Final

Site Safety and Health Plan

FWA 102 Former Communications Site
Fort Wainwright, Alaska

Prepared for

Department of the Army
U.S. Army Corps of Engineers,
Alaska District

P.O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Contract No. W911KB-05-D-0010
Task Order 0009

July 2007

CH2MHILL
301 W. Northern Lights Boulevard, Suite 601
Anchorage, AK 99503

CH2M HILL Health and Safety Plan

This Health and Safety Plan (HSP) will be kept onsite 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 Safety Coordinator—Haz Waste (SC-HW) is to be familiar with these SOPs and the contents of this plan. CH2M HILL's personnel and subcontractors must sign Attachment 1, "Employee Signoff Form—Field Safety Instructions."

Abbreviations and Acronyms

A	air
JHA	Job Hazard Analysis
BBLPS	Behavior-Based Loss Prevention System
CA	potential occupational carcinogen
CPR	cardiopulmonary resuscitation
CRREL	Cold Region Research and Engineering Laboratory
DMM	discarded military munition
DOT	Department of Transportation
DPW	Department of Public Works
D	drum
EOD	explosive ordnance disposal
FCS	former communication site
FW	Fort Wainwright
FSI	Field Safety Instructions
GFCI	ground fault circuit interrupter
GW	groundwater
HR	heart rate
H&S	health and safety
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
IDW	investigation-derived waste
kV	kilovolt
L	lagoon
MC	munitions constituent
MEC	munitions and explosives of concern
MSDS	material safety data sheet
NA	not applicable

NL	no limit
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PEL	permissible exposure limit
PIP	photoionization potential
PPE	personal protective equipment
PTSP	Pre-Task Safety Plan
S	surface soil
SB	soil boring
SC-HW	Safety Coordinator—Haz Waste
SL	sludge
SOP	Standard of Practice
SVOC	semivolatile organic compound
SW	surface water
TK	tank
TLV	threshold limit value
UK	unknown
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
VOC	volatile organic compound

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SECTION 1

Project Information and Description

PROJECT NO: 357465

CLIENT: U.S. Army Corps of Engineers

PROJECT/SITE NAME: Remedial Investigation, FWA-102 Former Communication Site (FCS)

SITE ADDRESS: Fort Wainwright, Alaska

CH2M HILL PROJECT MANAGER: Cory Hinds/ANC

DATE HEALTH AND SAFETY PLAN REVISED: May 2007, revised July 2007

DATE(S) OF SITE WORK: May 2007 through December 31, 2008

SITE ACCESS: Notify client before fieldwork; acquire any necessary base passes.

SITE TOPOGRAPHY: Level ground, unpaved

PREVAILING WEATHER: Wet summers, and extremely cold winters

SITE DESCRIPTION AND HISTORY:

The FCS is currently the site of Taku Gardens, a subdivision that includes 110 new, presently unoccupied residences intended to house Fort Wainwright personnel. Although the recent transfer of members of the 172nd Stryker Brigade to Fort Wainwright has created a pressing need to use this new housing, potential risk from the prior site uses to human health and the environment must first be addressed.

Little written documentation exists that describes activities specifically occurring at the FCS over the course of its use. As a result, much of what is known about the area has been surmised from examining and comparing historical photographs (dating from 1947 to the present), the 1958 post "Master Plans," past geographical surveys, and concurrent military operations at other locations. The results of this historical research indicate there was evidence of varied uses in the area, including the following:

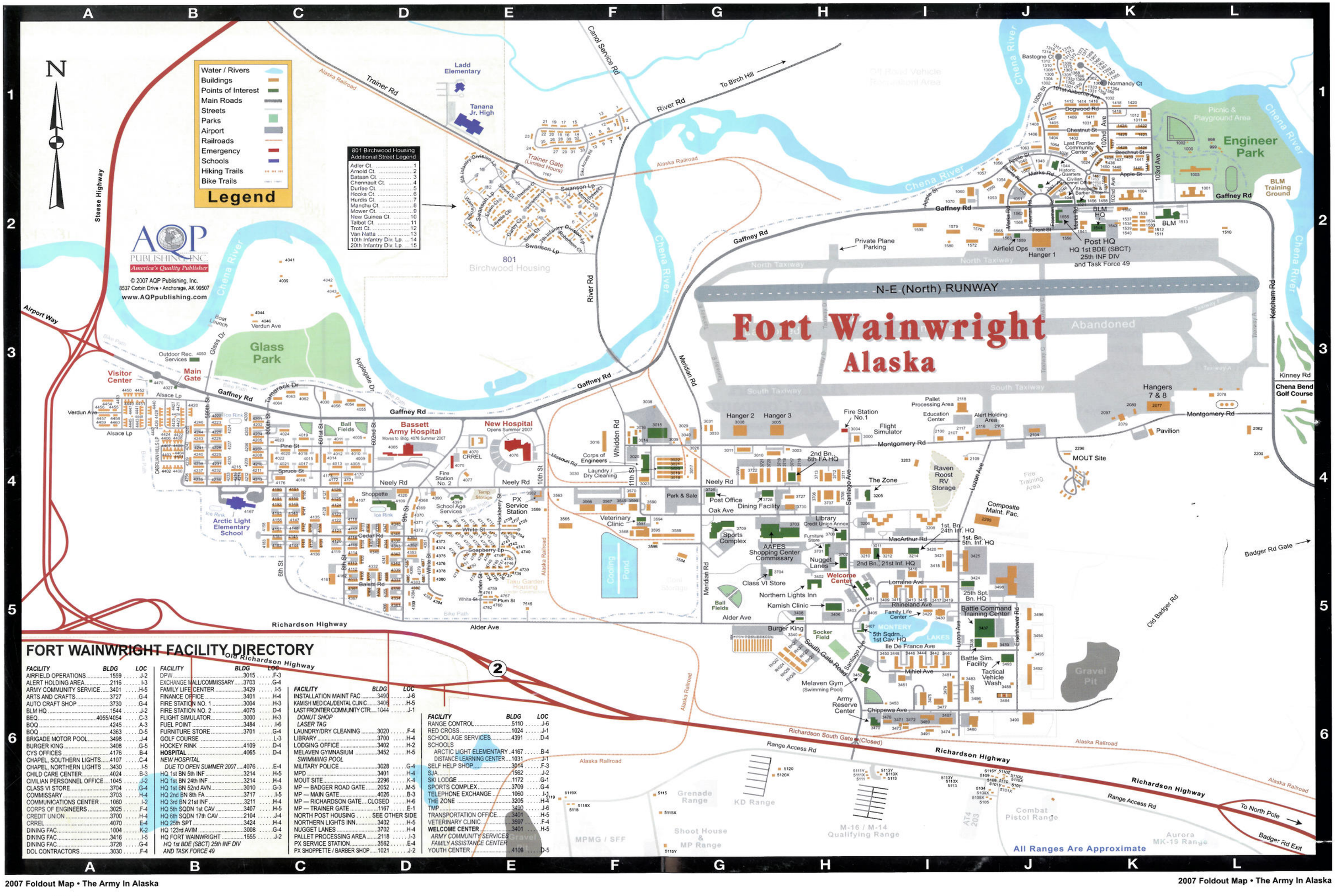
- A salvage/reclamation yard occupying much of the FCS
- Disposal of debris/salvage material in the dry Chena River oxbow that extends through the site, in trenches in the salvage yard area, and possibly in other local depressions
- Garden plots
- Possible fire fighting training activities (as evidenced by potential circular fire pits and a partially dismembered aircraft)
- Barracks and company headquarters extending into the northwest corner of the site
- Ammunition storage
- Communications and radar systems

When site clearing commenced for the housing area in 2003, onsite personnel began encountering metal debris on the ground surface; this resulted in the first geotechnical investigations. During the construction of Taku Gardens, contractors discovered additional metal debris, munitions (and munitions-related materials), fuel, and polychlorinated biphenyl (PCB) contamination, which resulted in further investigation into historic past uses of the area and limiting site access to authorized personnel. One area where PCBs have been detected at high concentrations has been made an exclusion zone with additional access restrictions. The housing development covers approximately 54 acres; however, the contamination associated with past uses of the FCS may expand beyond the boundaries of this area.

The Table 1-1 summarizes the activities and investigations conducted at the FCS to date.

TABLE 1-1
Activities and Investigations Conducted at the Former Communication Site (FCS) to Date

Date	Activity/Investigation	Responsible Party
October 2003	Limited geotechnical Investigation including geophysical investigation and soil boring/soil sample collection	Cold Regions Research and Engineering Laboratory (CRREL) and Shannon and Wilson
November 2003-February 2004	Geotechnical investigation including collection of geological and chemical data from soil borings	U.S. Army Corps of Engineers (USACE)
March 2004-April 2004	Subsurface soil sampling in suspected PCB-contaminated area. Results did not confirm previous detections.	North Wind
March 2004-2006	Explosive ordinance device (EOD) reports filed when suspected EOD was detected during excavation or removal actions	Military ordinance experts
May 2004	Geophysical investigation to detect buried debris and construction waste from former site activities	R&M
2004	Site clearing activities removed some detected buried metal debris that was located in proposed housing locations	Fort Wainwright (FW) Department of Public Works (DPW)
April 2005	Construction of 64 military housing units making up Taku Garden commenced. During construction, debris that impacted housing foundations or roads was removed by the contractor.	Watterson Construction Company
June-October 2005	Site Investigation activities—including investigation of soil and groundwater for fuels and PCBs in targeted areas. Surface wipe sampling also conducted for PCBs to evaluate the potential presence of contaminated dust.	North Wind
September 2005	FW DPW transports 230 cubic yards of PCB-impacted soil from original location of Bldg. 52 to offsite-approved facility for disposal."	North Wind
2006	Field activities in support of the Preliminary Source Evaluation II including soil, soil vapor, geophysical, and debris investigations for PCBs, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), petroleum products, pesticides, metals, anions, explosives, perchlorate, and dioxins/dibenzofurans.	North Wind



2007 Foldout Map • The Army In Alaska

Project HS&E Change Management Form

This evaluation form should be reviewed on a **continuous** basis to determine if the current site health and safety plan adequately addresses ongoing project work and should be completed whenever new tasks are contemplated or changed conditions are encountered.

Project Task:

Project Number: **Project/Task Manager:**

Name: **Employee #:**

	Evaluation Checklist	Yes	No
1.	Has the CH2MHILL staff listed in the original HSP changed?		
2.	Has a new subcontractor been added to the project?		
3.	Is any chemical or product to be used that is not listed in this HSP?		
4.	Have additional tasks been added to the project that were not originally addressed in the plan?		
5.	Have new contaminants or higher than anticipated levels of original contaminants been encountered?		
6.	Have other safety, equipment, activity or environmental hazards been encountered that are not addressed in the plan?		

If the answer is “YES” to Question 3, an HSP revision is NOT needed. Please take the following actions:

- Add the chemical to the HSP, and ensure employees handling the chemical are trained, and training documentation is attached as well.

If the answer is “YES” to Questions 1, 2 or 4-6, an HSP revision MAY BE NEEDED. Please contact HS&E directly.

1.1 Tasks to be Performed Under this Plan

1.1.1 Description of Tasks

(Reference Field Project Start-up Form)

Refer to project documents (i.e., Work Plan) for detailed task information. A health and safety (H&S) risk analysis (Section 1.2) 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 in the following subsection require an approved amendment or revision to this plan before tasks begin. Refer to Section 8.2 for procedures related to "clean" tasks that do not involve hazardous waste operations and emergency response (Hazwoper).

1.1.1.1 Hazwoper-Regulated Tasks

- Drilling
- Well installation
- Direct-push sampling
- Groundwater sampling
- Soil sampling
- Investigation-derived waste (IDW) management

1.1.1. 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 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
• General site survey (no intrusive tasks)	• Brief on hazards, limits of access, and emergency procedures • Post contaminant areas as appropriate (refer to Section 8.2 for details) • Sample and monitor as appropriate (refer to Section 5.0) • Follow personal protective equipment (PPE) guidelines in Section 4.0

1.2 Task Hazard Analysis

(Refer to Section 2 for hazard controls)

POTENTIAL HAZARDS	TASKS		
	Drilling, Well Installation, and Direct-Push Technology	Groundwater Sampling and Soil Sampling	IDW Management
Flying debris/objects	X		
Noise > 85dBA	X		
Electrical	X	X	
Suspended loads	X		
Buried utilities, drums, tanks	X		
Slip, trip, fall	X	X	X
Back injury	X	X	X
Visible lightning	X	X	X
Fires	X		
Entanglement	X		
Drilling	X		
Heavy equipment	X		X

SECTION 2

Hazard Controls

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. CH2M HILL employees and subcontractors who do not understand any of these provisions should contact the SC for clarification.

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 CH2M HILL 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, and be promptly submitted to the HSM.

Self Assessment Checklists: The self assessment checklist for the following tasks and exposures are required when the task or exposure is initiated and weekly while the task or exposure is taking place.

- Drilling/Direct-push

2.1 Project-Specific Training

In addition to the basic training requirements for Construction sites the following specialty training is required for the following tasks.

- **Safety Coordinator Training:** CH2M HILL SC must have current SC-HW
- **Hazardous Waste Training:** CH2M HILL employees performing activities specified in Section 1.1.1 must have current Hazwoper training and be medically monitored.
- **Fire Extinguisher:** The assigned SC-HW onsite must take the on-line fire extinguisher training course.
- **Blood-borne Pathogen Training:** The assigned SC-HW onsite must take the CH2M HILL on-line BBP training course.
- **Dangerous Goods Shipping Training:** The assigned SC-HW onsite must take the online DG training course.

2.1.1 Required Forms

The following forms are required to be completed by the drilling subcontractor as part of the Behavior Based Loss Prevention System for drilling operations.

- Activity Hazard Analysis (JHA)
- Pre-Task Safety Plan (PTSP)

2.2 Behavior-Based Loss Prevention System

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 SC and is responsible for implementing the BBLPS on the project site. The Safety Coordinator shall oversee the subcontractor's implementation of their JHAs and PTSPs processes on the project.

2.2.1 Job Hazard Analysis

An Job Hazard Analysis (JHA) defines the activity being performed, the hazards posed and control measures required to perform the work safely. Workers are briefed on the JHA 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. Job Hazard Analysis will be prepared before beginning drilling using the JHA form provided in **Attachment 6**. The JHA shall identify the work tasks required along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used, inspection requirements and training requirements for the safe operation of the equipment listed must be identified. Subcontractors are required to provide JHAs specific to drilling for acceptance by CH2M HILL. Additions or changes in 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 JHA to be prepared or an existing JHA to be revised.

2.2.2 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/JHAs. 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, "**JHAs/PTSA," 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 JHA. 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.

2.3 Project-Specific Hazards

2.3.1 Drilling/Direct-Push

- Only authorized personnel are permitted to operate drill rigs.
- Stay clear of areas surrounding drill rigs during every startup.
- Stay clear of the rotating augers and other rotating components of drill rigs.
- Stay as clear as possible of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Do not wear loose-fitting clothing or other items such as rings or watches that could get caught in moving parts. Long hair should have it restrained.
- If equipment becomes electrically energized, personnel shall be instructed not to touch any part of the equipment or attempt to touch any person who may be in contact with the electrical current. The utility company or appropriate party shall be contacted to have line de-energized before approaching the equipment.
- Smoking around drilling operations is prohibited.

2.3.2 XO Avoidance

(Reference CH2M HILL SOP HSE-610, Explosives Usage and Munitions Response

Munitions and Explosives of Concern (MEC) consist of unexploded ordnance (UXO), discarded military munitions (DMM) and munitions constituents (MC).

Client-specific instructions for environmental investigation activities is to stop work if an explosive-loaded/visibly contaminated item is discovered and the following steps shall be taken:

- Stop all intrusive operations
- Do not touch, move, or dig near or around suspected ordnance
- Evacuate the area and gather in the designated safe area
- Identify the area on a map or by terrain feature
- Report immediately to the following:

Points of Contact

Fort Wainwright: Joe Malen Environmental Project Specialist	**U.S. Army Corps of Engineers: Bob Brock** Project Manager	**CH2M HILL: Cory Hinds** Project Manager
Phone: (907) 353-4512	Phone: (907) 753-5612	Phone: (907) 646-0348
E-mail: joseph.malen@us.army.mil	E-mail: Robert.d.brock@poa02.usace.army.mil	E-mail: c.hinds@ch2m.com

The requirements of this section shall be followed by CH2M HILL employees who are potentially exposed to hazards associated with MEC activities, regardless of the company performing the MEC

operation. These requirements also pertain to MEC Avoidance Subcontractor personnel when CH2M HILL is providing oversight.

- Only qualified UXO Technicians or Explosive Ordnance Disposal (EOD) personnel will locate, identify, handle, remove, transport, store or dispose of MEC items.
- MEC must not be moved or disturbed in any way. There is to be absolutely no handling of MEC by CH2M HILL personnel or any subcontractor. Operations in the vicinity of MEC should only be conducted after a complete work plan, including emergency procedures, has been established.
- Do not activate electronic equipment capable of emitting electromagnetic radiation (radios, cellular phones) in the vicinity of known or suspect electrically initiated MEC.
- Approach ordnance from the side and avoid the forward and rear ends. Munitions may contain an ejection hazard, shaped charge explosive jet hazard, rocket motor, or fuzing sensitive to movement.
- Do not allow unnecessary personnel to remain near MEC.
- Always consider all munitions items to be armed and dangerous.
- Do not assume fired ammunition or MEC to be safe.
- Do not collect souvenirs.

2.4 General Hazards

2.4.1 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.

2.4.2 Hazard Communication

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

The SC-HW is to perform the following:

- Confirm that an inventory of chemicals brought on site by CH2M HILL and subcontractors is available.
- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which CH2M HILL 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.

2.4.3 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 CH2M HILL training in shipping dangerous goods. All hazardous materials that are shipped (e.g., by way of 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.

2.4.4 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 before the lift.

2.4.5 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.
- 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.

2.4.6 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 kilovolts (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.

2.4.7 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 1 to 2 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 SC-HW to avoid progression of heat-related illness.

SYMPTOMS AND TREATMENT OF HEAT STRESS

	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	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 pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	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!

2.4.7.1 Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70^{o}F, the relative humidity is high (greater than 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.

2.4.8 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.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SC-HW 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.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	**Frostbite**	**Hypothermia**
Signs and Symptoms	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.
Treatment	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.

2.4.9 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.

2.4.10 Procedures for Locating Buried Utilities

2.4.10.1 Local Utility Mark-Out Service

Name: Joe Malen (U.S. Army — DWP)
Phone: 907/353-4512

- 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 n 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 SC-HW should confirm that arrangement.

2.5 Biological Hazards and Controls

2.5.1 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 SC-HW 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.

2.5.2 Bloodborne Pathogens

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

Exposure to bloodborne pathogens may occur when rendering first aid or cardiopulmonary resuscitation (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.

2.6 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.

Hazards	Controls
None Known	None Required

2.7 Contaminants of Concern

(Refer to Project Files for more detailed contaminant information)

Contaminant	Location and Maximum[a] Concentration	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
Diesel Range Organics	Potential	100 mg/m3 (REL)	NL	Primary system effect is CNS depression. Inhalation of vapors may cause nausea, confusion, drowsiness, convulsions, and coma. Liquid may cause skin and eye irritation.	UK
Gasoline Range Organics	Potential	300 ppm	ND Ca	Eye, skin and mucous membrane irritation; dermatitis, headache, fatigue, blurred vision, dizziness, slurred speech, confusion, convulsions, chemical pneumonia on aspiration, possible liver and kidney damage	UK
PCBs	SB: 50 ppm	0.5 mg/m3	5 Ca	Eye and skin irritation, acne-form dermatitis, liver damage, reproductive effects	UK

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).
[b] Appropriate value of PEL, REL, or TLV listed.
[c] 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.
[d] PIP = photoionization potential; NA = Not applicable; UK = Unknown.

2.8 Potential Routes of Exposure

2.8.1 Dermal

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

2.8.2 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.

2.8.3 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).

SECTION 3

Project Organization and Personnel

3.1 CH2M HILL Employee Medical Surveillance and Training

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

The employees listed below are enrolled in the CH2M HILL Comprehensive Health and Safety Program and 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 "SC-HW" have completed a 12-hour Safety Coordinator — Haz Waste course, and have documented requisite field experience. An SC-HW 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. 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's 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	SC-HW/FA-CPR
Cory Hinds	ANC	Project Manager	Office Support Only – Not in the field
Bobby Huron	SCO	Field Team Leader/SC-HW	Level C; 40-Hr Hazardous Waste; Safety Coordinator-HW; FA-CPR
Reuben Greer	SPK	Field Team Member	Level C ; 40-Hr Hazardous Waste
Jessica Morris	SPK	Field Team Leader/SC-HW	Level C ; 40-Hr Hazardous Waste
Rikke Andersen	RDD	Field Team Member	Level C; 40-Hr Hazardous Waste; Safety Coordinator-HW; FA-CPR
Richy Ricks	SAC	Field Team Member	Level C ; 40-Hr Hazardous Waste
Bob Trebble	ANC	Field Team Member	Level C ; 40-Hr Hazardous Waste
Allan Erickson	PHX	Field Team Member	Level C ; 40-Hr Hazardous Waste
Dan Chern	SAC	Field Team Member	Level C ; 40-Hr Hazardous Waste

3.2 Field Team Chain of Command and Communication Procedures

3.2.1 Client

Contact Name: Bob Brock – U.S. Army Corps of Engineers (USACE)

Phone: 907/753-5612

3.2.2 CH2M HILL

Project Manager: Cory Hinds/ANC

Health and Safety Manager: John Culley/SPK

Field Team Leader/SC-HW: Bobby Horan/SCO

The SC-HW 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.

3.2.3 CH2M HILL Subcontractors

(Reference CH2M HILL SOP HS-215, Subcontractor, Contractor, and Owner)

Subcontractor: Discovery Drilling
Subcontractor Contact Name: Kyle Brown
Telephone: 907/344-6431

Subcontractor Tasks: Drilling/Direct-push

Safety Procedures Required: Subcontractor must have their company's safe drilling procedures onsite when field activities commence, or complete the JHA in Attachment 6.

The subcontractors listed above are covered by this HSP and must be provided a copy of this plan. 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 CH2M HILL for review before the start of field work. Subcontractors must comply with the established health and safety plan(s). The CH2M HILL SC-HW 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). CH2M HILL's oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

CH2M HILL 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. CH2M HILL is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SC-HW is responsible for confirming CH2M HILL subcontractor performance against both the subcontractor's safety plan and applicable self-assessment checklists. Self-assessment checklists contained in **Attachment 6** are to be used by the SC-HW to review subcontractor performance.

Health and safety related communications with CH2M HILL 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 the 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 CH2M HILL 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.

SECTION 4

Personal Protective Equipment (PPE)

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

PPE Specifications [a]

Task	Level	PPE	Head	Respirator [b]
General field surveying	D	Work clothes; steel-toe, leather work boots; work glove.	Hardhat [c] Safety glasses Ear protection [d]	None required
• Drilling • Well installation • Direct-push • Groundwater sampling • Soil sampling • IDW management	Modified D	**Coveralls:** Cotton coveralls **Boots:** Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers **Gloves:** Inner surgical-style nitrile & outer chemical-resistant nitrile or butyl gloves.	Hardhat [c] Safety glasses Ear protection [d]	None required

Reasons for Upgrading or Downgrading Level of Protection

Upgrade[e]	Downgrade
• Request from individual performing tasks. • Change in work tasks that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurrence of gas or vapor emission. • Known or suspected presence of dermal hazards. • Instrument action levels (Section 5) exceeded.	• New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decreases the hazard. • Change in work task that will reduce contact with hazardous materials.

[a] Modifications are as indicated. CH2M HILL will provide PPE only to CH2M HILL employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Hardhat and splash-shield areas are to be determined by the SC-HW.
[d] Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.
[e] 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 SC-HW qualified at that level is present.

SECTION 5

Air Monitoring/Sampling

5.1 Air Monitoring Specifications

Instrument	Tasks	Action Levels[a]	Frequency [b]	Calibration
PID: MiniRAE with 10.6 eV lamp or greater	• Drilling • Well installation • Direct-push • Groundwater sampling • Soil sampling • IDW management	<10 ppm → Modified D ≥10 ppm → Stop work; contact HSM	Initially and continuously during task; record every 30-60 minutes	Daily
Visual Dust Monitoring:	• Drilling • Well installation • Direct-push	No visible dust → Modified D Visible dust → Implement control measures or leave area	Continuous observation	N/A

[a] Action levels apply to **sustained** breathing-zone measurements above background **for more than 5 minutes**.
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SC-HW; 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.).

Air monitoring results may be obtained from other onsite parties if the following conditions are met:

- Instruments are calibrated in accordance with manufacturer’s specifications. Calibration logs and verifications must be kept by the SC-HW.
- Readings must be taken in CH2M Hill employees’ breathing zones (or from an employee who has a higher level of exposure) for the task listed. Results must be recorded as often as is stated above.
- The action levels previously listed must be followed.

5.2 Calibration Specifications

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

Instrument	Gas	Span	Reading	Method
PID: MiniRAE, 10.6 eV bulb	100 ppm isobutylene	CF=53	53 ppm ±5 ppm	1.5 lpm REG T-Tubing

5.3 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.

Method Description: None at this time

SECTION 6

Decontamination

(Reference CH2M HILL SOP *Decontamination*)

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

6.1 Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
• Boot wash/rinse • Glove wash/rinse • Outer-glove removal • Body-suit removal • Inner-glove removal • Respirator removal • Hand wash/rinse • Face wash/rinse • Shower ASAP • Dispose of PPE in municipal trash, or contain for disposal • Dispose of personnel rinse water to treatment facility operated by North Wind	• Wash/rinse equipment • Solvent-rinse equipment • Contain solvent waste for offsite disposal	• Power wash • Steam clean Dispose of equipment rinse water to treatment facility operated by North Wind

6.2 Diagram of Personnel-Decontamination Line

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

Figure 6-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SC-HW to accommodate task-specific requirements.

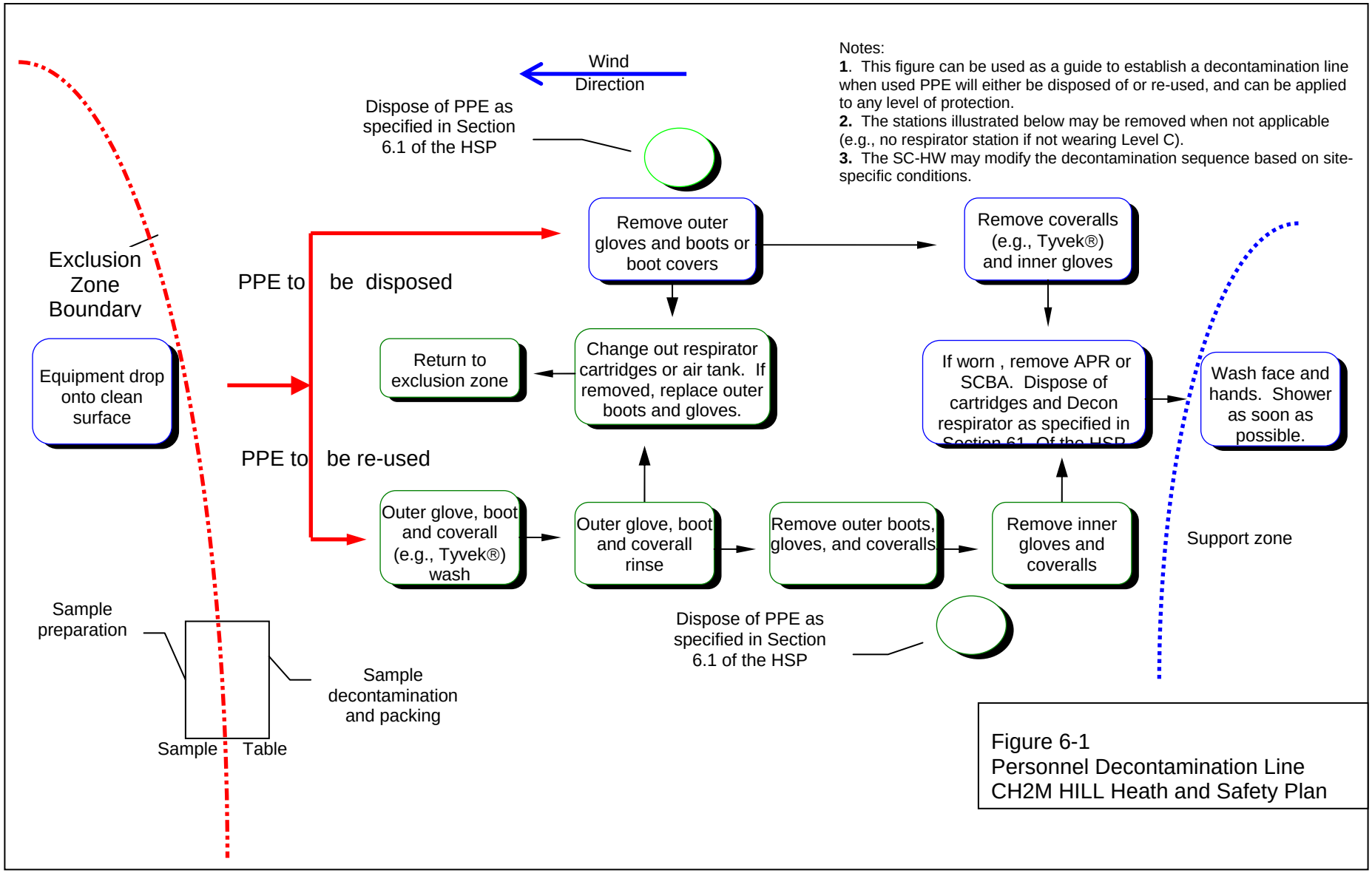


Figure 6-1
Personnel Decontamination Line
CH2M HILL Heath and Safety Plan

SECTION 7

Spill-Containment Procedures

In the event of a spill, the appropriate DPW contact shall be notified within 30 minutes with a description of the material spilled and the approximate volume released. he USACE Oil and Hazardous Substance Spill Notification Form is included as Attachment 7 of this document and will be completed by appropriate personnel.

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

SECTION 8

Site-Control Plan

8.1 Site-Control Procedures

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

- The SC-HW 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 SC-HW records attendance at safety briefings in a logbook and documents the topics discussed.
- Post the Occupational Safety and Health Administration (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 SC-HW 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.

8.2 Hazwoper Compliance Plan

(Reference CH2M HILL SOP 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 SC-HW 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.

SECTION 9

Emergency Response Plan

(Reference CH2M HILL, SOP *Emergency Response*)

9.1 Pre-Emergency Planning

The SC-HW performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with CH2M HILL 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 SC-HW will evaluate emergency response actions and initiate appropriate follow-up actions.

9.2 Emergency Equipment and Supplies

The SC-HW 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)	Required w/ drill rig
First aid kit	Support Zone/Field Vehicle
Potable water	Support & Decon Zone/Field Vehicle
Bloodborne-pathogen kit	Support Zone/Field Vehicle
Cellular phone	Support Zone/Field Vehicle
Eye Wash	Support Zone/Field Vehicle

9.3 Incident Response

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

- Shut down CH2M HILL 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.

9.4 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to Human Resources. 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. During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities listed in Section 9.8 (e.g., 911).
- The SC-HW 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, state that the situation is a CH2M HILL matter, and 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 9.7.

9.5 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 SC-HW before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The SC-HW 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 SC-HW will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The SC-HW will incident reporting as outlined in 9.7

9.6 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.

9.7 Incident Notification and Reporting

In the event of an emergency, immediately call….. **911.**

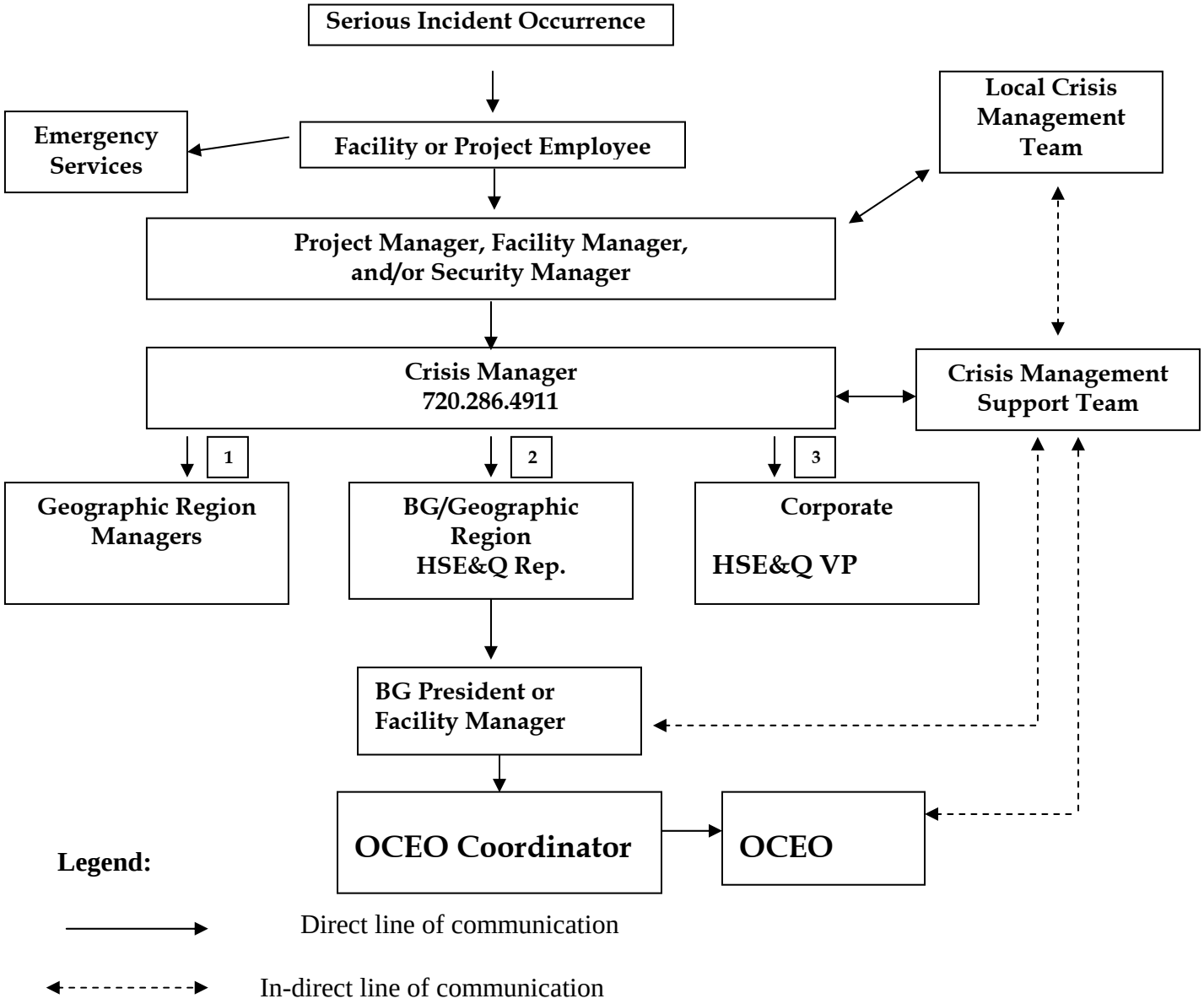
- Severe Bleeding
- Loss of consciousness
- Chest Pain
- Broken bones

All other injuries or illness' (even those that are minor and may only require First Aid) which occur at work, while on business travel or commute must be reported to your supervisor immediately. **After informing their supervisor, the injured employee calls CH2M HILL's contracted Occupational Nurse**.

24-hour CH2M HILL Emergency Nurse Assistance
800/756-1130

- The Occupational Injury Nurse listens to the injured employee to understand the injury/illness.
- Employee is provided guidance on appropriate treatment options (triage).
- Appropriate treatment details are handled by the Occupational Injury Nurse, and Workers Compensation Groups.
- Nurse communicates and troubleshoots with and for employee through full recovery.

Serious Incident Notification Chart



SECTION 10

Approval

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.

10.1 Original Plan

Written By: Cory Hinds/ANC **Date:** May 2007

Approved By: **Date:**

John Culley/SPK

10.2 Revisions

Revisions Made By: Jenelle Morris/DEN **Date:** July 26, 2007

Revisions to Plan: Updated staff and behavior based forms.

Revisions Approved By: **Date:** July 26, 2007

Jenelle Morris, CIH

SECTION 11

Attachments

Attachment 1: Employee Signoff Form — Field Safety Instructions

Attachment 2: Project-Specific Chemical Product Hazard Communication Form

Attachment 3: Chemical-Specific Training Form

Attachment 4: Emergency Contacts

Attachment 5: Project Activity Self-Assessment Checklists

Attachment 6: JHAs/PTSA

Attachment 7: Spill Notification Form (USACE)

Attachment 1
Employee Signoff Form — Field Safety Instructions

CH2MHILL

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

- The CH2M HILL project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

Project Name: **Project Number:**

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

Attachment 2
Project-Specific Chemical Product Hazard Communication Form

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Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SC-HW shall verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: **Project Number:**

MSDSs will be maintained at the following location(s):

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	Container Labels	
				Identity	Hazard
Isobutylene	1 liter, compressed	Support Zone			
Hydrochloric acid	< 500 ml	Support Zone / sample bottles			
Nitric acid	< 500 ml	Support Zone / sample bottles			
Sulfuric Acid	< 500 ml	Support Zone / sample bottles			
Sodium hydroxide	< 500 ml	Support Zone / sample bottles			
Methanol	< 1 Gallon	Support/Decon Zones			
Hexane	< 1 Gallon	Support/Decon Zones			
Alconox/Liquinox	< 1liter	Support/Decon Zones			

Refer to SOP HS-05 *Hazard Communication* for more detailed information.

Attachment 3
Chemical-Specific Training Form

CH2MHILL

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

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

CH2M HILL Medical Consultant
Health Resources
Dr. Jerry H. Berke, M.D., M.P.H.
600 West Cummings Park, Suite 3400
Woburn, MA 01801-6350
1-781-938-46531-800-350-4511
(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 #:

Corporate Director Health and Safety
Name: Jerry Lyle/BOI
Phone: 208/345-5314
24-hour emergency beeper: 888-444-1226

Utilities Emergency
Water:
Gas:
Electric:

Health and Safety Manager (HSM)
Name: John Culley/SPK
Phone: 509/747-2000

Safety Coordinator - Haz Waste (SC-HW)
Name: Bobby Horan/SCO
Phone: (714) 435-6256

Regional Human Resources Department
Name: Holly Michel/SEA
Phone: 425/453-5000

Project Manager
Name: Cory Hinds/ANC
Phone: (907) 646-0348 ext: 348

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

Federal Express Dangerous Goods Shipping
Phone: 800/238-5355

CH2M HILL Emergency Number for Shipping Dangerous Goods
Phone: 800/255-3924

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: Vehicle Horn

Evacuation Assembly Area(s): Site Trailer

Facility/Site Evacuation Route(s):

Hospital Name/Address:
Fairbanks Memorial Hospital - See map and directions
1650 Cowles St
Fairbanks, Alaska 99701

Hospital Phone #:
(907) 452-8181

Note: For emergencies use army hospital directly across from the site

Directions			Distance
		Total Est. Time: 11 minutes **Total Est. Distance:** 4.08 miles	
START	**1:**	Start out going NORTH on SANTIAGO AVE toward OAK AVE.	0.3 miles
	2:	Turn LEFT onto NEELY RD.	0.9 miles
	3:	Turn RIGHT onto 10TH ST.	0.2 miles
	4:	Turn LEFT onto GAFFNEY RD. Pass through 1 roundabout.	1.4 miles
	5:	Stay STRAIGHT to go onto AIRPORT WAY.	0.9 miles
	6:	Turn LEFT onto COWLES ST.	0.1 miles
END	**7:**	End at **1650 Cowles St** Fairbanks, AK 99701-5925, US	
		Total Est. Time: 11 minutes**Total Est. Distance:** 4.08 miles	

Attachment 5
Forms/Permits

Behavior Based Loss Prevention System

Job Hazard Analysis

Pre-Task Safety Plan

Safe Work Observation

Incident Report Form (use online form when available)

On line IRF/HITS form

Near Loss Investigation/Root Cause Analysis

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JOB HAZARD ANALYSIS

Date Prepared:	
Job/Activity:	
Project:	
Prepared by(SC):	
Reviewed by (PM/Site Supervisor/H&S):	
Description of the work:	

Task Risk Assessment Code (RAC): **L, M, H, or E**

E = Extremely High Risk

H = High Risk

M = Moderate Risk

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Probability

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)

Equipment to be used (List equipment to be used in the work activity)	**Inspection Requirements** (List inspection requirements for the work activity)	**Training Requirements** (List training requirements including hazard communication)

PRINT NAME	**SIGNATURE**	
Supervisor Name: _____	_____	**Date/Time:** _____
Safety Officer Name: _____	_____	**Date/Time:** _____
Employee Name(s): _____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____
_____	_____	**Date/Time:** _____

CH2MHILL

Pre-Task Safety Plan (PTSP)

Project: _____ Location: _____Date:_____

Supervisor: _____ Job Activity:_____

_____

Task Personnel:

_____

_____

_____

_____

List Tasks:

_____

_____

_____

_____

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

_____

_____

_____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

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

Other Potential Hazards (Describe):_____

_____

_____

CH2MHILL

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

Name (Print): _____

Signature:_____ Date:_____

Safe Work Observation Form		
Project:	Observer:	Date:
Position/Title of worker observed:	Background Information/ comments:	
Task/Observation Observed:		

- ❖ Identify and reinforce safe work practices/behaviors
- ❖ Identify and improve on at-risk practices/acts
- ❖ Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- ❖ Proactive PM support facilitates eliminating/reducing hazards (do you have what you need?)
- ❖ Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	Safe	At-Risk	Observations/Comments
Current & accurate Pre-Task Planning/Briefing (Project safety plan, STAC, JHA, PTSP, tailgate briefing, etc., as needed)			**Positive Observations/Safe Work Practices:**
Properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			**Questionable Activity/Unsafe Condition Observed:**
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			**Observer's Corrective Actions/Comments:**
Pace			
Uncomfortable/unsafe position			
Inconvenient/unsafe location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			**Observed Worker's Corrective Actions/Comments:**
Other…			

Root Cause Analysis Form

Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. **Lack of skill or knowledge**
2. **Lack of or inadequate operational procedures or work standards**
3. **Inadequate communication of expectations regarding procedures or work standards**
4. **Inadequate tools or equipment**
5. **Correct way takes more time and/or requires more effort**
6. **Short cutting standard procedures is positively reinforced or tolerated**
7. **Person thinks there is no personal benefit to always doing the job according to standards**

RCC #	Root Cause(s)	Corrective Actions	RC[1]	CF[2]	Due Date	Completion Date	Date Verified

[1] RC = Root Cause; [2] CF = Contributing Factors (check which applies)

Investigation Team Members

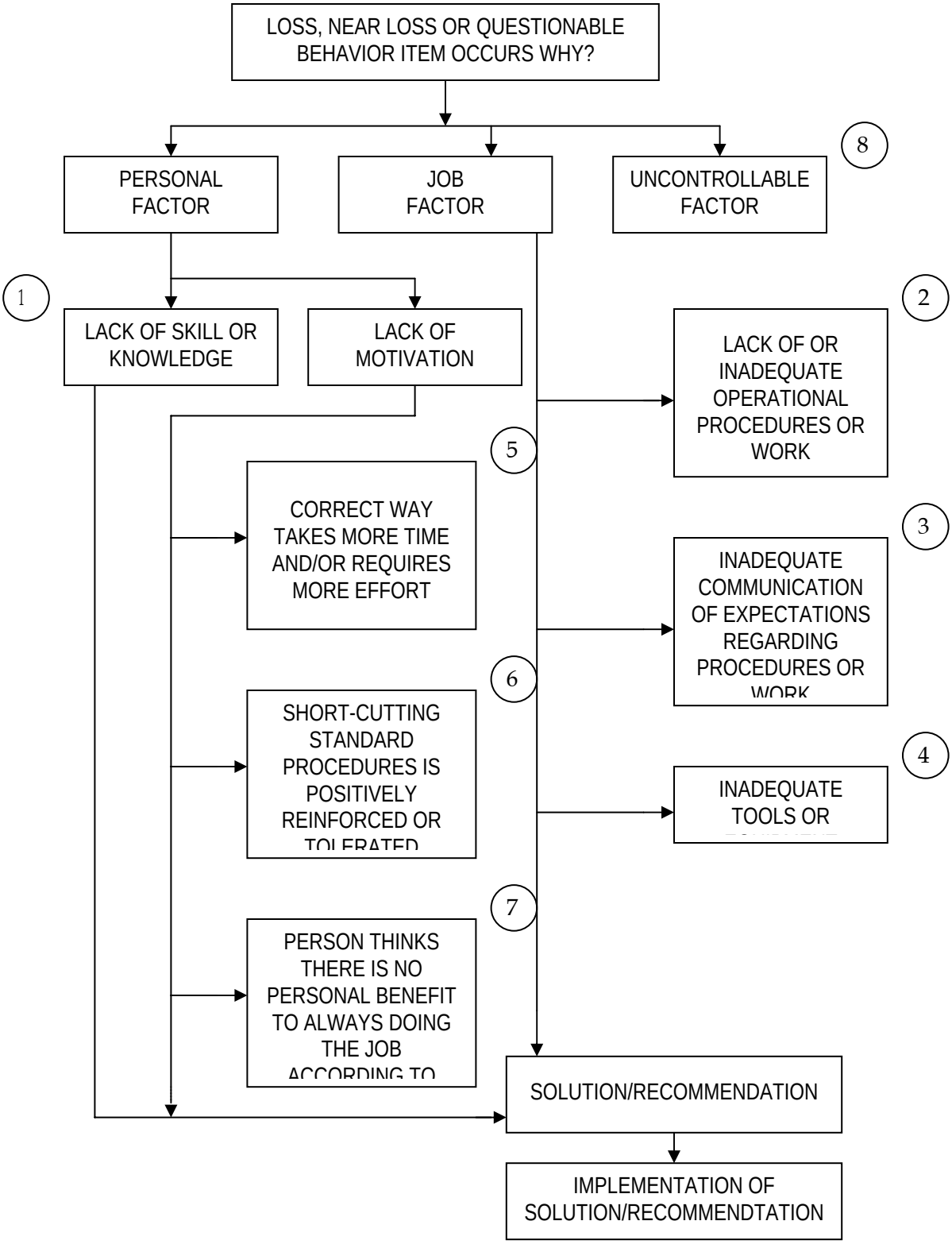
Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Root Cause Analysis
Flow Chart



Attachment 6
Self-Assessment Checklist

CH2MHILL

HS&E Self-Assessment Checklist - DRILLING

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's written safety plan.

This checklist is to be used at locations where: 1) CH2M HILL employees are potentially exposed to drilling hazards, 2) CH2M HILL staff are providing support function related to drilling activities, and/or 3) CH2M HILL oversight of a drilling subcontractor is required.

Safety Coordinator 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.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposures to drilling hazards (complete Section 1).
☐ Evaluate CH2M HILL support functions related to drilling activities (complete Section 2)
☐ Evaluate a CH2M HILL subcontractor's compliance with drilling safety requirements (complete entire checklist).
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 SOP HSE-204.

SECTION 1 - SAFE WORK PRACTICES (4.1)

	Yes	No	N/A	N/O
1. Personnel cleared during rig startup	☐	☐	☐	☐
2. Personnel clear of rotating parts	☐	☐	☐	☐
3. Personnel not positioned under hoisted loads	☐	☐	☐	☐
4. Loose clothing and jewelry removed	☐	☐	☐	☐
5. Smoking is prohibited around drilling operation	☐	☐	☐	☐
6. Personnel wearing appropriate personal protective equipment (PPE), per written plan	☐	☐	☐	☐
7. Personnel instructed not to approach equipment that has become electrically energized	☐	☐	☐	☐

SECTION 2 - SUPPORT FUNCTIONS (4.2)

FORMS/PERMITS (4.2.1)

8. Driller license/certification obtained	☐	☐	☐	☐
9. Well development/abandonment notifications and logs submitted and in project files	☐	☐	☐	☐
10. Water withdrawal permit obtained, where required	☐	☐	☐	☐
11. Dig permit obtained, where required	☐	☐	☐	☐

UTILITY LOCATING (4.2.2)

12. Location of underground utilities and structures identified	☐	☐	☐	☐

SECTION 2 (Continued)

		Yes	No	N/A	N/O
WASTE MANAGEMENT (4.2.3)					
13.	Drill cuttings and purge water managed and disposed properly	☐	☐	☐	☐
DRILLING AT HAZARDOUS WASTE SITES (4.2.4)					
14.	Waste disposed of according to project's written safety plan	☐	☐	☐	☐
15.	Appropriate decontamination procedures being followed, per project's written safety plan ☐		☐	☐	☐
DRILLING AT MUNITIONS RESPONSE (4.2.5)					
16.	MEC plan prepared and approved	☐	☐	☐	☐
17.	MEC avoidance provided, routes and boundaries cleared and marked	☐	☐	☐	☐
18.	Initial pilot hole established by UXO technician with hand auger	☐	☐	☐	☐
19.	Personnel remain inside cleared areas	☐	☐	☐	☐

SECTION 3 - DRILLING SAFETY REQUIREMENTS (4.3)

GENERAL (4.3.1)					
20.	Only authorized personnel operating drill rigs	☐	☐	☐	☐
21.	Daily safety briefing/meeting conducted with crew	☐	☐	☐	☐
22.	Daily inspection of drill rig and equipment conducted before use	☐	☐	☐	☐
DRILL RIG PLACEMENT (4.3.2)					
23.	Location of underground utilities and structures identified	☐	☐	☐	☐
24.	Safe clearance distance maintained from overhead power lines	☐	☐	☐	☐
25.	Drilling pad established, when necessary	☐	☐	☐	☐
26.	Drill rig leveled and stabilized	☐	☐	☐	☐
27.	Additional precautions taken when drilling in confined areas	☐	☐	☐	☐
DRILL RIG TRAVEL (4.3.3)					
28.	Rig shut down and mast lowered and secured prior to rig movement	☐	☐	☐	☐
29.	Tools and equipment secured prior to rig movement	☐	☐	☐	☐
30.	Only personnel seated in cab are riding on rig during movement	☐	☐	☐	☐
31.	Safe clearance distance maintained while traveling under overhead power lines	☐	☐	☐	☐
32.	Backup alarm or spotter used when backing rig	☐	☐	☐	☐
DRILL RIG OPERATION (4.3.4)					
33.	Kill switch clearly identified and operational	☐	☐	☐	☐
34.	All machine guards are in place	☐	☐	☐	☐
35.	Rig ropes not wrapped around body parts	☐	☐	☐	☐
36.	Pressurized lines and hoses secured from whipping hazards	☐	☐	☐	☐
37.	Drill operation stopped during inclement weather	☐	☐	☐	☐
38.	Air monitoring conducted per written safety plan for hazardous atmospheres	☐	☐	☐	☐
39.	Rig placed in neutral when operator not at controls	☐	☐	☐	☐
DRILL RIG SITE CLOSURE (4.3.5)					
40.	Ground openings/holes filled or barricaded	☐	☐	☐	☐
41.	Equipment and tools properly stored	☐	☐	☐	☐
42.	All vehicles locked and keys removed	☐	☐	☐	☐
DRILL RIG MAINTENANCE (4.3.6)					
28.	Defective components repaired immediately	☐	☐	☐	☐
29.	Lockout/tagout procedures used prior to maintenance	☐	☐	☐	☐
30.	Cathead in clean, sound condition	☐	☐	☐	☐
31.	Drill rig ropes in clean, sound condition	☐	☐	☐	☐
32.	Fall protection used for fall exposures of 6 feet (U.S.) 1.5 meters (Australia) or greater	☐	☐	☐	☐
33.	Rig in neutral and augers stopped rotating before cleaning	☐	☐	☐	☐
34.	Good housekeeping maintained on and around rig	☐	☐	☐	☐

SECTION 4

Complete this section for all items checked "No" in previous sections. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: _____ Project Manager: _____

Attachment 7
Spill Notification Form (USACE)

OIL & HAZARDOUS SUBSTANCES SPILL NOTIFICATION

SPILL #	**FILE #**		**LC**
SPILL NAME, IF ANY	**PERSON REPORTING:**		**PHONE NUMBER**
DATE/ TIME OF SPILL	**DATE/TIME REPORTED**:		**REPORTED HOW? (Phone, fax, etc.)**
	DATE/TIME DISCOVERED:		
LOCATION			**SUBSTANCE SPILLED**
QUANTITY SPILLED	**QUANTITY CONTAINED**	**QUANTITY RECOVERED**	**QUANTITY DISPOSED**
POTENTIAL RESPONSIBLE PARTY		**OTHER POTENTIAL RESPONSIBLE PARTIES, IF ANY**	
SOURCE OF SPILL			
CAUSE OF SPILL			
CLEANUP ACTIONS			
DISPOSAL METHODS AND LOCATION			
ENVIRONMENTAL DAMAGE (circle one) YES NO	**SURFACE AREA AFFECTED (in square feet)**		**SURFACE TYPE (describe area affected)**
COMMENTS. Spill Report FWA 04-XXX			
TYPE OF DEC RESPONSE (phone, field visit, took report)	**NAMES OF DEC STAFF RESPONDING**		**CASE STATUS (open, closed, trans. to cont. sites)**