCI should continuously endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. CCI is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SHSS is responsible for confirming CCI subcontractor performance against both the subcontractor's safety plan and applicable self-assessment checklists. Self-assessment checklists contained in Attachment 5 are to be used by the SHSS to review subcontractor performance.

Health and safety related communications with CCI subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this plan, and require them to sign the Employee Signoff Form included in Attachment 1.
- Request subcontractor(s) to brief project team on the hazards and precautions related to their work.

- When apparent non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action – the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.
- When an apparent imminent danger exists, immediately remove all affected CCI employees and subcontractors, notify subcontractor safety representative, and stop affected work until adequate corrective measures are implemented. Notify the Project Manager and HSM as appropriate.
- Document all oral health and safety related communications in project field logbook, daily reports, or other records.

# 5.0 Personal Protective Equipment

(Reference CH2M HILL- SOP HS-07, *Personal Protective Equipment*, HS-08, *Respiratory Protection*)

PPE Specifications are listed in Table 5-1.

**TABLE 5-1**  
PPE Specifications<sup>a</sup>

Task	Level	Body	Head	Respirator <sup>b</sup>
General site entry Oversight of remediation and construction	D	Work clothes; steel-toe, leather work boots; work glove.	Hardhat <sup>c</sup> Safety glasses Ear protection <sup>d</sup>	None required
Pre-excavation Confirmation Soil Screening, Sampling, and Analyses Backfill Material Certification Pre-excavation Survey Monitoring Well Abandonment Waste Characterization T&D of Contaminated/Uncontaminated Materials Site Restoration Post-excavation Survey Demobilization Post-excavation Groundwater Sampling and Analyses	Modified D	Work clothes or cotton coveralls <b>Boots:</b> Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers <b>Gloves:</b> Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat <sup>c</sup> Safety glasses Ear protection <sup>d</sup>	None required
Excavation of Petroleum-Contaminated Soil and Backfilling Monitoring Well Installation Decontamination	Modified D	<b>Coveralls:</b> Uncoated Tyvek® <b>Boots:</b> Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers <b>Gloves:</b> Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat <sup>c</sup> Splash shield <sup>c</sup> Safety glasses Ear protection <sup>d</sup>	None required.
Tasks requiring upgrade	C	<b>Coveralls:</b> Polycoated Tyvek® <b>Boots:</b> Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers <b>Gloves:</b> Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat <sup>c</sup> Splash shield <sup>c</sup> Ear protection <sup>d</sup> Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H cartridges or equivalent <sup>e</sup> .
Tasks requiring upgrade	B	<b>Coveralls:</b> Polycoated Tyvek® <b>Boots:</b> Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers <b>Gloves:</b> Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat <sup>c</sup> Splash shield <sup>c</sup> Ear protection <sup>d</sup> Spectacle inserts	Positive-pressure demand self-contained breathing apparatus (SCBA); MSA Ultralite, or equivalent.

**TABLE 5-1**  
**PPE Specifications<sup>a</sup>**

<b>Task</b>	<b>Level</b>	<b>Body</b>	<b>Head</b>	<b>Respirator<sup>b</sup></b>
<b>Reasons for Upgrading or Downgrading Level of Protection</b>				
<b>Upgrade<sup>f</sup></b>			<b>Downgrade</b>	
<ul style="list-style-type: none"> <li>• Request from individual performing tasks.</li> <li>• Change in work tasks that will increase contact or potential contact with hazardous materials.</li> <li>• Occurrence or likely occurrence of gas or vapor emission.</li> <li>• Known or suspected presence of dermal hazards.</li> <li>• Instrument action levels (Section 5) exceeded.</li> </ul>		<ul style="list-style-type: none"> <li>• New information indicating that situation is less hazardous than originally thought.</li> <li>• Change in site conditions that decreases the hazard.</li> <li>• Change in work task that will reduce contact with hazardous materials.</li> </ul>		

<sup>a</sup> Modifications are as indicated. CH2M HILL will provide PPE only to CH2M HILL employees.

<sup>b</sup> No facial hair that would interfere with respirator fit is permitted.

<sup>c</sup> Hardhat and splash-shield areas are to be determined by the SHSS.

<sup>d</sup> Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.

<sup>e</sup> Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range (refer to Section 5)--then at least every 4 hours. If encountered conditions are different than those anticipated in this HSP, contact the HSM.

<sup>f</sup> Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SHSS qualified at that level is present.

# 6.0 Air Monitoring/Sampling

(Reference CH2M HILL- SOP HS-06, *Air Monitoring*)

## 6.1 Air Monitoring Specifications

Air Monitoring Specifications are listed in Table 6-1.

**TABLE 6-1**  
Air Monitoring Specifications

Instrument	Tasks	Action Levels <sup>a</sup>	Frequency <sup>b</sup>	Calibration	
PID: OVM with 10.6eV lamp or equivalent	All intrusive operations	Up to 1ppm	Initially and periodically during task	Daily	
		1-5 ppm			Level D Level D: collect benzene tube; benzene action level not exceeded
		5-25 ppm			Level C: collect benzene tube; benzene action level not exceeded
		> 25 ppm		Level B: Contact HSM	
CGI: MSA model 260 or 261 or equivalent		0-10% : 10-25% LEL: >25% LEL:	Continuous during advancement of boring or trench	Daily	
O <sub>2</sub> Meter: MSA model 260 or 261 or equivalent		>25% <sup>c</sup> O <sub>2</sub> :	Continuous during advancement of boring or trench	Daily	
		20.9% <sup>c</sup> O <sub>2</sub> :			Explosion hazard; evacuate or vent
		<19.5% <sup>c</sup> O <sub>2</sub> :			Potential explosion hazard Explosion hazard; evacuate or vent
				Normal O <sub>2</sub> O <sub>2</sub> deficient; vent or use SCBA	
Dust Monitor Visual Assessment	All activities	No Visible Dust	Initially and periodically during tasks	Zero Daily	
		Visible Dust			Level D Use dust suppression methods
Detector Tube: Drager benzene specific 0.5/c (0.5 to 10 ppm range) with pre-tube, or equivalent	All Intrusive Activities	<0.5 ppm	Initially and periodically when PID/FIB >1 ppm	Not applicable	
		0.5-1 ppm			Level D Level C Level B
		>1 ppm			
Nose-Level Monitor <sup>e</sup> :		<85 dB(A)	Initially and periodically during task	Daily	
		85-120 dB(A)			No action required Hearing protection required Stop; re-evaluate
		120 dB(A)			

<sup>a</sup> Action levels apply to sustained breathing-zone measurements above background.

<sup>b</sup> The exact frequency of monitoring depends on field conditions and is to be determined by the SHSS; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3", "at surface/SB-2", etc.).

<sup>c</sup> If the measured percent of O<sub>2</sub> is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O<sub>2</sub> action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O<sub>2</sub> action levels are required for confined-space entry (refer to Section 2).

<sup>d</sup> Refer to SOP HS-10 for instructions and documentation on radiation monitoring and screening.

<sup>e</sup> Noise monitoring and audiometric testing also required.

## 6.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures)

Air Monitoring equipment calibration specifications are listed in Table 6-2

**TABLE 6-2**  
Air Monitoring Equipment Calibration Specifications

Instrument	Gas	Span	Reading	Method
PID: OVM, 10.6 or 11.8 eV bulb	100 ppm isobutylene	RF = 1.0	100 ppm	1.5 lpm reg T-tubing
PID: MiniRAE, 10.6 eV bulb	100 ppm isobutylene	CF = 100	100 ppm	1.5 lpm reg T-tubing
PID: TVA 1000	100 ppm isobutylene	CF = 1.0	100 ppm	1.5 lpm reg T-tubing
FID: OVA	100 ppm methane	3.0 ± 1.5	100 ppm	1.5 lpm reg T-tubing
FID: TVA 1000	100 ppm methane	NA	100 ppm	2.5 lpm reg T-tubing
Dust Monitor: Miniram-PDM3	Dust-free air	Not applicable	0.00 mg/m <sup>3</sup> in "Measure" mode	Dust-free area OR Z-bag with HEPA filter
CGI: MSA 260, 261, 360, or 361	0.75% pentane	N/A	50% LEL ± 5% LEL	1.5 lpm reg direct tubing

## 6.3 Air Sampling

Sampling, in addition to real-time monitoring, may be required by other OSHA regulations where there may be exposure to certain contaminants. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the HSM immediately if these contaminants are encountered.

# 7.0 Decontamination

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(Reference CH2M HILL- SOP HS-13, *Decontamination*)

The SHSS must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SHSS. The SHSS must ensure that procedures are established for disposing of materials generated on the site.

## 7.1 Decontamination Specifications

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Personnel	Sample Equipment	Heavy Equipment
<ul style="list-style-type: none"><li>• Boot wash/rinse</li><li>• Glove wash/rinse</li><li>• Outer-glove removal</li><li>• Body-suit removal</li><li>• Inner-glove removal</li><li>• Respirator removal</li><li>• Hand wash/rinse</li><li>• Face wash/rinse</li><li>• Shower ASAP</li><li>• Dispose of PPE in municipal trash, or contain for disposal</li><li>• Dispose of personnel rinse water to facility or sanitary sewer, or contain for offsite disposal</li></ul>	<ul style="list-style-type: none"><li>• Wash/rinse equipment</li><li>• Solvent-rinse equipment</li><li>• Contain solvent waste for offsite disposal</li></ul>	<ul style="list-style-type: none"><li>• Power wash</li><li>• Steam clean</li><li>• Dispose of equipment rinse water to facility or sanitary sewer, or contain for offsite disposal</li></ul>

---

## 7.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SHSS should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 7-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SHSS to accommodate task-specific requirements.

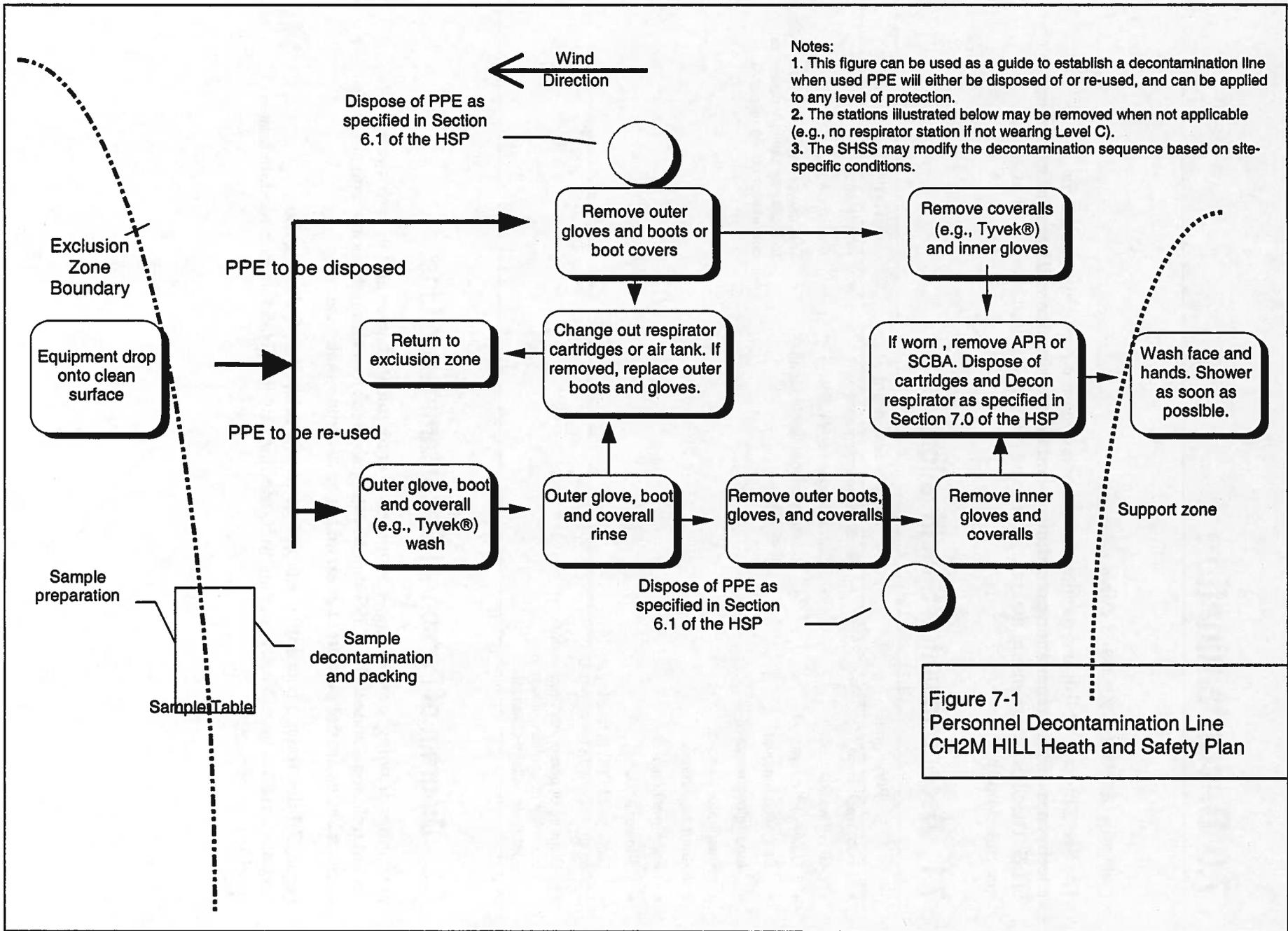


Figure 7-1  
Personnel Decontamination Line  
CH2M HILL Heath and Safety Plan

## **8.0 Spill-Containment Procedures**

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Sorbent material will be maintained in the support zone. Incidental spills will be contained with sorbent and disposed of properly.

# 9.0 Site-Control Plan

---

## 9.1 Site-Control Procedures

(Reference CH2M HILL- SOP HS-11, *Site Control*)

- The SHSS will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of Health and Safety Plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- The SHSS records attendance at safety briefings in a logbook and documents the topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location in accordance with CH2M HILL- SOP HS-71, OSHA Postings.
- Establish support, decontamination, and exclusion zones. Delineate with flags or cones as appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the "buddy system."
- Initial air monitoring is conducted by the SHSS in appropriate level of protection.
- The SCC is to conduct periodic inspections of work practices to determine the effectiveness of this plan – refer to Sections 2 and 3. Deficiencies are to be noted, reported to the HSM, and corrected.

## 9.2 Hazwoper Compliance Plan

(Reference CH2M HILL- SOP HS-19, *Site-Specific Written Safety Plans*)

Certain parts of the site work are covered by state or federal Hazwoper standards and therefore require training and medical monitoring. Anticipated Hazwoper tasks (Section 1.1.1) might occur consecutively or concurrently with respect to non-Hazwoper tasks. This section outlines procedures to be followed when approved activities specified in Section 1.1.2 do not require 24- or 40-hour training. Non-Hazwoper-trained personnel also must be trained in accordance with all other state and federal OSHA requirements.

- In many cases, air sampling, in addition to real-time monitoring, must confirm that there is no exposure to gases or vapors before non-Hazwoper-trained personnel are allowed on the site, or while non-Hazwoper-trained staff are working in proximity to Hazwoper activities. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data. Refer to subsections 2.5 and 5.3 for contaminant data and air sampling requirements, respectively.
- When non-Hazwoper-trained personnel are at risk of exposure, the SHSS must post the exclusion zone and inform non-Hazwoper-trained personnel of the:
  - nature of the existing contamination and its locations
  - limitations of their access
  - emergency action plan for the site
- Periodic air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-Hazwoper-trained personnel (e.g., in an adjacent area) are not exposed to airborne contaminants.
- When exposure is possible, non-Hazwoper-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.
- Remediation treatment system start-ups: Once a treatment system begins to pump and treat contaminated media, the site is, for the purposes of applying the Hazwoper standard, considered a treatment, storage, and disposal facility (TSDF). Therefore, once the system begins operation, only Hazwoper-trained personnel (minimum of 24 hour of training) will be permitted to enter the site. All non-Hazwoper-trained personnel must not enter the TSDF area of the site.

# 10.0 Emergency Response Plan

---

(Reference CH2M HILL- SOP HS-12, *Emergency Response*)

## 10.1 Pre-Emergency Planning

The SHSS performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with CCI onsite parties, the facility, and local emergency-service providers as appropriate.

- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including driving route to hospital.
- Brief new workers on the emergency response plan.

The SHSS will evaluate emergency response actions and initiate appropriate follow-up actions.

## 10.2 Emergency Equipment and Supplies

The SHSS should mark the locations of emergency equipment on the site map and post the map.

Emergency Equipment and Supplies	Location
20 LB (or two 10-lb) fire extinguisher (A, B, and C classes)	Support Zone/Heavy Equipment
First aid kit	Support Zone/Field Vehicle
Eye Wash	Support & Decon Zone/Field Vehicle
Potable water	Support & Decon Zone/Field Vehicle
Bloodborne-pathogen kit	Support Zone/Field Vehicle

## 10.3 Incident Reporting, Investigation and Response

For any accident meeting the definition of Recordable Occupational Injuries or Illnesses or Significant Accidents, the Southern Division, NAVFAC Contracting Officer and Navy Technical Representative (NTR) shall be notified by the HSM or Program Manager soon as practical, but not later than four hours after occurrence. All other incidents must be reported to Southern Division, NAVFAC within 24 hours of incident occurrence.

Therefore in order for the incident to be assessed for reportability purposes it is imperative that according to CCI requirements, all personal injuries, near-misses, or property damage incidents involving CCI or subcontractor project personnel be reported IMMEDIATELY to the HSM Rich Rathnow/ORO, Program Manager Scott Newman/ATL, or CCI Corporate HSM Angelo Liberatore/ATL at the numbers identified in the emergency contact attachment contained in this plan.

The Site Manager or designee must report the following incident information to the HSM immediately after incident occurrence:

- Date and time of mishap
- Project name and project number
- Name and worker classification
- Extent of known injuries
- Level of medical attention
- Injury cause

A written incident investigation shall be performed and submitted to the HSM within 24 hours of incident occurrence by the completing the Incident Report, Near Loss Investigation and Root Cause Analysis provided in the HSP Attachments.

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down CCI operations and evacuate the immediate work area.
- Notify appropriate response personnel.
- Account for personnel at the designated assembly area(s).

- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

## 10.4 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. CCI employee injuries and illnesses must be reported to the Human Resource contact in Attachment 4. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CH2M HILL medical consultant, depending on whose employee is injured. During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities (e.g., 911).
- The SHSS will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incident as outlined in Section 10.7.

## 10.5 Evacuation

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the SHSS before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The SHSS and a "buddy" will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- The SHSS will account for all personnel in the onsite assembly area.

- A designated person will account for personnel at alternate assembly area(s).
- The SHSS will write up the incident as soon as possible after it occurs and submit a report to the Corporate Director of Health and Safety.

## 10.6 Evacuation Signals

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

## 10.7 Incident Notification and Reporting

- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the PM and HSM. Call emergency beeper number if HSM is unavailable.
- For CCI work-related injuries or illnesses, contact the respective Human Resources contact listed in Attachment 4. For CCI incidents the HR administrator completes an Incident Report Form (IRF). IRF must be completed within 24 hours of incident.
- For CCI subcontractor incidents, complete the Subcontractor Accident/Illness Report Form (Attachment )and submit to the HSM.
- Notify and submit reports to client as required in contract.

## 11.0 Behavior Based Loss Prevention System

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A Behavior Based Loss Prevention System (BBLPS) is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The four basic Loss Prevention tools that will be used on EE&S CCI projects to implement the BBLPS include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plans (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (NLI)

The Site Supervisor serves as the Site Health and Safety Specialist (SHSS) and is responsible for implementing the BBLPS on the project site. When a separate individual is assigned as the SHSS, the SHSS is delegated authority from the Site Supervisor to implement the BBLPS on the project site, but the Site Supervisor remains accountable for its implementation. The Site Supervisor/Safety Coordinator shall only oversee the subcontractor's implementation of their AHAs and PTSPs processes on the project.

### 11.1 Activity Hazard Analysis

An Activity Hazard Analysis (AHA) defines the activity being performed, the hazards posed and control measures required to perform the work safely. Workers are briefed on the AHA before doing the work and their input is solicited prior, during and after the performance of work to further identify the hazards posed and control measures required.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in Attachment 6. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

An AHA shall be prepared for all field activities performed by CCI and subcontractor during the course of the project by the Site Supervisor/SHSS. The Project-Specific and General Hazards of the HSP, the Hazard Analysis Table (Table 2-1), and applicable CH2Mhill Standards of Practice (SOPs) should be used as a basis for preparing CCI's AHAs.

CCI subcontractors are required to provide AHAs specific to their scope of work on the project for acceptance by CCI. Each subcontractor shall submit AHAs for their field activities, as defined in their work plan/scope of work, along with their project-specific HSP. Additions or changes in CCI or subcontractor field activities, equipment, tools or material to perform work or additional/different hazard encountered that require

additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised.

## **11.2 Pre-Task Safety Plans**

Daily safety meetings are held with all project personnel in attendance to review the hazards posed and required H&S procedures/AHAs, that apply for each day's project activities. The PTSPs serve the same purpose as these general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on those hazards posed to individual work crews. At the start of each day's activities, the crew supervisor completes the PTSP, provided in Attachment 6, with input from the work crew, during their daily safety meeting. The day's tasks, personnel, tools and equipment that will be used to perform these tasks are listed, along with the hazards posed and required H&S procedures, as identified in the JSA. The use of PTSPs, better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day. The use of PTSPs is a common safety practice in the construction industry.

## **11.3 Loss Prevention Observations**

Loss Prevention Observations (LPOs) shall be conducted by Site Supervisor/SHSS for specific work tasks or operations comparing the actual work process against established safe work procedures identified in the project-specific HSP and AHAs. LPOs are a tool to be used by supervisors to provide positive reinforcement for work practices performed correctly, while also identifying and eliminating deviations from safe work procedures that could result in a loss. Site Supervisor/SHSS shall perform at least one LPO each week for a tasks/operations addressed in the project-specific HSP or AHA. The Site Supervisor/SHSS shall complete the LPO form in Attachment 6 for the task/operation being observed.

## **11.4 Loss/Near Loss Investigations**

Loss/Near Loss Investigations shall be performed for the all CCI and subcontractor incidents involving:

- Person injuries/illnesses and near miss injuries
- Equipment/property damage
- Spills, leaks, regulatory violations
- Motor vehicle accidents

The cause of loss and near loss incidents are similar, so by identifying and correcting the causes of near loss causes, future loss incidents may be prevented. The following is the Loss/Near Loss Investigation Process:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the who, what, when, where and how questions.
- Draw conclusions, pitting facts together into a probable scenario.

- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.
- Develop and implement solutions, matching all identified root causes with solutions.
- Communicate incident as a Lesson Learned to all project personnel.
- Filed follow-up on implemented corrective active action to confirm solution is appropriate.

Site Supervisors/SHSS shall perform an incident investigation, as soon as practical after incident occurrence during the day of the incident, for all Loss and Near Loss Incidents that occur on the project. Loss and Near Loss incident investigations shall be performed using the following incident investigation forms provided in Attachment 6:

- Incident Report Form (IRF)
- Incident Investigation Form
- Root Cause Analysis Form

All Loss and Near Loss incident involving personal injury, property damage in excess of \$1,000 or near loss incidents that could have resulted in serious consequences shall be investigated by completing the incident investigation forms and submitting them to the PM and HSM within 24 hours of incident occurrence. A preliminary Incident Investigation and Root Cause Analysis shall be submitted to the Project Manager and HSM within 24 hours of incident occurs. The final Incident Investigation and Root Cause Analysis shall be submitted after completing a comprehensive investigation of the incident.

## 12.0 Approval

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This site-specific Health and Safety Plan has been written for use by CH2M HILL only. CH2M HILL claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

### 12.1 Original Plan

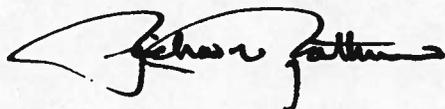
Written By: Rich Rathnow

Date: 10/30/2003

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Approved By: Rich Rathnow

Date: 10/30/2003



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### 12.2 Revisions

Revisions Made By:

Date:

---

Revisions to Plan:

---

Revisions Approved By:

Date:

---

**Attachment 1**

**Employee Signoff Form**



**Attachment 2**

**Project-Specific Chemical Product  
Hazard Communication Form**



**Attachment 3**

**Chemical Specific Training Form**

## CHEMICAL-SPECIFIC TRAINING FORM

Location:	Project # :
HCC:	Trainer:

**TRAINING PARTICIPANTS:**

NAME	SIGNATURE	NAME	SIGNATURE

**REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:**


The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

- Physical and health hazards
- Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)
- Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

**Attachment 4**

**Emergency Contacts**

# Emergency Contacts-

## 24-hour CH2M HILL Emergency Beeper – 888/444-1226

**Medical Emergency – 911**  
Facility Medical Response #:  
Local Ambulance #:

**CH2M HILL- Medical Consultant**  
Dr. Jerry H. Berke, M.D., M.P.H.  
Health Resources  
600 West Cummings Park, Suite 3400  
Woburn, MA 01801-6350  
781/938-4653  
800/350-4511  
(After hours calls will be returned within 20 minutes)

**Fire/Spill Emergency – 911**  
Facility Fire Response #:  
Local Fire Dept #:

**Local Occupational Physician**

**Security & Police – 911**  
Facility Security #:  
Local Police #:

**Navy RAC Program Manager**  
Name: Scott Newman/ATL  
Phone: 770/604/9182

**Utilities Emergency**  
Water:  
Gas:  
Electric:

**Navy RAC Health and Safety Manager (HSM)**  
Name: Rich Rathnow/ORO  
Phone: 865/483-9005 (Office); 865/607-6734 (Cell)  
865/531-2933 (Home)

**Site Health and Safety Specialist (SHSS)**  
Name:  
Phone:

**CCI Human Resources Department**  
Name: Nancy Orr/COR  
Phone: 303/771-0952

**Project Manager**  
Name:  
Phone:

**Corporate Human Resources Department**  
Name: John Monark/COR  
Phone: 303/771-0900

**Federal Express Dangerous Goods Shipping**  
Phone: 800/238-5355  
**Emergency Number for Shipping Dangerous Goods**  
Phone: 800/255-3924

**CH2M HILL Worker's Compensation and Auto Claims**  
Sterling Administration Services  
Phone: 800/420-8926 After hours: 800/497-4566  
Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

**Facility Alarms:**

**Evacuation Assembly Area(s):**

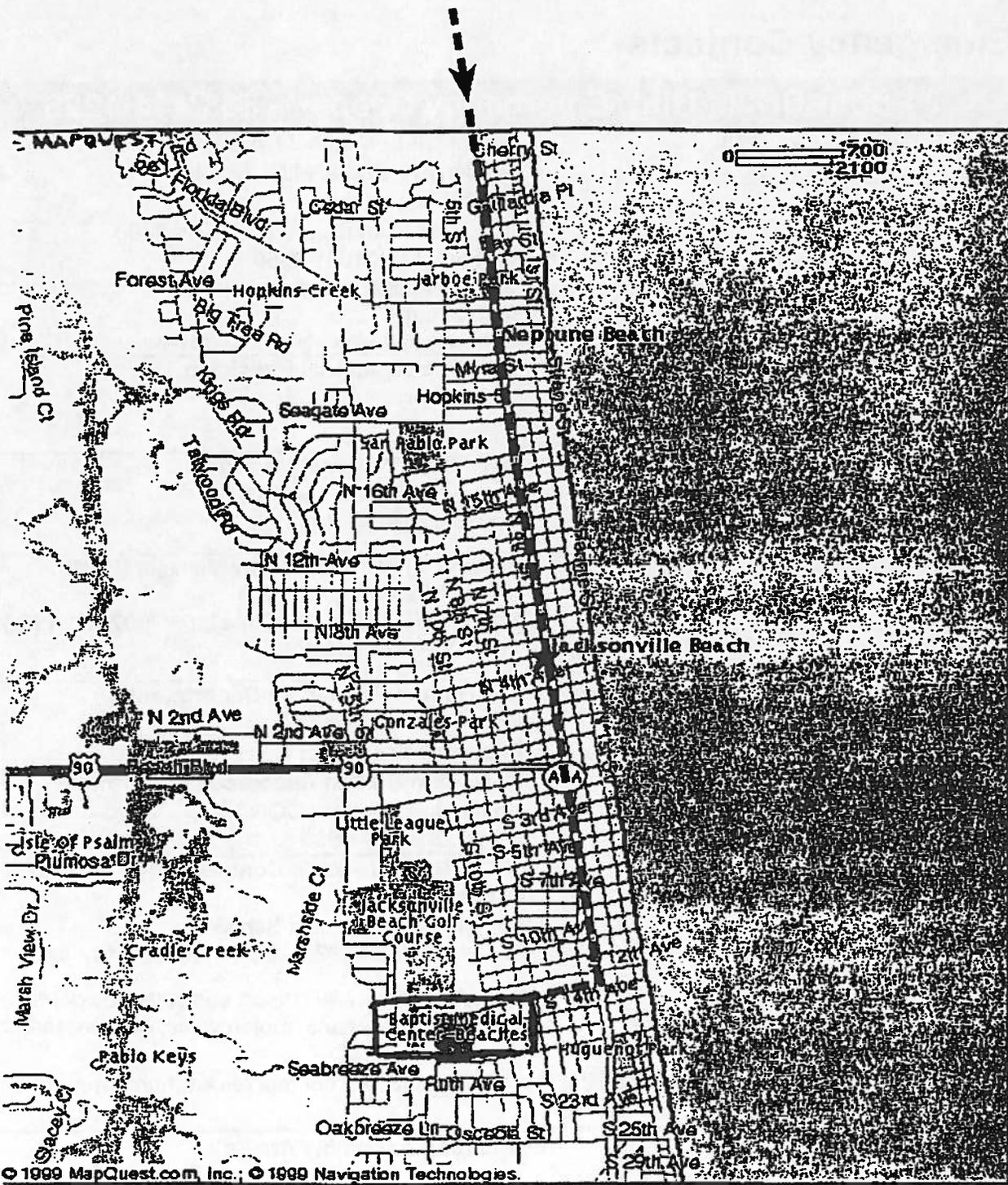
**Facility/Site Evacuation Route(s):**

**Hospital Name/Address:**

**Hospital Phone #: Hospital Phone #:**

## Directions to Hospital

See map



## **Attachment 5**

### **Project Activity Self-Assessment Checklists/Permits**

- **Drilling**
- **Earthmoving Equipment**
- **Excavations**

# CH2MHILL

## HS&E Self-Assessment Checklist - DRILLING

Page 1 of 3

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are potentially exposed to hazards associated with drilling operations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of a drilling subcontractor is required (complete entire checklist).

SC may consult with drilling subcontractors when completing this checklist, but shall not direct the means and methods of drilling operations nor direct the details of corrective actions. Drilling subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_  
Location: \_\_\_\_\_ PM: \_\_\_\_\_  
Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- Evaluate CH2M HILL employee exposures to drilling hazards
  - Evaluate a CH2M HILL subcontractor's compliance with drilling HS&E requirements
- Subcontractors Name: \_\_\_\_\_

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the drilling subcontractor. Section 3 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-35.

### SECTION 1

Yes No N/A N/O

#### PERSONNEL SAFE WORK PRACTICES (3.1)

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Only authorized personnel operating drill rig   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Personnel cleared during rig startup  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Personnel clear of rotating parts   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Personnel not positioned under hoisted loads  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Loose clothing and jewelry removed  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Personnel instructed not to approach equipment that has become electrically energized | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Smoking is prohibited around drilling operation                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Personnel wearing appropriate PPE, per HSP/FSI  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SECTION 2**

Yes   No   N/A   N/O

**GENERAL (3.2.1)**

- 9. Aquifer evaluated for contamination, sole source and wellhead protection  Yes  No  N/A  N/O
- 10. Daily safety briefing/meeting conducted with crew  Yes  No  N/A  N/O
- 11. Daily inspection of drill rig and equipment conducted before use  Yes  No  N/A  N/O

**DRILL RIG PLACEMENT (3.2.2)**

- 12. Location of underground utilities identified  Yes  No  N/A  N/O
- 13. Safe clearance distance maintained from overhead powerlines  Yes  No  N/A  N/O
- 14. Drilling pad established, when necessary  Yes  No  N/A  N/O
- 15. Drill rig leveled and stabilized  Yes  No  N/A  N/O

**DRILL RIG TRAVEL (3.2.3)**

- 16. Rig shut down and mast lowered and secured prior to rig movement  Yes  No  N/A  N/O
- 17. Tools and equipment secured prior to rig movement  Yes  No  N/A  N/O
- 18. Only personnel seated in cab are riding on rig during movement  Yes  No  N/A  N/O
- 19. Safe clearance distance maintained while traveling under overhead powerlines  Yes  No  N/A  N/O
- 20. Backup alarm or spotter used when backing rig  Yes  No  N/A  N/O

**DRILL RIG OPERATION (3.2.4)**

- 21. Kill switch clearly identified and operational  Yes  No  N/A  N/O
- 22. All machine guards are in place  Yes  No  N/A  N/O
- 23. Rig ropes not wrapped around body parts  Yes  No  N/A  N/O
- 24. Pressurized lines and hoses secured from whipping hazards  Yes  No  N/A  N/O
- 25. Drill operation stopped during inclement weather  Yes  No  N/A  N/O
- 26. Air monitoring conducted per HSP/FSI for hazardous atmospheres  Yes  No  N/A  N/O
- 27. Rig placed in neutral when operator not at controls  Yes  No  N/A  N/O

**DRILL RIG MAINTENANCE (3.2.5)**

- 28. Defective components repaired immediately  Yes  No  N/A  N/O
- 29. Lockout/tagout procedures used prior to maintenance  Yes  No  N/A  N/O
- 30. Cathead in clean, sound condition  Yes  No  N/A  N/O
- 31. Drill rig ropes in clean, sound condition  Yes  No  N/A  N/O
- 32. Fall protection used for fall exposures of 6 feet or greater  Yes  No  N/A  N/O
- 33. Rig in neutral and augers stopped rotating before cleaning  Yes  No  N/A  N/O
- 34. Good housekeeping maintained on and around rig  Yes  No  N/A  N/O

**DRILLING WASTE MANAGEMENT (3.2.6)**

- 35. Drill cuttings and purge water managed and disposed properly  Yes  No  N/A  N/O

**DRILLING AT HAZARDOUS WASTE SITES (3.2.7)**

- 36. Waste disposed of according to HSP and RCRA regulations  Yes  No  N/A  N/O
- 37. Appropriate decontamination procedures being followed, per HSP  Yes  No  N/A  N/O

**FORMS/PERMITS (3.3)**

- 38. Driller license/certification and drill rig permit obtained  Yes  No  N/A  N/O
- 39. Well development/abandonment notifications and logs submitted and in project files  Yes  No  N/A  N/O
- 40. Water withdrawal permit obtained, where required  Yes  No  N/A  N/O
- 41. Dig permit obtained, where required  Yes  No  N/A  N/O



# CH2MHILL

## H&S Self-Assessment Checklist - EARTHMOVING EQUIPMENT

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are potentially exposed to hazards associated with earthmoving equipment operations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of a earthmoving equipment subcontractor is required (complete entire checklist).

SSC/DSC may consult with earthmoving equipment subcontractors when completing this checklist, but shall not direct the means and methods of equipment operations nor direct the details of corrective actions. Earthmoving equipment subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: _____		Project No.: _____	
Location: _____		PM: _____	
Auditor: _____		Title: _____	Date: _____
This specific checklist has been completed to:			
<input type="checkbox"/> Evaluate CH2M HILL employee exposures to earthmoving equipment hazards			
<input type="checkbox"/> Evaluate a CH2M HILL subcontractor's compliance with earthmoving equipment H&S requirements			
Subcontractors Name: _____			

Check "Yes" if an assessment item is complete/correct.

Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the earthmoving equipment subcontractor. Section 3 must be completed for all items checked "No."

Check "N/A" if an item is not applicable.

Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-27.

### SECTION 1

Yes   No   N/A   N/O

#### **PERSONNEL SAFE WORK PRACTICES (3.1)**

1. Only authorized personnel operating earthmoving equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Personnel maintaining safe distance from operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Personnel and equipment operator in close communication when personnel must be in proximity of operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Personnel approach operating equipment safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Personnel wearing high-visibility and/or reflective vests when close to operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Personnel riding only in seats of equipment cab and using seat belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Personnel not positioned under hoisted loads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Personnel not hoisted by equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Personnel instructed not to approach equipment that has become electrically energized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Personnel wearing appropriate PPE, per HSP/FSI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 2****Yes   No   N/A   N/O****GENERAL (3.2.1)**

11. Daily safety briefing/meeting conducted with crew  Yes  No  N/A  N/O
12. Daily inspection of equipment and equipment accessories conducted before use  Yes  No  N/A  N/O
13. At least one fire extinguisher available at the equipment operating area  Yes  No  N/A  N/O

**EARTHMOVING EQUIPMENT COMPONENTS (3.2.2)**

14. Backup alarm or spotter used when backing equipment  Yes  No  N/A  N/O
15. Operational horn provided on bi-directional equipment  Yes  No  N/A  N/O
16. Seat belts are provided and used  Yes  No  N/A  N/O
17. Rollover protective structures (ROPS) provided  Yes  No  N/A  N/O
18. Braking system capable of stopping full payload  Yes  No  N/A  N/O
19. Headlights and taillights operable when additional light required  Yes  No  N/A  N/O
20. Brake lights in operable condition  Yes  No  N/A  N/O
21. Cab glass provides no visible distortion to the operator  Yes  No  N/A  N/O
22. Hauling equipment (dump trucks) provided with cab shield or canopy  Yes  No  N/A  N/O
23. Dump truck beds provided with positive means of support during maintenance or inspection  Yes  No  N/A  N/O
24. Dump truck operating levers provided with latch to prevent accidental dumping  Yes  No  N/A  N/O

**EARTHMOVING EQUIPMENT PLACEMENT (3.2.3)**

25. Location of underground utilities identified  Yes  No  N/A  N/O
26. Safe clearance distance maintained while working under overhead powerlines  Yes  No  N/A  N/O
27. Safe distance is maintained while traveling under powerlines  Yes  No  N/A  N/O
28. Unattended equipment visibly marked at night  Yes  No  N/A  N/O
29. Parking brake set when equipment parked and equipment chocked when parked on incline  Yes  No  N/A  N/O

**EARTHMOVING EQUIPMENT OPERATION (3.2.4)**

30. Equipment operated on safe roadways and grades  Yes  No  N/A  N/O
31. Equipment operated at safe speed  Yes  No  N/A  N/O
32. Equipment not operated during inclement weather, lightning storms  Yes  No  N/A  N/O
33. Using equipment to lift loads, other than earth, done according to equipment manufacturer specifications  Yes  No  N/A  N/O
34. Lifting and hauling capacities are not exceeded  Yes  No  N/A  N/O
35. Equipment components lowered when not in use  Yes  No  N/A  N/O
36. All machine guards are in place  Yes  No  N/A  N/O
37. Air monitoring conducted per HSP/FSI for hazardous atmospheres  Yes  No  N/A  N/O

**EARTHMOVING EQUIPMENT MAINTENANCE (3.2.5)**

38. Defective components repaired immediately  Yes  No  N/A  N/O
39. Suspended equipment or equipment parts are supported prior to work under or between  Yes  No  N/A  N/O
40. Lockout/tagout procedures used prior to maintenance  Yes  No  N/A  N/O
41. Tires on split rims removed using safety tire rack or cage  Yes  No  N/A  N/O
42. Good housekeeping maintained on and around equipment  Yes  No  N/A  N/O

**EXCAVATING AT HAZARDOUS WASTE SITES (3.2.6)**

43. Waste disposed of according to HSP  Yes  No  N/A  N/O
44. Appropriate decontamination procedures being followed, per HSP  Yes  No  N/A  N/O



# CH2MHILL

## HS&E Self-Assessment Checklist - EXCAVATIONS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees enter excavations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of an excavation subcontractor is required (complete entire checklist).

SC may consult with excavation subcontractors when completing this checklist, but shall not direct the means and methods of excavation operations nor direct the details of corrective actions. Excavation subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: _____	Project No.: _____	
Location: _____	PM: _____	
Auditor: _____	Title: _____	Date: _____
This specific checklist has been completed to:		
<input type="checkbox"/> Evaluate CH2M HILL employee exposures to excavation hazards		
<input type="checkbox"/> Evaluate a CH2M HILL subcontractor's compliance with excavation HS&E requirements		
Subcontractor Name: _____		

Check "Yes" if an assessment item is complete/correct.
Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the excavation subcontractor. Section 3 must be completed for all items checked "No."
Check "N/A" if an item is not applicable.
Check "N/O" if an item is applicable but was not observed during the assessment.
Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-32.

### SECTION 1

Yes   No   N/A   N/O

#### PERSONNEL SAFE WORK PRACTICES (4.1)

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Competent person has completed daily inspection and has authorized entry                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Personnel aware of entry requirements established by competent person                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Protective systems are free from damage and in stable condition                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Surface objects/structures secured from falling into excavation                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Potential hazardous atmospheres have been tested and found to be at safe levels          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Precautions have been taken to prevent cave-in from water accumulation in the excavation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Personnel wearing appropriate PPE, per HSP/FSI   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SECTION 2**

**Yes No N/A N/O**

**GENERAL (4.2.1)**

- 8. Daily safety briefing/meeting conducted with personnel  Yes  No  N/A  N/O
- 9. Excavation and protective systems adequately inspected by competent person  Yes  No  N/A  N/O
- 10. Defective protective systems or other unsafe conditions corrected before entry  Yes  No  N/A  N/O
- 11. Guardrails provided on walkways over excavation 6' or deeper  Yes  No  N/A  N/O
- 12. Barriers provided at excavations 6' or deeper when not readily visible  Yes  No  N/A  N/O
- 13. Barriers or covers provided for wells, pits, shafts, or similar excavation 6' or deeper  Yes  No  N/A  N/O
- 14. Excavating equipment operated safely (use earthmoving equipment checklist in HS-27)  Yes  No  N/A  N/O

**PRIOR TO EXCAVATING (4.2.2)**

- 15. Location of underground utilities and installations identified  Yes  No  N/A  N/O
- 16. Soils characterized prior to excavation where contamination may be present  Yes  No  N/A  N/O
- 17. Excavation area checked for wetlands, endangered species, cultural/historic resources  Yes  No  N/A  N/O
- 18. Stockpile construction and management plan  Yes  No  N/A  N/O
- 19. ECC consulted and plan established for wastewater disposal from excavation dewatering  Yes  No  N/A  N/O
- 20. SWPPP prepared for construction site 1-5 acres (depending on project location)  Yes  No  N/A  N/O

**EXCAVATING ACTIVITIES (4.2.3)**

- 21. Rocks, trees, and other unstable surface objects removed or supported  Yes  No  N/A  N/O
- 22. Exposed underground utility lines supported  Yes  No  N/A  N/O
- 23. Undermined surface structures supported or determined to be in safe condition  Yes  No  N/A  N/O
- 24. Warning system used to remind equipment operators of excavation edge  Yes  No  N/A  N/O
- 25. Stockpile, excavation covers, liners, silt fences in place, where required  Yes  No  N/A  N/O
- 26. Fugitive dust suppressed  Yes  No  N/A  N/O

**EXCAVATION ENTRY (4.2.4)**

- 27. Trenches > 4' deep provided with safe means of egress within 25'  Yes  No  N/A  N/O
- 28. Structure ramps designed and approved by competent person  Yes  No  N/A  N/O
- 29. Potential hazardous atmospheres tested prior to entry  Yes  No  N/A  N/O
- 30. Rescue equipment provided where potential for hazardous atmospheres exists  Yes  No  N/A  N/O
- 31. Ventilation used to control hazardous atmospheres and air tested frequently  Yes  No  N/A  N/O
- 32. Appropriate respiratory protection used when ventilation does not control hazards  Yes  No  N/A  N/O
- 33. Precautions taken to prevent cave-in from water accumulation in the excavation  Yes  No  N/A  N/O
- 34. Precautions taken to prevent surface water from entering excavation  Yes  No  N/A  N/O
- 35. Protection provided from falling/rolling material from excavation face  Yes  No  N/A  N/O
- 36. Spoil piles, equipment, materials restrained or kept at least 2' from excavation edge  Yes  No  N/A  N/O

**EXCAVATION PROTECTIVE SYSTEMS (4.2.5)**

- 37. Protective systems used for excavations 5' or deeper  Yes  No  N/A  N/O
- 38. Protective systems for excavation deeper than 20' designed by registered PE  Yes  No  N/A  N/O
- 39. If soil unclassified, maximum allowable slope is 34 degrees  Yes  No  N/A  N/O
- 40. Protective systems free from damage  Yes  No  N/A  N/O
- 41. Protective system used according to manufacturer recommendations and not subjected to loads exceeding design limits  Yes  No  N/A  N/O
- 42. Protective system components securely connected to prevent movement or failure  Yes  No  N/A  N/O
- 43. Cave-in protection provided while entering/exiting shielding systems  Yes  No  N/A  N/O
- 44. Personnel removed from shielding systems when installed, removed, or vertical movement  Yes  No  N/A  N/O

**PROTECTIVE SYSTEM REMOVAL (4.2.6)**

- 45. Protective system removal starts and progresses from excavation bottom  Yes  No  N/A  N/O
- 46. Protective systems removed slowly and cautiously  Yes  No  N/A  N/O
- 47. Temporary structure supports used if failure of remaining components observed  Yes  No  N/A  N/O
- 48. Backfilling taking place immediately after protective system removal  Yes  No  N/A  N/O

**CH2MHILL**

**HS&E Self-Assessment Checklist - EXCAVATIONS**

**EXCAVATING AT HAZARDOUS WASTE SITES (4.2.7)**

- 49. Waste disposed of according to HSP and RCRA regulations
- 50. Appropriate decontamination procedures being followed, per HSP

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**BACKFILL (4.2.8)**

- 51. Backfill certified clean when required by client or local regulation

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

**FORMS/PERMITS (4.3)**

- 52. Waste discharge/NPDES permit obtained for excavation de-watering, where required
- 53. Dig permit obtained, where required by client/facility
- 54. USDA soil permit obtained (for south/southeast and coastal states)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## **Attachment 6**

### **Behavior Based Loss Prevention System Forms**

- **Activity Hazard Analysis**
- **Pre-Task Safety Plans**
- **Loss Prevention Observation**
- **Incident Report and Investigation**







**PRINT**

**SIGNATURE**

**Supervisor Name:**

\_\_\_\_\_

\_\_\_\_\_

**Date/Time:**

\_\_\_\_\_

**Safety Officer Name:**

\_\_\_\_\_

\_\_\_\_\_

**Date/Time:**

\_\_\_\_\_

**Employee Name(s):**

\_\_\_\_\_

\_\_\_\_\_

**Date/Time:**

\_\_\_\_\_

Project: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_

Supervisor: \_\_\_\_\_ Emergency Number(s): \_\_\_\_\_

**Brief Job Descriptions:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**List Specific Tasks for the Jobs (Match number from above).**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**Tools/Equipment required for Tasks, (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools)match number from above:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply and review exposures as they will be encountered in the tasks above):**

<input type="checkbox"/> Chemical burns/contact	<input type="checkbox"/> Trench, excavations, cave-ins	<input type="checkbox"/> Ergonomics
<input type="checkbox"/> Pressurized lines/equipment	<input type="checkbox"/> Overexertion	<input type="checkbox"/> Chemical splash
<input type="checkbox"/> Thermal burns	<input type="checkbox"/> Pinch points	<input type="checkbox"/> Poisonous plants/insects
<input type="checkbox"/> Electrical	<input type="checkbox"/> Cuts/abrasions	<input type="checkbox"/> Eye hazards/flying projectile
<input type="checkbox"/> Weather conditions	<input type="checkbox"/> Spills	<input type="checkbox"/> Inhalation hazard
<input type="checkbox"/> Heights/fall > 6'	<input type="checkbox"/> Overhead Electrical hazards	<input type="checkbox"/> Heat/cold stress
<input type="checkbox"/> Noise	<input type="checkbox"/> Elevated loads	<input type="checkbox"/> Water/drowning hazard
<input type="checkbox"/> Explosion/fire	<input type="checkbox"/> Slips, trip and falls	<input type="checkbox"/> Heavy equipment
<input type="checkbox"/> Radiation	<input type="checkbox"/> Manual lifting	<input type="checkbox"/> Aerial lifts/platforms
<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Welding/cutting	<input type="checkbox"/> Demolition

**Other Potential Hazards (Describe):**

\_\_\_\_\_

# 12.4 CH2MHILL

# PRE-TASK SAFETY PLAN

Hazard Control Measures (Check all that apply):

<b>PPE</b> <input type="checkbox"/> Thermal/lined <input type="checkbox"/> Eye <input type="checkbox"/> Dermal/hand <input type="checkbox"/> Hearing <input type="checkbox"/> Respiratory <input type="checkbox"/> Reflective vests <input type="checkbox"/> Flotation device	<b>Protective Systems</b> <input type="checkbox"/> Sloping <input type="checkbox"/> Shoring <input type="checkbox"/> Trench box <input type="checkbox"/> Barricades <input type="checkbox"/> Competent person <input type="checkbox"/> Locate buried utilities <input type="checkbox"/> Daily inspections	<b>Fire Protection</b> <input type="checkbox"/> Fire extinguishers <input type="checkbox"/> Fire watch <input type="checkbox"/> Non-spark tools <input type="checkbox"/> Grounding/bonding <input type="checkbox"/> Intrinsically safe equipment	<b>Electrical</b> <input type="checkbox"/> Lockout/tagout <input type="checkbox"/> Grounded <input type="checkbox"/> Panels covered <input type="checkbox"/> GFCI/extension cords <input type="checkbox"/> Power tools/cord inspected
<b>Fall Protection</b> <input type="checkbox"/> Harness/lanyards <input type="checkbox"/> Adequate anchorage <input type="checkbox"/> Guardrail system <input type="checkbox"/> Covered opening <input type="checkbox"/> Fixed barricades <input type="checkbox"/> Warning system	<b>Air Monitoring</b> <input type="checkbox"/> PID/FID <input type="checkbox"/> Detector tubes <input type="checkbox"/> Radiation <input type="checkbox"/> Personnel sampling <input type="checkbox"/> LEL/O2 <input type="checkbox"/> Other	<b>Proper Equipment</b> <input type="checkbox"/> Aerial lift/ladders/scaffolds <input type="checkbox"/> Forklift/ Heavy equipment <input type="checkbox"/> Backup alarms <input type="checkbox"/> Hand/power tools <input type="checkbox"/> Crane w/current inspection <input type="checkbox"/> Proper rigging <input type="checkbox"/> Operator qualified	<b>Welding &amp; Cutting</b> <input type="checkbox"/> Cylinders secured/capped <input type="checkbox"/> Cylinders separated/upright <input type="checkbox"/> Flash-back arrestors <input type="checkbox"/> No cylinders in CSE <input type="checkbox"/> Flame retardant clothing <input type="checkbox"/> Appropriate goggles
<b>Confined Space Entry</b> <input type="checkbox"/> Isolation <input type="checkbox"/> Air monitoring <input type="checkbox"/> Trained personnel <input type="checkbox"/> Permit completed <input type="checkbox"/> Rescue	<b>Medical/ER</b> <input type="checkbox"/> First-aid kit <input type="checkbox"/> Eye wash <input type="checkbox"/> FA-CPR trained personnel <input type="checkbox"/> Route to hospital	<b>Heat/Cold Stress</b> <input type="checkbox"/> Work/rest regime <input type="checkbox"/> Rest area <input type="checkbox"/> Liquids available <input type="checkbox"/> Monitoring <input type="checkbox"/> Training	<b>Vehicle/Traffic</b> <input type="checkbox"/> Traffic control <input type="checkbox"/> Barricades <input type="checkbox"/> Flags <input type="checkbox"/> Signs
<b>Permits</b> <input type="checkbox"/> Hot work <input type="checkbox"/> Confined space <input type="checkbox"/> Lockout/tagout <input type="checkbox"/> Excavation <input type="checkbox"/> Demolition <input type="checkbox"/> Energized work	<b>Demolition</b> <input type="checkbox"/> Pre-demolition survey <input type="checkbox"/> Structure condition <input type="checkbox"/> Isolate area/utilities <input type="checkbox"/> Competent person <input type="checkbox"/> Hazmat present	<b>Inspections:</b> <input type="checkbox"/> Ladders/aerial lifts <input type="checkbox"/> Lanyards/harness <input type="checkbox"/> Scaffolds <input type="checkbox"/> Heavy equipment <input type="checkbox"/> Cranes and rigging	<b>Training:</b> <input type="checkbox"/> Hazwaste <input type="checkbox"/> Construction <input type="checkbox"/> Competent person <input type="checkbox"/> Task-specific (THA) <input type="checkbox"/> Hazcom

FieldNotes: \_\_\_\_\_

Supervisor signature: \_\_\_\_\_

Date: \_\_\_\_\_



Project: _____	Supervisor: _____	Date: _____
Task/Operation Observed: _____ _____ _____	Job Title of Worker Observed: _____ _____	
Background Information/comments: _____ _____ _____	Task Hazard Analysis completed for task (Y/N): _____	
<b>Positive Observations/Safe Work Procedures</b>		
1. _____		
2. _____		
3. _____		
4. _____		
<b>Questionable Activity/Unsafe Condition Observed</b>		
1. _____		
2. _____		
3. _____		
<b>Observed Worker's Comment(s)</b>		
1. _____		
2. _____		
3. _____		
4. _____		
<b>Supervisor's Corrective Actions Taken:</b>		
1. _____		
2. _____		
3. _____		
4. _____		

**CH2MHILL**  
**Loss Investigation Report Form**

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**Employer Information**

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

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

Project Location: \_\_\_\_\_

CHIL Project? Yes  No

Task Location: \_\_\_\_\_

Job Assignment: \_\_\_\_\_ Business Group: \_\_\_\_\_

Preparer's Name: \_\_\_\_\_ Preparer's Employee Number: \_\_\_\_\_

**Near Loss Incident Specific Information**

Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_ a.m./p.m.

Location of incident:

- Company premises
- Field
- In Transit
- Other: \_\_\_\_\_

Address where the incident occurred: \_\_\_\_\_

Equipment Malfunction : Yes  No   
Activity was a Routine Task: Yes  No

Describe any property damage: \_\_\_\_\_

Specific activity the employee was engaged in when the incident occurred: \_\_\_\_\_

All equipment, materials, or chemicals the employee was using when the incident occurred: \_\_\_\_\_

Describe the specific incident and how it occurred:

---

---

---

---

Describe how this incident may have been prevented:

---

---

---

Contributing Factors (Describe in detail why incident occurred):

---

---

---

Date employer notified of incident: \_\_\_\_\_ To whom reported: \_\_\_\_\_

**Witness Information (First Witness)**

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

Employee Number (for CH2M HILL employees): \_\_\_\_\_

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

City: \_\_\_\_\_

Zip Code : \_\_\_\_\_

Phone: \_\_\_\_\_

**Witness Information (Second Witness)**

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

Employee Number (for CH2M HILL employees): \_\_\_\_\_

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

City: \_\_\_\_\_

Zip Code: \_\_\_\_\_

Phone : \_\_\_\_\_

Additional information or comments: \_\_\_\_\_

---

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**COMPLETE ROOT CAUSE ANALYSIS FORM**

# Root Cause Analysis Form

## Root Cause Analysis (RCA)

Lack of skill or knowledge  
 Lack of or inadequate operational procedures or work standards  
 Inadequate communication of expectations regarding procedures or work standards  
 Inadequate tools or equipment

Correct way takes more time and/or requires more effort  
 Short cutting standard procedures is positively reinforced or tolerated  
 Person thinks there is no personal benefit to always doing the job according to standards  
 Uncontrollable

RCA #	Solution(s): How to Prevent Loss From Occurring	RC <sup>1</sup>	CF <sup>2</sup>	Corrective Action Lead	Due Date	Completion Date	Date Verified

<sup>1</sup> RC = Root Cause; <sup>2</sup> CF = Contributing Factors (check which applies)

## Investigation Team Members

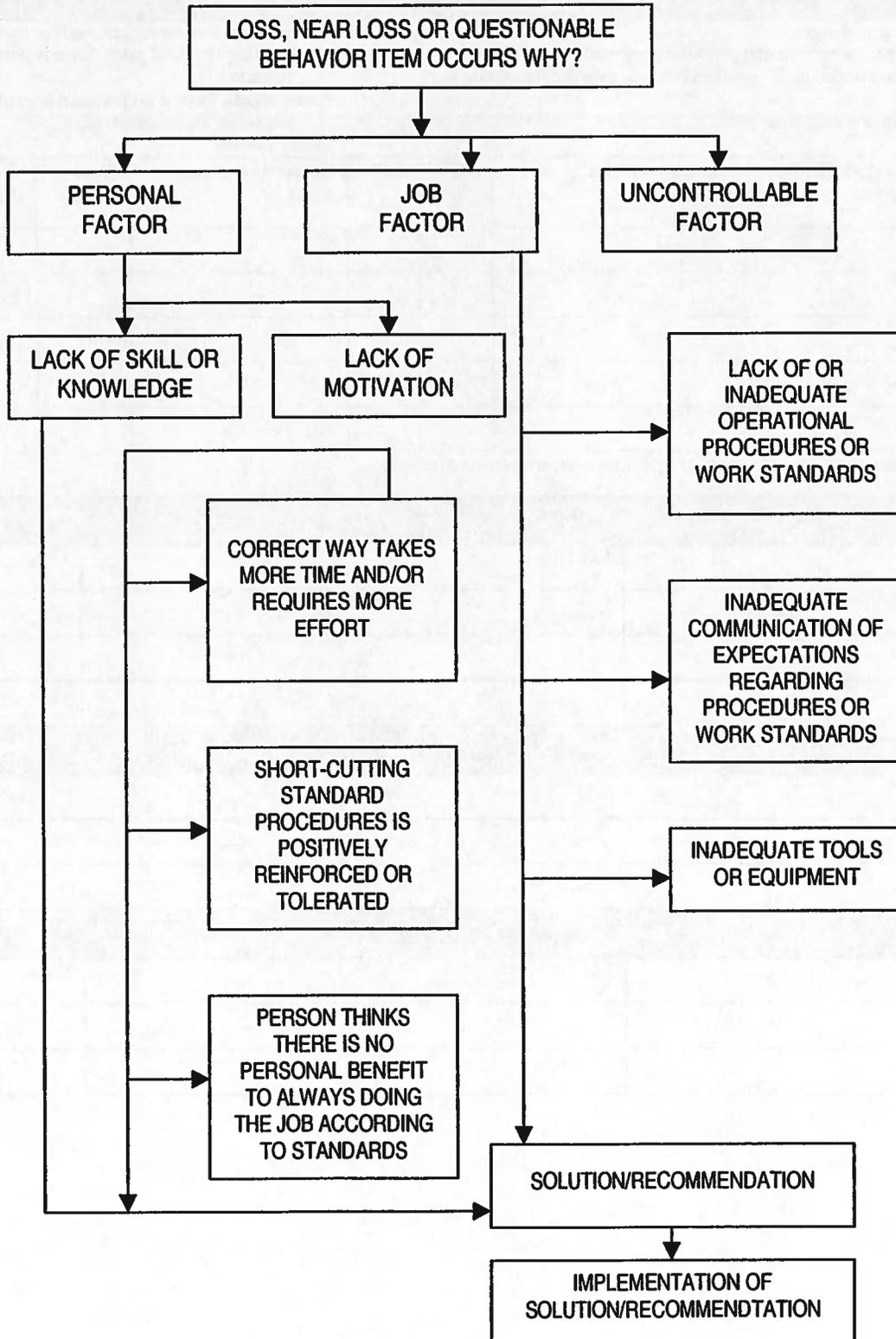
Name	Job Title	Date

## Results of Solution Verification and Validation


## Reviewed By

Name	Job Title	Date

# Root Cause Analysis Flow Chart



## **Determination of Root Cause(s)**

For minor losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more "root causes" and "contributing factors". The "root cause" is the primary or immediate cause of the incident, while a "contributing factor" is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as "personal factors". Causes that pertain to the *system* within which the loss or injury occurred should be referred to as "job factors".

### **Personal Factors**

Lack of skill or knowledge

Correct way takes more time and/or requires more effort

Short-cutting standard procedures is positively reinforced or tolerated

Person thinks that there is no personal benefit to always doing the job according to standards

### **Job Factors**

Lack of or inadequate operational procedures or work standards.

Inadequate communication of expectations regarding procedures or standards

Inadequate tools or equipment

The root cause(s) could be any one or a combination of these seven possibilities or some other "uncontrollable factor". In the vast majority of losses, the root cause is very much related to one or more of these seven factors. Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.

# Incident Report Form

**Fax completed form to:**

425.462.5957

CH2M HILL Seattle Office

Attention: Corporate HS&E Department

**Type of Incident** (Select at least one)

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Injury/Illness             | <input type="checkbox"/> Property Damage | <input type="checkbox"/> Spill/Release |
| <input type="checkbox"/> Environmental/Permit Issue | <input type="checkbox"/> Near Miss       | <input type="checkbox"/> Other         |

**General Information** (Complete for all incident types)

Preparer's Name: \_\_\_\_\_ Preparer's Employee Number: \_\_\_\_\_  
Date of Report: \_\_\_\_\_ Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_ am/pm

**Type of Activity** (Provide activity being performed that resulted in the incident)

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Asbestos Work                     | <input type="checkbox"/> Excavation Trench-Haz Waste | <input type="checkbox"/> Other (Specify) _____     |
| <input type="checkbox"/> Confined Space Entry              | <input type="checkbox"/> Excavation Trench-Non Haz   |  |
| <input type="checkbox"/> Construction Mgmt- Haz Waste      | <input type="checkbox"/> Facility Walk Through       | <input type="checkbox"/> Process Safety Management |
| <input type="checkbox"/> Construction Mgmt - Non-Haz Waste | <input type="checkbox"/> General Office Work         | <input type="checkbox"/> Tunneling                 |
| <input type="checkbox"/> Demolition                        | <input type="checkbox"/> Keyboard Work               | <input type="checkbox"/> Welding                   |
| <input type="checkbox"/> Drilling-Haz Waste                | <input type="checkbox"/> Laboratory                  | <input type="checkbox"/> Wetlands Survey           |
| <input type="checkbox"/> Drilling-Non Haz Waste            | <input type="checkbox"/> Lead Abatement              | <input type="checkbox"/> Working from Heights      |
| <input type="checkbox"/> Drum Handling                     | <input type="checkbox"/> Motor Vehicle Operation     | <input type="checkbox"/> Working in Roadways       |
| <input type="checkbox"/> Electrical Work                   | <input type="checkbox"/> Moving Heavy Object         | <input type="checkbox"/> WWTP Operation            |

**Location of Incident** (Select one)

- Company Premises (CH2M HILL Office: \_\_\_\_\_)  
 Field (Project #: \_\_\_\_\_ Project/Site Name: \_\_\_\_\_ Client: \_\_\_\_\_)  
 In Transit (Traveling from: \_\_\_\_\_ Traveling to: \_\_\_\_\_)  
 At Home

**Geographic Location of Incident** (Select region where the incident occurred)

- |                                    |                                    |   |
|------------------------------------|------------------------------------|---|
| <input type="checkbox"/> Northeast | <input type="checkbox"/> Southwest | <input type="checkbox"/> Asia Pacific       |
| <input type="checkbox"/> Southeast | <input type="checkbox"/> Corporate | <input type="checkbox"/> Europe Middle East |
| <input type="checkbox"/> Northwest | <input type="checkbox"/> Canadian  | <input type="checkbox"/> Latin America      |

If a CH2M HILL subcontractor was involved in the incident, provide their company name and phone number: \_\_\_\_\_

Describe the Incident (Provide a brief description of the incident): \_\_\_\_\_

**Injured Employee Data** (Complete for Injury/Illness incidents only)

**If CH2M HILL employee injured**

Employee Name: \_\_\_\_\_ Employee Number: \_\_\_\_\_

**If CH2M HILL Subcontractor employee injured**

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

### Injury Type

- Allergic Reaction
- Amputation
- Asphyxia
- Bruise/Contusion/Abrasion
- Burn (Chemical)
- Burn/Scald (Heat)
- Cancer
- Carpal Tunnel
- Concussion
- Cut/Laceration
- Dermatitis
- Dislocation

- Electric Shock
- Foreign Body in eye
- Fracture
- Freezing/Frost Bite
- Headache
- Hearing Loss
- Heat Exhaustion
- Hernia
- Infection
- Irritation to eye
- Ligament Damage

Multiple (Specify) \_\_\_\_\_

- Muscle Spasms
- Other (Specify) \_\_\_\_\_

- Poisoning (Systemic)
- Puncture
- Radiation Effects
- Strain/Sprain
- Tendonitis
- Wrist Pain

### Part of Body Injured

- Abdomen
- Ankle(s)
- Arms (Multiple)
- Back
- Blood
- Body System
- Buttocks
- Chest/Ribs
- Ear(s)
- Elbow(s)
- Eye(s)
- Face
- Finger(s)
- Foot/Feet

- Hand(s)
- Head
- Hip(s)
- Kidney
- Knee(s)
- Leg(s)
- Liver
- Lower (arms)
- Lower (legs)
- Lung
- Mind

Multiple (Specify) \_\_\_\_\_

- Neck
- Nervous System
- Nose
- Other (Specify) \_\_\_\_\_

- Reproductive System
- Shoulder(s)
- Throat
- Toe(s)
- Upper Arm(s)
- Upper Leg(s)
- Wrist(s)

### Nature of Injury

- Absorption
- Bite/Sting/Scratch
- Cardio-Vascular/Respiratory System Failure
- Caught In or Between
- Fall (From Elevation)
- Fall (Same Level)
- Ingestion

- Inhalation
- Lifting
- Mental Stress
- Motor Vehicle Accident
- Multiple (Specify) \_\_\_\_\_

Other (Specify) \_\_\_\_\_

- Overexertion
- Repeated Motion/Pressure
- Rubbed/Abraded
- Shock
- Struck Against
- Struck By
- Work Place Violence

Initial Diagnosis/Treatment Date: \_\_\_\_\_

### Type of Treatment

- Admission to hospital/medical facility
- Application of bandages
- Cold/Heat Compression/Multiple Treatment
- Cold/Heat Compression/One Treatment
- First Degree Burn Treatment
- Heat Therapy/Multiple treatment
- Multiple (Specify) \_\_\_\_\_

- Heat Therapy/One Treatment
- Non-Prescriptive medicine
- None
- Observation
- Other (Specify) \_\_\_\_\_

Prescription- Multiple dose

- Prescription- Single dose
- Removal of foreign bodies
- Skin Removal
- Soaking therapy- Multiple Treatment
- Soaking Therapy- One Treatment
- Stitches/Sutures
- Tetanus
- Treatment for infection
- Treatment of 2<sup>nd</sup> /3<sup>rd</sup> degree burns
- Use of Antiseptics – multiple treatment
- Use of Antiseptics – single treatment
- Whirlpool bath therapy/multiple treatment
- Whirlpool therapy/single treatment
- X-rays negative
- X-rays positive/treatment of fracture

Number of days doctor required employee to be off work: \_\_\_\_\_  
Number of days doctor restricted employee's work activity: \_\_\_\_\_  
Equipment Malfunction : Yes  No  Activity was a Routine Task: Yes  No   
Describe how you may have prevented this injury: \_\_\_\_\_  
\_\_\_\_\_

**Physician Information**

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Hospital Information**

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Property Damage (Complete for Property Damage incidents only)**

Property Damaged: \_\_\_\_\_ Property Owner: \_\_\_\_\_  
Damage Description: \_\_\_\_\_  
Estimated Amount: \$ \_\_\_\_\_

**Spill or Release (Complete for Spill/Release incidents only)**

Substance (attach MSDS): \_\_\_\_\_ Estimated Quantity: \_\_\_\_\_  
Facility Name, Address, Phone No.: \_\_\_\_\_  
Did the spill/release move off the property where work was performed?: \_\_\_\_\_  
Spill/Release From: \_\_\_\_\_ Spill/Release To: \_\_\_\_\_

**Environmental/Permit Issue (Complete for Environmental/Permit Issue incidents only)**

Describe Environmental or Permit Issue: \_\_\_\_\_  
Permit Type: \_\_\_\_\_  
Permitted Level or Criteria (e.g., discharge limit): \_\_\_\_\_  
Permit Name and Number (e.g., NPDES No. ST1234): \_\_\_\_\_  
Substance and Estimated Quantity: \_\_\_\_\_  
Duration of Permit Exceedence: \_\_\_\_\_

**Verbal Notification (Complete for all incident types)(Provide names, dates and times)**

CH2M HILL Personnel Notified: \_\_\_\_\_  
Client Notified: \_\_\_\_\_

**Witnesses (Complete for all incident types)**

**Witness Information (First Witness)**

Name: \_\_\_\_\_  
Employee Number (CH2M HILL): \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Witness Information (Second Witness)**

Name: \_\_\_\_\_  
Employee Number (CH2M HILL): \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

Additional Comments:  
\_\_\_\_\_  
\_\_\_\_\_

# NEAR LOSS INVESTIGATION FORM

## Employer Information

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

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

Project Location: \_\_\_\_\_

CHIL Project? Yes  No

Task Location: \_\_\_\_\_

Job Assignment: \_\_\_\_\_ Business Group: \_\_\_\_\_

Preparer's Name: \_\_\_\_\_ Preparer's Employee Number: \_\_\_\_\_

## Near Loss Incident Specific Information

Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_ a.m./p.m.

Location of incident:

Company premises  Field  In Transit  Other: \_\_\_\_\_

Address where the incident occurred: \_\_\_\_\_

Equipment Malfunction : Yes  No  Activity was a Routine Task: Yes  No

Describe any property damage: \_\_\_\_\_

Specific activity the employee was engaged in when the incident occurred:

\_\_\_\_\_

All equipment, materials, or chemicals the employee was using when the incident occurred:

\_\_\_\_\_

Describe the specific incident and how it occurred:

\_\_\_\_\_

Describe how this incident may have been prevented:

\_\_\_\_\_

Contributing Factors (Describe in detail why incident occurred):

\_\_\_\_\_

Date employer notified of incident: \_\_\_\_\_ To whom reported: \_\_\_\_\_

**NEAR LOSS INVESTIGATION FORM**

**Witness Information (First Witness)**

Name: \_\_\_\_\_  
Employee Number (for CH2M HILL employees): \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code : \_\_\_\_\_  
Phone: \_\_\_\_\_

**Witness Information (Second Witness)**

Name: \_\_\_\_\_  
Employee Number (for CH2M HILL employees): \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone : \_\_\_\_\_

Additional information or  
comments: \_\_\_\_\_  
\_\_\_\_\_

**Attachment 7**

**Applicable Material Safety Data Sheets  
(available onsite)**

**Attachment 8**

**Subcontractor H&S Plans/Procedures**

## **Appendix C**

### **Quality Control Attachments**

- Submittal Register
- Testing Plan and Log
- Transportation and Disposal Log
- Summary of Field Tests Log
- Contractor Daily Production Report
- Contractor Daily Quality Control Report
- Preparatory Phase Report













CTO NO: 0011	PROJECT NAME/LOCATION:	REPORT NO:
PROJECT NO:	PROJECT QC MANAGER:	SITE H&S SPECIALIST:

**SAFETY MEETINGS AND INSPECTIONS**

WAS A SAFETY MEETING HELD THIS DAY?     YES     NO    IF YES, ATTACH SAFETY MEETING MINUTES  
 WAS CRANE USED ON THE SITE THIS DAY?     YES     NO    IF YES, ATTACH DAILY CRANE REPORT OF INSPECTION AND CONTRACTOR CRANE OPERATION CHECKLIST

DEFINABLE FEATURES OF WORK STATUS				
DFOW No.	Definable Feature Of Work	Preparatory	Initial	Follow-Up
1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

WAS PREPARATORY PHASE WORK PERFORMED TODAY?     YES     NO  
 IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.

PREPARATORY	DFOW No.(from list above).	TASK/ACTIVITY	PREPARATORY PHASE REPORT NO.

INITIAL AND FOLLOW-UP FEATURE OF WORK COMMENTS		
DFOW No.(from list above)	Phase	Comment/Finding/Action
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
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	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)			REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)	
TASK/ACTIVITY	DATE ISSUED	DESCRIPTION	TASK/ACTIVITY	CORRECTIVE ACTION(S) TAKEN



<b>CH2M HILL</b> SOUTH DIV RAC N62467-01-D-0331	<b>PREPARATORY PHASE REPORT</b>	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:	CTO NO: 0011
---	---------------------------------	------------	--	-----------------

PROJECT NO:	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY:
-------------	----------------------------	----------------

<b>PERSONNEL PRESENT</b>	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE:      YES <input type="checkbox"/> NO <input type="checkbox"/>		
	NAME	POSITION	COMPANY/GOVERNMENT

<b>SUBMITTALS</b>	REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER.	HAVE ALL SUBMITTALS BEEN APPROVED?      YES <input type="checkbox"/> NO <input type="checkbox"/>
	IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED?	
	ARE ALL MATERIALS ON HAND?      YES <input type="checkbox"/> NO <input type="checkbox"/>	
	IF NO, WHAT ITEMS ARE MISSING?	
CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES).		
COMMENTS:		

<b>MATERIAL STORAGE</b>	ARE MATERIALS STORED PROPERLY?      YES <input type="checkbox"/> NO <input type="checkbox"/>
	IF NO, WHAT ACTION IS TAKEN?

<b>SPECIFICATIONS</b>	REVIEW EACH PARAGRAPH OF SPECIFICATIONS.
	DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK.
CLARIFY ANY DIFFERENCES.	

<b>PRELIMINARY WORK &amp; PERMITS</b>	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.
	IF NO, WHAT ACTION IS TAKEN?

<b>CH2M HILL</b> SOUTH DIV RAC N62467-01-D-0331	<b>PREPARATORY PHASE REPORT</b>	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:	CTO NO: 0011
---	---------------------------------	------------	--	-----------------

PROJECT NO:	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY:
-------------	----------------------------	----------------

<b>TESTING</b>	IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM.		
	TEST	FREQUENCY	PERFORMER
	WHEN REQUIRED?		
	WHERE REQUIRED?		
	REVIEW TESTING PLAN.		
	HAVE TEST FACILITIES BEEN APPROVED?		
TEST FACILITY	APPROVED?		
	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
	YES <input type="checkbox"/>	NO <input type="checkbox"/>	

<b>SAFETY</b>	ACTIVITY HAZARD ANALYSIS APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>	
	REVIEW APPLICABLE PORTION OF EM 385-1-1.	

<b>MEETING COMMENTS</b>	NAVY/ROICC COMMENTS DURING MEETING.

<b>OTHER ITEMS OR REMARKS</b>	OTHER ITEMS OR REMARKS:

PROJECT QC MANAGER NAME	PROJECT QC MANAGER'S SIGNATURE	DATE	

**Appendix D**

**Project QC Manager Appointment Letters**



**CCI NAVY RAC**

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CH2MHill Constructors Inc.  
115 Perimeter Center Place, NE  
Suite 700  
Atlanta, GA 30346-1278  
TEL 770.604.9182  
FAX 770.604.9282

June 09, 2003

Mr. David Keul  
J.A. Jones Environmental Services Company  
6219 Authority Avenue  
Jacksonville, Florida 32221

Subject: Contract No. N62467-98-D-0995  
Contract Task Order No. 0057, Former NAS Cecil Field, Jacksonville, FL  
Quality Control Manager Letter of Authority

Dear Mr. Keul:

Herein describes the responsibilities and authority delegated to you in your capacity as the Project QC Manager on Contract Task Order No. 0057 under the Navy RAC Contract No. N62467-98-D-0995.

In this position, you assist and represent the QC Program Manager in continued implementation and enforcement of the Project QC Plans. You are responsible for implementing the QC program as described in the Navy RAC contract. You are responsible for managing the site-specific QC requirements in accordance with the Project QC Plans. You are required to attend the coordination and mutual understanding meeting, conduct QC meetings, perform the three phases of control, perform submittal review, perform submittal approval, ensure testing is performed, and prepare QC certifications and documentation required in the Navy RAC Contract.

Your responsibilities further include identifying and reporting quality problems, rejecting nonconforming materials, initiating corrective actions, and recommending solutions for nonconforming activities.

You have the authority to control or stop further processing, delivery, or installation activities until satisfactory disposition and implementation of corrective actions are achieved.

You have the authority to direct the correction of non-conforming work.

Sincerely,

CH2M HILL Constructors, Inc.

R. Scott Newman, P.E.  
Program Manager



CH2M HILL  
115 Perimeter Center Place, N.E.  
Suite 700  
Atlanta, GA  
30346-1278  
Tel 770.604.9095  
Fax 770.604.9282

July 16, 2003

Mr. Bruce Johnson  
J.A. Jones Environmental Services Company  
6219 Authority Avenue  
Jacksonville, Florida 32221

RE: Contract No. N62467-98-D-0995  
Contract Task Order No. 0057  
Naval Air Station (NAS) Cecil Field - Jacksonville, Florida  
Alternate Project Quality Control Manager Letter of Appointment

Dear Mr. Johnson:

Herein describes the responsibilities and authority delegated to you in your capacity as the alternate Project QC Manager on the NAS Cecil Field, Contract Task Order (CTO) 0057 under RAC Contract No. N62467-98-D-0995.

In this position, you assist and represent the Project QC Manager in the event that he is not on the project site and the Program QC Manager in continued implementation and enforcement of the Project QC Plans. Your primary role is to ensure all requirements of the contract are met. Consistent with this responsibility, you will: (i) implement the QC program as described in the Navy RAC contract; (ii) manage the site-specific QC requirements in accordance with the Project QC Plans; (iii) attend the coordination and mutual understanding meeting; (iv) conduct QC meetings; (v) oversee implementation of the three phases of control; (vi) perform submittal review and approval; (vii) ensure testing is performed; , (viii) prepare QC certifications and documentation required in the Navy RAC Contract; and, (ix) furnish a Completion Certificate to the Contracting Officer or designated representative, upon completion of work under a contract task order , attesting that "the work has been completed, inspected, and tested, and is in compliance with the contract."

Your responsibilities further include identifying and reporting quality problems, rejecting nonconforming materials, initiating corrective actions, and recommending solutions for nonconforming activities.

You have the authority to control or stop further processing, delivery, or installation activities until satisfactory disposition and implementation of corrective actions are achieved. You have the authority to direct the correction of non-conforming work. All work requiring corrective action will be documented on daily reports, and, in the event non-conforming work is not immediately corrected you are required to submit a non-conformance report to the PM and

copy the Program QC Manager. A status log will be kept of all non-conforming work. You shall immediately notify the Program QC Manager in the event of any stop work order.

It is imperative that you comply with all terms of the basic contract. In particular, Section C, Paragraph 6.5.2, which states:

*"No work or testing may be performed unless the QC Program Manager or Project QC Manager is on the work site."*

In the event that you are not able to be at the work site when work or testing is to be performed, it is your responsibility to inform the Program QC Manager and Project Manager, in advance, so that other arrangements can be made.

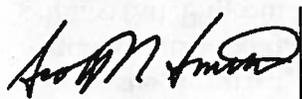
Further, if you are requested to perform the duties of the Site Supervisor, it is your responsibility to inform the Program QC Manager so that approval can be obtained in advance from the Contracting Officer or designated representative, in accordance with Section C Paragraph.6.2.1of the contract.

You are a key member of the Project Manager's team and ensure that work meets the specific requirements and intent of the work plan, the Navy's scope of work and the basic contract. Should you have any questions regarding this role, you should immediately contact the Program QC Manager, Theresa Rojas. Your day-to-day activities on the site should be coordinated with all site personnel and the Project Manager. In event of any deficient items, the Superintendent and Project Manager should be advised immediately so they have opportunity to remedy the situation.

**You may be assigned other responsibilities concurrent with this assignment. Regardless of other responsibilities assigned, you shall take your QC and safety responsibilities as primary. Any other assigned responsibilities shall be secondary to your QC and safety responsibilities.**

Sincerely,

CH2M HILL Constructors, Inc.



Scott Smith  
Acting Program Manager

cc: Mike Halil/J.A. Jones  
Theresa Rojas/ATL  
CCI Project File No. 163231