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FISC WILLIAMSBURG  
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ACCIDENT PREVENTION PLAN SITE INSPECTION SUPPLEMENTAL SOIL SAMPLE  
COLLECTION AREA OF CONCERN 2 (AOC 2) DEXTROSE DUMP CHEATHAM ANNEX FISC  
WILLIAMSBURG VA  
5/1/2014  
CH2M HILL

**Accident Prevention Plan  
Site Inspection Supplemental Soil Sample Collection  
AOC 2 - Dextrose Dump**

**Naval Weapons Station Yorktown Cheatham Annex  
Williamsburg, Virginia**

**Contract Task Order 056**

**May 2014**

Prepared for

**Department of the Navy  
Naval Facilities and Engineering Command  
Mid Atlantic**

Under the

**NAVFAC CLEAN 1000 Program  
Contract N62470-08-D-1000**

Prepared by



**Virginia Beach, Virginia**

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**Appendix**

A Site Safety and Health Plan

**Figures**

- 1 Base Location Map
- 2 AOC 2 Site Location Map

# Acronyms and Abbreviations

°C	degree Celsius
µg/L	microgram per liter
µg/kg	microgram per kilogram
µm	micrometer
%R	percent range
ALS	ALS Environmental
AM	Activity Manager
AOC	Area of Concern
AQM	Activity Quality Manager
bgs	below ground surface
BTAG	Biological Technical Assistance Group
CA	corrective action
CAX	Cheatham Annex
CLEAN	Comprehensive Long-term Environmental Action—Navy
COC	constituent of concern
COPC	constituent of potential concern
CSM	conceptual site model
CTO	Contract Task Order
CVAA	cold vapor atomic absorption
DL	detection limit
DO	dissolved oxygen
DoD	Department of Defense
DPT	direct-push technology
DQI	data quality indicator
DQO	data quality objective
DV	Data Validator
ELAP	Environmental Laboratory Accreditation Program
ENCO	Environmental Conservation Laboratories, Inc.
ERA	Ecological Risk Assessment
ESV	ecological screening value
FID	flame ionization detector
FTL	Field Team Leader
g	gram
GC/ECD	gas chromatography/electron capture detection
GC/MS	gas chromatography/mass spectrometry
HASP	Health and Safety Plan
HHRA	Human Health Risk Assessment
HMW	high molecular weight
HQ	hazard quotient
IC	ion chromatography
ICAL	initial calibration

ICP-AES	inductively coupled plasma-atomic emission spectroscopy
ICP-MS	inductively coupled plasma-mass spectrometry
ICS	Interference check solution
ID	Identification
IDW	investigation-derived waste
IS	Internal Standards
Kemron	Kemron Environmental Services, Inc.
LCL	lower criteria limit
LCS	laboratory control sample
LIMS	Laboratory Information Management System
LMW	low molecular weight
LOD	limit of detection
LOQ	limit of quantification
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
ml	milliliter
mm	millimeter
MPC	Measurement Performance Criteria
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl-tert-butyl ether
NA	not applicable
NAIP	natural attenuation indicator parameter
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NC	No Criterion
NTR	Navy Technical Representative
ORP	Oxidation Reduction Potential
PAH	polycyclic aromatic hydrocarbon
PAL	Project Action Limit
PC	Project Chemist
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PDM	Project Data Manager
PID	photoionization detector
PIL	project indicator limit
PM	Project Manager
POC	point of contact
PPE	personal protective equipment
PS	post spike
PSLP	Penniman Shell Loading Plant
PVC	polyvinyl chloride
QA	quality assurance
QAO	Quality Assurance Officer
QC	quality control
QL	quantitation limit
QSM	Quality Systems Manual

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RHSM	Responsible Health and Safety Manager
RI	Remedial Investigation
RPD	relative percent difference
RPM	Remedial Project Manager
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SI	Site Inspection
SOP	Standard Operating Procedure
SSHO	Site Safety & Health Officer
STC	Senior Technical Consultant
SVOC	semivolatile organic compound
TBD	to be determined
TCD	Thermal Conductivity Detector
TCLP	Toxicity Characteristic Leaching Procedure
TOC	total organic carbon
UCL	upper confidence limit
UFP	Uniform Federal Policy
UPC	Universal Product Code
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit
VDEQ	Virginia Department of Environmental Quality
VOA	volatile organic analyte
VOC	volatile organic compound
WWI	World War I

# 1 Signature Page

## Accident Prevention Plan (APP)

Cheatham Annex AOC 2  
Williamsburg, Virginia

Date: January 2014

Plan Preparer:

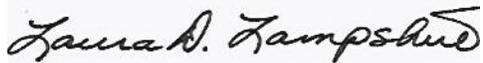


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Mark L. Ost  
CH2M HILL  
Phone number: 757-362-4597

Date: 1/8/2014

Project Manager Concurrence:



---

Name: Laura Lampshire  
CH2M HILL  
Program/Project Manager  
Phone number: 301-570-1042

Date: 1/20/2014

Plan Concurrence:



---

Name: Carl Woods  
CH2M HILL  
Project Safety and Health Manager  
Phone number: 513-889-5771

Date: 1/19/2014

Program Health and Safety Manager Concurrence:

*Richard Cavil*

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Richard Cavil CSP  
CH2M HILL  
Program Health and Safety Manager  
408-896-0140

Date: 1/24/2014

## 2 Background Information

This APP has been developed to protect and guide the personnel conducting soil sampling, waste sampling and management. The remedial site covered in this investigation consists of AOC 2, Cheatham Annex (CAX).

CAX encompasses 2,300 acres east of Williamsburg, between Interstate 64 and the York River on the York-James Peninsula (**Figure 1**). AOC 2, the Dextrose Dump, is a small (less than 1 acre) wooded site located to the north of Garrison Road, along the southern perimeter of CAX as depicted in (**Figure 2**). AOC 2 was identified during site visits by the Navy, USEPA, VDEQ, and Baker in late 1997 and early 1998 and consists of several rows of concrete foundation piers that at one time supported a Shipping House associated with the PSLP. The majority of structures associated with the Penniman facility were demolished between 1918 and 1925. Grass-covered lanes leading to the site area are likely locations of former rail lines that have been removed. In 2001, 15 trenches were excavated at AOC 2 to confirm the presence or absence of buried respiratory cartridges along Deer Pit Road and to obtain additional information concerning subsurface materials potentially buried at AOC 2. Based on the types of debris observed during the trenching activities, AOC 2 was separated into three areas; Areas 1a and 1b contain dextrose bottles and minor debris, and Area 3 contains military clothing. Area 2 contains respirator cartridge canisters and 55-gallon drums.

This APP has been prepared to meet applicable requirements of the U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual EM 385-1-1 (USACE 2011), 29 *Code of Federal Regulations* (CFR) 1910.1200 Hazard Communication Standard, Hazardous Waste Operations or emergency response as required by 29 CFR 1910.120 and 29 CFR 1926.65, and the corporate safety and health policies of CH2M HILL, Inc. This APP has been constructed to directly track with the EM 385-1-1 2011 Appendix A "Minimum Basic Outline for Accident Prevention Plan."

Various portions of this work shall also be conducted under non-hazardous waste site protocols. The site safety and health plan (SSHP) for this project is included as Appendix A.

### 2.1 Contractor

CH2M HILL, Inc.

### 2.2 Contract Number

N62470-11-D-8012

### 2.3 Project Name

Site Inspection Supplemental Soil Sampling AOC 2 Cheatham Annex, Williamsburg, Virginia

### 2.4 Project Description and Location

This APP presents the hazards known or anticipated to be present at, AOC 2 CAX. Tasks included under this HSP will be conducted within the boundaries of the site. The area included in this investigation is, located at Naval Weapons Station Yorktown Cheatham Annex (CAX) in Williamsburg, Virginia. All soil data evaluated in the SI Report (CH2M HILL, 2011), as well as residual sump material (if present) data collected as part of this SI, will be used to characterize the site and support a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA).

Soil samples will be collected by hand auger. Four surface composite samples will be collected from 6 to 24 inches below ground surface. In addition, four composite subsurface samples will be collected from 6 to 24 inches below ground surface. Samples will be shipped overnight to the specified laboratory for analysis.

This project-specific APP will be used by CH2M HILL and its subcontractors to identify and mitigate task-specific hazards and to select appropriate health and safety protective measures. For specific task descriptions and safety measures refer to section 3.2 of the SSHP, Appendix A.

Onsite personnel must review the APP and sign an agreement to comply with its provisions prior to commencing onsite work. The APP and attached SSHP are considered operational documents that are subject to revisions in response to various site-specific conditions that may be encountered. However, the documents may be modified or updated only with the approval of the health and safety manager (HSM) and project manager.

## 2.5 Contractor Accident Experience

CH2M HILL's exceptional safety performance greatly exceeds the industry average. Our injury and illness rates and our Experience Modification Rate (EMR) have averaged 0.68 over the past 5 years.

Following are examples of our achievements:

- An EMR of less than 1.0 over the past 5 years, which is the average accident injury experience for the industry, with a 2013 EMR of 0.63 (or 63 percent) of the industry average (NAICS 54133).

Category	2009	2010	2011	2012	2013
Employee Hours	14,673,402	12,842,086	10,704,063	9,759,106	9,636,525
Experience Modification Rate (EMR)	0.72	0.71	0.67	0.69	0.63
Fatalities	0	0	0	0	0
Recordable Incidents	20	8	13	10	12
Recordable Incident Rate *	0.27	0.12	0.24	0.20	0.25
Recordable Incident Rate Average *	1.1	1.2	1.0	1.0	0.8
Lost Workday (LWD) Incidents (DART) **	3	0	3	0	1
LWD Incident Rate (DART)	0.04	0.00	0.12	0.0	0.02

## 2.6 Work Requiring Activity Hazard Analysis

The planned field tasks requiring activity hazard analyses (AHAs) are as follows:

- 01 Soil sampling
- 02 Utility Clearance (subcontractor task)

AHAs for each of the above field tasks are included in Appendix A.

## 3 Statement of Safety and Health Policy and Compliance Procedures

CH2M HILL is committed to providing a safe and healthful workplace for employees. The conditions will be ensured through an aggressive and comprehensive worker safety and health program that is integrated with other site worker protection activities. We regard employee protection as a priority and are committed to developing, implementing, and improving safety and health practices that will afford optimal protection to employees and enable continuous improvement of the quality of worker protection performance. The safety and health of employees will take precedence whenever conflicts with production or other objectives arise.

Managers and supervisors are held accountable for worker safety and health. Accountability is achieved by assigning worker protection responsibilities, evaluating personnel performance, and holding personnel accountable for worker protection performance.

In addition to complying with this APP and their corporate safety and health program, persons working under the SSHP are encouraged to be active participants in their workplace safety and health activities, and to actively take advantage of the worker rights in a responsible manner, without reprisal.

CH2M HILL has embraced a philosophy for health safety and environment excellence. The primary driving force behind this commitment to health and safety is simple: employees are the company's most significant asset, and management values their safety, health, and welfare. Also, top management believes that all injuries are preventable. The safety culture empowers employees at all levels to accept ownership for safety and take whatever actions are necessary to eliminate injury. Our company is committed to world-class performance in health and safety and also understands that world-class performance in health and safety is a critical element in overall business success.

CH2M HILL is committed to the prevention of personal injuries, occupational illnesses, and damage to equipment and property in all of its operations; to the protection of the general public whenever it comes in contact with the Company's work; and to the prevention of pollution and environmental degradation.

Company management, field supervisors, and employees plan safety into each work task in order to prevent occupational injuries and illnesses. CH2M HILL management extends its full commitment to health and safety excellence.

### 3.1 Objective

The objective of the CH2M HILL program is to provide a place of employment free of all recognized hazards that are causing or will likely result in death or serious physical harm to our employees. The objective can be facilitated by developing and administering an overall health and safety program, which establishes written policies and procedures to serve as vehicles through which the program requirements will be implemented.

### 3.2 Purpose

The purpose of this project APP, in conjunction with the project-specific or program health and safety documents, is to define the policies, procedures, and requirements that must be implemented for the CH2M HILL program and to establish the requirements, responsibilities, and expectations for management, supervisors, employees, and subcontractors that may participate in the execution of the program projects. It is the intent of this APP to address applicable requirements set forth by 29 CFR 1910, 29 CFR 1926, EM 385 1-1, and CH2M HILL policies and procedures incorporated by reference herein.

### 3.3 Goals

The health and safety goal for this project and the overall goal for the CH2M HILL program are to eliminate workplace accidents, gain worker acceptance through cooperation and training, and provide our clients with a responsible, well-trained, safety-oriented work force.

CH2M HILL considers safety the highest priority during work at all project sites and in its business offices and has established a goal of zero incidents. CH2M HILL's program will be conducted in a manner that minimizes the probability of near misses, injury, illness, and equipment or property damage.

All management and employees are to strive to meet the project-specific health, safety, and environment goals outlined below. The team will be successful only if everyone makes a concerted effort to accomplish these goals. The goals allow the project to stay focused on optimizing the health and safety of all project personnel and, therefore, making the project a great success.

The project has established the following 11 specific goals and objectives:

1. Create an injury-free environment.
2. Have zero injuries or incidents.
3. Provide management leadership for health, safety, and environment by communicating performance expectations, reviewing and tracking performance, and leading by example.
4. Ensure effective implementation of the SSHP and APP through education, delegation, and teamwork.
5. Ensure 100-percent participation in training programs, personal protective equipment (PPE) use, and health, safety, and environment compliance.

6. Continuously improve safety performance.
7. Maintain free and open lines of communication.
8. Make a personal commitment to safety as a value.
9. Focus safety improvements on high-risk groups.
10. Continue strong employee involvement initiatives.
11. Achieve health and safety excellence.

### 3.4 Safe Work Policy

It is policy to perform work in the safest manner possible. Safety must never be compromised. To fulfill the requirements of this policy, an organized and effective safety program must be carried out at each location where work is performed.

CH2M HILL believes that all injuries are preventable, and is dedicated to the goal of a safe work environment. To achieve this goal, every employee on the project must assume responsibility for safety.

Every employee is empowered to:

- Conduct their work in a safe manner
- Stop work immediately to correct any unsafe condition that is encountered
- Take corrective actions so that work may proceed in a safe manner

Safety, occupational health, and environmental protection will not be sacrificed for production.

### 3.5 Standards of Conduct Violations

All individuals associated with this project must work injury-free and drug-free and must comply with the Standards of Conduct, the SSHP and APP, and the site safety requirements. Commonly accepted standards of conduct help maintain good relationships between people. They promote responsibility and self-development. Misunderstandings, frictions, and disciplinary action can be avoided by refraining from thoughtless or wrongful acts. Violations of the standards of conduct would include, but not be limited to the following:

- Failure to perform work
- Inefficient performance, incompetence, or neglect of work
- Willful refusal to perform work as directed (insubordination)
- Negligence in observing safety regulations, poor housekeeping, or failure to report on-the-job injuries or unsafe conditions
- Unexcused or excessive absence or tardiness
- Unwillingness or inability to work in harmony with others
- Discourtesy, irritation, friction, or other conduct that creates disharmony
- Harassment or discrimination against another individual
- Failure to be prepared for work by wearing the appropriate construction clothing or PPE, or bringing the necessary tools
- Violation of any other commonly accepted reasonable rule of responsible personal conduct
- Violation of the safety and health requirements of their corporation's policy or of this APP
- Unauthorized or illegal possession, use, or sale of alcohol or controlled substances on work premises, during working hours, while engaged in corporate activities, or in corporate vehicles
- Use or sale of firearms or explosives on work premises

See Appendix A of the SSHP, Section 1.0, for further details.

### **3.6 Intolerable Offenses**

Certain employee conduct may be so intolerable as to justify removal from the project. Intolerable offenses and actions will include, but not be limited to, the following:

- Any manager, supervisor, foreman, or other person in charge of the work being performed who requires requests, asks, threatens with their job, allows, or condones employees to work in or around unsafe acts or conditions
- Any employee, supervisor, or manager who knowingly falsifies any investigative documents or testimony involving an investigation
- Any employee, supervisor, or manager who openly exhibits disregard, defiance, or disrespect for the safety program
- Any employee who violates established safety rules, regulations, or codes that endanger themselves or other employees
- Any and all parties involved in workplace violence, including physical encounters (fighting) or threats of violence, theft, or destruction of property
- Any employee, supervisor, or manager failing to comply with procedures contained in the subcontract, SSHP and APP, USACE EM 385-1-1 Manual, or local safety laws and regulations that create the potential for serious or costly consequences
- Any employee who commits repeated minor offenses and shows a lack of responsible effort to correct these offenses

### **3.7 Enforcement and Discipline**

CH2M HILL's Enforcement and Discipline procedures, the Standards of Conduct, the Intolerable Offenses, and the Drug-Free Workplace policy will be thoroughly reviewed with each employee during the employee project orientation.

#### **3.7.1 Intolerable Offenses**

CH2M HILL practices zero tolerance for intolerable offenses. Individuals found participating in such offenses will be dealt with according to our policy and may be subjected to the following:

- Suspended from work for 3 days without pay
- Immediately discharged and not allowed to return

#### **3.7.2 Other Violations**

Other violations will be handled accordingly:

- First offense—employee will receive a written warning
- Second offense—employee will receive a 2-day suspension without pay
- Third offense—employee will be discharged

### **3.8 Subcontractor Default**

If the subcontractor fails to comply with any of the requirements of the subcontract, SSHP and APP, or local safety laws and regulations, the prime contractor may issue a stop work order to the subcontractor. Thereupon, the subcontractor will immediately cease all work or portion of work that may be specifically designated in the stop work order until the prime contractor has concluded in writing that the subcontractor has corrected its failure of performance. No adjustments will be made to the subcontractor price or schedule as a result of any stop work orders being issued by the prime contractor. A stop work order will be given to the noncompliant subcontractor on the date of deficiency. If the subcontractor fails to correct the deficiencies noted in the stop work order within

3 working days following the written notice from the prime contractor, the prime contractor may, without prejudice to any other rights or remedies under the subcontract or at law or equity, suspend all further payments to subcontractor and/or terminate subcontractor's right to continue performance of the work.

### 3.9 Incentive Program

CH2M HILL will encourage all parties to implement a safety incentive program for the project that rewards workers for exhibiting exemplary safety behaviors. Actions that qualify are those that go above and beyond what is expected. Actions that will be rewarded include spotting and correcting a hazard, bringing a hazard to the attention of your foreman, telling your foreman about an incident, coming up with a safer way to get the work done, stopping a crew member from doing something unsafe, etc. The program will operate throughout the project, covering all craft workers. The incentive program will be communicated to all employees during the project employee orientation and project safety meetings.

### 3.10 Posting of Health and Safety Information

There will be a posting area, accessible by all workers onsite, and in clear view for the posting of site-specific health and safety information. The posted information will be protected from the environment and kept updated as project information changes.

## 4 Responsibilities and Lines of Authorities

Section 4 identifies the personnel who have specific safety responsibilities on the project.

### 4.1 Personnel with Safety Responsibilities

Participating personnel are responsible for complying with safety procedures and for proactively making safety awareness part of their day-to-day conduct.

The following positions have specific corporate and project safety responsibilities:

- HSM: Howard Gordon/DEN
- Project Manager: Laura Lampshire/WDC
- Site Safety Health Officer (SSHO) : Brian Wachter/VBO
- Other project field staff

Appendix A (the SSHP) lists the specific personnel that will fill the stated positions for this project. See Section 4 of Appendix A for details and lines of authority.

All work is conducted under a Behavior-based and loss prevention system program. AHAs are a vital part of this work, as well as using Pre-task Safety Planning. All staff members are accountable for their own health and safety, and have the authority to request a work stoppage when they feel unsafe behaviors, actions, or situations are occurring.

All work requiring a competent person per the Occupational Safety and Health Administration (OSHA) definition (29 CFR 1926.32(f)), will not be started until that competent person is designated and on site. *Competent person* means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

For all general tasks, the SSHO is the competent person, unless otherwise noted for specific tasks.

## 5 Subcontractors and Suppliers

Subcontractors and suppliers providing services onsite will be subject to the safety provisions of this APP and those included in Appendix A. See Section 4.3 of Appendix A for details.

CH2M HILL and any identified subcontractors shall conduct site work in accordance with this APP and associated documents. CH2M HILL shall address compliance with specific safety and health requirements, including those

listed in Section 9, and through safety meetings at the start of each shift. The specific safety and health requirements and site conditions will be reviewed with field personnel during the meetings. All parties shall also comply with the requirements of their respective Injury and Illness Prevention Programs (IIPPs).

## 6 Training

Site workers, supervisors, and managers will have training appropriate to their assigned duties and as specified in the SSHP and AHAs that are applicable to the work being performed. As specified in Section 4.0 of Appendix A, the SSHO (who will also conduct the project safety and health inspections), will meet the training and indoctrination requirements prescribed in this APP and Appendix A, as well as the Hazardous Waste Operations and Emergency Response (HAZWOPER) supervisory training. All employees engaging in hazardous waste operations or emergency response shall receive appropriate training as required by 29 CFR 1910.120 and 29 CFR 1926.65. At a minimum, the training shall have consisted of instruction in the topics outlined in 29 CFR 1910.120 and 29 CFR 1926.65. Since there are no tasks planned that require a competent person, competent-person-level training is not required. Personnel who have not met these training requirements shall not be allowed to engage in HAZWOPER activities.

Details of required training are specified in Section 15.0 of Appendix A.

All SSHO's (primary and alternates) will have completed 30-hour OSHA Construction Safety training, as well as all required internal training courses under CH2M HILL requirements. The courses include, but are limited to, First aid/cardiopulmonary resuscitation (CPR), Fire Extinguisher, Blood Borne Pathogens, and many others.

The SSHO shall also serve as the project competent person for all general tasks not covered by a specialized subcontractor.

## 7 Safety and Health Inspections

### 7.1 Inspection Details

The project SSHO (specifically identified in the attached SSHP) will provide onsite safety and health inspections for this project. The SSHO will meet the training and indoctrination requirements as prescribed in this APP and Appendix A, including HAZWOPER supervisory training, CPR, first-aid, and bloodborne pathogen awareness training. The SSHO will also have hands-on experience overseeing these types of tasks.

See Section 21.0 of Appendix A for further inspection details.

### 7.2 Recordkeeping

Project safety and health documentation will be maintained by the SSHO for CH2M HILL staff and verified for the respective contractors assigned to this task order. Records to be maintained (both in project files of each of the respective companies, and in the onsite field trailer) will include the following:

- HAZWOPER training certificates
- First-aid and CPR training certificates
- Documentation of medical surveillance
- Daily safety and health briefing acknowledgment forms
- Deficiency identification, correction, and follow-up documentation
- Accident reports and investigation records
- Respirator usage and fit training, as applicable
- Material Safety Data Sheet (MSDS) for sample preservatives

### 7.3 External Inspection/Certifications

External inspections or certifications will not be required for this work.

## 8 Accident Reporting

The SSHO and HSM are responsible for all incidents reporting. Specific details are found in Section 22.0 of Appendix A.

Also, all significant accidents shall be reported as soon as possible, but not more than 24 hours afterwards to the Contracting Officer/Representative (CO/COR). The contractor shall thoroughly investigate the incident and submit the findings of the investigation along with appropriate corrective actions to the CO/COR in the prescribed format as soon as possible, but no later than 5 working days following the incident. Implement corrective actions as soon as reasonably possible.

The following occurrences require immediate accident notification:

- A fatal injury
- A permanent total disability
- A permanent partial disability
- The hospitalization of three or more people resulting from a single occurrence
- Property damage of \$200,000 or more

## 9 Plans Required By the EM 385-1-1 Safety Manual

Plans required by the EM 385-1-1 Safety Manual are presented in the following subsections. Plans and procedures that are not applicable to this project are indicated as such with the non-applicability rationale.

### 9.1 Layout Plan

Site layout is located at the end of section 3 in the SSHP. It will be provided prior to start of work to all staff.

### 9.2 Emergency Response Plans

Details are provided in Section 19.0 and 20.0 of Appendix A. Medical support for this project will be provided onsite and offsite. The plans fulfill the following:

- Procedures and tests (01.E.01)
- Spill plans (01.E.01, 06.A.02)
- Firefighting plan (01.E.01, Section 9)
- Posting of emergency telephone numbers (01.E.05)
- Man overboard/abandon ship (sec. 19.A.04) Not Applicable. No work over water will take place.
- Medical support (section 03.A.02: 03.D)

#### 9.2.1 Onsite Medical Support

When two or more field staff members are present onsite, at least two will have current certification in basic first-aid and CPR, along with bloodborne pathogens annual training. Unless injured, the SSHO will be the lead person to initiate any required first-aid until offsite medical support can be engaged.

Location and direction to medical support facilities shall be posted in a conspicuous location where temporary construction facilities or support are established at the project site. Where temporary construction facilities or a designated administrative/support office are not allowed or provided, the list shall be available for quick reference by the SSHO personnel executing site operations and its location shall also be made known to other site personnel.

In addition, the project shall be outfitted with first-aid kits of suitable size and quality (contents) to meet health and safety requirements for onsite first-aid and CPR response. Personal protective devices shall be provided such that universal precautions against bloodborne pathogens can be exercised while administering CPR or first-aid. Eye wash stations, either portable or stationary, will be available.

An effective means of communication to summon transportation of injured workers to medical treatment facilities must be evaluated and established prior to the start of field activities. Communication devices shall be tested in the area of use to assure functionality. When a medical facility or physician is not accessible within 5 minutes of an injury to a group of two or more employees for the treatment of injuries, at least two employees on each shift shall be qualified/certified to administer basic first-aid and CPR, along with bloodborne pathogens annual training. Unless injured, the SSHO/site safety coordinator will be the lead person to initiate any required first-aid until offsite medical support can be engaged.

**It must be understood that for life-threatening emergencies, get or summon medical attention immediately.**

During non-life-threatening emergencies, follow these procedures as appropriate:

- Notify appropriate emergency response authorities (for example, 911).
- The site supervisor or site safety coordinator 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 and where worker “Universal Precautions” to bloodborne pathogens can be completed.
- 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.

## 9.2.2 Offsite Medical Support

In the event of a medical emergency or if follow up to basic first-aid is required, request emergency medical transport as opposed to transporting the injured person in a private or company vehicle where practical. The contact and location information for the nearest offsite medical support is presented below. A map indicating the travel route to the nearest medical facility with emergency care is presented in the SSHP.

Medical Facility: Sentara Williamsburg Regional Medical Center  
100 Sentara Cir, Williamsburg, VA 23188 (757) 984-7970

Emergency #: In case of emergency contact the police, fire, and medical emergency dispatch at the NWS Yorktown CAX Emergency #757-887-4911 or on base 7-4911.

## 9.2.3 Hospital Addresses and Route

Information on the nearest medical facility with emergency care is discussed in Section 19.0 of the SSHP.

## 9.3 Alcohol and Drug Abuse Prevention

(References: DFARS, Subpart 252.223-7004 and CH2M HILL SOP HSE-105, *Drug Free Workplace Program*)

In order to maintain a drug- and alcohol-free workplace, the respective parties have established a drug- and alcohol-free awareness program to educate employees on the following: (1) the danger of drug abuse and alcohol in the workplace; (2) the corporate drug- and alcohol-free workplace policy; (3) the availability of any drug and alcohol counseling, rehabilitation, and employee assistance programs; and (4) the penalties that may be imposed upon employees for drug abuse and alcohol violations and violations of the corporation’s drug- and alcohol-free workplace. Such education includes the distribution of the drug- and alcohol-free workplace policy at the employment interview; a discussion of the drug- and alcohol-free workplace policy at the new employee orientation session; and inclusion of the company’s drug- and alcohol-free workplace policy in the employee handbook and any other personnel policy publications.

### 9.3.1 CH2M HILL

The corporation has vital interests in ensuring a safe, healthy, and efficient working environment for our employees, their coworkers, and clients we serve. The unlawful or improper use of controlled substances or alcohol in the workplace presents a danger to everyone. In addition, as a federal contractor, we have a duty to comply with the requirement of the Drug-Free Workplace Act of 1988. For these reasons, we have established as a condition of employment and continued employment with the corporation the following drug- and alcohol-free workplace policy.

Employees are prohibited from reporting to work or working while using illegal or unauthorized substances. Employees are prohibited from reporting to work or working when the employee uses any drugs, except when the use is pursuant to a doctor's orders and the doctor has advised the employee that the substance does not adversely affect the employee's ability to safely perform his or her job duties. This does not include the authorized use of alcohol at corporate-sponsored functions or activities.

In addition, employees are prohibited from engaging in the unlawful or unauthorized manufacture, distribution, sale, or possession of illegal or unauthorized substances and alcohol in the workplace, including on client-paid time, on client premises, in client vehicles, or while engaged in client activities.

In accordance with the Drug-Free Workplace Act of 1988, employees must notify their supervisor of any criminal drug statute conviction for a violation occurring within the workplace within 5 days of such conviction.

Employment with the corporation is conditioned upon an employee's full compliance with the foregoing drug- and alcohol-free workplace policy. Any violation of this policy may result in disciplinary action, up to and including discharge. Furthermore, any employee who violates this policy who is subject to termination may be permitted in lieu of termination, at the corporation's sole discretion, to participate in and successfully complete an appropriate treatment, counseling, or rehabilitation program as recommended by a substance abuse professional as a condition of continued employment and in accordance with applicable federal, state, and local laws.

Consistent with its fair employment policy, the corporation maintains a policy of nondiscrimination and reasonable accommodation with respect to recovering addicts and alcoholics, and those having a medical history reflecting treatment for substance abuse conditions. We encourage employees to seek assistance before their drug and alcohol use renders them unable to perform their essential job functions or jeopardizes the health and safety of themselves or others. The corporation will attempt to assist its employees through referrals to rehabilitation, appropriate leaves of absence, and other measures consistent with the corporation's policies and applicable federal, state, or local laws.

The corporation further reserves the right to take any and all appropriate and lawful actions necessary to enforce this drug- and alcohol-free workplace policy, including, but not limited to, the inspection of corporation-issued lockers, desks, or other suspected areas of concealment. Employees are required to submit for "post accident" and "for cause" drug and alcohol screening following any incident. Random drug and/or alcohol screening is a requirement of CH2M HILL.

### 9.3.2 Subcontractor Management

The subcontractor must comply with the provisions of this program. As a minimum, the subcontractor must provide a written statement that their drug-free workplace program meets the minimum requirements outlined in CH2M HILL's program.

The prime contractor project manager and site safety coordinator can request to be provided copies of any subcontractor's employee's last negative screening results. The results cannot be over 12 months old.

It is the responsibility of subcontractors to transfer this plan to the lower-tiered subcontractors.

### 9.3.3 Prescription and Nonprescription Drugs

Employees using prescription or nonprescription drugs that could impair their functions on the project are required to notify the employer in advance of such drug use.

Failure to report prescription and nonprescription drugs as required above, illegally obtaining the substance, or use that is inconsistent with the prescription or label may be subject to disciplinary action.

The subcontractor is required to document that all of their employees have also been provided with a drug-free workplace and alcohol education program.

### 9.3.4 Employee Assistance Program

Employees may participate in CH2M HILL’s Employee Assistance Program (EAP) immediately upon hire. The EAP helps eligible employees and their immediate families with a wide range of problems, including marriage and family problems; emotional problems; alcoholism and alcohol abuse; drug abuse and dependency; financial problems; compulsive gambling; and eating disorders. Employee conversations and records under the EAP are strictly confidential. The administrative cost of this program is fully paid by the company.

## 9.4 Site Sanitation Plan (Section 2)

The following constitutes the site sanitation plan for this project.

### 9.4.1 Drinking Water

A cooler containing an adequate supply of drinking water will be available at the site for the site workers and replenished each day. The cooler will be stored outside the exclusion zone on or near the field vehicles. Clean, disposable cups will be provided.

### 9.4.2 Toilets

Bathroom facilities are available at the Navy Exchange and Cafeteria. Separate facilities for women are available as required, EM 385-1-1, Section 02.E.01, paragraph a.

However, toilet facilities on construction sites shall be provided as follows:

**Minimum Toilet Facilities at Construction Sites**

Number of Personnel	Number of Toilets
20 or fewer	One
20 or greater	One toilet seat and One urinal per 40 workers
Greater than 200	One toilet seat and One urinal per 50 workers

Note: The above requirements do not apply to mobile crews or to normally unattended work locations if employees working at these locations have transportation immediately available to nearby toilet facilities. Separate toilet rooms for each sex need not be provided if toilet rooms can only be occupied by one person at a time, can be locked from the inside, and contain at least one toilet seat.

Toilet facilities shall be constructed so that the occupants are protected against weather and falling objects; all cracks shall be sealed, and the door shall be tight-fitting, self-closing, and capable of being latched. Adequate ventilation shall be provided and all windows and vents shall be screened. Toilet facilities shall be constructed so that the interior is lighted.

Provisions for routinely servicing and cleaning all toilets and disposing of the sewage shall be established before placing toilet facilities into operation. The method of sewage disposal and the placement location selected shall be in accordance with federal, state, and local health regulations.

Access to washing facilities is available at the same location as the toilets.

Washing facilities shall be provided at toilet facilities and as needed to maintain healthful and sanitary conditions. Each washing facility shall be maintained in a sanitary condition and provided with water (either hot and cold

running water or tepid running water), soap, and individual means of drying. If it is not practical to provide running water, hand sanitizers may be used as a substitute. Washing facilities shall be in close proximity to the worksite.

### 9.4.3 Food Service

No food service will be provided onsite. Site workers will either bring their food to the site to be consumed outside of the exclusion zone and only after proper decontamination, or will go offsite for food.

### 9.4.4 Waste Disposal

Any investigation-derived waste will be stored, profiled, and disposed of in accordance with the project work plan.

Nonhazardous waste materials and rubbish will be contained in a garbage bag and disposed of with regular site sanitary service disposal or at an offsite disposal facility.

### 9.4.5 Vermin Control

No enclosed spaces are being constructed for this project and waste materials will be securely stored and transported offsite to provide vermin control.

## 9.5 Access and Haul Road Plan (Section 4.B)

NOT APPLICABLE. No access or haul roads are being constructed for this work.

## 9.6 Respiratory Protection Plan (Section 5.G)

Only field personnel who have been medically cleared, fit-tested, and trained in the use and maintenance of the appropriate respiratory protection will be allowed to proceed with work under conditions requiring respiratory protection.

See Section 14.2 of Appendix A for specific details if required due to site hazards.

## 9.7 Health Hazard Control Plan (Section 6.A)

Safety and health hazards for performing work covered under this APP are identified through the preparation of AHAs (provided in Appendix A). Each AHA also indicates recommended controls for each identified potential safety/health hazard. Further hazards and controls are outlined in sections 7 through 11 of Appendix A.

Appropriate PPE shall be supplied and used at all times for this project. PPE selection is based on the selected hazard control measures specified in the AHAs and section 14 of Appendix A.

## 9.8 Hazard Communication Program

Chemical products may occasionally be stored and used on the project site, and/or stored on field vehicles. Examples of chemicals include hydrogen peroxide, gases used to calibrate sensing equipment, and lubricants. Other chemicals may be used as well. The chemicals may pose hazards, including flammability, corrosiveness, reactivity and incompatibility, and toxicity. Because of these potential hazards, special precautions must be taken including the following:

- Tracking and controlling hazardous chemical products received and stored
- A hazard evaluation of each chemical product, using such sources as MSDSs
- Informing workers of the potential hazards through training, MSDSs, and appropriate labeling of containers
- Air monitoring in the case of potential respiratory hazards
- Design and implementation of engineering controls such as ventilation and source control
- Developing storage, handling, housekeeping, and decontamination procedures
- Assigning appropriate PPE such as eye and face protection, gloves, body protection, and respirators. Respirator usage by CH2M HILL or subcontractor employees will be in accordance with the employees' IIPP.

- Training personnel who will be handling chemicals on safe handling procedures, PPE, and emergency and spill cleanup procedures.

Hazardous substances that may be encountered in soil on the project site are not covered by this program. Appendix A, Section 12, addresses chemical and other hazard assessment and mitigation associated with site contaminants, including investigation and remediation of waste materials.

### 9.8.1 Chemicals Covered by this Project Program

For the purposes of this program, chemicals considered to be hazardous are those:

- Listed in the OSHA Permissible Exposure Limits.
- Included in the American Conference of Governmental Industrial Hygienists Threshold Limit Values for Chemical Substances (2007).
- Found to be suspected or confirmed carcinogens by the National Toxicology Program in the latest edition of the Annual Report on Carcinogens, or by the International Agency for Research on Cancer (IARC) in the latest edition of the IARC monographs.

No chemicals are expected to be used during field activities as part of this scope of work.

Exceptions to this policy, by OSHA definition, include consumer products that are used in a consumer fashion and pose no more of an exposure hazard than a consumer would face.

### 9.8.2 Training

Employees who work with or are potentially exposed to hazardous chemicals will receive initial training on the elements of this Hazard Communication Program, including the following:

- Content and requirements of this program and the OSHA Hazard Communication Standard
- The potential physical and toxic hazards of the chemicals used in their work location, and especially the hazards of non-routine tasks
- Chemical inventory and tracking procedures
- Location of this Hazard Communication Program, the chemical inventory, and the MSDSs
- How to read MSDSs
- Methods to detect the release of or exposure to chemicals in their area
- Content and interpretation of labels
- Safe use and handling of chemicals
- Required PPE
- Basic emergency procedures

Additional training will be provided annually, whenever a new chemical is added to the workplace, and when non-routine tasks are planned.

### 9.8.3 Labeling

The SSHO will ensure that hazardous chemicals brought onto the site are properly labeled with at least the following information, in English, as a minimum, and the language of non-English-speaking employees who may use the product, as appropriate. This labeling includes the following:

- The identity of the product and chemical components
- Appropriate hazard warnings
- Name and address of the manufacturer, importer, or other responsible party

Hazard warnings will also be transmitted in the form of the National Fire Prevention Agency or Hazardous Materials Information System color-coded warnings, which are ranked on a 0 to 4 scale. When chemicals are transferred to a portable container, labels containing chemical identification and hazard warnings must be affixed to the portable container.

#### **9.8.4 Current Onsite Inventory (see attachments 2&3 of the SSHP)**

NOT APPLICABLE. There is currently no inventory of hazardous materials stored on site for this project.

#### **9.9 Process Safety Management Plan (Section 06.B.04)**

NOT APPLICABLE. This work does not include chemical management.

#### **9.10 Lead Abatement Plan**

NOT APPLICABLE. Lead is not known to be an exposure concern for this project.

#### **9.11 Asbestos Hazard Control Plan**

NOT APPLICABLE. Asbestos is not known to be an exposure concern for this project.

#### **9.12 Radiation Safety Program (Section 06.E.03.a)**

NOT APPLICABLE. Radiation hazards not anticipated for this work.

#### **9.13 Abrasive Blasting (Section 06.H.01)**

NOT APPLICABLE. This work does not involve abrasive blasting. Or see section 9.1 of the SSHP for specific details.

#### **9.14 Heat/Cold Stress Monitoring Plan (Section 06.I.02)**

See Sections 13.2.4 and 13.2.5 of Appendix A.

#### **9.15 Crystalline Silica Monitoring Plan (Section 06.M)**

NOT APPLICABLE. This work does not expose personnel to silica dust.

#### **9.16 Night Operations Lighting Plan**

NOT APPLICABLE. Work will not be conducted at night.

#### **9.17 Fire Prevention Plan**

See Section 8.6 of Appendix A for more details.

#### **9.18 Wildland Fire Management Plan**

NOT APPLICABLE. Wildland fires are not anticipated as a risk for this work.

#### **9.19 Hazardous Energy Control Plan**

NOT APPLICABLE. Servicing or maintenance on a system where the unexpected energizing, startup, or release of kinetic or stored energy that could cause injury or damage to occur is not part of this project.

#### **9.20 Critical Lift Procedures**

NOT APPLICABLE. No critical lifts will be performed under this scope of work.

#### **9.21 Contingency Plan for Severe Weather**

NOT APPLICABLE. Development of a severe weather contingency plan is related to marine operations and therefore does not apply to this scope of work. However, exterior fieldwork on this project will be suspended in the event of severe weather that could impact field activities. Such work suspension will be communicated immediately to the project manager.

This section is covered in detail of section 10.1 of the SSHP.

### **9.22 Float Plan (Section 19.F.04)**

NOT APPLICABLE. This work is not over water or requiring use of a boat.

### **9.23 Fall Prevention and Protection Plan (Section 21.C)**

NOT APPLICABLE. This work does not expose workers to fall hazard.

### **9.24 Demolition Plan (Engineering and Asbestos Surveys)**

NOT APPLICABLE. This work does not involve demolition.

### **9.25 Excavation/Trenching Plan (Section 25.A.01)**

NOT APPLICABLE. This work does not involve test pitting.

### **9.26 Emergency Rescue (Tunneling) (Section 26.A)**

NOT APPLICABLE. Tunneling and other underground construction is not necessary for this work.

### **9.27 Underground Construction Fire Prevention and Protection Plan**

NOT APPLICABLE. Tunneling and other underground construction is not necessary for this work.

### **9.28 Compressed Air Plan**

NOT APPLICABLE. Compressed air usage is not necessary for this work, except for calibration gases of very small amounts.

### **9.29 Formwork and Shoring Erection and Removal Plans**

NOT APPLICABLE. This work does not involve forming or shoring.

### **9.30 Precast Concrete Plan (Section 27.D)**

NOT APPLICABLE. No precast concrete is used in this project.

### **9.31 Jacking Plan (Lift) Slab Plans**

NOT APPLICABLE. These plans are associated with concrete masonry work, which is not part of this project.

### **9.32 Steel Erection Plan**

NOT APPLICABLE. This work does not involve steel erection.

### **9.33 Site Safety and Health Plan**

An SSHP is attached to this APP as Appendix A. The SSHP meets the requirements for work on hazardous waste sites in accordance with 29 CFR 1910.120 and 29 CFR 1926.65.

Detailed site-specific hazards and controls are provided in Appendix A and AHAs.

### **9.34 Blasting Plan**

NOT APPLICABLE. This work does not involve blasting.

### **9.35 Diving Plan**

NOT APPLICABLE. This work does not involve diving.

### **9.36 Confined Space**

NOT APPLICABLE. Entry or proximity to confined space is not required for this project.

## **10 Risk Management Processes**

The specific processes are addressed in multiple sections of Appendix A, depending on whether classified as physical, chemical, or other type (see Sections 7 through 15), as well as the task-specific AHAs included in Appendix A.

## Figures

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**Legend**

-  CAX Boundary
-  Active AOC

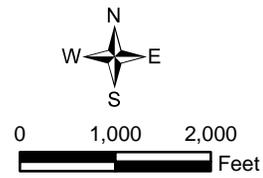
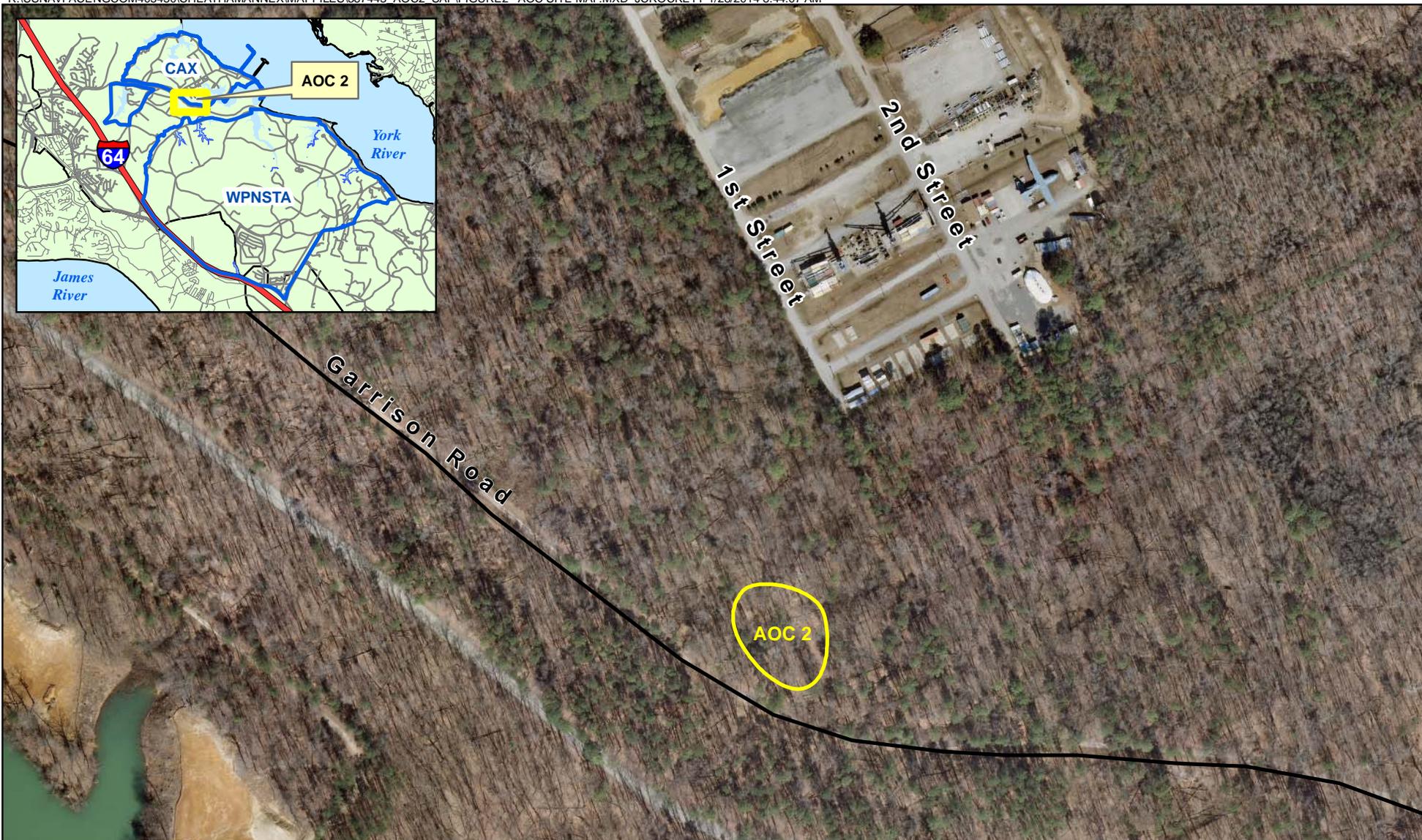


Figure 1  
Base Location Map  
AOC 2 SI Supplemental Soil Sample Collection  
Cheatham Annex  
Williamsburg, Virginia



**Legend**

-  CAX Boundary/Fenceline
-  Approximate Study Area Boundary

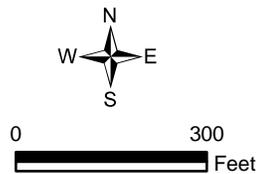


Figure 2  
AOC 2 Site Map  
AOC 2 SI Supplemental Soil Sample Collection  
Cheatham Annex  
Williamsburg, Virginia

**Appendix A**  
**Site Safety and Health Plan**

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**Site Safety and Health Plan  
Site Inspection Supplemental Soil Sample Collection  
AOC 2 - Dextrose Dump**

**Naval Weapons Station Yorktown Cheatham Annex  
Williamsburg, Virginia**

**Contract Task Order 056**

**May 2014**

Prepared for

**Department of the Navy  
Naval Facilities and Engineering Command  
Mid Atlantic**

Under the

**NAVFAC CLEAN 1000 Program  
Contract N62470-08-D-1000**

Prepared by



**Virginia Beach, Virginia**

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2	Chemical Inventory/Register Form
3	Chemical-Specific Training Form
4	Project Activity Self-Assessment Checklists/Forms/Permits
5	Key Target Zero Program Elements
6	Fact Sheets
7	Observed Hazard Form
8	Stop Work Order Form
9	Agency Inspection Target Zero Bulletin
10	Completed CH2M HILL AHAs
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12	Deficiency Tracking Log
13	Contractor Safety Incident Report

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# Acronyms and Abbreviations

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°C	degree Celsius
µg/L	microgram per liter
µg/kg	microgram per kilogram
µm	micrometer
%R	percent range
ALS	ALS Environmental
AM	Activity Manager
AOC	Area of Concern
AQM	Activity Quality Manager
bgs	below ground surface
BTAG	Biological Technical Assistance Group
CA	corrective action
CAX	Cheatham Annex
CLEAN	Comprehensive Long-term Environmental Action—Navy
COC	constituent of concern
COPC	constituent of potential concern
CSM	conceptual site model
CTO	Contract Task Order
CVAA	cold vapor atomic absorption
DL	detection limit
DO	dissolved oxygen
DoD	Department of Defense
DPT	direct-push technology
DQI	data quality indicator
DQO	data quality objective
DV	Data Validator
ELAP	Environmental Laboratory Accreditation Program
ENCO	Environmental Conservation Laboratories, Inc.
ERA	Ecological Risk Assessment
ESV	ecological screening value
FID	flame ionization detector
FTL	Field Team Leader
g	gram
GC/ECD	gas chromatography/electron capture detection
GC/MS	gas chromatography/mass spectrometry
HASP	Health and Safety Plan
HHRA	Human Health Risk Assessment
HMW	high molecular weight
HQ	hazard quotient
HSM	Health and Safety Manager

IC	ion chromatography
ICAL	initial calibration
ICP-AES	inductively coupled plasma-atomic emission spectroscopy
ICP-MS	inductively coupled plasma-mass spectrometry
ICS	Interference check solution
ID	Identification
IDW	investigation-derived waste
IS	Internal Standards
Kemron	Kemron Environmental Services, Inc.
LCL	lower criteria limit
LCS	laboratory control sample
LIMS	Laboratory Information Management System
LMW	low molecular weight
LOD	limit of detection
LOQ	limit of quantification
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
ml	milliliter
mm	millimeter
MPC	Measurement Performance Criteria
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl-tert-butyl ether
NA	not applicable
NAIP	natural attenuation indicator parameter
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NC	No Criterion
NTR	Navy Technical Representative
ORP	Oxidation Reduction Potential
PAH	polycyclic aromatic hydrocarbon
PAL	Project Action Limit
PC	Project Chemist
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PDM	Project Data Manager
PID	photoionization detector
PIL	project indicator limit
PM	Project Manager
POC	point of contact
PPE	personal protective equipment
PS	post spike
PSLP	Penniman Shell Loading Plant
PVC	polyvinyl chloride
QA	quality assurance
QAO	Quality Assurance Officer
QC	quality control

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QL	quantitation limit
QSM	Quality Systems Manual
RI	Remedial Investigation
RPD	relative percent difference
RPM	Remedial Project Manager
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SI	Site Inspection
SOP	Standard Operating Procedure
SSHO	Site Safety & Health Officer
STC	Senior Technical Consultant
SVOC	semivolatile organic compound
TBD	to be determined
TCD	Thermal Conductivity Detector
TCLP	Toxicity Characteristic Leaching Procedure
TOC	total organic carbon
UCL	upper confidence limit
UFP	Uniform Federal Policy
UPC	Universal Product Code
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit
VDEQ	Virginia Department of Environmental Quality
VOA	volatile organic analyte
VOC	volatile organic compound
WWI	World War I

# Approval

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This site-Safety Health Plan (SSHP) 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 and identified scope(s) of work and must be amended if those conditions or scope(s) of work change.

By approving this SSHP, the responsible health and safety manager (RHSM) certifies that the personal protective equipment (PPE) has been selected based on the project-specific hazard assessment.

## Original Plan

Plan Preparer Concurrence:



---

Carl Woods  
Project Health and Safety Manager  
CH2M HILL  
513-889-5771

Date 1/19/2014

Program Health and Safety Manager Concurrence:

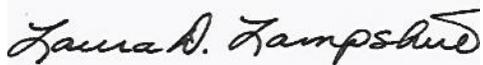
*Richard Cavil, CSP*

---

Richard Cavil  
CH2M HILL  
Program Health and Safety Manager  
408-896-0140

Date: 01/24/2014

Project Manager Concurrence:



---

Name: Laura Lampshire  
Program/Project Manager  
Phone number: (301) 580-0027

Date: 01/20/2014

## Revisions

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**Revisions Made By:**

**Date:**

---

**Description of Revisions to Plan:**

---

**Revisions Approved By:**

**Date:**

# Introduction

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## Health, Safety, and Environment Policy Commitment

Protection of people and the environment is a CH2M HILL core value. It is our vision to create a culture that empowers employees to drive this value into all global operations and achieve excellence in health, safety, and environment (HSE) performance. CH2M HILL deploys an integrated, enterprise-wide behavior based HSE management system to fulfill our mission and the expectations of our clients, staff, and communities based on the following principles:

- We require all management and supervisory personnel to provide the leadership and resources to inspire and empower our employees to take responsibility for their actions and for their fellow employees to prevent injuries, illnesses, and adverse environmental impacts, and create a safe, healthy, and environmentally-responsible workplace.
- We provide value to clients by tailoring HSE processes to customer needs and requiring CH2M HILL employees and subcontractors to deliver projects that identify HSE requirements and commit to compliance with applicable HSE laws and regulations, company standards, and external requirements.
- We are committed to pollution prevention in conjunction with our Sustainability Policy and by offering our clients sustainable solutions.
- We aspire to continually improve our performance and influence others to redefine world-class HSE excellence.
- We evaluate our design engineering and physical work environment to verify safe work conditions and practices are established, followed, and corrected as needed.
- We assess and continually improve our HSE program to achieve and maintain world-class performance by setting and reviewing objectives and targets, reporting performance metrics, and routinely evaluating our program.
- We expect all employees to embrace our Target Zero culture, share our core value for the protection of people and the environment, understand their obligations, actively participate, take responsibility, and “walk the talk” on and off the job.

The undersigned pledge our leadership, commitment, and accountability for making this Policy a reality at CH2M HILL.

Dated the 2nd of October, 2012

Lee McIntire  
Chief Executive Officer

Mike Lucki  
Chief Financial Officer

John Madia  
Chief Human Resources Officer

Margaret McLean  
Chief Legal Officer

Mike McKelvy  
President, Government, Environment, and Infrastructure Division

Mike Szomjassy  
President, Energy, Water and Facilities Division

Jacqueline Rast  
President, International Division

Gene Lupia  
President, Government Facilities and Infrastructure Business Group  
Enterprise Delivery Excellence

## 1.1 CH2M HILL Policy and Commitment

### 1.1.1 Safe Work Policy

It is the policy of CH2M HILL to perform work in the safest manner possible. Safety must never be compromised. To fulfill the requirements of this policy, an organized and effective safety program must be carried out at each location where work is performed.

CH2M HILL believes that all injuries are preventable, and we are dedicated to the goal of a safe work environment. To achieve this goal, every employee on the project must assume responsibility for safety.

Every employee is empowered to:

- Conduct their work in a safe manner
- Stop work immediately to correct any unsafe condition that is encountered
- Take corrective actions so that work may proceed in a safe manner

Safety, occupational health, and environmental protection will not be sacrificed for production. These elements are integrated into quality control, cost reduction, and job performance, and are crucial to our success.

### 1.1.2 Health and Safety Commitment

CH2M HILL has embraced a philosophy for health and safety excellence. The primary driving force behind our commitment to health and safety is simple: employees are CH2M HILL's most significant asset and CH2M HILL management values their safety, health, and welfare. Also, top management believes that all injuries are preventable. CH2M HILL's safety culture empowers employees at all levels to accept ownership for safety and take whatever actions are necessary to eliminate injury. Our company is committed to world-class performance in health and safety and also understands that world-class performance in health and safety is a critical element in overall business success.

CH2M HILL is committed to the prevention of personal injuries, occupational illnesses, and damage to equipment and property in all of its operations; to the protection of the general public whenever it comes in contact with our work; and to the prevention of pollution and environmental degradation.

CH2M HILL's management, field supervisors, and employees plan safety into each work task in order to prevent occupational injuries and illnesses. The ultimate success of CH2M HILL's safety program depends on the full cooperation and participation of each employee.

CH2M HILL management extends its full commitment to health and safety excellence.

### 1.1.3 Project-specific Health, Safety, and the Environment Goals

All management and employees are to strive to meet the project-specific health, safety, and the environment (HSE) goals outlined below. The team will be successful only if everyone makes a concerted effort to accomplish these goals. The goals allow the project to stay focused on optimizing the health and safety of all project personnel and, therefore, making the project a great success.

The project has established the following 11 specific goals and objectives:

- Create an injury-free environment
- Have zero injuries or incidents
- Provide management leadership for HSE by communicating performance expectations, reviewing and tracking performance, and leading by example
- Ensure effective implementation of the SSHP through education, delegation, and teamwork
- Ensure 100 percent participation in HSE compliance
- Continuously improve our safety performance

- Maintain free and open lines of communication
- Make a personal commitment to safety as a value
- Focus safety improvements on high-risk groups
- Continue strong employee involvement initiatives
- Achieve health and safety excellence

## SECTION 2

# Applicability

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This SSHP applies to the following:

- All CH2M HILL staff, including subcontractors and tiered subcontractors of CH2M HILL working on the site
- All visitors to the construction site in the custody of CH2M HILL, including visitors from the client, the government, the public, and other staff of any CH2M HILL company)

This SSHP does not apply to the third-party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of CH2M HILL.

This SSHP defines the procedures and requirements for the health and safety of CH2M HILL staff and visitors when they are physically on the work site. The work site includes the project area (as defined by the contract documents) and the project offices, trailers, and facilities thereon.

This SSHP will be kept onsite during field activities and will be reviewed as necessary. The SSHP will be amended or revised as project activities or conditions change or when supplemental information becomes available. The SSHP adopts, by reference, the Enterprise-wide Core Standards and standard operating procedures (SOPs), as appropriate. In addition, the SSHP may adopt procedures from the project work plan and any governing regulations. If there is a contradiction between this SSHP and any governing regulation, the more stringent and protective requirement will apply.

All CH2M HILL staff and subcontractors must sign the employee signoff form included in this document (Attachment 1) to acknowledge review of this document. Copies of the signature page will be maintained onsite by the site safety and health officer (SSHO).

## General Project Information

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### 3.1 Project Information and Background

**Project Number:** 387443

**Client:** Department of the Navy, Naval Facilities and Engineering Command, Mid-Atlantic

**Project/Site Name:** Cheatham Annex (CAX) Williamsburg, AOC 02

**CH2M HILL Project Manager:** Laura Lampshire/WDC

**CH2M HILL Office:** Virginia Beach/VBO

**DATE HSP Prepared:** 08 January, 2014

**Date(s) of Site Work:** February 2014

### 3.2 Site Background and Setting

This project-specific SSHP will be used by CH2M HILL and its subcontractors to identify and mitigate task-specific hazards and to select appropriate health and safety protective measures.

This SSHP presents the hazards known or anticipated to be present at, AOC 02 Cheatham Annex, Williamsburg. Tasks included under this HSP will be conducted within the boundaries of the site). AOC 2 consists of a small (less than 1 acre) wooded site located to the north of Garrison Road, along the southern perimeter of CAX as depicted in (**Figure 4- 2**). AOC 2 was identified during site visits by the Navy, USEPA, VDEQ, and Baker in late 1997 and early 1998 and consists of several rows of concrete foundation piers that at one time supported a Shipping House associated with the PSLP. Grass-covered lanes leading to the site area are likely locations of former rail lines that have been removed.

The plan also outlines the health and safety procedures that will be used to conduct soil sampling at this site. The investigation is expected to be performed in the month of February 2014.).

Soil samples will be collected by hand auger after utility surveyors have cleared the area for underground utility obstructions. Four surface composite samples will be collected from 6 to 24 inches below ground surface. In addition, four composite subsurface samples will be collected from 6 to 24 inches below ground surface. Sampling will be conducted according to CH2M HILL SOPs for soil sampling. Samples will be shipped overnight to the specified laboratory for analysis.

The purpose of this Supplemental Site Investigation (SI) is to collect additional soil data to supplement the current Site Inspection (SI) dataset to adequately characterize Area of Concern (AOC) 2. All soil data evaluated in the earlier SI (CH2M HILL, 2012) and all soil and residual sump material (if present) data collected as part of this SI will be used to characterize the site and support a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA).

### 3.3 Contractor Incident Experience

CH2M HILL's exceptional safety performance greatly exceeds the industry average. Our injury and illness rates and our experience modification rate have decreased dramatically over the past 5 years. See Section 2.5 of the APP for details on past 5 years of history.

### 3.4 Description of Tasks

All CH2M HILL and subcontractor employees engaging in hazardous waste operations (HAZWOPER) or emergency response will receive appropriate training as required by 29 *Code of Federal Regulations* (CFR) 1910.120 and 29 CFR 1926.65 (or if required by subcontract). Personnel who have not met these training requirements will not be allowed to engage in HAZWOPER or emergency response activities. See the following subsection for HAZWOPER-regulated tasks.

#### 3.4.1 HAZWOPER-regulated Tasks

- Sample surface and subsurface soils, and residual sump material (if present) around AOC 02.
- Perform utility survey prior to soil sampling.

#### 3.4.2 Non-HAZWOPER-regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state HAZWOPER regulations are not applicable. The following tasks do not involve exposure to safety or health hazards associated with the hazardous waste operations. HAZWOPER training or medical requirements do not apply for the following tasks:

**TASKS**

- All tasks described in this HSP require hazwoper training (minimum 24-hour initial hazwoper training for surveyors/utility locators). Contact RHSM for any other additional tasks to determine hazwoper applicability

**CONTROLS**

- Brief on hazards, limits of access, and emergency procedures.
- Post areas of contamination as appropriate.
- Perform air sampling/monitoring as specified in this HSP.

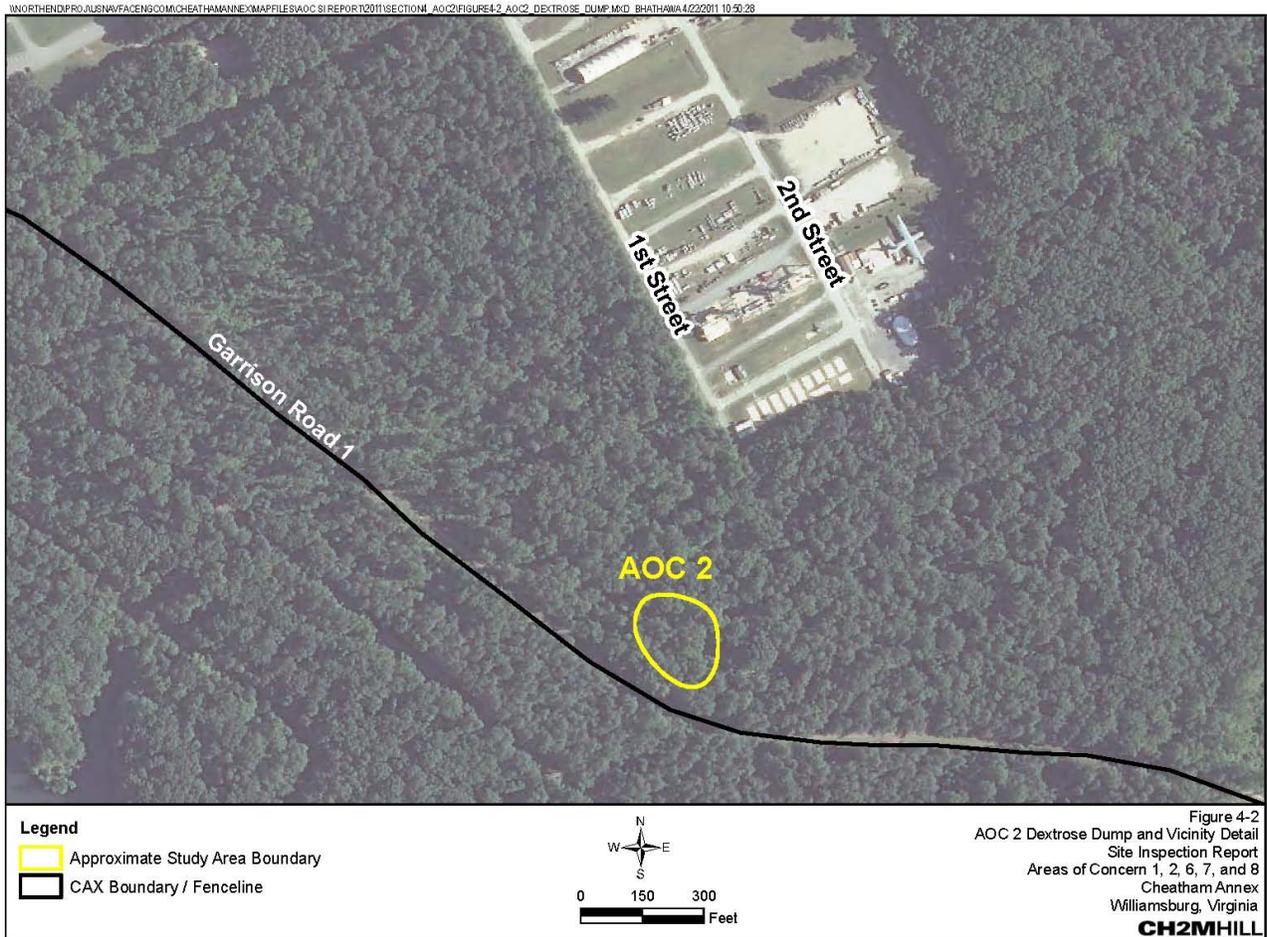
### 3.5 Tasks Requiring Activity Hazard Analysis

Activity hazard analyses (AHAs) are required for all definable work tasks. As the project gets closer to initiation of field operations, additional information such as identification of subcontractor, specific equipment and/or tools is obtained; the AHAs will be updated accordingly. The planned field tasks requiring AHAs are as follows:

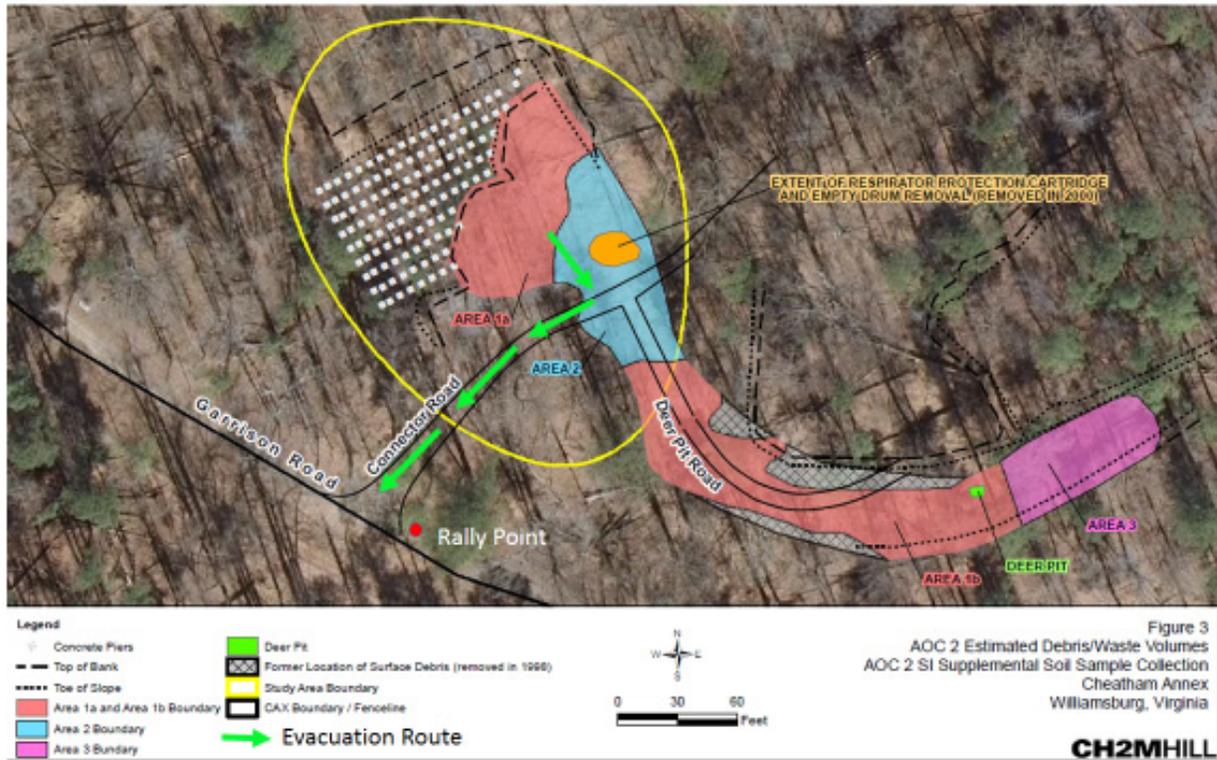
- 01 Surface and Subsurface soil sampling
- 02 Utility Clearance

Refer to Section 7 for information regarding AHA preparation, training, and use for visual inspection and all other tasks associated with this project. The project AHAs for the hazardous work operations listed above are included in Attachment 10.

### 3.6 Site Map



Site Evacuation Route:



**Procedure**

When an emergency evacuation signal is given, all site personnel shall shut down operations and equipment, complete any personnel decontamination procedures, secure the site to the extent possible and proceed to Rally Point at Garrison Road (refer to map above). All site personnel shall be accounted for before leaving the site. Notify the CH2MHILL management team in accordance with Section 22.6 “ESBG US Operations Incident Reporting Flow Diagram” of this APP and await further instructions.

## SECTION 4

# Project Organization and Responsibilities

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## 4.1 Client

Contact Name: Department of the Navy, Naval Facilities and Engineering Command. Jim Gravette Phone: 757-341-0477 Facility Contact Name: Trevor Manning Phone: 757-887-4086
---

## 4.2 CH2M HILL

### 4.2.1 Project Manager

Project Manager Name: Laura Lampshire CH2M HILL Office: WDC Telephone Number: 301-570-1042 (office) Cellular Number: 301-580-0027 (cell)
---

The project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HSE management process. The PM has overall management responsibility for the tasks in the following bulleted list. 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 document:

- Incorporate standard terms and conditions, and contract-specific HSE roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by:
  - Choosing potential subcontractors based on technical ability and HSE performance
  - Implementing the subcontractor prequalification process
  - Ensuring that acceptable certificates of insurance, including CH2M HILL as named additional insured, are secured as a condition of subcontract award
  - Ensuring HSE submittals, subcontract agreements, and appropriate site-specific safety procedures are in place and accepted prior field mobilization
- Ensure copies of training and medical monitoring records, and site-specific safety procedures are being maintained in the project file accessible to site personnel.
- Provide oversight of subcontractor HSE practices per the site-specific safety plans and procedures.
- Manage the site and interfacing with third parties in a manner consistent with the contract and subcontract agreements and the applicable standard of reasonable care.
- Ensure that the overall, job-specific, HSE goals are fully and continuously implemented.
- Provide visible support and motivation for HSE programs, rules, procedures, processes, and training, leading by example and encouraging CH2M HILL employees to take ownership of HSE issues.
- Intervene or stop work when an unsafe condition or behavior is observed, and/or when an environmentally compromising condition is encountered.

- Make available to and require CH2M HILL employees to complete required HSE training within established timelines and provide project numbers for such training.
- Consistently and even-handedly enforce HSE rules, procedures, and requirements at the office and/or on project work sites.
- Promptly report all work-related HSE incidents or near misses.
- Wear any required PPE.
- Ensure CH2M HILL employees complete required HSE training within established timelines.
- Conduct, cooperate, or assist with HSE incident investigations.
- Consult with the Human Resources Delivery Partner before taking any disciplinary action (other than verbal counseling) associated with CH2M HILL Policy 203 and/or HSE programs rules, procedures, processes, and training.

#### 4.2.2 CH2M HILL Responsible Health and Safety Manager

RHSM Name: Carl Woods  
 CH2M HILL Office: CIN  
 Telephone Number: 513-889-5771  
 Cellular Number: 513-319-5771

The RHSM is responsible for the following:

- Review and evaluate subcontractor HSE performance using the pre-qualification process.
- Approve the SSHP and its revisions as well as AHA.
- Review and evaluate subcontractor site-specific safety procedures for adequacy prior to start of subcontractor’s field operations.
- Support the oversight (or SSHO’s direct oversight) of subcontractor and tiered subcontractor HSE practices.
- Permit upgrades and downgrades in respiratory protection after reviewing analytical data.
- Conduct audits as determined by project schedule and coordination with PM.
- Participate in incident investigations, lessons learned, and loss and near loss reporting.

#### 4.2.3 CH2M HILL Project Environmental Manager

Environmental Manager Name: Hope Wilson  
 CH2M HILL Office: ATL  
 Telephone Number: 678-530-4226  
 Cellular Number: 678-656-5411

The project environmental manager (EM) is responsible for the following:

- Provide environmental program support in areas such as training, auditing, planning, permit tracking, and subcontractor oversight as needed or as specified in the project environmental plan.
- Review and evaluate qualifications for subcontractors with a history of environmental noncompliance and for waste transportation and disposal subcontractors.
- Evaluate any spills, releases, or environmental permit incidents for appropriate follow-up actions, notifications, and recordkeeping requirements.

- Provide environmental compliance and environmental management expertise and advice to the project team as needed during the course of the project.

#### 4.2.4 CH2M HILL Site Safety Health Officer

SSHO Name: Brian Wachter CH2M HILL Office: VBO Telephone Number: 757-671-6289 Cellular Number: 804-317-1935
--

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

- Conduct a health, safety, and environment orientation for all team members prior to entering the project work areas.
- Verify compliance with the requirements of this SSHP and applicable contractor SSHP, U.S. Army Corps of Engineers (USACE) EM 385-1-1 Manual, and federal, state, and local regulations.
- Verify this SSHP is current and amended when project activities or conditions change.
- Verify CH2M HILL site personnel and subcontractor personnel read the SSHP and sign the Employee Signoff Form, prior to commencing field activities.
- Verify CH2M HILL site personnel have completed any required specialty training (for example, fall protection, confined space entry, etc.) and medical surveillance as identified in this SSHP.
- Verify that project files include copies of subcontractor training and medical monitoring records, and accepted site-specific safety procedures prior to start of subcontractor’s field operations.
- Act as the project “Hazard Communication Coordinator,” and perform the responsibilities outlined in the SSHP.
- Act as the project “Emergency Response Coordinator,” and perform the responsibilities outlined in the SSHP.
- Act as the project competent person for general tasks not conducted by a specialized subcontractor.
- Post the Occupational Safety and Health Administration (OSHA) job-site poster—the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established. If you work in a state with an OSHA state plan, make sure the state plan poster is posted, if required.
- Hold and/or verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (as tasks or hazards change).
- Verify that project health and safety forms and permits are being used as outlined this SSHP.
- Perform oversight and assessments of subcontractor HSE practices per the site-specific safety plan, and verify that project activity self-assessment checklists are being used as outlined this SSHP.
- Coordinate with the RHSM regarding CH2M HILL and subcontractor operational performance, and third-party interfaces.
- Verify appropriate PPE use, availability, and training.
- Ensure that the overall, job-specific, HSE goals are fully and continuously implemented.
- Conduct Incident investigations, including root cause analysis.
- Calibrate and conduct air monitoring in accordance with the SSHP, and maintain all air monitoring records in the project file.

- Maintain HSE records and documentation.
- Facilitate client, OSHA, or other government agency inspections, including accompanying the inspector and providing all necessary documentation and follow-up.
- Deliver field HSE training as-needed, based on project-specific hazards and activities.
- Consistently and even-handedly enforce HSE rules, procedures, and requirements at the office and/or on project work sites.
- Wear any required PPE.
- Conduct, cooperate, or assist with HSE incident investigations.
- Contact the PM and RHSM when standards of conduct or CH2M HILL Policy 203 has been violated by a CH2M HILL employee.
- Contact the RHSM and PM in the event of an incident.
- Contact the RHSM and project EM in the event of a spill or release immediately so evaluation of reportable quantity requirements and whether agency reporting is required.
- When an apparent imminent danger exists, immediately remove all affected CH2M HILL employees and subcontractors, notify subcontractor safety representative, stop affected work until adequate corrective measures are implemented, and notify the PM and RHSM as appropriate.
- Document all verbal health-and-safety-related communications in project field logbook, daily reports, or other records.

### 4.3 CH2M HILL Subcontractors

(Reference CH2M HILL SOP HSE-215, *Contracts and Subcontracts*)

Subcontractor: ECLS  
 Subcontractor Contact Name: Shawn Rumberger  
 Telephone: (910) 897-3257

Subcontractor: NA  
 Subcontractor Contact Name:  
 Telephone:

Subcontractor: NA  
 Subcontractor Contact Name:  
 Telephone:

Subcontractors must comply with the following activities, and are responsible to for the following:

- Comply with all local, state, and federal safety standards.
- Comply with project and owner safety requirements.
- Actively participate in the project safety program and either hold or attend and participate in all required safety meetings.
- Provide a qualified safety representative to interface with CH2M HILL.
- Maintain safety equipment and PPE for their employees.
- Maintain and replace safety protection systems damaged or removed by the subcontractor’s operations.

- Notify the SSHO of any Incident, injury, or incident (including spills or releases) immediately, and submit reports to CH2M HILL within 24 hours.
- Install contractually required general conditions for safety (for example, handrail, fencing, fall protection systems, floor opening covers).
- Conduct and document weekly safety inspections of project-specific tasks and associated work areas.
- Conduct site-specific and job-specific training for all subcontractor employees, including review of the CH2M HILL SSHP, subcontractor health and safety plans, and subcontractor AHAs, and sign appropriate signoff forms.
- Determine and implement necessary controls and corrective actions to correct unsafe conditions.

The subcontractors listed above may be required to submit their own site-specific health and safety plan and other plans such as lead or asbestos abatement compliance plans. Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit their plans to CH2M HILL for review and acceptance before the start of fieldwork.

Subcontractors are also required to prepare AHAs before beginning each activity posing hazards to their personnel. The AHA will identify the principle steps of the activity, potential health and safety hazards for each step, and will 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.

## 4.4 Employee Responsibilities

All personnel are assigned responsibility for safe and healthy operations. This concept is the foundation for involving all employees in identifying hazards and providing solutions. For any operation, individuals have full authority to stop work and initiate immediate corrective action or control. In addition, each worker has a right and responsibility to report unsafe conditions or practices. This right represents a significant facet of worker empowerment and program ownership. Through shared values and a belief that all Incidents are preventable, our employees accept personal responsibility for working safely.

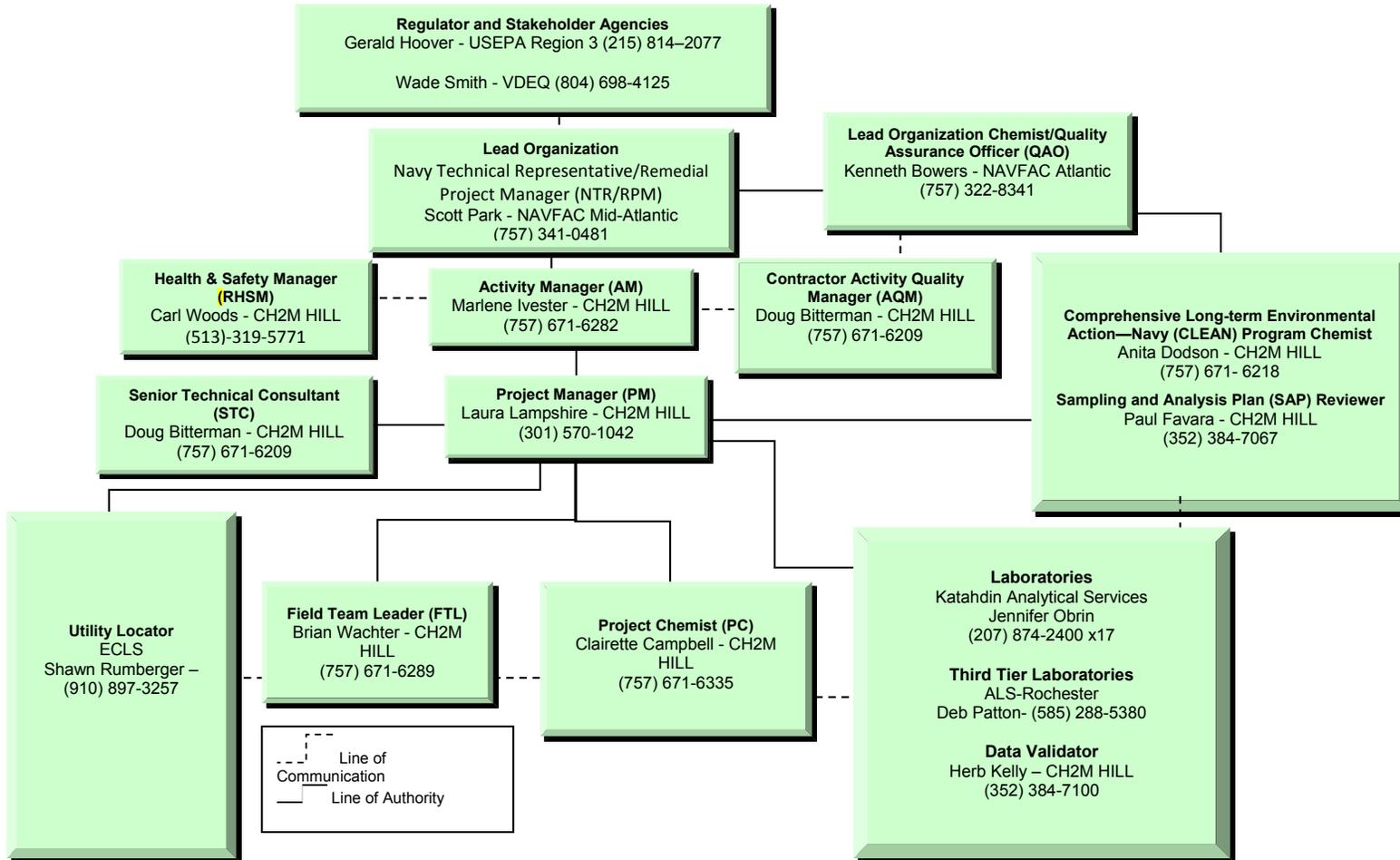
Each employee is responsible for the following performance objectives:

- Understanding and abiding by CH2M HILL and client HSE programs, rules, procedures, processes, and training, including any that are project-specific
- Completing all required HSE training made available and accessible within established timelines
- Always wearing any required personal protective equipment
- Intervening or stopping work for you or other CH2M HILL employees when an unsafe condition or behavior is encountered or observed, and/or when an environmentally compromising condition exists
- Promptly notifying a supervisor, PM, SSHO, or RHSM when an unsafe condition or behavior is observed, and/or when an environmentally compromising condition exists
- Promptly reporting a supervisor, PM, SSHO, or RHSM all work-related health, safety , and environmental incidents or near misses
- Attending required project HSE pre-task briefings and meeting prior to performing work
- Cooperating or assisting with HSE incident investigations

### 4.4.1 Employee Authority

Each employee on the project has the obligation and authority to shut down any perceived unsafe work and during employee orientation, each employee will be informed of their authority to do so.

## 4.5 Lines of Authority



## SECTION 5

# Standards of Conduct

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All individuals associated with this project must work injury-free and drug-free and must comply with the following standards of conduct, the SSHP, and the safety requirements of CH2M HILL. Commonly accepted standards of conduct help maintain good relationships between people. They promote responsibility and self-development. Misunderstandings, frictions, and disciplinary action can be avoided by refraining from thoughtless or wrongful acts.

## 5.1 Standards of Conduct Violations

All individuals associated with this project are expected to behave in a professional manner. Violations of the standards of conduct would include, but not be limited to, the following:

- Failure to perform work
- Inefficient performance, incompetence, or neglect of work
- Willful refusal to perform work as directed (insubordination)
- Negligence in observing safety regulations, poor housekeeping, or failure to report on-the-job injuries or unsafe conditions
- Unexcused or excessive absence or tardiness
- Unwillingness or inability to work in harmony with others
- Discourtesy, irritation, friction, or other conduct that creates disharmony
- Harassment or discrimination against another individual
- Failure to be prepared for work by wearing the appropriate construction clothing or bringing the necessary tools
- Violation of any other commonly accepted reasonable rule of responsible personal conduct

## 5.2 Disciplinary Actions

The Environmental Services Business Group (ESBG) employees, employees working on ESBG projects, and subcontractor employees are subject to disciplinary action for not following HSE rules and requirements. Potential disciplinary action is equally applicable to all employees, including management and supervision. Disciplinary action may include denial of access to the worksite, warnings, reprimands, and other actions up to and including termination depending on the specific circumstances.

## 5.3 Subcontractor Safety Performance

CH2M HILL should continuously endeavor to observe subcontractors' safety performance and adherence to their plans and AHAs. 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. CH2M HILL oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

### 5.3.1 Observed Hazard Form

When apparent noncompliance or unsafe conditions or practices are observed, notify the subcontractor's supervisor or safety representative verbally, and document using the Observed Hazard Form, included as an attachment to this SSHP, and require corrective action.

If necessary, stop subcontractor's work using the Stop Work Order Form until corrective actions is implemented for observed serious hazards or conditions. Update the Observed Hazard Form to document corrective actions have been taken. The subcontractor is responsible for determining and implementing necessary controls and corrective actions.

### **5.3.2 Stop Work Order**

CH2M HILL has the authority, as specified in the contract, and the responsibility to stop work in the event any CH2M HILL employee observes unsafe conditions or failure of the subcontractor to adhere to its safe work practices, or observes a condition or practice that may result in a release or violation of an environmental requirement. This authority and action does not in any way relieve the subcontractor of its responsibilities for the means and methods of the work or, therefore, of any corrective actions. Failure to comply with safe work practices can be the basis for restriction or removal of the subcontractor staff from the job site, termination of the subcontract, restriction from future work, or all three.

When an apparent imminent danger is observed, immediately stop work and alert all affected individuals. Remove all affected CH2M HILL employees and subcontractor staff from the danger, notify the subcontractor's supervisor or safety representative, and do not allow work to resume until adequate corrective measures are implemented. Notify the PM, contract administrator, and RHSM.

When repeated noncompliance or unsafe conditions are observed, notify the subcontractor's supervisor or safety representative and stop affected work by completing and delivering the Stop Work Order Form (attached to this SSHP) until adequate corrective measures are implemented. Consult the contract administrator to determine what the contract dictates for actions to pursue in event of subcontractor noncompliance including work stoppage, back charges, progress payments, removal of subcontractor manager, monetary penalties, or termination of subcontractor for cause.

## **5.4 Incentive Program**

Each project is encouraged to implement a safety incentive program that rewards workers for exhibiting exemplary safety behaviors. Actions that qualify are those that go above and beyond what is expected. Actions that will be rewarded include spotting and correcting a hazard, bringing a hazard to the attention of your foreman, telling your foreman about an incident, coming up with a safer way to get the work done, or stopping a crew member from doing something unsafe. The program will operate throughout the project, covering all workers. The incentive program will be communicated to all employees during the project employee orientation and project safety meetings.

## **5.5 Reporting Unsafe Conditions/Practices**

Responsibility for effective health and safety management extends to all levels of the project and requires good communication between employees, supervisors, and management. Incident prevention requires a proactive policy on near misses, close calls, unsafe conditions, and unsafe practices. All personnel must report any situation, practice, or condition which might jeopardize the safety of our projects. All unsafe conditions or unsafe practices will be corrected immediately. CH2M HILL has zero tolerance of unsafe conditions or unsafe practices.

No employee or supervisor will be disciplined for reporting unsafe conditions or practices. Individuals involved in reporting the unsafe conditions or practices will remain anonymous.

The following reporting procedures will be followed by all project employees:

- Upon detection of any unsafe condition or practice, the responsible employee will attempt to safely correct the condition.
- The unsafe condition or practice will be brought to the attention of the worker's direct supervisor, unless the unsafe condition or practice involves the employee's direct supervisor. If so, the SSHO needs to be notified at once by the responsible employee.

- Either the responsible employee or responsible employee's direct supervisor is responsible for immediately reporting the unsafe condition or practice to the SSHO.
- The SSHO will act promptly to correct the unsafe condition or practice.
- Details of the incident or situation will be recorded by the SSHO in the field logbook. If the subcontractor was involved, the Observed Hazard Form will be used.

# Safety Planning and Change Management

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## 6.1 Daily Safety Meetings and Pre-task Safety Plans

Daily safety meetings are to be held with all project personnel in attendance to review the hazards posed and required HSE procedures and AHAs that apply for each day's project activities. The Pre-task Safety Plans (PTSPs) serve the same purpose as the general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on hazards posed to individual work crews.

At the start of each day's activities, the crew supervisor completes the PTSP, provided as an attachment to this HSP, 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 the tasks listed, along with the hazards posed and required HSE procedures, in the HSP and AHA. The use of PTSPs promotes worker participation in the hazard recognition and control process while reinforcing the task-specific hazard and required HSE procedures with the crew each day.

## 6.2 Change Management

This HSP addresses all known activities and associated hazards. As work progresses, if significant changes are identified that could affect health and safety at the site, coordinate with the RHSM to determine whether an HSP update is necessary.

The following are examples of changes that may require a revision to the plan:

- Change in CH2M HILL staff
- New subcontractor to perform work
- New chemicals brought to site for use
- Change in scope or addition of new tasks
- Change in contaminants of concern (COCs) or change in concentrations of COCs
- New hazards or hazards not previously identified that are not addressed in this SSHP

## 6.3 Agency Inspection Guidance

(Reference CH2M HILL SOP HSE-201, *Agency Inspections and Communications*)

Agency inspections (for example, OSHA, the U.S. Environmental Protection Agency (USEPA), or other regulatory agencies) are on the rise. CH2M HILL implements safety and environmental programs in order to ensure safety to workers, the public, and the environment. This plan addresses things like labeling containers, completing the hazard communication training using the attachments to this SSHP, listing training requirements and PPE requirements, and addressing project-specific hazards. Field personnel need to contact the RHSM to update this plan if hazards are encountered that are not addressed.

[SOP HSE-201](#) addresses agency inspections in detail, and the attached **Target Zero Bulletin on Agency Inspections** provides a good summary of the inspection process and what to do if an agency such as OSHA or USEPA shows up at the site. It is critical immediately notify the RHSM if an inspector arrives (and EM if it is environmental-related) because they can help facilitate and make additional notifications.

Review the Target Zero Bulletin and keep it with your Health and Safety Plan/Environmental Plan. Make it a topic at a safety meeting, and keep it readily available in the event of an inspection.

## SECTION 7

# Project Hazard Analysis and Health Hazard Control Program

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(Reference: EM 385-1-1 Section 01.B.06)

The Health Hazard Control Program will be conducted by the use of the AHA process. Section 7 outlines the process that will be used by the SSHO onsite to determine the presence of hazardous environments or whether hazardous or toxic agents could be released into the work environment.

A health and safety risk analysis (Table 7-1) has been performed for each task. In the order listed below, the RHSM considers the various methods for mitigating the hazards. Employees are trained on this hierarchy of controls during their hazardous waste training and reminded of them throughout the execution of projects:

- Elimination of the hazards (use remote sampling methodology to avoid going into a confined space)
- Substitution (reduce exposure to vapors by using of a geoprobe instead of test pitting)
- Engineering controls (ventilate a confined space to improve air quality)
- Warnings (establish exclusion zones to keep untrained people away from hazardous waste work)
- Administrative controls (implement a work-rest schedule to reduce chance of heat stress)
- Use of PPE (use of respirators when action levels are exceeded)

The hazard controls and safe work practices are summarized in the following sections of this SSHP:

- General hazards and controls
- Project-specific hazards and controls
- Physical hazards and controls
- Biological hazards and controls
- Contaminants of concern

## 7.1 Activity Hazard Analysis

An AHA must be developed for each CH2M HILL job activity. The AHA should define the work tasks required to perform each activity, along with potential HSE hazards and recommended control measures for each hazard. A listing of the equipment to be used to perform the activity, inspection requirements to be performed, and training requirements for the safe operation of the equipment listed must be identified. Workers are briefed on the AHA before performing the work and their input is solicited prior to, during, and after the performance of work to further identify the hazards posed and control measures required. The AHA should identify the work tasks required to perform each activity, along with potential HSE hazards and recommended control measures for each hazard.

The hazard controls described in the following sections and applicable CH2M HILL core standards and SOPs should be used as a basis for preparing AHAs.

AHAs prepared for CH2M HILL activities and subcontractors are included as an attachment to this SSHP.

## 7.2 Subcontractor Activity Hazard Analysis

CH2M HILL subcontractors are required to provide AHAs specific to their scope of work on the project for acceptance by CH2M HILL. Each subcontractor will submit AHAs for its field activities, as defined in its scope of work, along with a project-specific safety plan and procedures. Additions or changes in field activities, equipment, tools, or material used to perform work or hazards not addressed in existing AHAs requires either a new AHA to be prepared or an existing AHA to be revised.

**TABLE 7-1  
General Activity Hazard Analysis**

Potential Hazard	Project Activity	
	01 - Soil Sampling	02 - Utility Survey
Arsenic	X	
Biological Hazards	X	X
Chemical Hazard	X	
Compressed Gas Cylinders	X	
IDW Drum Handling	X	
IDW Drum Sampling	X	
Field Vehicles	X	X
Fire Prevention	X	X
Hand & Power Tools	X	
Manual Lifting	X	X
Personal Security	X	X
Temperature Extremes	X	X
Ultraviolet Light exposure (sunburn)	X	X
Utilities (underground/overhead)	X	X

## SECTION 8

# General Hazards and Controls

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Section 8 provides safe work practices and control measures used to reduce or eliminate potential hazards. It is a summarized list of requirements. Always consult the appropriate CH2M HILL SOP to ensure all requirements are implemented.

## 8.1 Bloodborne Pathogens

(Reference CH2M HILL SOP HSE-202, *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 (PIM).

Employees trained in first-aid/CPR or those exposed to PIM must complete CH2M HILL's 1-hour bloodborne pathogens computer-based training module annually. When performing first-aid/CPR the following apply:

- Observe universal precautions to prevent contact with blood or other PIMs. Where differentiation between body fluid types is difficult or impossible, consider all body fluids to be potentially infectious materials.
- Always wash your hands and face with soap and running water after contacting PIMs. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes.
- If necessary, decontaminate all potentially contaminated equipment and surfaces with chlorine bleach as soon as possible. Use one part chlorine bleach (5.25 percent sodium hypochlorite solution) diluted with 10 parts water for decontaminating equipment or surfaces after initially removing blood or other PIMs. Remove contaminated PPE as soon as possible before leaving a work area.

CH2M HILL will provide exposed employees with a confidential medical examination should an exposure to PIM occur. The examination includes the following procedures:

- Documenting the exposure.
- Testing the exposed employee's and the source individual's blood (with consent).
- Administering post-exposure prophylaxis.

## 8.2 Chemical Storage

The following are general guidelines for storing chemicals and other hazardous materials:

- Keep acids away from bases.
- Keep oxidizers (nitric acid, nitrates, peroxides, chlorates) and organics away from inorganic reducing agents (metals).
- Keep flammables and corrosives in appropriate storage cabinets.
- Do not store paper or other combustibles near flammables.
- Use secondary containment and lipped shelving that is secured.
- Have a fire suppression system available.

### 8.2.1 Storage of Flammable/Combustible Liquids

- Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids.
- Approved safety cans shall be used for the handling and use of flammable liquids in quantities of 5 gallons (19 liters) or less. Do not use plastic gas cans.

- For quantities of 1 gallon (3.78 liters) or less, the original container may be used for storage and use of flammable liquids.
- Flammable or combustible liquids shall not be stored in areas used for stairways or normally used for the passage of people.

### 8.2.2 Indoor Storage of Flammable/Combustible Liquids

- No more than 25 gallons (95 liters) of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.
- Quantities of flammable and combustible liquids in excess of 25 gallons (95 liters) shall be stored in an acceptable or approved cabinet.
- Cabinets shall be conspicuously lettered: "FLAMMABLE: KEEP FIRE AWAY."
- Not more than 60 gallons (228 liters) of flammable or 120 gallons (456 liters) of combustible liquids shall be stored in any one storage cabinet. Not more than three such cabinets may be located in a single storage area.

### 8.2.3 Outside Storage of Flammable/Combustible Liquids

- Storage of containers (not more than 60 gallons [228 liters] each) shall not exceed 1,100 gallons (4,180 liters) in any one area. No area shall be within 20 feet (6.1 meters) of any building.
- Storage areas shall be graded to divert spills away from buildings and surrounded by an earthen dike.
- Storage areas may not be located near a storm drain. Overflow and spills must be diverted away from storm drains or surface waters.
- Storage areas shall be free from weeds, debris, and other combustible materials.
- Outdoor portable tanks shall be provided with emergency vent devices and shall not be closer than 20 feet (6.1 meters) to any building.
- Signs indicating no smoking shall be posted around the storage area.

### 8.2.4 Storage of Hazardous Waste

- All facilities storing ignitable and combustible liquids and hazardous wastes must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any release of hazardous constituents.
- Flammable wastes should be stored more than 50 feet from the property line.

## 8.3 Driving Safety

(Reference CH2M HILL HSE Policy 205, Distracted Driving – Wireless Devices, Vehicle Safety Core Standard)

All CH2M HILL employees are prohibited from using wireless devices while operating a motor vehicle when conducting company business regardless of the location or vehicle ownership and whether or not during regular working hours.

All CH2M HILL contractors and subcontractors are prohibited from using wireless devices while operating a CH2M HILL- or CH2M HILL client-owned, leased, or rented motor vehicle, or while operating any other motor vehicle on the project site.

- Prohibited use includes the following:
  - Dialing or speed dialing
  - Using a hands-free or voice-recognition (blue tooth) device to dial or speed dial
  - Engaging in conversation or listening to a conversation using a wireless device

- Checking e-mails or surfing the Internet using a wireless device
- Texting or e-mailing (reading, sending, or screening) with a wireless device
- Programming or entering coordinates into a global positioning system device (following directions by a global positioning system is permitted)
- Using a wireless device for voice recording or dictation
- Employees, contractors, and subcontractors who need to use a wireless device must pull off the road to a safe location, with the vehicle securely stopped and emergency flashers on, or wait until they reach their destination.
- Avoid distractions from mobile phones, smartphones, voice recognition systems, PDAs, notebook, tablets (or similar devices), or laptops, by turning off or silencing the wireless devices before operating a motor vehicle.

Follow the guidelines below when operating a vehicle:

- Obey speed limits, and be aware of blind spots or other hazards associated with low visibility. Practice defensive driving techniques, such as leaving plenty of room between your vehicle and the one ahead of you.
- Do not drive while drowsy. Drowsiness can occur at any time, but is most likely after 18 hours or more without sleep.
- Maintain focus on driving. Eating, drinking, smoking, and adjusting controls can divert attention from the road. Take the time to park and perform these tasks when parked rather than while driving.
- Ensure vehicle drivers are familiar with the safe operation of vehicles of the type and size to be operated. Large vehicles such as full-size vans and pick-ups have different vision challenges and handling characteristics than smaller vehicles.

## 8.4 Field Vehicles

- Field vehicles may be personal vehicles, rental vehicles, fleet vehicles, or project vehicles.
- Maintain a first-aid kit, bloodborne pathogen kit, and fire extinguisher in the field vehicle at all times.
- Use a rotary beacon on vehicle if working adjacent to active roadway.
- Familiarize yourself with the following rental vehicle features prior to operating the vehicle:
  - Vision fields and blind spots
  - Vehicle size
  - Mirror adjustments
  - Seat adjustments
  - Cruise control features, if offered
  - Pre-program radio stations and global positioning system, if equipped
- Always wear seatbelt while operating vehicle.
- Adjust headrest to proper position.
- Tie down loose items if utilizing a van or pick-up truck.
- Close car doors slowly and carefully. Fingers can get pinched in doors.
- Park vehicle in a location where it can be accessed easily in the event of an emergency. If not possible, carry a phone.
- Have a designated place for storing the field vehicle keys when not in use.

- Ensure back-up alarms are functioning, if equipped. Before backing a vehicle, take a walk around the vehicle to identify obstructions or hazards. Use a spotter when necessary to back into or out of an area.
- See the Vehicle Incident Guidance attached to this SSHP, if a vehicle incident is experienced in a rental or fleet vehicle.

## 8.5 Fire Prevention

(Reference EM 385-1-1 Section 09.A.01, and CH2M HILL SOP HSE-403, *Hazardous Material Handling*)

Follow the fire prevention and control procedures listed in the following subsection.

### 8.5.1 Fire Extinguishers and General Fire Prevention Practices

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet (30.5 meters). When 5 gallons (19 liters) or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet (15.2 meters). When 10 liters or more of a flammable or combustible liquid is being used, an extinguisher must be within 15 meters.
- Extinguishers must:
  - Be maintained in a fully charged and operable condition
  - Be visually inspected each month
  - 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 (3 meters) from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Keep areas neat. Housekeeping is important.
- A fire extinguisher, rated not less than 2A, shall be provided for each 280 square meters of a combustible building area, or major fraction thereof. Travel distance from any point of the protection area to the nearest fire extinguisher shall not exceed a horizontal distance of 50 feet or 15 meters.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

Fire extinguishers can represent an important segment of any overall fire protection program. However, their successful functioning depends upon the following conditions having been met:

- The extinguisher is properly located and in working order.
- The extinguisher is of proper type and for a fire which may occur.
- The fire is discovered while still small enough for the extinguisher to be effective.
- The fire is discovered by a person ready, willing, and able to use the extinguisher.
- Class C fires (see below for fire classifications) can be readily extinguished by quenching-cooling with water or a water-mixture agent. Class B fires are more effectively extinguished by an agent that blankets-smothers the fire through exclusion of oxygen surrounding the fire area. Those extinguishers containing bromochlorodifluoromethane, monobromotrifluoromethane, carbon dioxide, or dry chemical are generally best suited for extinguishing Class B fires. For Class C fires, the primary consideration in extinguishing this type of fire is the selection of nonconductive extinguishing agent to prevent dangerous electrical shock and possible death to user.

- Due to its corrosive nature, dry chemical is not recommended for use on computerized, electronic, or other equipment with extensive circuitry.
- The following chart defines/explains classes of fires:

<b>A</b>		<b>Common Combustibles</b>	<b>Wood, paper, cloth etc.</b>
<b>B</b>		<b>Flammable liquids and gases</b>	<b>Gasoline, propane and solvents</b>
<b>C</b>		<b>Live electrical equipment</b>	<b>Computers, fax machines (see note!)</b>
<b>D</b>		<b>Combustible metals</b>	<b>Magnesium, lithium, titanium</b>
<b>K</b>		<b>Cooking media</b>	<b>Cooking oils and fats</b>

Fires are classified into five groups:

- Class A: Class A fires involve common combustibles such as wood, paper, cloth, rubber, trash, and plastics. They are common in typical commercial and home settings, but can occur anywhere these types of materials are found.
- Class B: Class B fires involve flammable liquids, gases, solvents, oil, gasoline, paint, lacquers, tars, and other synthetic or oil-based products. Class B fires often spread rapidly and, unless properly secured, can reflash after the flames are extinguished.
- Class C: Class C fires involve energized electrical equipment, such as wiring, controls, motors, data processing panels, or appliances. They can be caused by a spark, power surge, or short circuit and typically occur in locations that are difficult to reach and see.
- Class D: Class D fires involve combustible metals such as magnesium and sodium. Combustible metal fires are unique industrial hazards that require special dry powder agents.

*(NOTE: Although ABC and BC dry chemical extinguishers can control a fire involving electronic equipment, the National Fire Code specifically advises against dry-chemical extinguishers for fires involving computers or other delicate electronic equipment due to the potential damage from residues).*

Firefighting shall only be conducted by those trained and certified in this practice. The commonly accepted practice is the PASS method. This means, pull the pin, aim, squeeze the handle, and sweep the base of the fire area. The SSHO shall verify that at least two staff members are onsite that have the required training for use of fire extinguishers.

### 8.5.2 Dispensing of Flammable/Combustible Liquids

- Areas in which flammable or combustible liquids are dispensed in quantities greater than 5 gallons (22.7 liters) (shall be separated from other operations by at least 25 feet (7.6 meters)).
- Drainage away from storm drains or surface waters or other means of containment shall be provided to control spills.
- Adequate natural or mechanical ventilation shall be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit.
- Dispensing of flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded).
- Dispensing flammable or combustible liquids by means of air pressure on the container or portable tanks is prohibited.

- Dispensing devices and nozzles for flammable liquids shall be of an approved type.

## 8.6 General Practices and Housekeeping

The following are general requirements applicable to all portions of the work:

- Site work should be performed during daylight hours whenever possible.
- 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, 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.
- Review the safety requirements of each job you are assigned to with your supervisor. You are not expected to perform a job that may result in injury or illness to yourself or to others.
- Familiarize yourself with, understand, and follow jobsite emergency procedures.
- Do not fight or horseplay while conducting the firm's business.
- Do not use or possess firearms or other weapons while conducting the firm's business.
- Report unsafe conditions or unsafe acts to your supervisor immediately.
- Report emergencies, occupational illnesses, injuries, vehicle incidents, and near misses immediately.
- Do not remove or make ineffective safeguards or safety devices attached to any piece of equipment.
- Report unsafe equipment, defective or frayed electrical cords, and unguarded machinery to your supervisor.
- Shut down and lock out machinery and equipment before cleaning, adjustment, or repair. Do not lubricate or repair moving parts of machinery while the parts are in motion.
- Do not run in the workplace.
- When ascending or descending stairways, use the handrail and take one step at a time.
- Do not apply compressed air to any person or clothing.
- Do not wear steel taps or shoes with metal exposed to the sole at any CH2M HILL project location.
- Do not wear finger rings, loose clothing, wristwatches, and other loose accessories when within arm's reach of moving machinery.
- Remove waste and debris from the workplace and dispose of in accordance with federal, state, and local regulations.
- Note the correct way to lift heavy objects (secure footing, firm grip, straight back, lift with legs), and get help if needed. Use mechanical lifting devices whenever possible.
- Check the work area to determine what problems or hazards may exist.

## 8.7 Hazard Communication

(Reference Section 01.B.06, EM 385-1-1 and CH2M HILL SOPs HSE-107, *Hazard Communication* and HSE-403, *Hazardous Material Handling*)

The hazard communication coordinator is to perform the following:

- Effective information and training on hazardous chemicals shall be given to project employees by their employer at the time of initial assignment and/or whenever a new physical or health hazard the employees have not been previously trained about is introduced into their work area.
- Complete an inventory of chemicals brought onsite by CH2M HILL using the chemical inventory form included as an attachment to this SSHP.
- Confirm that an inventory of chemicals brought onsite by CH2M HILL subcontractors is available.
- Request or confirm locations of MSDSs from the client, contractors, and subcontractors for chemicals to which CH2M HILL employees potentially are exposed.
- Before or as the chemicals arrive onsite, obtain an MSDS for each hazardous chemical and include on the chemical inventory sheet (attached to this SSHP) and add the MSDS to the MSDS attachment section of this plan.
- Label chemical containers with the chemical name and with hazard warnings, and store properly.
- Give employees required chemical-specific hazardous communication training using the chemical-specific training form included as an attachment to this SSHP.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

## 8.8 Knife Use

Open-bladed knives (for example, box cutters, utility knives, pocket knives, machetes, and multi-purpose tools with fixed blades such as a Leatherman™) are prohibited at worksites, except where the following three conditions are met:

- The open-bladed knife is determined to be the best tool for the job.
- An approved AHA or written procedure is in place and covers the necessary safety precautions (work practices, PPE, and training).
- Knife users have been trained and follow the AHA.

## 8.9 Lighting

Lighting shall be evaluated when conducting work inside buildings, confined spaces, or other areas/instances where supplemental light may be needed (for example, work before sunrise or after sunset). A light meter can be used to evaluate the adequacy of lighting. The following are common requirements for lighting and the conditions/type of work being performed:

- While work is in progress outside construction, areas shall have at least 33 lux.
- Construction work conducted inside buildings should be provided with at least 55 lux light.
- The means of egress shall be illuminated with emergency and non-emergency lighting to provide a minimum 11 lux measured at the floor. Egress illumination shall be arranged so that the failure of any single lighting unit, including the burning out of an electric bulb, will not leave any area in total darkness.

## 8.10 Manual Lifting

(Reference CH2M HILL SOP HSE-112, *Manual Lifting*)

Back injuries are the leading cause of disabling work and most back injuries are the result of improper lifting techniques or overexertion. Use the following to mitigate the hazards associated with lifting:

- When possible, the task should be modified to minimize manual lifting hazards.
- Lifting of loads weighing more than 40 pounds (18 kilograms) shall be evaluated by the SC using the Lifting Evaluation Form contained in SOP HSE-112.
- Using mechanical lifting devices is the preferred means of lifting heavy objects such as forklifts; cranes, hoists, and rigging; hand trucks; and trolleys.
- Personnel shall seek assistance when performing manual lifting tasks that appear beyond their physical capabilities.
- In general, the following steps must be practiced when planning and performing manual lifts: Assess the situation before you lift; ensure good lifting and body positioning practices; and ensure good carrying and setting down practices.
- All CH2M HILL workers must have training in proper manual lifting training either through the New Employee Orientation or through Manual Lifting module located on the Virtual Office.

## 8.11 Personal Hygiene

Good hygiene is essential for personal health and to reduce the potential of cross-contamination when working on a hazardous waste site. Implement the following:

- Keep hands away from nose, mouth, and eyes during work.
- Keep areas of broken skin (chapped, burned, etc.) covered.
- Wash hands with soap and water prior to eating, smoking, or applying cosmetics.

## 8.12 Personal Security

Follow the guidelines below for personal security measures. The RHSM and Firm-Wide Security Office can be contacted if additional, specific measures are needed (such as evaluating the needs for security service).

### 8.12.1 General Safety and Security Guidelines

The CH2M HILL Corporate Security Department recommends the following guidelines for workers in the United States:

- Stay alert and be aware of your surroundings. Avoid pre-occupations with mobile devices, while in an unfamiliar area.
- Whenever possible, use the buddy system with another employee or client or subcontractor employee.
- Trust your intuition; if a situation appears strange or wrong, it probably is.
- Be confident in your walk or stride; do not give the appearance you are new in town.
- Avoid carrying and displaying large sums of cash.
- If you sense or see dangerous situations along your route, change your route and depart the area quickly. If you feel that you are being followed, go to the nearest police station or safe location and file a complaint with the police. Provide a description of the person, their vehicle, license plate number, and any other useful information.
- Only walk short distances that are safe and secure while visiting an unfamiliar city or location.

- Take host-approved transportation for long distances.
- “Fight or Flight?” Leaving the possible or dangerous area is always better than staying to fight.
- Always report suspicious activity to the nearest local law enforcement agency.
- Locate emergency exits in your hotel or where you are staying to ensure you know where to go in case of a fire or a natural or man-made disaster.
- Secure your electronic devices when left in your room or take them with you if you are not able to secure them properly.
- If you feel your life is in danger, call 911. Be sure to speak clearly, concisely, and give the dispatcher a good description of where you are physically located.

### 8.12.2 Operating or Riding in Vehicles

- When waiting for public transportation or a taxi, remain in a store or restaurant as long as possible before catching your ride and never wait by yourself in an isolated area.
- Approach your vehicle with keys firmly in your hand and ready to unlock the car.
- Quickly check your car before entering it to determine damage or presence of an intruder.
- Vulnerable times can be stopping to find your keys to enter your vehicle or stepping out of your vehicle in an isolated area. Be aware of your surroundings before you perform these activities.
- Always keep your doors locked during transit and when the vehicle is parked.
- Never leave your vehicle unlocked, even when performing a quick task such as checking in at a hotel, getting gas, or going picking up food.
- If confronted by an individual inside a vehicle pointing a weapon at you, run the opposite way from where the vehicle is facing and scream as loud as you can. This evasive action will probably cause the individual to drive away.
- If an individual in a passing car points at your tires or engine to indicate a malfunction, only pull over in a well-lit and populated gas or rest stop. Never pull over in an isolated or dimly lit area. You may have a malfunction or the passing motorist may be attempting to rob you.
- Always park your vehicle in a well-lit and secure area. If your vehicle is parked in a dimly lit or isolated area in a parking garage; ask an attendant or friend to accompany you to your vehicle.
- Secure your valuables in the trunk, or place them out of sight or cover them with a blanket or coat if there is no secure storage area in the vehicle. The would-be-perpetrator likes to see what to steal and not knowing what you have concealed will normally prevent a break in.

### Walking

- If you experience automotive trouble, remain inside the locked vehicle and call for assistance.
- If you can't reach assistance through a mobile phone, only walk for help in a safe area facing the traffic.
- If while walking you are shadowed or followed by a vehicle, run back in the direction of your vehicle and enter the vehicle if possible. File a police report on the incident as soon as practicable.
- Be aware of your surroundings and those around you while walking, and do not be distracted by using electronic devices.
- Regularly change your route if you are walking to and from meetings or conferences, and choose only well-lit areas in which to walk at night.

- If walking long distances, identify a safe house, shop, store, or restaurant to duck into if confronted by a perpetrator.

### Emergency Numbers and Information

- Leave your itinerary and emergency contact numbers where you can be reached with family members and only those that have a need to know.
- Pre-program emergency numbers in the mobile device you are traveling with.
- Carry a list of current medications and specific doses in your purse or wallet.
- Record medical emergency information on a document that can be readily available if you are unable to speak or unconscious.
- Have a photocopy of your driver's license, passport, and credit card information separately in case your wallet or purse is stolen.

## 8.13 Shipping and Transportation of Hazardous Materials

(Reference CH2M HILL SOP HSE-417, *Hazardous Materials Transportation*)

The U.S. Department of Transportation (DOT) has specific regulations governing shipping of hazardous materials (also called dangerous goods). Chemicals brought to the site might be defined as hazardous materials by the U.S. DOT. Hazardous wastes that may be shipped offsite are also defined as hazardous materials by U.S. DOT. Other wastes may also be U.S. DOT hazardous materials. To confirm whether a material or a waste is a U.S. DOT hazardous material, check with the ESG Waste Coordinator (Lisa Schwan/ATL), the project EM, or the CH2M HILL Dangerous Goods Shipping Coordinators (John Blasco/BAO or Rob Strehlow/MKW).

All staff who are involved in shipment of hazardous materials, including receiving hazardous materials, preparing profiles or manifests, packaging hazardous wastes, labeling, or transporting hazardous materials by road, are called HazMat employees (note CH2M HILL cannot transport hazardous wastes by public road). HazMat employees must receive CH2M HILL online training in shipping dangerous goods. CH2M HILL's online Dangerous Goods Shipping course can be found on the HSSE area of the Virtual Office.

All hazardous materials that are shipped (for example, by Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. If the material is a product that is being shipped (for example, calibration gas), use the HazMat ShipRight tool on the CH2M HILL Virtual Office (under Company Resources – Online Shipping). Contact the Dangerous Goods Shipping coordinators, the ESG Waste Coordinator, or the project EM for additional information.

49 CFR 172 requires that all hazmat employees be aware of potential transportation security concerns. Hazardous materials security is addressed in CH2M HILL's Hazardous Materials SOP (HSE-403). The following points are provided as an overview of security measures to increase awareness of this important matter:

- It is essential that each employee understand the security risks involved with transporting hazardous materials.
- All transporters of hazardous materials must be prequalified by a contract administrator who evaluates the carrier's safety rating, security measures, and employee screening procedures.
- When shipping hazardous materials, check driver's credentials and ask about shipping details.
- When receiving a hazardous materials shipment, inspect packages for signs of tampering or damage to the contents. Verify the drivers and company information on the form with the driver.
- If there is suspicious or unusual behavior (for example, driver without credentials, evasive answers) or any discrepancies identified, do not offer or accept the shipment, and immediately notify the PM or the RHSM.

Employees responsible for shipping hazard materials must also review the CH2M HILL Transportation Security Plan (HSE-417 Appendix A).

## 8.14 Substance Abuse

(Reference CH2M HILL SOP HSE-105, *Drug-Free Workplace*)

Employees who work under the influence of controlled substances, drugs, or alcohol may prove to be dangerous or otherwise harmful to themselves, other employees, clients, the company, the company's assets and interests, or the public. CH2M HILL does not tolerate illegal drug use, or any use of drugs, controlled substances, or alcohol that impairs an employee's work performance or behavior.

Prohibitions onsite include the following:

- Use or possession of intoxicating beverages while performing CH2M HILL work.
- Abuse of prescription or nonprescription drugs.
- Use or possession of illegal drugs or drugs obtained illegally.
- Sale, purchase, or transfer of legal, illegal, or illegally obtained drugs.
- Arrival at work under the influence of legal or illegal drugs or alcohol.

Drug and/or alcohol testing is applicable under CH2M HILL Constructors, Inc., and munitions response projects performed in the United States. In addition, employees may be required to submit to drug and/or alcohol testing as required by clients. When required, the testing is performed in accordance with SOP HSE-105, *Drug-Free Workplace*. Employees who are enrolled in drug or alcohol testing are required to complete annual training located on the CH2M HILL Virtual Office.

## 8.15 Unknown or Suspect Objects/Materials

If unknown or suspect objects/materials are encountered (that is, exposed or partially buried drums, biological waste, cylinders, munitions of explosive concern, and unexpected stained/discolored soil) are encountered during site operations, ongoing activities shall be immediately suspended. CH2M HILL or subcontractor personnel encountering unknown or suspect objects/materials shall adhere to the following:

- Secure the area and identify the location of the object/material to the extent possible, without causing bodily injury to yourself or others and without disturbing the object.
- Evacuate the work area.
- Immediately notify the PM/HSM of the encountered condition.
- Do not provide additional disturbance or otherwise handle the suspect object/material.

The site supervisor or SC shall contact the PM and the HSM to evaluate potential hazards associated with the specific situation encountered. The project team will then address the need for the use of special procedures, engineering controls, PPE, or specialized subcontract personnel to safely mitigate the situation.

## SECTION 9

# Project-specific Hazard Controls

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Section 9 provides safe work practices and control measures used to reduce or eliminate potential hazards. The practices and controls are to be implemented by the party in control of either the work or the particular hazard. Each person onsite is required to abide by the hazard controls. Always consult the appropriate CH2M HILL SOP to ensure all requirements are implemented. 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 RHSM for clarification.

## 9.1 Arsenic

(Reference CH2M HILL, SOP HSE-501, *Arsenic*)

Section provided for informational purposes only. Based on SOW and site history there is no reasonable anticipation of employee exposure at or above established action limits.

Arsenic is considered a “Confirmed Human Carcinogen.” CH2M HILL is required to control employee exposure to arsenic when exposures are at or above 5.0 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), or if there is the possibility of skin or eye irritation from arsenic. The elements of the CH2M HILL arsenic program include the following:

- Exposure monitoring
- Methods of control, including PPE and respirators
- Medical surveillance
- Training on hazards of arsenic and control measures (includes project-specific training and the computer-based training on CH2M HILL’s Virtual Office, *Arsenic Exposure*)
- Recordkeeping requirements

If air monitoring indicates there is potential exposure at the action level concentrations, notify the RHSM to ensure the above have been adequately addressed. Full implantation of SOP HSE-501, Arsenic, will be required. Other exposure control measures include:

- Do not enter regulated work areas unless training, medical monitoring, and PPE requirements established by the competent person have been met.
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.
- Avoid skin and eye contact with liquid and particulate arsenic or arsenic trichloride.
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from the competent person.
- Review the fact sheet included as an attachment to this SSHP.

## 9.2 Drum and Portable Tank Handling

The following are the hazard controls and safe work practices to follow when overseeing the movement of drums or when handling drums:

- Ensure that personnel are trained in proper lifting and moving techniques to prevent back injuries.
- Ensure drum or tank bungs and lids are secured and are labeled prior to moving.
- Ensure that drums and tanks remain covered except when removing or adding material or waste. Covers and/or lids will be properly secured at the end of each workday.

- Provide equipment to keep the operator removed from the drums to lessen the likelihood of injury. Such equipment might include: a drum grappler attached to a hydraulic excavator; a small front-end loader, which can be either loaded manually or equipped with a bucket sling; a rough terrain forklift; Roller conveyor equipped with solid rollers; drum carts designed specifically for drum handling.
- Make sure the vehicle selected has sufficient rated load capacity to handle the anticipated loads, and make sure the vehicle can operate smoothly on the available road surface.
- Ensure there are appropriately designed Plexiglas cab shields on loaders, backhoes, etc., when handling drums containing potentially explosive materials.
- Equipment cabs should be supplied with fire extinguishers, and should be air-conditioned to increase operator efficiency.
- Supply operators with appropriate respiratory protective equipment when needed.
- Ensure that drums are secure and are not in the operator's view of the roadway.
- Prior to handling, all personnel should be warned about hazards of handling.
- Before moving anything, determine the most appropriate sequence in which the various drums, portable tanks, and other containers should be moved (for example small containers may have to be removed first to permit heavy equipment to enter and move the drums.
- Overpack drums and an adequate volume of absorbent should be kept near areas where minor spills may occur.
- Use containers or overpacks that are compatible with the waste or materials.
- Drums containing liquids or hazardous waste will be provided with secondary containment and may not be located near a storm water inlet or conveyance.
- Allow enough aisle space between drum pallets and between drums and other equipment that the drums can be easily accessed (at least 2 to 3 feet) by fire control equipment and similar equipment.
- Make sure that a spill kit is available in drum or tank storage areas (or where liquids are transferred from one vessel to another).

### 9.3 Drum Sampling Safety

Personnel are permitted to handle and/or sample drums containing certain types of waste (drilling waste, investigation-derived waste, and waste from known sources) only. Handling or sampling drums with unknown contents requires a plan revision or amendment approved by the RHSM. The following control measures will be taken when sampling drums:

- Minimize transportation of drums.
- Sample only labeled drums or drums from a known waste stream.
- Do not sample bulging or swollen drums. Contact the RHSM.
- If drums contain, or potentially contain, flammable materials, use non-sparking tools to open.
- Use the proper tools to open and seal drums.
- Reseal bung holes or plugs whenever possible.
- Avoid mixing incompatible drum contents;
- Sample drums without leaning over the drum opening.
- Transfer/sample the content of drums using a method that minimizes contact with material.

- Use the PPE and perform air monitoring as specified in the PPE and Site Monitoring sections of this SSHP.
- Take precautions to prevent contaminated media from contacting the floor or ground, such as having plastic under the sampling area, having a spill kit accessible during sampling activities.
- If transferring/sampling drums containing flammable or combustible liquids, drums and liquid transfer equipment should be grounded and bonded to reduce the potential of a static discharge.

## 9.4 Hand and Power Tools

(Reference CH2M HILL, SOP HSE-210, *Hand and Power Tools*)

The following are the hazard controls and safe work practices to follow when personnel or subcontractors are using hand and power tools. Ensure the requirements in the referenced SOP are followed:

- Tools shall be inspected prior to use and damaged tools will be tagged and removed from service.
- Hand tools will be used for their intended use and operated in accordance with manufacturer's instructions and design limitations.
- Maintain all hand and power tools in a safe condition.
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool.
- Do not carry or lower a power tool by its cord or hose.
- Portable power tools will be plugged into GFCI protected outlets.
- Portable power tools will be Underwriters Laboratories listed and have a three-wire grounded plug or be double insulated.
- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters).
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof, etc.).
- Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

## 9.5 Slips, Trips and Falls

### 9.5.1 General

- Institute and maintain good housekeeping practices.
- Designate foot traffic paths in and out of sites, when necessary, to ensure paths are kept free from slip, trip, and fall hazards or to deter personnel from taking "shortcuts" where slip, trip, hazards may be.
- Mitigate icy conditions by keeping foot traffic paths clear of ice and snow.

- Watch footing as you walk to avoid trip hazards, animal holes, or other obstacles, especially in tall grassy areas.

### 9.5.2 Muddy Conditions

- Muddy conditions present a slipping hazard. Use mats or other similar surface to work from if footing cannot be stabilized.
- Take shortened steps across muddy areas.
- Use a walking staff or other similar means to assist with balance.

### 9.5.3 Steep Slopes/Uneven Ground/Rock and Vertical Slopes

- Be aware that escarpments can slough. Avoid these areas.
- Exercise caution in relying on rocks and trees/tree stumps to support you. Many times they are loose.
- Whenever possible, switchback your way up/down steep areas, and maintain a slow pace with firm footing.
- Employees walking in ditches, swales and other drainage structures adjacent to roads or across undeveloped land must use caution to prevent slips and falls which can result in twisted or sprained ankles, knees, and backs.
- Whenever possible observe the conditions from a flat surface and do not enter a steep ditch or side of a steep road bed.
- If steep terrain must be negotiated coordinate with RHSM to evaluate the need for ladders or ropes to provide stability.

## 9.6 Utilities (underground)

An assessment for underground utilities must be conducted where there is a potential to contact underground utilities or similar subsurface obstructions during intrusive activities. Intrusive activities include excavation, trenching, drilling, hand augering, soil sampling, or similar activities.

The assessment must be conducted before any intrusive subsurface activity and must include at least the following elements:

1. A background and records assessment of known utilities or other subsurface obstructions.
2. Contacting and using the designated local utility locating service.
3. Conducting an independent field survey to identify, locate, and mark potential underground utilities or subsurface obstructions. *Note: This is independent of, and in addition to, any utility survey conducted by the designated local utility locating service above.*
4. A visual survey of the area to validate the chosen location.

When any of these steps identifies an underground utility within 5 feet (1.5 meters) of intrusive work, then non-aggressive means must be used to physically locate the utility before a drill rig, backhoe, excavator or other aggressive method is used.

Aggressive methods are never allowed within 2 feet of an identified high-risk utility (see paragraph below).

Any deviation from these requirements must be approved by the RHSM and the PM.

### 9.6.1 Background and Records Assessment of Known Utilities

Identify any client- or location-specific permit and/or procedural requirements (for example, dig permit or intrusive work permit) for subsurface activities. For military installations, contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.

Obtain available utility diagrams and/or as-built drawings for the facility.

Review locations of possible subsurface utilities including sanitary and storm sewers, electrical lines, water supply lines, natural gas lines, fuel tanks and lines, communication lines, lighting protection systems, etc. Note: Use caution in relying on as-built drawings as they are rarely 100 percent accurate.

Request that a facility contact with knowledge of utility locations review and approve proposed locations of intrusive work.

### **9.6.2 Designated Local Utility Locating Service**

Contact your designated local utility locating service (for example, Dig-Safe, Blue Stake, One Call) to identify and mark the location of utilities. Call 811 in the US or go to [www.call811.com](http://www.call811.com) to identify the appropriate local service group. Contacting the local utility locating service is a legal requirement in most jurisdictions.

### **9.6.3 Independent Field Survey (Utility Locate)**

The organization conducting the intrusive work (CH2M HILL or subcontractor) shall arrange for an independent field survey to identify, locate, and mark any potential subsurface utilities in the work area. This survey is in addition to any utility survey conducted by the designated local utility-locating service.

The independent field survey provider shall determine the most appropriate instrumentation/technique or combinations of instrumentation/techniques to identify subsurface utilities based on their experience and expertise, types of utilities anticipated to be present, and specific site conditions.

A CH2M HILL or subcontractor representative must be present during the independent field survey to observe the utility locate and verify that the work area and utilities have been properly identified and marked. If there is any question that the survey was not performed adequately or the individual was not qualified, then arrangements must be made to obtain a qualified utility locate service to re-survey the area. Obtain documentation of the survey and clearances in writing and signed by the party conducting the clearance. Maintain all documentation in the project file.

If the site owner (military installation or client) can provide the independent field survey, CH2M HILL or the subcontractor shall ensure that the survey includes:

- Physically walking the area to verify the work location and identify, locate, and mark underground utility locations.
- Having qualified staff available and instrumentation to conduct the locate.
- Agreeing to document the survey and clearances in writing.
- Should any of the above criteria not be met, CH2M HILL or subcontractor must arrange for an alternate independent utility locate service to perform the survey.
- The markings from utility surveys must be protected and preserved until the markings are no longer required. If the utility location markings are destroyed or removed before intrusive work commences or is completed, the PM, SC, or designee must notify the independent utility locate service or the designated local utility locating service to resurvey and remark the area.

### **9.6.4 Visual Assessment before and during Intrusive Activities**

Perform a “360 degree” assessment. Walk the area and inspect for utility-related items such as valve caps, previous linear cuts, patchwork in pavement, hydrants, manholes, utility vaults, drains, and vent risers in and around the dig area.

The visual survey shall include all surface landmarks, including manholes, previous liner cuts, patchwork in pavement, pad-mounted transformers, utility poles with risers, storm sewer drains, utility vaults, and fire hydrants.

If any unanticipated items are found, conduct further research before initiating intrusive activities and implement any actions needed to avoid striking the utility or obstruction.

### 9.6.5 Subsurface Activities within 5 feet of an Underground Utility or if there is Uncertainty

When aggressive intrusive activities will be conducted within 5 feet (1.5 meters) of an underground utility or when there is uncertainty about utility locations, locations must be physically verified by non-aggressive means such as air or water knifing, hand digging, or human powered hand augering. Non-conductive tools must be used if electrical hazards may be present. If intrusive activities are within 5 feet (1.5 meters) and parallel to a marked existing utility, the utility location must be exposed and verified by non-aggressive methods every 100 feet (30.5 meters). Check to see if the utility can be isolated during intrusive work.

#### Intrusive Activities within 2 feet of an Underground Utility

Use non-aggressive methods (hand digging, vacuum excavation, etc.) to perform intrusive activities within 2 feet of a high-risk utility (that is, a utility that cannot be de-energized or would cause significant impacts to repair/replace). Hazardous utilities shall be de-energized whenever possible.

### 9.6.6 Spotter

A spotter shall be used to monitor for signs of utilities during advancement of intrusive work (for example, sudden change in advancement of auger or split spoon, presence of pea gravel or sand in soils, presence of concrete or other debris in soils, refusal of auger or excavating equipment). If any suspicious conditions are encountered, stop work immediately and contact the PM or RHSM to evaluate the situation. The spotter must have a method to alert an operator to stop the intrusive activity (for example, air horn, hand signals).

## 9.7 Utilities (overhead)

### 9.7.1 Proximity to Power Lines

It must be determined whether equipment operations including, positioning, and traveling will occur in proximity to power lines within 20 feet (6.1 meters) for line voltage up to 350 kV, and within 50 feet (15.2 meters) for line voltage between 350 kV to 1,000 kV. For power lines over 1,000 kV, the distance must be determined by the utility/operator or qualified registered professional engineer in electrical power transmission and distribution.

**Operations adjacent to overhead power lines are PROHIBITED unless one of the following conditions is satisfied:**

- Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage.
- The minimum clearance from energized overhead lines is as shown in the table below, or the equipment will be repositioned and blocked to ensure that no part, including cables, can come within the minimum clearances shown in the table.

Minimum Distances from Powerlines	
Powerlines Nominal System Kv	Minimum Required Distance, Feet (Meters)
0-50	10 (3.0)
50-200	15 (4.6)
201-350	20 (6.1)
351-500	25 (7.6)
501-750	35 (10.7)
751-1000	45 (13.7)
Over 1000	Established by utility owner/operator or by a professional engineer in electrical power transmission/distribution

*(These distances have been determined to eliminate the potential for arcing based on the line voltage.)*

- The power line(s) has been isolated through the use of insulating blankets which have been properly placed by the utility. If insulating blankets are used, the utility will determine the minimum safe operating distance; get this determination in writing with the utility representative's signature.
- All inquiries regarding electric utilities must be made in writing and a written confirmation of the outage/isolation must be received by the PM prior to the start of work.

# Physical Hazards and Controls

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Physical hazards include exposure to temperature extremes, sun, noise, and radiation. If you encounter a physical hazard that has not been identified in this plan, contact the RHSM so that a revision to this plan can be made.

## 10.1 Contingency Plan for Severe Weather

### 10.1.1 Inclement Weather

- Work may proceed in light rain—wear rain gear.
- Exposure to slips, trips, and falls is increased during rainy conditions.
- Take cover in a sheltered location during adverse weather conditions (high winds, heavy rain).
- Work shall cease and cover shall be taken in the event of lightning or tornado warnings.
- Identify “Take Shelter” areas before starting the project.
- Notify the PM and Client representative after shelter has been sought.

Adverse weather conditions requiring immediate suspension of fieldwork activities are defined as the following:

- Thunder or lightning. Thunderstorm watches or warning, as the situation warrants, will be used as an alert to potential electrical activity. Typically, a 30-minute stand-down occurs to allow the storm cell to pass the area. If lightning or thunder is observed within the stand down period, the 30-minute timeframe is extended until electrical activity ceases.
- Sustained wind speeds of 25 miles per hour or wind gusts of 35 miles per hour for high-profile work where wind chill is not a factor, that is, greater than 60°F.
- Sustained wind speeds of 40 miles per hour or wind gusts of 45 miles per hour for non-high-profile work.
- Moderate rain and/or snow fall of 0.11 to 0.3 inch per hour during hoisting activities. Freezing rain is also cause for suspending hoist use.
- An equivalent wind chill factor of minus 24°F on the wind chill factor chart (see Section 10.4.2) will trigger systematic shut down of all non-emergency work activities.
- A tornado or hurricane warning for the general area or county will suffice in requiring a general work stoppage.
- If you are inadvertently caught outside in a thunder/lightning storm, move away from all metal structures.

## 10.2 Noise

(Reference CH2M HILL SOP HSE-108, *Hearing Conservation*)

CH2M HILL is required to control employee exposure to occupational noise levels of 85 decibels (dBA), A-weighted, and above by implementing a hearing conservation program that meets the requirements of the OSHA Occupational Noise Exposure standard, 29 CFR 1910.95. A noise assessment may be conducted by the RHSM or designee based on potential to emit noise above 85 dBA and also considering the frequency and duration of the task.

- Areas or equipment emitting noise at or above 90 dBA shall be evaluated to determine feasible engineering controls. When engineering controls are not feasible, administrative controls can be developed and appropriate hearing protection will be provided.

- Areas or equipment emitting noise levels at or above 85 dBA, hearing protection must be worn.
- Employees exposed to 85 dBA or a noise dose of 50 percent must participate in the hearing conservation program including initial and annual (as required) audiograms.
- The RHSM will evaluate appropriate controls measures and work practices for employees who have experienced a standard threshold shift in their hearing.
- Employees who are exposed at or above the action level of 85 dBA are required to complete the online Noise Training Module located on CH2M HILL's Virtual Office.
- Hearing protection will be maintained in a clean and reliable condition, inspected prior to use and after any occurrence to identify any deterioration or damage, and damaged or deteriorated hearing protection repaired or discarded.
- In work areas where actual or potential high noise levels are present at any time, hearing protection must be worn by employees working or walking through the area.
- Areas where tasks requiring hearing protection are taking place may become hearing protection required areas as long as that specific task is taking place.
- High noise areas requiring hearing protection should be posted or employees must be informed of the requirements in an equivalent manner and a copy of the OSHA standard 29 CFR 1910.95 shall be posted in the workplace.

## **10.3 Ultraviolet Radiation (sun exposure)**

Health effects regarding ultraviolet (UV) radiation are confined to the skin and eyes. Overexposure can result in many skin conditions, including erythema (redness or sunburn), photoallergy (skin rash), phototoxicity (extreme sunburn acquired during short exposures to UV radiation while on certain medications), premature skin aging, and numerous types of skin cancer. Implement the following controls to avoid sunburn.

### **10.3.1 Limit Exposure Time**

- Rotate staff so the same personnel are not exposed all of the time.
- Limit exposure time when UV radiation is at peak levels (approximately 2 hours before and after the sun is at its highest point in the sky).
- Avoid exposure to the sun, or take extra precautions when the UV index rating is high.

### **10.3.2 Provide Shade**

- Take lunch and breaks in shaded areas.
- Create shade or shelter through the use of umbrellas, tents, and canopies.
- Fabrics such as canvas, sailcloth, awning material and synthetic shade cloth create good UV radiation protection.
- Check the UV protection of the materials before buying them. Seek protection levels of 95 percent or greater, and check the protection levels for different colors.

### **10.3.3 Clothing**

- Reduce UV radiation damage by wearing proper clothing; for example, long sleeved shirts with collars, and long pants. The fabric should be closely woven and should not let light through.
- Head protection should be worn to protect the face, ears, and neck. Wide-brimmed hats with a neck flap or "Foreign Legion" style caps offer added protection.

- Wear UV-protective sunglasses or safety glasses. These should fit closely to the face. Wrap-around style glasses provide the best protection.

### 10.3.4 Sunscreen

- Apply sunscreen generously to all exposed skin surfaces at least 20 minutes before exposure, allowing time for it to adhere to the skin.
- Re-apply sunscreen at least every 2 hours, and more frequently when sweating or performing activities where sunscreen may be wiped off.
- Choose a sunscreen with a high sun protection factor. Most dermatologists advocate sun protection factor 30 or higher for significant sun exposure.
- Waterproof sunscreens should be selected for use in or near water, and by those who perspire sufficiently to wash off non-waterproof products.
- Check for expiration dates, because most sunscreens are only good for about 3 years. Store in a cool place out of the sun.
- No sunscreen provides 100 percent protection against UV radiation. Other precautions must be taken to avoid overexposure.

## 10.4 Temperature Extremes

(Reference CH2M HILL SOP HSE-211, *Heat and Cold Stress*)

Each employee is responsible for the following:

- Recognizing the symptoms of heat or cold stress.
- Taking appropriate precautionary measures to minimize their risk of exposure to temperature extremes (see following sections).
- Communicating any concerns regarding heat and cold stress to their supervisor or SC.

### 10.4.1 Heat

Heat-related illnesses are caused by more than just temperature and humidity factors.

**Physical fitness** influences a person's ability to perform work under heat loads. At a given level of work, the more fit a person is, the less the physiological strain, the lower the heart rate, the lower the body temperature (indicates less retained body heat—a rise in internal temperature precipitates heat injury), and the more efficient the sweating mechanism.

**Acclimatization** is a gradual physiological adaptation that improves an individual's ability to tolerate heat stress. Acclimatization requires physical activity under heat-stress conditions similar to those anticipated for the work. With a recent history of heat-stress exposures of at least 2 continuous hours per day for 5 of the last 7 days to 10 of the last 14 days, a worker can be considered acclimatized. Its loss begins when the activity under those heat-stress conditions is discontinued, and a noticeable loss occurs after 4 days and may be completely lost in 3 to 4 weeks. Because acclimatization is to the level of the heat-stress exposure, a person will not be fully acclimatized to a sudden higher level, such as during a heat wave.

**Dehydration** reduces body water volume. This reduces the body's sweating capacity and directly affects its ability to dissipate excess heat.

The ability of a body to dissipate heat depends on the ratio of its surface area to its mass (surface area/weight).

**Heat dissipation** is a function of surface area, while heat production depends on body mass. Therefore, overweight individuals (those with a low ratio) are more susceptible to heat-related illnesses because they produce more heat per unit of surface area than if they were thinner. Monitor these persons carefully if heat stress is likely.

When wearing **impermeable clothing**, the weight of an individual is not as important in determining the ability to dissipate excess heat because the primary heat dissipation mechanism, evaporation of sweat, is ineffective.

**Symptoms and Treatment Of Heat Stress**

	<b>Heat Syncope</b>	<b>Heat Rash</b>	<b>Heat Cramps</b>	<b>Heat Exhaustion</b>	<b>Heat Stroke</b>
<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 of 104°F or higher.
<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!

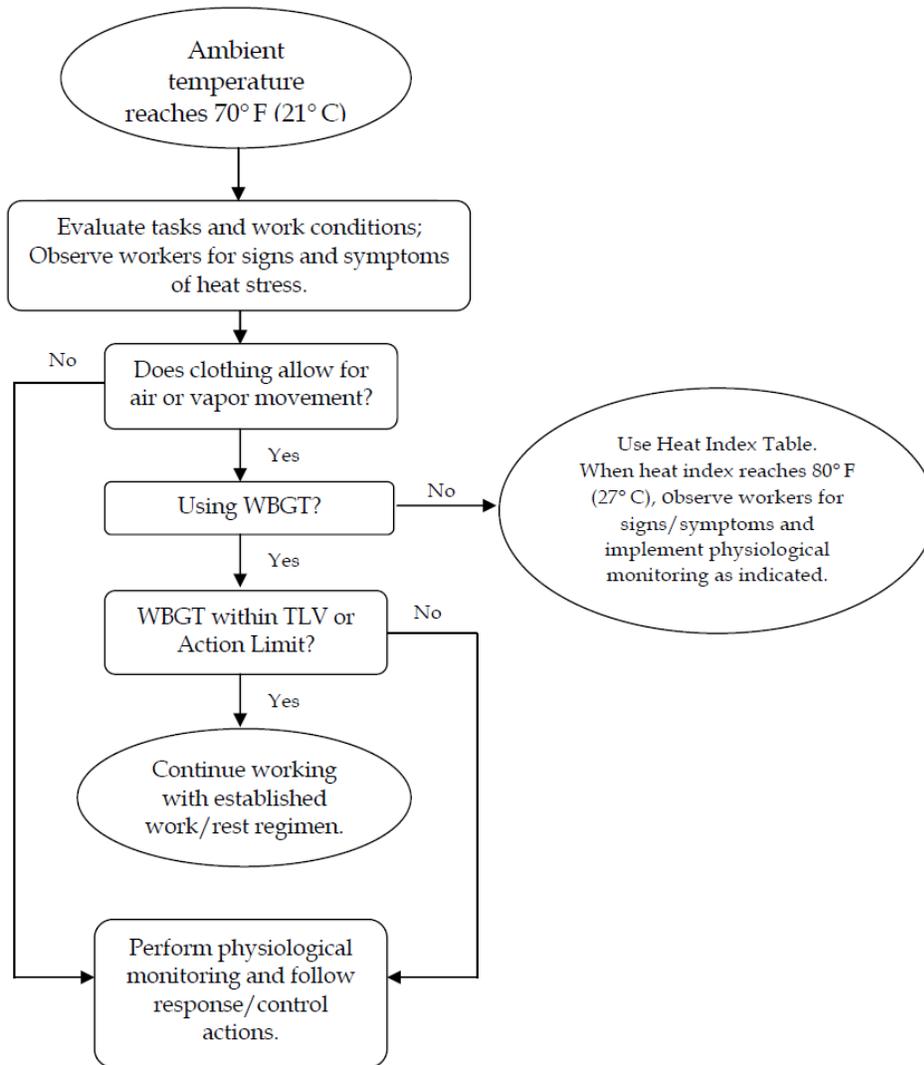
**10.4.2 Precautions**

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F (10 degrees Celsius) to 60°F (15.6 degrees Celsius) should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons (7.5 liters) per day. Remind employees to drink water throughout their work shift.
- 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 to site work conditions by slowly increasing workloads; for example, do not begin site work with extremely demanding activities. Closely monitor employees during their first 14 days of work in the field.
- Supervisors and SCs must continually observe employees throughout the work shift for signs and symptoms of heat stress or illness. Employees must monitor themselves for heat stress as well as observe their coworkers.
- Effective communication must be maintained with employees throughout the work shift either by voice, observation, or electronic device.
- 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 shade to protect personnel against radiant heat (sun, flames, hot metal).
- Use portable fans for convection cooling or in extreme heat conditions, an air-conditioned rest area when needed.
- In hot weather, rotate shifts of workers.

- Maintain good hygiene standards by frequent changes of clothing and showering. Clothing should be permitted to dry during rest periods. Persons who notice skin problems should consult medical personnel.
- Brief employees initially before the project work begins and routinely as part of the daily safety briefing, on the signs and symptoms, of heat-relatedness illnesses, precautions to measures and emergency procedures to follow as described in this plan.
- Observe one another for signs of heat stress. PREVENTION and communication are key.

### 10.4.3 Thermal Stress Monitoring

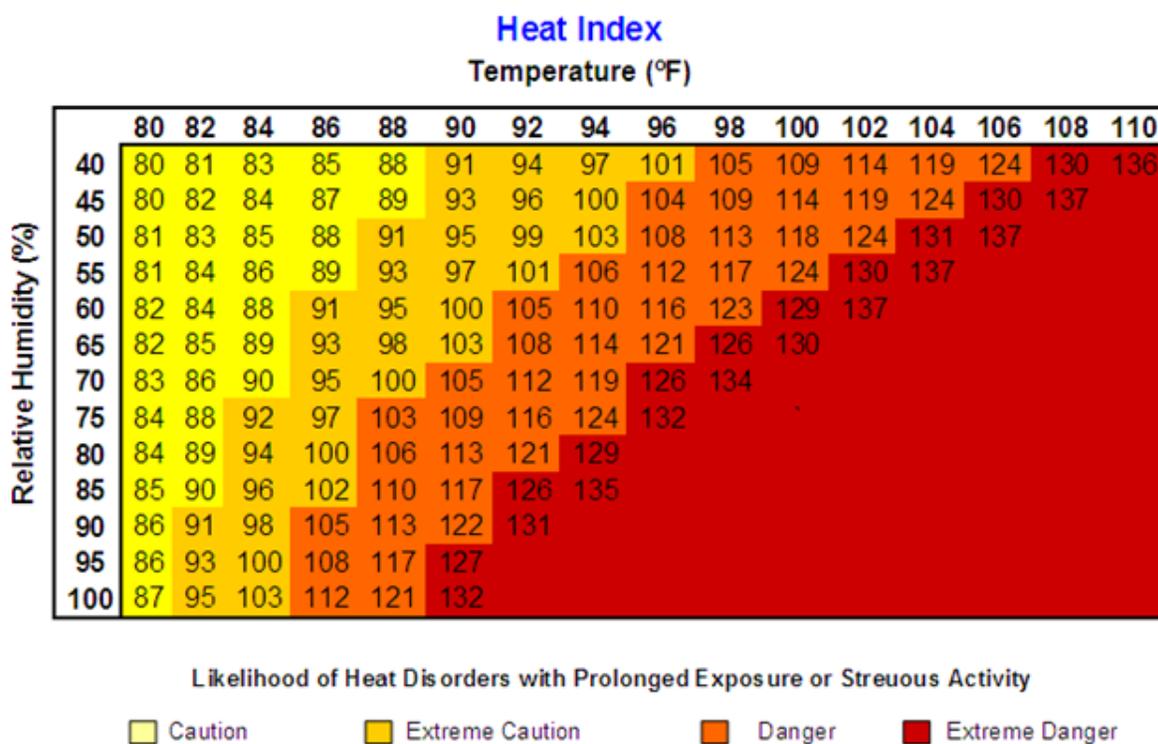
#### Thermal Stress Monitoring Flow Chart



### 10.4.4 Thermal Stress Monitoring—Permeable or Impermeable Clothing

When **permeable work clothes** are worn (street clothes or clothing ensembles over street clothes), regularly observe workers for signs and symptoms of heat stress and implement physiological monitoring as indicated below. This should start when the heat index reaches 80°F (27 degrees Celsius) [see Heat Index Table below], or sooner if workers exhibit symptoms of heat stress indicated in the table above. The heat index values were devised for shady, light wind conditions; exposure to full sunshine can increase the values by up to 15°F (8 degrees Celsius). Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

When wearing **impermeable clothing** (for example, clothing doesn't allow for air or water vapor movement such as Tyvek), physiological monitoring as described below shall be conducted when the ambient temperature reaches 70°F (21 degrees Celsius) or sooner when climatic conditions may present greater risk of heat stress combined with wearing unique variations of impermeable clothing, or workers exhibit symptoms of heat stress.



Heat Index	Possible Heat Disorders	Minimum Frequency of Physiological Monitoring
80°F - 90°F (27°C - 32°C)	Fatigue possible with prolonged exposure and/or physical activity	Conduct initial monitoring as baseline and observe workers for signs of heat stress and implement physiological monitoring if warranted.
90°F - 105°F (32°C - 41°C)	Sunstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity	Conduct initial monitoring as baseline, then at least every hour, or sooner, if signs of heat stress are observed.
105°F - 130°F (41°C - 54°C)	Sunstroke, heat cramps, or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.	Conduct initial monitoring as baseline, then every 30 minutes or sooner if signs of heat stress are observed.
130°F or Higher (54°C or Higher)	Heat/Sunstroke highly likely with continued exposure.	Conduct initial monitoring as baseline, then every 15 minutes or sooner if signs of heat stress are observed.

Source: National Weather Service

## Physiological Monitoring and Associated Actions

For employees wearing permeable clothing, follow the minimum frequency of physiological monitoring listed in the Heat Index Table.

For employees wearing impermeable clothing, physiological monitoring should begin initially at a 15-minute interval, then if the employee's heart rate or body temperature is within acceptable limits, conduct the subsequent physiological monitoring at 30 minutes, and follow the established regimen protocol below.

When physiological monitoring is required, use either radial pulse or aural temperature and follow actions below:

- The sustained heart rate during the work cycle should remain below 180 beats per minute (bpm) minus the individual's age (for example 180 – 35 year old person = 145 bpm). The sustained heart rate can be estimated by measuring the heart rate at the radial pulse for 30 seconds as quickly as possible prior to starting the rest period.
- The heart rate after one minute rest period should not exceed 120 bpm.
- If the heart rate is higher than 120 bpm after the FIRST minute into the rest period, 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 120 bpm at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent.
- Continue this procedure until the rate is maintained below 120 bpm after the FIRST minute into the rest period.

Alternately, the body temperature can be measured, either oral or aural (ear), before the workers have something to drink.

- If the oral or aural temperature exceeds 99.6°F (37.6 degrees Celsius) at the beginning of the rest period, the following work cycle should be shortened by 33 percent.
- Continue this procedure until the oral or aural (ear) temperature is maintained below 99.6°F (37.6 degrees Celsius). While an accurate indication of heat stress, oral temperature is difficult to measure in the field; however, a digital aural (aural) thermometer is easy to obtain and inexpensive to purchase.
- Use the form attached to this HSP to track workers' measurements and actions taken.

### Procedures for when Heat Illness Symptoms are Experienced

- **Always** contact the RHSM when any heat illness related symptom is experienced so that controls can be evaluated and modified, if needed.
- In the case of cramps, reduce activity, increase fluid intake, move to shade until recovered.
- In the case of all other heat-related symptoms (fainting, heat rash, heat exhaustion), and if the worker is a CH2M HILL worker, contact the occupational physician at 1-866-893-2514 and immediate supervisor.
- In the case of heat stroke symptoms, call 911, have a designee give location and directions to ambulance service if needed, follow precautions under the emergency medical treatment of this HSP.
- Follow the Incident Notification, Reporting, and Investigation section of this HSP.

## 10.4.5 Cold

### General

Low ambient temperatures increase the heat lost from the body to the environment by radiation and convection. In cases where the worker is standing on frozen ground, the heat loss is also due to conduction.

Wet skin and clothing, whether because of water or perspiration, may conduct heat away from the body through evaporative heat loss and conduction. Thus, the body cools suddenly when chemical protective clothing is removed if the clothing underneath is perspiration-soaked.

Movement of air across the skin reduces the insulating layer of still air just at the skin’s surface. Reducing the insulating layer of air increases heat loss by convection.

Non-insulating materials in contact or near-contact with the skin, such as boots constructed with a metal toe or shank, conduct heat rapidly away from the body.

Certain common drugs, such as alcohol, caffeine, or nicotine, may exacerbate the effects of cold, especially on the extremities. The chemicals reduce the blood flow to peripheral parts of the body, which are already high-risk areas because of their large surface area to volume ratios. These substances may also aggravate an already hypothermic condition.

**Precautions**

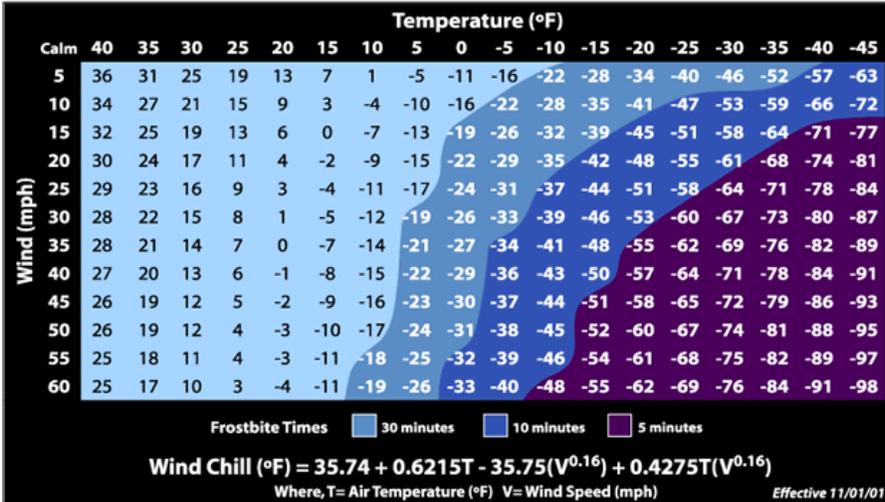
- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in wet weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council.
- Wind-Chill Index (below) 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.
- Persons who experience initial signs of immersion foot, frostbite, and/or hypothermia should report it immediately to their supervisor/PM 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**

	<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 <b>not</b> hot—water. Have victim drink warm fluids, but <b>not</b> 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 <b>not</b> coffee or alcohol. Get medical attention.



# Wind Chill Chart



## SECTION 11

# Biological Hazards and Controls

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Biological hazards are everywhere and change with the region and season. During project planning stages, ask the site Point of Contact if there are insect or other biological hazards that have been noted at any of the work sites.

If you encounter a biological hazard that has not been identified in this plan, contact the RISM so that a revision to this plan can be made. Whether it is contact with a poisonous plant, a poisonous snake, or a bug bite, do not take bites or stings lightly. If there is a chance of an allergic reaction or infection, or to seek medical advice on how to properly care for the injury, contact the occupational nurse at 1-866-893-2514.

## 11.1 Bees and Other Stinging Insects

Bees and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic.

Precautions include the following:

- 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 your supervisor and/or a buddy. When working at a remote location, ensure that first-aid kits contain over-the-counter allergy and itch medication (for example, Benadryl, Claritin, etc.) as well as other over-the-counter medications that may not be available to aid in symptom treatment.
- If bees or other stinging insects are known to be present, determine whether additional protective clothing should be donned before entering/working in brushy areas.
- Before entering a heavily vegetated or brushy area, observe the area for several minutes to see if bees or other stinging insects may be present. If nests or individual insects are observed, retreat and inquire whether a specialist or a client service can be contacted to clear the area before work proceeds.
- Consider if heavy-weight clothing or Tyvek, or head netting would provide additional protection in areas where wasps/bees are known or suspected. Be aware of heat stress conditions that additional clothing may cause.
- Use insect repellent on clothing. Wear light-colored clothing and remove bright reflective safety-colored clothing if not working near a roadway as these may attract the wasps.
- Wear fragrance-free or lightly-scented sunscreen, and body lotions. Bees are attracted to sweet scents. Avoid using floral scented soaps, shampoos, or conditioners.
- Move slowly and calmly through vegetated areas and try to avoid major disturbance of vegetation as wasps/bees often react to aggressive movement.
- If you encounter a wasp, back away slowly and calmly, do not run or swat at the insect. Wait for it to leave, or gently move or brush it off gently with a piece of paper or other light object. Do not use your hand.

If you are stung, contact the occupational nurse at 1-866-893-2514, no matter how minor it may seem. If a stinger is present, remove it as soon as possible using something with a thin, hard edge (for example, credit card) to scrape the stinger out. Be sure to sanitize the object first with hand sanitizer, alcohol, or soap and water. Wash and disinfect the wound, cover it, and apply ice. Watch for an allergic reaction if you have never been stung before. Call 911 if the reaction is severe.

## 11.2 Fire Ants

There are several types of fire ants in the United States that can cause painful bites and allergic reactions. Fire ants aggressively defend their nests by stinging several times after climbing on their victims. Large ant mounds are easily visible, but there can be smaller mounds or nests with little “worked” soil that can be stepped on inadvertently. They can also be under rocks, wood, or other debris. Implement the following when fire ants are observed:

- Be aware of fire ants and take care not to stand on ant nests.
- Use insect repellents on clothing and footwear to temporarily discourage ants from climbing.
- Tuck pants into socks.

If stung, get away from the area on which you are standing, briskly brush off ants, and wash the affected area with soap. Call the occupational nurse.

## 11.3 Giant Hogweed

Giant hogweed is a noxious weed that has become established in New York, Pennsylvania, Ohio, Maryland, Oregon, Washington, Michigan, Virginia, Vermont, New Hampshire, Maine, and adjacent areas of Canada, but can be spread to surrounding areas.

Its sap, in combination with moisture and sunlight, can cause phytophotodermatitis—a serious skin inflammation and severe eye irritation leading to blindness. Contact between the skin and the sap of this plant occurs either through brushing against the bristles on the stem or breaking the stem or leaves. Eye exposure to the sap can occur during the breaking of the stems (during clearing/grubbing). Heat, sunlight, and moisture worsen the skin reaction.

Giant hogweed is a biennial or perennial that can grow up to 12 feet (approximately 3.5 meters) or more. Its hollow, ridged stems grow 2 to 4 inches (5 to 10 centimeters) in diameter and have dark reddish-purple blotches. Its large compound leaves can grow up to 5 feet (1.5 meters) wide. Its white flower heads can grow up to 2.5 feet (approximately 1 meter) in diameter.

Symptoms of exposure include initial itching and redness, then painful blisters form within 48 hours with the area becoming dark and pigmented. Long-term effects include scarring, sensitivity of the affected area to sunlight, and temporary or permanent blindness if it gets into the eyes.

As with all hazardous plants, recognition and avoidance is key. Do not touch any portion of the plant. Become familiar with the identity of the plants (see below). 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 cold water immediately. Keep exposed area away from sunlight for 48 hours. Contact the occupational nurse immediately.



## 11.4 Mosquito Bites

Due to the recent detection of the West Nile Virus in the southwestern 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 N,N-diethyl-meta-toluamide (DEET) since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35 percent DEET. 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.

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

### 11.4.1 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 to 15 days.

Contact the project RHSM with questions, and immediately report any suspicious symptoms to your supervisor and PM, and contact the occupational nurse at 1-866-893-2514.

## 11.5 Poison Ivy, Poison Oak, 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. Shrubs are usually 12 to 30 inches high, or can also be a tree-climbing vine, with triple leaflets and short, smooth hair underneath. Plants are red and dark green in spring

and summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in fall, but plants lose its (yellowed, then brown) leaves in winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons. These plants contain urushiol a colorless or pale yellow oil that oozes from any cut or crushed part of the plant, including the roots, stems and leaves and causes allergic skin reactions when contacted. The oil is active year round.

Become familiar with the identity of the plants (see images below). 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.

*Poison Ivy*



*Poison Sumac*



*Poison Oak*



Contamination with poison ivy, sumac, or oak can happen through several pathways, including the following:

- Direct skin contact with any part of the plant (even roots once aboveground foliage has been removed).
- Contact with clothing that has been contaminated with the oil.
- Contact from removing shoes that have been contaminated (shoes are coated with urushiol oil).
- Sitting in a vehicle that has become contaminated.
- Contact with any objects or tools that have become contaminated.
- Inhalation of particles generated by weed-whacking, chipping, and vegetation clearing.

If you must work on a site with poison ivy, sumac, or oak, the following precautions are necessary:

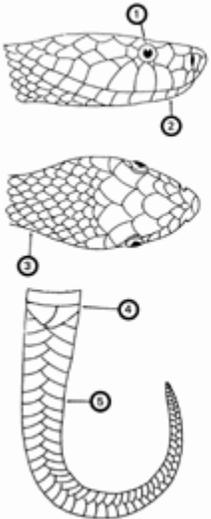
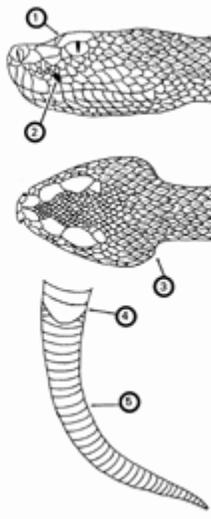
- Do not drive vehicles onto the site where it will come into contact with poison ivy, sumac, or oak. Vehicles that need to work in the area, such as drill rigs or heavy equipment must be washed as soon as possible after leaving the site.
- All tools used in the poison ivy, sumac, or oak area, including those used to cut back poison oak, surveying instruments used in the area, air monitoring equipment, or other test apparatus must be decontaminated before they are placed back into the site vehicle. If onsite decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated.
- PPE, including Tyvek coveralls, gloves, and boot covers must be worn. PPE must be placed into plastic bags and sealed if they are not disposed of immediately into a trash receptacle.
- As soon as possible following the work, shower to remove any potential contamination. Any body part with suspected or actual exposure should be washed with Zanfel, Tecnu, or other product designed for removing urushiol. If you do not have Zanfel or Tecnu, wash with cold water. Do not take a bath because the oils can form an invisible film on top of the water and contaminate your entire body upon exiting the bath.
- Tecnu may also be used to decontaminate equipment.
- Use IvyBlock or similar products to prevent poison oak, ivy, and sumac contamination. Check with the closest CH2M HILL warehouse to see if these products are available. Follow all directions for application.

If you do come into contact with one of these poisonous plants and a reaction develops, contact your supervisor and the occupational nurse 1-866-893-2514.

## 11.6 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 bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Call the occupational nurse at 1-866-893-2514 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. The following is a guide to identifying poisonous snakes from non-poisonous snakes.

### Identification of Poisonous Snakes

Major Identification Features Non-venomous Snake	Major Identification Features Venomous Snake
<ol style="list-style-type: none"> <li>1. Round pupils</li> <li>2. No sensing pit</li> <li>3. Head slightly wider than neck</li> <li>4. Divided anal plate</li> <li>5. Double row of scales on the underside of the tail</li> </ol> 	<ol style="list-style-type: none"> <li>1. Elliptical pupils</li> <li>2. Sensing pit between eye and nostril</li> <li>3. Head much wider than neck</li> <li>4. Single anal plate</li> <li>5. Single scales on the underside of the tail</li> </ol> 

## 11.7 Spiders—Brown Recluse and Widow

The Brown Recluse spider can be found most anywhere in the United States. It varies in size in shape, but the distinguishing mark is the violin shape on its body. They are typically non-aggressive. Keep an eye out for irregular, pattern-less webs that sometimes appear almost tubular built in a protected area such as in a crevice or between two rocks. The spider will retreat to this area of the web when threatened.

The Black Widow, Red Widow, and the Brown Widow are all poisonous. Most have globose, shiny abdomens that are predominantly black with red markings (although some may be pale or have lateral stripes), with moderately long, slender legs. The spiders are nocturnal and build a three-dimensional tangled web, often with a conical tent of dense silk in a corner where the spider hides during the day.

## 11.7.1 Hazard Controls

- Inspect or shake out any clothing, shoes, towels, or equipment before use.
- Wear protective clothing such as a long-sleeved shirt and long pants, hat, gloves, and boots when handling stacked or undisturbed piles of materials.
- Minimize the empty spaces between stacked materials.
- Remove and reduce debris and rubble from around the outdoor work areas.
- Trim or eliminate tall grasses from around outdoor work areas.
- Store apparel and outdoor equipment in tightly closed plastic bags.
- Keep your tetanus boosters up-to-date (every 10 years). Spider bites can become infected with tetanus spores.

If you think you have been bit by a poisonous spider, immediately call the occupational nurse at 1-866-893-2514 and follow the guidance below:

- Remain calm. Too much excitement or movement will increase the flow of venom into the blood.
- Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite.
- Elevate the bitten area, if possible.
- Do not apply a tourniquet, and do not try to remove venom.
- Try to positively identify the spider to confirm its type. If the spider has been killed, collect it in a plastic bag or jar for identification purposes. Do not try to capture a live spider—especially if you think it is a poisonous spider.

Black Widow



Red Widow



Brown Widow



Brown Recluse



## 11.8 Ticks

Every year employees are exposed to tick bites at work and at home putting them at risk of illness. Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to 0.25 inch (6.4 millimeters) in size.

In some geographic areas, exposure is not easily avoided. 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 DEET only. Check yourself frequently for ticks.

Where site conditions (vegetation above knee height, tick-endemic area) or when tasks (having to sit or kneel in vegetation) diminish the effectiveness of the controls mentioned above, bug-out suits (check with your local or regional warehouse) or Tyvek shall be used. Bug-out suits are more breathable than Tyvek.

Take precautions to avoid exposure by including pre-planning measures for biological hazards prior to starting fieldwork. Avoid habitats where possible and reduce the abundance through habitat disruption or application of acaricide. If the controls aren't feasible, contact your local or regional warehouse for preventative equipment such as repellants, protective clothing, and tick-removal kits. Use the buddy system and perform tick inspections prior to entering the field vehicle. If ticks were not planned to be encountered and are observed, do not continue fieldwork until the controls can be implemented.

See tick fact sheet attached to this SSHP for further precautions and controls to implement when ticks are present. If bitten by a tick, follow the removal procedures found in the tick fact sheet, and call the occupational nurse at 1-866-893-2514.

Be aware of the symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme disease is a rash that might appear. The rash looks like a bull's eye with a small welt in the center. RMSF is a rash of red spots under the skin 3 to 10 days after the tick bite. In both RMSF and Lyme disease, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, again contact the occupational nurse at 1-866-893-2514.

Be sure to complete an Incident Report (either use the Hours and Incident Tracking System [HITS] system on the Virtual Office) if you do come in contact with a tick.

SECTION 12

# Contaminants of Concern

Table 12-1 summarizes the potential COCs and their occupational exposure limit and signs and symptoms of exposure. The table also includes the maximum concentration of each COC and the associated location and media that was sampled (groundwater, soil boring, surface soil). The concentrations were used to determine engineering and administrative controls described in the “Project-Specific Hazard Controls” section of this SSHP, as well as PPE and site monitoring requirements.

TABLE 12-1  
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)
Arsenic	GW: NA SB: NA SS: NA	0.01 mg/m <sup>3</sup>	5 mg/ m <sup>3</sup> as As Ca	Ulceration of nasal septum, respiratory irritation, dermatitis, gastrointestinal disturbances, peripheral neuropathy, hyperpigmentation	NA
Mercury	GW: NA SB: NA SS: NA	0.025 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	Skin and eye irritation, cough, chest pain, difficult breathing, bronchitis, pneumonitis, tremors, insomnia, irritability, indecision, headache, fatigue, weakness, GI disturbance	UK
Chromium (as Cr(II) & Cr(III))	GW:NA SB:NA SS:NA	0.5 mg/m <sup>3</sup>	25 mg/m <sup>3</sup>	Irritated eyes, sensitization dermatitis, histologic fibrosis of lungs	NA

Footnotes:

<sup>a</sup> Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), SS (Surface Soil), SL (Sludge), SW (Surface Water).

<sup>b</sup> Appropriate value of permissible exposure limit (PEL), recommended exposure limit (REL), or threshold limit value (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.

eV = electron volt

mg/m<sup>3</sup> = milligrams per cubic meter

µg/m<sup>3</sup> = micrograms per cubic meter

SB = soil boring

### Potential Routes of Exposure

**Dermal:** Contact with contaminated media. This route of exposure is minimized through use of engineering controls, administrative controls and proper use of PPE.

**Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through use of engineering controls, administrative controls and proper use of respiratory protection when other forms of control do not reduce the potential for exposure.

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

SECTION 13

# Site Monitoring

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(Reference CH2M HILL SOP HSE-207, *Exposure Monitoring for Airborne Chemical Hazards*)

N/A

SECTION 14

# Personal Protective Equipment

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(Reference EM 385-1-1 Section 5, *Personal Protective and Safety Equipment*; CH2M HILL- SOP HSE-117, *Personal Protective Equipment*)

## 14.1 Required Personal Protective Equipment

PPE must be worn by employees when actual or potential hazards exist and engineering controls or administrative practices cannot adequately control the hazards.

A PPE assessment has been conducted by the RHSM based on project tasks (see PPE specifications below). Verification and certification of assigned PPE by task is completed by the RHSM that approved this plan. Below are items that need to be followed when using any form of PPE:

- Employees must be trained to properly wear and maintain the PPE.
- Employees must be trained in the limitations of the PPE.
- In work areas where actual or potential hazards are present at any time, PPE must be worn by employees working or walking through the area.
- Areas requiring PPE should be posted or employees must be informed of the requirements in an equivalent manner.
- PPE must be inspected prior to use and after any occurrence to identify any deterioration or damage.
- PPE must be maintained in a clean and reliable condition.
- Damaged PPE shall not be used and must either be repaired or discarded.
- PPE shall not be modified, tampered with, or repaired beyond routine maintenance.

The employer shall identify actual or potential hazards and the need for PPE. The following two conditions typically dictate the necessity for PPE: general hazards present in the work area, and hazards created by the tasks being performed. Some work areas have actual or potential hazards that can be present at any time, thereby potentially exposing any personnel working or walking through the area. Such areas should be posted as PPE-required areas, or personnel should be informed of the requirements in an equivalent manner. In addition, the actual task being performed may create a hazard and require personnel who perform this task to wear appropriate PPE. The areas where the tasks are taking place may become PPE-required areas as long as that specific task is taking place. Specific hazardous assessments are conducted through the AHA process, and thus AHAs become the daily tool for proper hazard assessment and mitigation. The following table should be used as a general minimum guideline, with the specific task AHA having the final required protocol for PPE. AHAs are a living document, and should reflect changing site conditions.

Table 14-1 outlines PPE to be used according to task, based on project-specific hazard assessment. If a task other than the tasks described in this table needs to be performed, contact the RHSM so this table can be updated.

TABLE 14-1  
**Project-Specific Personal Protective Equipment Requirements<sup>a</sup>**

Task	Level	Body	Head	Respirator <sup>b</sup>
-General Site Entry -Surveying/Utility Locating -Oversight of subcontractors (if outside the exclusion zone)	D	Work clothes; safety toed leather work boots and gloves Tyvek or Bug-Out Suits when needed to protect against biological hazards (see memo as an attachment to this HSP for specific PPE specifications) <b>Special:</b> If walking in knee-high or higher vegetation, snake chaps are required.	Hardhat <sup>c</sup> Safety glasses with side shields Ear protection <sup>d</sup>	None required
Soil Sampling	Modified D	<b>Coveralls:</b> Uncoated Tyvek® (polycoated Tyvek if groundwater contact is possible) <b>Boots:</b> Safety -toe, chemical-resistant boots OR Safety -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 with side shields Ear protection <sup>d</sup>	None required.
Work near vehicular traffic ways or earth moving equipment.	All	Appropriate level of ANSI/ISEA 107-2010 high-visibility safety vests.	Work near vehicular traffic ways or earth moving equipment.	

## Reasons for Upgrading or Downgrading Level of Protection (with approval of the RHSM)

Upgrade <sup>f</sup>	Downgrade
<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 in the “Site Monitoring” section 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 decrease 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 SC.

<sup>d</sup> Ear protection should be worn when conversations cannot be held at distances of 3 feet (1 meter) or less without shouting.

<sup>e</sup> See cartridge change-out schedule.

<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 RHSM, and an SC qualified at that level is present.

## 14.2 Respiratory Protection

(Reference Section 05.E.03, EM 385-1-1 and CH2M HILL SOP HSE-121, *Respiratory Protection*)

### 14.2.1 General

Respiratory protection is not anticipated to be required at this project site based on the current scope of work. If the parameters change, or unforeseen circumstances dictate the use of respiratory protection this section will be updated accordingly.

# Worker Training and Qualification

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## 15.1 CH2M HILL Worker Training

The intent of employee training program is to ensure that employees receive the appropriate level of training to conduct their work in a safe manner and to comply with applicable regulations. All employees are required to maintain the training qualification necessary to perform their assigned duties and job functions. (Reference CH2M HILL SOP HSE-110, *Training*.)

### 15.1.1 Hazardous Waste Operations Training

All employees engaging in HAZWOPER shall receive appropriate training as required by 29 CFR 1910.120 and 29 CFR 1926.65. At a minimum, the training shall have consisted of instruction in the topics outlined in 29 CFR 1910.120 and 29 CFR 1926.65. Personnel who have not met these training requirements shall not be allowed to engage in HAZWOPER activities.

#### Initial Training

General site workers engaged in hazardous waste operations shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations, unless otherwise noted in the above-referenced standards.

Employees who may be exposed to health hazards or hazardous substances at treatment, storage, and disposal operations shall receive a minimum of 24 hours of initial training to enable the employee to perform their assigned duties and functions in a safe and healthful manner.

Employees engaged in emergency response operations shall be trained to the level of required competence in accordance with 29 CFR 1910.120.

#### Three-day Actual Field Experience

General site workers for hazardous waste operations shall have received 3 days of actual experience (on-the-job training) under the direct supervision of a trained, qualified supervisor, and shall be documented. If the field experience has not already been received and documented at a similar site, the supervised experience shall be accomplished and documented at the beginning of the assignment of the project.

#### Refresher Training

General site workers and treatment, storage, and disposal workers shall receive 8 hours of refresher training annually (within the previous 12-month period) to maintain qualifications for fieldwork. Employees engaged in emergency response operations shall receive annual refresher training of sufficient content and duration to maintain their competencies or shall demonstrate competency in the areas at least annually.

#### Eight-hour Supervisory Training

Onsite management or supervisors who will be directly responsible for, or supervise employees engaged in hazardous waste site operations, will have received at least 8 hours of additional specialized training in managing such operations. Employees designated as Safety Coordinator—Hazardous Waste are considered 8-hour HAZWOPER Site Safety Supervisor-trained.

### 15.1.2 First-aid/Cardiopulmonary Resuscitation

First-aid and CPR training consistent with the requirements of a nationally recognized organization such as the American Red Cross Association or National Safety Council shall be administered by a certified trainer. A minimum of two personnel per active field operation will have first-aid and CPR training. Bloodborne pathogen training located on CH2M HILL's Virtual Office is also required for those designated as first-aid/CPR trained.

### **15.1.3 Site Safety and Health Officer Training**

SSHOs are trained to implement the HSE program on CH2M HILL field projects. A qualified SSHO is required to be identified in the SSHSP for CH2M HILL field projects. SSHOs must also meet the requirements of the worker category appropriate to the type of field project (construction or hazardous waste). In addition, the SSHOs shall have completed additional safety training required by the specific work activity on the project that qualifies them to implement the HSE program (for example, fall protection, excavation). All SSHO's shall also have completed 30-hour OSHA construction safety training, and have the requisite experience to oversee the tasks assigned. Furthermore, the SSHO shall have an understanding of the USACE EM385-1-1 Safety Manual.

### **15.1.4 Site-specific Training**

Prior to commencement of field activities, all field personnel assigned to the project will have completed site-specific training that will address the contents of applicable HSPs, including the activities, procedures, monitoring, and equipment used in the site operations. Site-specific training will also include site and facility layout, potential hazards, risks associated with identified emergency response actions, and available emergency services. The training allows fieldworkers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and work operations for their particular activity.

### **15.1.5 Project-Specific Training Requirements**

Project-specific training for this project includes the following:

- SSHPs/AHAs
- Online Computer Based CH2M HILL worker category training

## **15.2 Subcontractor Personnel Qualifications**

All subcontractors will provide the RHSM with a list certifying the training and qualifications of competent persons and qualified operators for the following activities/equipment.

### **15.2.1 Competent Persons/Qualified Operators**

- N/A

### **15.2.2 Activity/Equipment List**

- Field Vehicles/Hand Tools

## **15.3 Project Employee Orientation**

Employees expecting to access the site are required to have the project employee orientation. The training will be provided by the SSC. The training provided to the employees in the employee orientation shall include the following:

- Review the SSHP and APP
- Present an overall site safety briefing (general site safety)
- Review employee responsibilities
- Review AHA policies and procedures
- Review emergency procedures and evacuation plan
- Review injury and incident reporting procedures
- Review reporting procedures for hazardous conditions and/or hazardous activities

## **15.4 Personal Protective Equipment Training**

OSHA requires each PPE user to receive training on the proper care, maintenance, limitations, and instructions on how to wear and adjust PPE. The proper use of PPE will also be included in project safety briefings and toolbox meetings.

## 15.5 Safety Meetings and Toolbox Meetings

Safety meetings provide a method for maintaining safety awareness and providing safety-related information and training to employees. Safety meetings for project supervisory personnel and project employees shall be held at least daily, and include relevant information for on- and off-the-job safety.

## 15.6 Activity Hazard Analysis Training

Each supervisor will review task-specific AHAs with all workers assigned to perform that task prior to the beginning of that task anywhere on the job site. All workers will sign the AHA document signifying they have been trained and understand the task steps, hazards, and hazard controls to be used.

## 15.7 Safety Pre-task Planning and Training

Each day, the onsite supervisors shall hold informational safety training with each member of their crew. Information discussed and training performed shall pertain to current project activities and scope of work. The subcontractor is encouraged to use the time for employee input and task-specific training.

## 15.8 Vendor Training

Vendors that supply equipment to the project will be required to perform a training session to review and explain the safe operation procedures to the parties that will be using or operating the equipment.

## 15.9 Emergency Response Plan Training

Emergency Response Plan training will occur during the employee orientation and retraining will occur periodically in safety meetings. The Emergency Response Plan training will include evacuation alarms, site evacuation, designated evacuation assembly areas, and route to emergency medical facility. Emergency drills will be performed initially, but at least twice yearly. See Section 19 for the Emergency Preparedness procedures.

## 15.10 Conduct of Training

### 15.10.1 Instructor/Trainer Requirements

All personnel who will conduct training will have documented expertise in the areas of which they will be conducting the training, and knowledge of the regulatory and other requirements. They will also be listed as a competent person in that area by the employer or contractor.

### 15.10.2 Initial Training

All employees will have documentation of initial training required to perform their assigned duties with their assigned tools and equipment. If previous documentation or subcontractor certification is not available, then initial training will take place onsite prior to the employee commencing work.

### 15.10.3 Retraining

Retraining will be required under the following conditions:

- There is a change in operations or equipment capabilities.
- An employee is seen performing an unsafe act, or operating equipment or machinery in an unauthorized manner.
- There is an incident or Incident on the job site.
- Anytime the regulatory requirements require refresher training due to time periods, such as HAZWOPER, etc.

### 15.10.4 Demonstrated Competency

For all training conducted for equipment, machinery, or hazardous activities, the trainer will document in writing that the individual has “demonstrated competency” in the areas required to perform their assigned tasks safely and in compliance with the regulatory and other guidance.

## 15.11 Documentation

All training shall be documented. Documentation and certificates verifying completion will be maintained onsite by the employer, and copies of the training documentation will be submitted to the Health and Safety Manager. Training documentation will be made available for review at all times.

## SECTION 16

# Medical Surveillance and Qualification

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(Reference CH2M HILL SOP HSE-113, *Medical Surveillance*)

All site workers participating in HAZWOPER will maintain an adequate medical surveillance program in accordance with 29 CFR 1910.120 or 29 CFR 1926.65 and other applicable OSHA standards. Documentation of employee medical qualification (for example, physician's written opinion) will be maintained in the project files and made available for inspection.

## 16.1 Hazardous Waste Operations and Emergency Response

CH2M HILL personnel expected to participate in onsite HAZWOPER tasks are required to have a current medical qualification for performing this work. Medical qualification shall consist of a qualified physician's written opinion regarding fitness for duty at a hazardous waste site, including any recommended limitations on the employee's assigned work. The physician's written opinion shall state whether the employee has any detected medical conditions that would place the employee at increased risk of material impairment of the employee's health from work in HAZWOPER, or from respirator use.

## 16.2 Job- or Site-specific Medical Surveillance

Due to the nature of hazards for a particular job or work site, specialized medical surveillance may be necessary. This surveillance could include biological monitoring for specific compounds, or specialized medical examinations.

## 16.3 Respirator User Qualification

Personnel required to wear respirators must have a current medical qualification to wear respirators. Medical qualification shall consist of a qualified physician's written opinion regarding the employee's ability to safely wear a respirator in accordance with 29 CFR 1910.134.

## 16.4 Hearing Conservation

Personnel working in hazardous waste operations or operations that fall under 29 CFR 1910.95 and exposed to noise levels in excess of the 85 dBA time-weighted average shall be included in a hearing-conservation program that includes annual audiometric testing.

# Site Control Plan

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## 17.1 Site Control Procedures

(Reference CH2M HILL SOP HSE-218, *Hazardous Waste Operations*)

Site control is established to prevent the spread of contamination throughout the site and to ensure that only authorized individuals are permitted into potentially hazardous areas.

The SSHO will implement site control procedures, including the following bulleted items:

- Establish support, contamination reduction, 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.”

## 17.2 Remediation Work Area Zones

(Reference CH2M HILL SOP HSE-218 Hazardous Waste Operations)

A three-zone approach will be used to control areas where site contaminants exist. Access will be allowed only after verification of appropriate training and medical qualification. The three-zone approach shall include an exclusion zone (EZ), contamination reduction zone (CRZ), and a support zone (SZ). The three-zone approach is not required for construction work performed outside contaminated areas where control of site contamination is not a concern.

Specific work control zones shall be established as necessary during task planning. Site work zones should be modified in the field as necessary, based on such factors as equipment used, air monitoring results, environmental conditions, or alteration of work plans. The following guidelines shall be used for establishing and revising these preliminary zone designations.

### 17.2.1 Support Zone

The SZ is an uncontaminated area (trailers, offices, field vehicles, etc.) that will serve as the field support area for most operations. The SZ provides field team communications and staging for emergency response. Appropriate sanitary facilities and safety and emergency response equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged and decontaminated materials, or personnel with medical emergencies that cannot be decontaminated.

### 17.2.2 Contamination Reduction Zone

The CRZ is established between the EZ and the SZ, upwind of the contaminated area where possible. The CRZ provides an area for decontamination of personnel, portable handheld equipment and tools, and heavy equipment. In addition, the CRZ serves as access for heavy equipment and emergency support services.

### 17.2.3 Exclusion Zone

The EZ is where activities take place that may involve exposure to site contaminants and/or hazardous materials or conditions. This zone shall be demarcated to prevent unauthorized entry. More than one EZ may be established

if there are different levels of protection to be employed or different hazards that exist in the same work area. The EZ shall be large enough to allow adequate space for the activity to be completed, including field personnel and equipment, as well as necessary emergency equipment.

The EZ shall be demarcated with some form of physical barrier or signage. The physical barrier or signage shall be placed so that it is visible to personnel approaching or working in the area. Barriers and boundary markers shall be removed when no longer needed.

#### **17.2.4 Other Controlled Areas**

Other work areas may need to be controlled due to the presence of an uncontrolled hazard, to warn workers of requirements, or to prevent unauthorized entry. Examples include general construction work areas, open excavations, high noise areas, vehicle access areas, and similar activities or limited access locations. The areas shall be clearly demarcated with physical barriers (fencing, cones, reinforced caution tape, or rope) as necessary and posted with appropriate signage.

## SECTION 18

# Decontamination

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(Reference CH2M HILL SOP HSE-218, *Hazardous Waste Operations*)

Decontamination areas will be established for work in potentially contaminated areas to prevent the spread of contamination. Decontamination areas should be located upwind of the exclusion zone where possible and should consider any adjacent or nearby projects and personnel. The SC must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SC. The SC must ensure that procedures are established for disposing of materials generated on the site.

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SC should establish areas for eating, drinking, and smoking.

## 18.1 Contamination Prevention

Preventing or avoiding contamination of personnel, tools, and equipment will be considered in planning work activities at all field locations. Good contamination prevention and avoidance practices will assist in preventing worker exposure and result in a more efficient decontamination process. Procedures for contamination prevention and avoidance include the following:

- Do not walk through areas of obvious or known contamination.
- Do not directly handle or touch contaminated materials.
- Make sure there are no cuts or tears in PPE.
- Fasten all closures in suits and cover them with duct tape, if appropriate.
- Take particular care to protect any skin injuries.
- Stay upwind of airborne contamination, where possible.
- Do not eat or drink in contaminated work areas.
- Do not carry food, beverages, tobacco, or flame-producing equipment into contaminated work areas.
- Minimize the number of personnel and amount of equipment in contaminated areas to that necessary for accomplishing the work.
- Choose tools and equipment with nonporous exterior surfaces that can be easily cleaned and decontaminated.
- Cover monitoring and sampling equipment with clear plastic, leaving openings for the sampling ports, as necessary.
- Minimize the amount of tools and equipment necessary in contaminated areas.

## 18.2 Personnel and Equipment Decontamination

Personnel exiting an EZ must ensure that they are not spreading potential contamination into clean areas or increasing their potential for ingesting or inhaling potential contaminants. Personal decontamination may range from removing outer gloves as exiting the EZ, to proceeding through an outer layer doffing station, including a boot and glove wash and rinse, washing equipment, etc. Equipment that has come into contact with contaminated media must also be cleaned/decontaminated when it is brought out of the EZ.

## **18.3 Decontamination during Medical Emergencies**

Standard personnel decontamination practices will be followed whenever possible. For emergency life-saving first-aid and/or medical treatment, normal decontamination procedures may need to be abbreviated or omitted. In this situation, site personnel shall accompany contaminated victims to advise emergency response personnel on potential contamination present and proper decontamination procedures.

Outer garments may be removed if they do not cause delays, interfere with treatment, or aggravate the problem. Protective clothing can be cut away. If the outer garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances or medical personnel. Outer garments can then be removed at the medical facility.

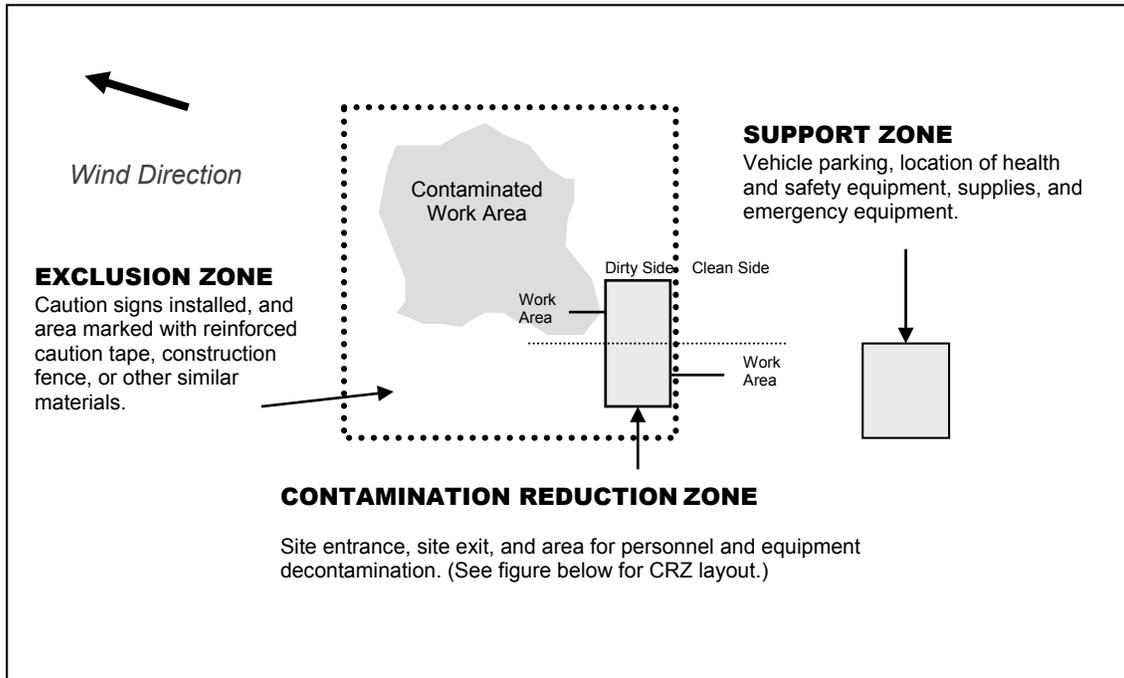
## **18.4 Waste Collection and Disposal**

All contaminated material generated through the personnel and equipment decontamination processes (for example, contaminated disposable items, gross debris, liquids, and sludges) will be properly containerized, labeled, stored at a secure location, and disposed of in accordance with the project plans.

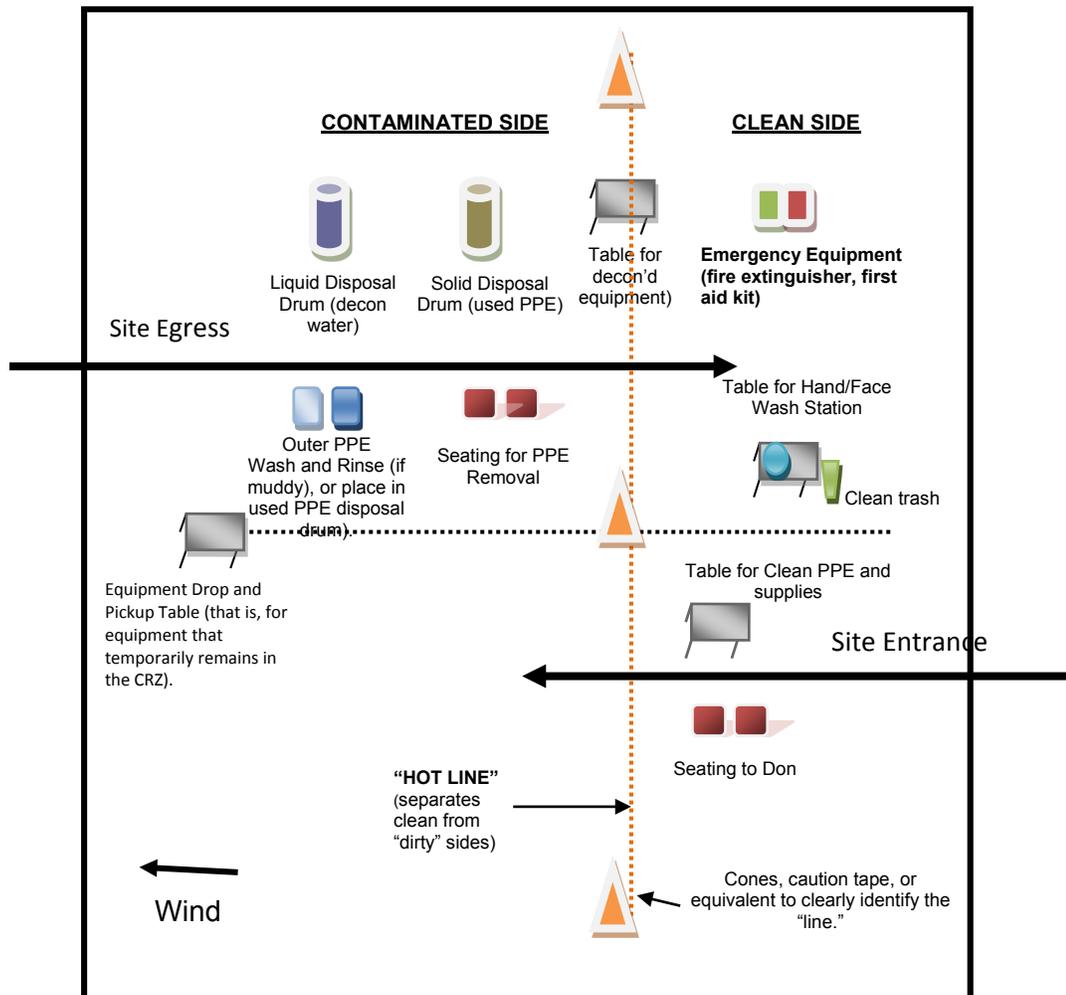
## **18.5 Diagram of Personnel-decontamination Line**

The following figure illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SC to accommodate task-specific requirements.

### Work Area—Set-up Appropriately Based On Wind Direction



### Typical Contamination Reduction Zone



SECTION 19

# Emergency Response Plan

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(Reference CH2M HILL SOP HSE-106, *Emergency Planning*)

## 19.1 Pre-emergency Planning

The Emergency Response Coordinator (ERC), typically the SSHO or designee, 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. Pre-Emergency Planning activities performed by the ERC include the following:

- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (two-way radio and air horn).
- Determine what offsite communication equipment is needed (nearest telephone or cell phone).
- Confirm and post the “Emergency Contacts” page and route to the hospital located in this section in project trailer(s) and keep a copy in field vehicles along with evacuation routes and assembly areas. Communicate the information to onsite personnel and keep it updated.
- 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.
- 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. This may include a “tabletop” exercise or an actual drill depending on the nature and complexity of the project. Drills should take place periodically but no less than once a year.
- Brief new workers on the emergency response plan.
- The ERC will evaluate emergency response actions and initiate appropriate follow-up actions.

## 19.2 Emergency Equipment and Supplies

The ERC shall ensure the following emergency equipment is on the site. Verify and update the locations of this equipment as needed. The equipment will be inspected in accordance with manufacturer’s recommendations. The inspection shall be documented in a field logbook or similar means to be kept in the project files.

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Emergency Equipment and Supplies	Location
20 (or two 10) class A,B,C fire extinguisher	Field Vehicle
First-aid kit	Field Vehicle
Eye wash	Field Vehicle
Potable water	Field Vehicle
Bloodborne-pathogen kit	Field Vehicle
Additional equipment (specify): Cell Phone	Field Vehicle/On SSHO

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## 19.3 Incident Response

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

- Notify appropriate response personnel.
- Shut down CH2M HILL operations and evacuate the immediate work area.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.
- Implement HSE-111, Incident Notification, Reporting and Investigation.
- Notify and submit reports to clients as required in contract.

Small fires or spills posing minimal safety or health hazards may be controlled with onsite spill kits or fire extinguishers without evacuating the site. When in doubt evacuate. Follow the incident reporting procedures in the “Incident Notification, Reporting, and Investigation” section of this SSHP.

## 19.4 Emergency Medical Treatment

Emergency medical treatment is needed when there is a life-threatening injury (such as severe bleeding, loss of consciousness, breathing or heart has stopped). When in doubt, if an injury is life-threatening or not, treat it as needing emergency medical treatment.

- Notify 911 or other appropriate emergency response authorities as listed in the “Emergency Contacts” page located in this section.
- The ERC 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, perform decontamination (if applicable) where feasible; lifesaving and first-aid or medical treatment takes priority.
- Initiate first-aid and CPR where feasible.
- Notify supervisor and if the injured person is a CH2M HILL employee, the supervisor will call the occupational nurse at 1-866-893-2514. Make other notifications as required by HSE SOP-111, *Incident Notification, Reporting and Investigation*.
- Make certain that the injured person is accompanied to the emergency room.
- Follow the Serious Incident Reporting process in HSE SOP-111, Incident Notification, Reporting, and Investigation, and complete incident report using the HITS system on the Virtual Office or if not feasible, use the hard copy forms provided as an attachment to this SSHP.
- Notify and submit reports to client as required in contract.

## 19.5 Evacuation

- Evacuation routes, assembly areas, and severe weather shelters (and alternative routes and assembly areas) are to be specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the ERC or designee before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The ERC 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 ERC will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).

- The ERC will follow the incident reporting procedures in the “Incident Notification, Reporting, and Investigation” section of this HSP.

## 19.6 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.

## 19.7 Firefighting Plan

(References: Section 01.E.01 & 06.A.02, EM 385-1-1 and CH2M HILL SOP HSE-208, *Fire Prevention*)

The decision on whether or not to try to extinguish a fire using available site personnel and equipment will be made by the SSC, and is based on whether the fire is small or large, and involves explosives or flammable liquids/gases.

### Location of Fire Extinguishers

Fire extinguishers will be located around the project sites as required in the following places at a minimum:

- In each vehicle
- Near areas where flammable materials are stored or in use

All fire extinguishers will be kept clearly visible, marked, and placed where they are easily accessible.

## 19.8 Inclement Weather

Sudden inclement weather can rapidly encroach upon field personnel. Preparedness and caution are the best defenses. Field crew members performing work outdoors should carry clothing appropriate for inclement weather. Personnel are to take heed of the weather forecast for the day and pay attention for signs of changing weather that indicate an impending storm. Signs include towering thunderheads, darkening skies, or a sudden increase in wind. If stormy weather ensues, field personnel should discontinue work and seek shelter until the storm has passed.

Protective measures during a lightning storm include seeking shelter; avoiding projecting above the surrounding landscape (don’t stand on a hilltop—seek low areas); staying away from open water, metal equipment, railroad tracks, wire fences, and metal pipes; and positioning people several yards apart. Some other general precautions include the following:

- Know where to go and how long it will take to get there. If possible, take refuge in a large building or vehicle. Do not go into a shed in an open area.
- The inclination to see trees as enormous umbrellas is the most frequent and most deadly mistake. Do not go under a large tree that is standing alone. Likewise, avoid poles, antennae, and towers.
- If the area is wide open, go to a valley or ravine, but be aware of flash flooding.
- If you are caught in a level open area during an electrical storm and you feel your hair stand on end, drop to your knees, bend forward and put your hands on your knees or crouch. The idea is to make yourself less vulnerable by being as low to the ground as possible and taking up as little ground space as possible. Lying down is dangerous, since the wet earth can conduct electricity. Do not touch the ground with your hands.
- Do not use telephones during electrical storms, except in the case of emergency.

Remember that lightning may strike several miles from the parent cloud, so work should be stopped and restarted accordingly. The lightning safety recommendation is 30-30: Seek refuge when thunder sounds within 30 seconds after a lightning flash; and do not resume activity until 30 minutes after the last thunder clap.

High winds can cause unsafe conditions, and activities should be halted until wind dies down. High winds can also knock over trees, so walking through forested areas during high-wind situations should be avoided. If winds increase, seek shelter or evacuate the area. Proper body protection should be worn in case the winds hit suddenly, because body temperature can decrease rapidly.

## Emergency Contacts

## 24-hour CH2M HILL Injury Reporting – 1-866-893-2514

### 24-hour CH2M HILL Serious Incident Reporting Contact – 720-286-4911

<b>Medical Emergency – 757-887-4991</b> <b>Facility Medical Response #:7-4911 Or 757-887-4911</b> <b>Local Ambulance #:757-887-4911</b> <b>Hot works Permits: 757-613-8194</b> <b>Base Safety Department Secure Area: (757) 887-4661</b>	<b>CH2M HILL Medical Consultant</b> WorkCare Dr. Peter Greaney, M.D. 300 S. Harbor Blvd, Suite 600 Anaheim, CA 92805 800-455-6155/866-893-2514 714-978-7488
<b>Fire/Spill Emergency – 911</b> <b>Facility Fire Response #:7-4911 onbase or 757-887-4333</b>	<b>CH2M HILL Director – Health, Safety, Security &amp; Environment</b> Andy Strickland/DEN (720) 480-0685 (cell) or (720) 286-2393 (office)
<b>Local Fire Dept. #:911</b>	<b>CH2M HILL Responsible Health and Safety Manager (RHSM)</b> Name: Carl Woods Phone: (513) 319-5771
<b>Security &amp; Police – 911</b> <b>Facility Security #:757-887-4676</b> <b>Local Police #:911</b>	<b>CH2M HILL Human Resources Department</b> Phone: Employee Connect toll-free number 1-877-586-4411 (U.S. and Canada)
<b>Utilities Emergency Phone Numbers</b> Water: 757-445-6868 Gas: 757-445-6868 Electric: 757-445-6868 Engineering Tech: G. Colley 757-636-7215 PWC: 757-887-4303	<b>CH2M HILL Worker's Compensation:</b> Contact Business Group Human Resources dept. to have form completed or contact Jennifer Rindahl after hours: (720)891-5382
<b>CH2M HILL PM</b> Name: Laura Lampshire Phone: 301-570-1042 (o), 301-580-0027 (c)	<b>Media Inquiries Corporate Strategic Communications</b> Name: John Corsi Phone: (720) 286-2087
<b>CH2M HILL Safety and Health Officer (SSHO)</b> Name: Brian Wachter Phone: 757-671-6289	<b>Automobile Incidents</b> Rental: Jennifer Rindahl/DEN: 720-286-2449 CH2M HILL owned vehicle: Linda George/DEN: 720-286-2057
<b>CH2M HILL Project Environmental Manager</b> Name: Hope Wilson Phone: 678-530-4226	<b>CHEMTEL (hazardous material spills)</b> <b>Phone: 800/255-3924</b>
<b>Federal Express Dangerous Goods Shipping</b> Phone: 800/238-5355	Evacuation Assembly Area(s): Outside of Gate 1
Facility Alarms: 3x Horn Blast of Field Vehicle	

Facility/Site Evacuation Route(s): Barracks Road to Main to exit Gate 1 See map for Evacuation Route

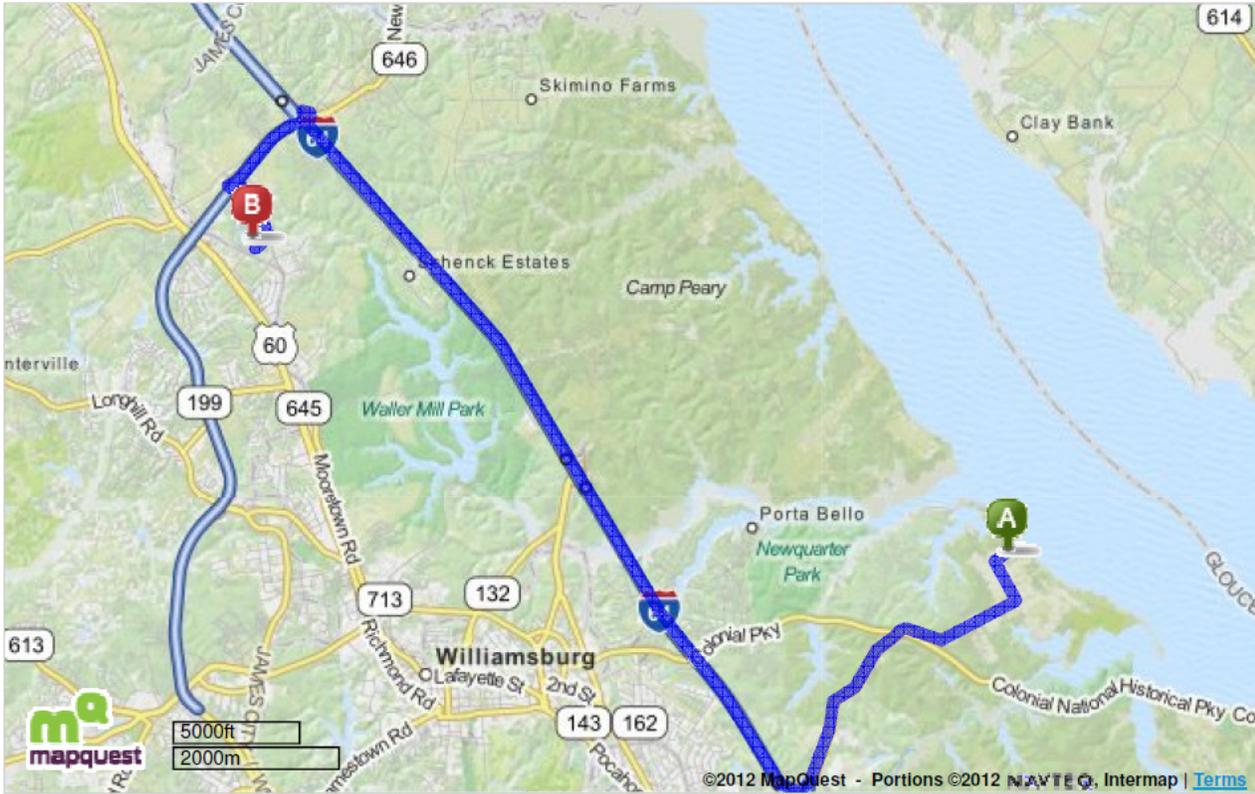
#### Directions to Local Hospital

**Sentara Williamsburg Regional Medical Center. Phone: 757-984-6000. 100 Sentara Circle, Williamsburg Va.**

From Gate 1:

1. Leave Cheatham Annex through Gate 1
2. Proceed to express way I-64
3. Turn right. Follow I-64 west for 14 miles to exit 234, Route 199 to Lightfoot.
4. Turn Left unto 199
5. Exit at east 603 toward Mooretown Road, proceed through stop light.
6. Follow Signs to Sentara Regional Medical Center Emergency Room on right.

Total Travel Estimate: **14.12 miles - about 19 minutes**



**Emergency Phone Numbers: Naval Weapons Station Yorktown and Cheatham Annex**

Fire and Rescue - Call - 757- 887-4911 (Do Not Call #911)

Police 757- 887- 4911

Utilities Trouble 757- 445- 6868

Hot Work Permits – (Fire Marshal) -757-613-8194 (Office) - 757-847-7873

Base Safety Dept. – (Security Areas) - 887-4661

Report Safety and Security Incidents Immediately

Engineering Tech. George Colley – 757-636-7215

© Public Works Dept. – NWSY, NAVFAC 757-887-4303(ph)

## SECTION 20

# Spill Containment Procedures

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CH2M HILL and subcontractor personnel working at the project site shall be knowledgeable of the potential health, safety, and environmental concerns associated with petroleum and other substances that could potentially be released at the project site.

The following is a list of criteria that must be addressed in CH2M HILL's or the subcontractor's plans in the event of a spill or release. In the event of a large-quantity spill, notify emergency services. Personnel discovering a spill shall (only if safe to do so):

- Stop or contain the spill immediately (if possible) or note source. Shut off the source (for example, pump, treatment system) if possible. If unsafe conditions exist, then leave the area, call emergency services, inform nearby personnel, notify the site supervisors, and initiate incident reporting process. The SSHO shall be notified immediately.
- Extinguish sources of ignition (flames, sparks, hot surfaces, or cigarettes).
- Clear personnel from the spill location and barricade the area.
- Use available spill control equipment in an effort to ensure that fires, explosions, and releases do not occur, recur, or spread.
- Use sorbent materials to control the spill at the source.
- Construct a temporary containment dike of sorbent materials, cinder blocks, bricks or other suitable materials to help contain the spill.
- Attempt to identify the character, exact source, amount, and extent of the released materials. Identification of the spilled material should be made as soon as possible so that the appropriate cleanup procedure can be identified.
- Contact the RHSM and project EM in the event of a spill or release immediately so evaluation of reportable quantity requirements and whether agency reporting is required.
- Assess possible hazards to human health or the environment as a result of the release, fire or explosion.
- Follow incident notification, reporting, and investigation section of this plan.

# Inspections

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## 21.1 Management Health, Safety, Security, and Environment Inspections

The Management Inspection Checklist (attached to this plan) is intended to facilitate PM leadership, provide an opportunity for PM's to mentor field staff on HSE and identify any big picture actions that need to be addressed. Observations that would improve global HSE program should also be included on the form. This checklist does NOT take the place of a formal HSE audit. The PM shall:

- Complete one checklist per month during fieldwork when visiting the site. The PM may delegate completion to the task lead, field team leader, or construction manager if the project is short duration and a visit is not planned for.
- Complete applicable sections of the checklist (can be typed or hand-written). Address issues with the field team, taking the opportunity to mentor staff by identifying the "root cause" of observation (for example, why are safe behavior observations not being completed, had this hazard been noted by any other team members?).
- Send completed form to Project Delivery Manager, Sector HSE Lead, and RHSM for tracking and review. Original should be kept in the project files.

## 21.2 Project Activity Self-assessment Checklists

In addition to the hazard controls specified in this document, Project Activity Self-assessment Checklists are contained as an attachment to this SSHP. The Project Activity Self-assessment Checklists are based upon minimum regulatory compliance and some site-specific requirements may be more stringent. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. The self-assessment checklists, including documented corrective actions, shall be made part of the permanent project records and maintained by the SSHO.

The self-assessment checklists will also be used by the SSHO in evaluating the subcontractors and any client contractors' compliance onsite.

The self-assessment checklists for the following tasks and exposures are required when the task or exposure is initiated and weekly thereafter while the task or exposure is taking place. The checklists shall be completed by the SSHO or other CH2M HILL representative and maintained in project files.

- Hand and Power Tools
- Manual Lifting
- PPE

## 21.3 Safe Behavior Observations

Safe behavior observations (SBOs) 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.

The SSHO or designee shall perform at least one SBO each week for any fieldwork performed by subcontractors or when there are at least two CH2M HILL personnel performing fieldwork.

The SSHO or designee shall complete the SBO form (attached to this SSHP) for the task/operation being observed and submit them weekly.

For federal projects, SBOs may be submitted electronically by e-mailing them to the address, "CH2M HILL ES FED Safe Behavior Observations," when connected to the network or at [CH2MHILLESFEDSafeBehaviorObservation@ch2m.com](mailto:CH2MHILLESFEDSafeBehaviorObservation@ch2m.com).

A copy of the SBO must also be sent to the RHSM for review and comment.

## 21.4 Deficiency Tracking System

### 21.4.1 Safe Behavior Observation Forms

All observed hazard forms will be completed onsite at the time of the observed hazard, or activity inspection. Both good behaviors and questionable or unsafe behaviors will be annotated on the form and discussed with the observed worker(s). Any unsafe behavior or acts observed will be documented in writing to the subcontractor's project manager for action. All observed hazard forms will become a permanent part of the project files.

### 21.4.2 Self-assessment Checklists

Any item that is annotated with a "NO" must be explained on the last sheet of the checklist, and followed up for corrective action. The last page of each checklist has a column for recording the date the deficiency was corrected. The self-assessment checklists—once completed and signed by the inspector, reviewed with the applicable supervisor and/or employee, and signed by the project manager—will become a permanent record of inspection and part of the project files.

### 21.4.3 Open Deficiencies

All self-assessment checklists with open deficiencies or stop work orders will be the top priority for the SSC each work day to ensure they are corrected, any training accomplished, or the situation corrected to close out the deficiency. If the deficiency is not handled in a timely manner, the SSC will report the problem in writing to the prime contractor PM.

A copy of the Safety and Occupational Health deficiency tracking log shall be mounted on or be adjacent to the bulletin board or a notice on the bulletin board shall state the location where it may be accessed by all workers upon request. See Attachment 12 for the form.

## SECTION 22

# Incident Notification, Reporting, and Investigation

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(Reference CH2M HILL SOP HSE-111, *Incident Notification, Reporting and Investigation*)

## 22.1 General Information

This section applies to the following:

- All injuries involving employees, third parties, or members of the public
- Damage to property or equipment
- Interruptions to work or public service (hitting a utility)
- Incidents that attract negative media coverage
- Near misses
- Spills, leaks, or regulatory violations
- Motor vehicle accidents

Documentation, including incident reports, investigation, analysis, and corrective measure taken shall be kept by the SSHO and maintained onsite for the duration of the project.

## 22.2 Section Definitions

**Incident:** An incident is an event that causes or could have caused undesired consequences. An incident may be caused by natural forces, employees, subcontractors, or third parties in any location associated with CH2M HILL operations, including offices, warehouses, project sites, private property, or public spaces. Incidents include the following:

- Injury or illness to a CH2M HILL employee or subcontractor employee, or member of the public
- Property damage
- Spill or release
- Environmental requirement or permit violation
- A “near-miss”
- Other (for example, fire, explosion, bomb threat, workplace violence, threats)

**Accident:** An incident involving actual loss through injury, damage to assets, or environmental harm

**Near Miss:** A near-miss occurs when an intervening factor prevented an injury or illness, property damage, spill or release, permit violation, or other event from occurring. Examples of near-miss situations include the following: a hard hat or other PPE prevented an injury; secondary containment or emergency shutoff prevented a spill; or an alert coworker prevented an incident.

**Serious Incident:** A Serious Incident must be immediately reported to senior management includes the following:

- Work-related death, or life threatening injury or illness of a CH2M HILL employee, subcontractor, or member of the public
- Kidnap/missing person
- Acts or threats of terrorism
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than \$ 500,000 in damage
- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community, or the environment

## 22.3 Reporting Requirements

All employees and subcontractors' employees shall immediately report any incident (including "near misses," as defined in the section above) in which they are involved or witness to their supervisor.

The CH2M HILL or Subcontractor supervisor, upon receiving an incident report, shall inform his immediate superior and the CH2M HILL SSHO.

The SSHO shall immediately report the following information to the RHSM and PM by phone and e-mail:

- Project Name and Site Manager
- Date and time of incident
- Description of incident
- Extent of known injuries or damage
- Level of medical attention
- Preliminary root cause/corrective actions

**If the incident was an environmental permit issue (potential permit noncompliance, other situation that result in a notice of violation) or a spill or release, contact the Project EM immediately so evaluation of reportable quantity requirements and whether agency reporting is required;**

The CH2M HILL team shall comply with all applicable statutory incident reporting requirements such as those to OSHA, the police, or state federal environmental agency.

Be aware that many OSHA-designated states require reporting to the area OSHA office if one person is admitted to the hospital (for example, California and Washington); whereas, federal OSHA requires it if three or more are admitted.

## 22.4 HITS System and Incident Report Form

CH2M HILL maintains a HITS entry and/or IRF for all work-related injuries and illnesses sustained by its employees in accordance with recordkeeping and insurance requirements. A HITS entry and/or IRF will also be maintained for other incidents (property damage, fire, or explosion, spill, release, potential violation, and near misses) as part of our loss prevention and risk reduction initiative.

The SSHO shall complete an entry into the HITS database system located on CH2M HILL's Virtual Office (or if Virtual Office is not available, use the hard copy Incident Report Form and Root Cause Analysis Form and forward it to the RHSM) within 24 hours and finalize those forms within 3 calendar days.

## 22.5 Injury Management/Return-to-Work (for U.S./Puerto Rico-based CH2M HILL Staff Only)

(Reference CH2M HILL, SOP HSSE-124, Injury Management/Return-to-Work)

### 22.5.1 Background

The Injury Management Program has been established to provide orderly, effective, and timely medical treatment and return-to-work transition for an employee who sustains a work-related injury or illness. It also provides guidance and assistance with obtaining appropriate treatment to aid recovery, keep supervisors informed of employee status, and to quickly report and investigate work-related injury/illnesses to prevent recurrence.

To implement the Injury Management/Return-to-Work Program successfully, supervisors and/or SC should:

- Ensure employees are informed of the Injury Management/Return-to-Work Program.
- Become familiar with the Notification Process (detailed below).
- Post the Injury Management/Return-to-Work Notification Poster.

## 22.5.2 The Injury Management/Return-to-Work Notification Process:

- Employee informs their supervisor.
- Employee calls the Injury Management Program toll free number 1-866-893-2514 immediately and speaks with the Occupational Injury Nurse. This number is operable 24 hours per day, 7 days a week.
- Supervisor ensures employee immediately calls the Injury Management Program number. Supervisor makes the call with the injured worker or for the injured worker, if needed.
- Nurse assists employee with obtaining appropriate medical treatment, as necessary, schedules clinic visit for employee (calls ahead, and assists with any necessary follow up treatment). The supervisor or SC accompanies the employee if a clinic visit is necessary to ensure that employees receive appropriate and timely care.
- Supervisor or SC completes the HITS entry or Incident Report Form immediately (within 24 hours) and forwards it to the PM and RHSM.
- Nurse notifies appropriate CH2M HILL staff by e-mail (supervisor, Health & Safety, Human Resources, Workers' Compensation).
- Nurse communicates and coordinates with and for employee on treatment through recovery.
- Supervisor ensures suitable duties are identified and available for injured or ill workers who are determined to be medically fit to return to work on transitional duty (temporary and progressive).
- Supervisor ensures medical limitations prescribed (if any) by physician are followed until the worker is released to full duty.

## 22.6 Serious Incident Reporting Requirements

(Reference CH2M HILL SOP HSE-111, *Incident Reporting, Notification and Investigation*)

The serious incident reporting requirements ensures timely notification and allows for positive control over flow of information so that the incident is handled effectively, efficiently, and in conjunction with appropriate corporate entities. This standard notification process integrates Health, Safety, Security, and Environment and Firm-Wide Security Operations requirements for the consistent reporting of and managing of serious events throughout our operations.

### 22.6.1 Serious Incident Determination

The following are general criteria for determining whether an incident on CH2M HILL owned or managed facilities or program sites is considered serious and must be immediately reported up to Group President level through the reporting/notification process:

- Work-related death, or life threatening injury or illness of a CH2M HILL employee, subcontractor, or member of the public
- Kidnap or missing person
- Acts or threats of terrorism
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than \$ 500,000 in damage
- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community, or the environment

## 22.6.2 Serious Incident Reporting

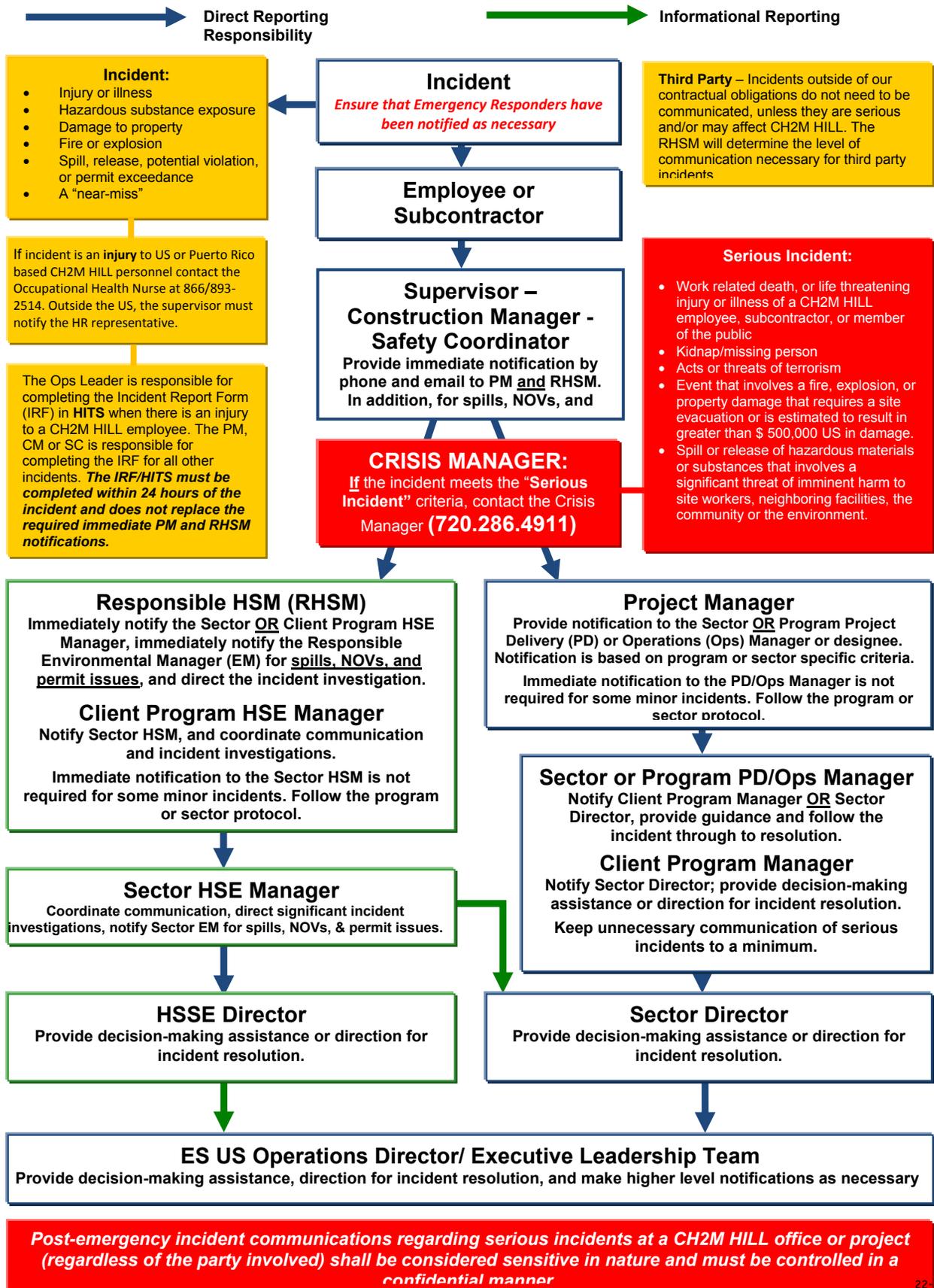
***If an incident meets the "Serious Incident" criteria, the PM is to immediately contact the Crisis Manager at 720-286-4911, then follow the standard incident reporting procedure.***

For all serious incidents this standard reporting process is implemented immediately so as to ultimately achieve notification to the Business Group President within 2 hours of incident onset or discovery, and notification to appropriate corporate Crisis Management Support Team.

Major accidents include any occupational hazard exposure or physical injury that requires more than basic first-aid (physical injury/exposure) or fire, explosion, or property damage exceeding \$200,000. Major accidents require immediate notification of appropriate personnel as discussed below and must be done within 24 hours to the Contracting Officer/Representative.

In the event of an injury that constitutes an OSHA-recordable incident, the SSHO will notify the Navy Remedial Project Manager (RPM), Navy Resident Officer in Charge of Construction (ROICC, need to complete), PM, Compliance Safety and Health Officer, and HSM as soon as practical after the incident. The reporting form shall be Contractor Safety Incident Report, found in Attachment 13.

# ESBG US Operations Incident Reporting Flow Diagram



## 22.7 Incident Root Cause Analysis

The accident analysis is essential if all causes of the incident are to be identified for the correct remedial actions to be taken to prevent the same and similar type of incident from recurring. Root Cause Analysis (RCA) shall be completed for all recordable injuries, property damage incidents in excess of \$5000.00 (US), environmental permit violations, spills and releases that are required to be reported to regulatory agencies, and any other incident, including near misses where they RHSM or PM determines an RCA is appropriate. The RHSM/ Responsible Environmental Manager is responsible for ensuring it is completed and results entered in the incident report form in HITS. RCA's must be completed using a team that includes, at least the RHSM or designee, the involved party(ies), a responsible operations representative (for example, PM, construction manager, crew supervisor, etc.) and an independent management representative not associated with the incident.

The Root Cause Analysis Form must be completed for all Loss Incidents and Near Loss Incidents. The form must be submitted to the investigation team for review.

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, the information may be all that is necessary to enable the investigation team to analyze the loss, determine the root cause, and 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. The point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must follow the Root Cause Analysis Flow Chart (see Attachment 4 of the SOP) 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 include the following:

- 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 there is no personal benefit to always doing the job according to standards

Job Factors include the following:

- 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.

### 22.7.1 Corrective Actions

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a timeframe for completion. Be sure the corrective actions address the causes.

Once the investigation report has been completed, the PM shall hold a review meeting to discuss the incident and provide recommendations. The responsible supervisors shall be assigned to carry out the recommendations, and shall inform the SSHO upon successful implementation of all recommended actions.

- Evaluation and follow-up of the IRF will be completed by the type of incident by the RHSM or EM.
- Incident investigations must be initiated and completed as soon as possible but no later than 72 hours after the incident.

## SECTION 23

# Records and Reports

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An organized project filing system is essential for good documentation and recordkeeping. The following are some of the many benefits to an organized filing system:

- Other CH2M HILL employees can easily and quickly find documents
- Records are readily available for review
- Records may be needed during OSHA investigations, audits, or other legal matters
- Records may be needed on short notice in case of an accident, illness, or other emergency
- Systematic recordkeeping aids in overall project organization

The project filing system shall be established at the beginning of the project and maintained throughout all phases of construction and archived in accordance with CH2M HILL's Records Retention Policy. The information contained in the filing system shall be updated regularly and/or as specified in this document. The PM and SC are responsible for collecting documentation, including subcontractor documentation, and maintaining a complete and organized filing system.

Below are examples of records that must be maintained as the project progresses:

- Exposure records includes air monitoring data (including calibration records), MSDSs, and exposure modeling results
- Physical hazard exposure records include noise, ionizing radiation, non-ionizing radiation, vibration, and lasers exposure assessments and measurements
- Respiratory fit test records
- Training records
- Incident reports, investigations and associated back-up information such as agency notifications, calculations, and corrective actions taken
- Federal or state agency inspection records
- Other Records:
  - Ergonomic evaluations
  - HSE audits and assessments
  - Project-specific HSE plans
  - Confined space entry permits
  - Equipment inspections
  - Equipment maintenance
  - Emergency equipment inspection records
  - SBOs
  - Self-assessment checklists
- The RHSM shall coordinate with the PM or designee to ensure that final project-specific HSE records described in this section, including negative exposure determinations, are maintained with the project files in accordance with the CH2M HILL records retention schedule, or forwarded to the Medical Surveillance Program Administrator, as appropriate. Records retention requirements are detailed in the Recordkeeping and Access to Records SOP, HSE-119.

**CH2M HILL Health and Safety Plan**  
**Attachment 1**

**Health and Safety Plan Employee Signoff Form**



**CH2M HILL Health and Safety Plan**  
**Attachment 2**

**Chemical Inventory/Register Form**



**CH2M HILL Health and Safety Plan**  
**Attachment 3**

**Chemical-specific Training Form**



## CHEMICAL-SPECIFIC TRAINING FORM

Refer to SOP HSE-107 Attachment 1 for instructions on completing this form.

Location: AOC 2 Cheatham Annex

Project #:387443

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.

# **CH2M HILL Health and Safety Plan**

## **Attachment 4**

### **Project Activity Self-assessment Checklists/Permits/Forms**

Heat stress physiological monitoring form

Hand and Power Tools

Manual Lifting

PPE

## HEAT STRESS PHYSIOLOGICAL MONITORING FORM

Project:

Date:

Company:

1. Take and record measurement of temperature or pulse at the frequency indicated in the safety plan.
2. Follow the Physiological Monitoring Protocol in the safety plan.
3. Never continue work if your body temperature is more than 100.4° F/38° C, or if you are experiencing sudden and severe fatigue, nausea, dizziness, or lightheadedness.

Employee:

Describe action taken below if measurements are exceeded:

Time									
Temp									
Pulse									

Employee:

Describe action taken below if measurements are exceeded:

Time									
Temp									
Pulse									

Employee:

Describe action taken below if measurements are exceeded:

Time									
Temp									
Pulse									

Employee:

Describe action taken below if measurements are exceeded:

Time									
Temp									
Pulse									

Employee:

Describe action taken below if measurements are exceeded:

Time									
Temp									
Pulse									

# **CH2M HILL Health and Safety Plan**

## **Attachment 5**

### **Key Target Zero Program Elements**

**(blank forms for field use)**

**Activity Hazard Analysis EM 385 format**

**Pre-Task Safety Plans**

**Safe Behavior Observation**

**Incident Report and Investigation**

**(use electronic form when possible)**

[HITS](#)

**Lessons Learned Template**

# Activity Hazard Analysis (AHA)

EM-385 Format

ACTIVITY/WORK TASK:		Overall Risk Assessment Code (RAC) (Use highest code)						
	SIGNATURES	Activity #		AHA #				
PWD/OICC/ROICC OFFICE		<b>Risk Assessment Code (RAC) Matrix</b>						
NAME & DATE ACCEPTED BY GDA:		<b>Severity</b>	<b>Probability</b>					
CONTRACT NUMBER:			Frequent	Likely	Occasional	Seldom	Unlikely	
TASK ORDER/DELIVERY #:			Catastrophic	E	E	H	H	M
PRIME CONTRACTOR:			Critical	E	H	H	M	L
SUBCONTRACTOR:			Marginal	H	M	M	L	L
NAME AND DATE OF REVIEWER:		Negligible	M	L	L	L	L	
DATE OF INITIAL INSPECTION:		<b>ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)</b> Review each "Hazard" with identified safety "Controls" and determine (RAC)						
CONTRACTOR COMPETENT PERSON:		Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity						
SITE SAFETY and HEALTH OFFICER		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place						
		"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.						
<b>Job Steps</b>		<b>Hazards</b>		<b>Controls</b>			<b>RAC</b>	

<b>Job Steps</b>	<b>Hazards</b>	<b>Controls</b>	<b>RAC</b>

<b>Equipment to be Used</b>	<b>Training Requirements and Competent or Qualified Personnel name(s)</b>	<b>Inspection Requirements</b>	<b>RAC</b>

<b>Equipment to be Used</b>	<b>Training Requirements/Competent or Qualified Personnel name(s)</b>	<b>Inspection Requirements</b>

## Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task – Insert work/task this AHA is written for that is excavation, scaffold building, foundation preparation.**
2. **PWO/OICC/ROICC – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC)**
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person onsite for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**
13. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and Controls have been assigned**
14. **Schedule number is activity number from production daily reports**
15. **AHA number is the sequential number of all AHA's for this contract.**
16. **Job steps is the complete sequence of work, not general statements to complete the entire activity**
17. **Hazards is the known safety risks associated with completing the task**
18. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity that is crane, backhoe, vehicle, all heavy equipment**
21. **List the training requirements required by EM 385, Safety Spec 01356 or OSHA that apply to this task.**
  - List competent person(s) required for specific tasks in EM 385**
  - List qualified person(s) required for specific tasks in EM 385**
  - List CPR/First Aid training and qualification dates**
22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

**Pre-task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet**

Project: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_  
 Supervisor: \_\_\_\_\_ Job Activity: \_\_\_\_\_

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Attendees:	Print Name	Sign Name

List Tasks and verify that applicable AHAs have been reviewed:

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

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Potential Health and Safety Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

<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 feet	<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
<input type="checkbox"/> Underground Utilities	<input type="checkbox"/> Security	<input type="checkbox"/> Poor communications

Other Potential Hazards (Describe):

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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 <input type="checkbox"/> Hard Hat <input type="checkbox"/> Safety-Toed Boots	<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 <input type="checkbox"/> Entry Permits/notification	<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 <input type="checkbox"/> Overhead line clearance <input type="checkbox"/> Underground utils ID'd
<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"/> No visible dust <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 with 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 confined space entry <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"/> First-aid-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"/> Drill rigs/geoprobe rigs <input type="checkbox"/> Cranes and rigging <input type="checkbox"/> Utilities marked	<b>Training:</b> <input type="checkbox"/> Hazwaste (current) <input type="checkbox"/> Construction <input type="checkbox"/> Competent person <input type="checkbox"/> Task-specific <input type="checkbox"/> First-aid/CPR <input type="checkbox"/> Confined Space <input type="checkbox"/> Hazcom
<b>Underground Utilities</b> <input type="checkbox"/> Dig alert called <input type="checkbox"/> 3 <sup>rd</sup> Party locater <input type="checkbox"/> As-builts reviewed <input type="checkbox"/> Interview site staff <input type="checkbox"/> Client review <input type="checkbox"/> soft locate necessary?	<b>Incident Communications</b> <input type="checkbox"/> Work stops until cleared by TM/CM <input type="checkbox"/> Immediate calls to TM/CM <input type="checkbox"/> Client notification <input type="checkbox"/> 24 hour notification setup <input type="checkbox"/> Clear communications	<b>AHA' s</b> <input type="checkbox"/> reviewed and approved by HSM <input type="checkbox"/> onsite and current <input type="checkbox"/> applicable for this day's work <input type="checkbox"/> Communication and incident processes included?	
<b>Field Notes (including observations from prior day, etc.):</b> <hr/> <hr/> <hr/>			

Name (Print): \_\_\_\_\_

Signature: \_\_\_\_\_

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

<b>Safe Behavior Observation Form</b>			
<input type="checkbox"/> Federal <input type="checkbox"/> Commercial    (check one)		<input type="checkbox"/> Construction or <input type="checkbox"/> Consulting (check one)	
<input type="checkbox"/> International			
Project Number (required):		Client/Program:	
Project Name:		Observer:	Date:
Position/Title of worker observed:		Background Information/ comments:	
Task/Observation _____			
Observed:			
<ul style="list-style-type: none"> <li>❖ Identify and reinforce safe work practices/behaviors</li> <li>❖ Identify and improve on at-risk practices/acts</li> <li>❖ Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards</li> <li>❖ Proactive PM support facilitates eliminating/reducing hazards (do you have what you need?)</li> <li>❖ Positive, corrective, cooperative, collaborative feedback/recommendations</li> </ul>			
Actions & Behaviors	Safe	At-Risk	Observations/Comments
Current & accurate Pre-Task Planning/Briefing (Project safety plan, STAC, AHA, PTSP, tailgate briefing, etc., as needed)			<b>Positive Observations/Safe Work Practices:</b>
Properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			<b>Questionable Activity/Unsafe Condition Observed:</b>
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			<b>Observer's Corrective Actions/Comments:</b>
Pace			
Uncomfortable/unsafe position			
Inconvenient/unsafe location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			<b>Observed Worker's Corrective Actions/Comments:</b>
Repetitive motion			
Other...			

For ES Federal Sector projects please email completed forms to: [CH2M HILL ES FED Safe Behavior Observation](#)  
 For ES Commercial Sector projects please email completed forms to: [CH2M HILL ES COM Safe Behavior Observation](#)  
 For CNR ES staff please email completed forms to: [cnr\\_safe@ch2m.com](mailto:cnr_safe@ch2m.com)  
 For International ES projects please e-mail completed forms to: [ESINTLSafeBehaviorObservation@ch2m.com](mailto:ESINTLSafeBehaviorObservation@ch2m.com)

# HITS Incident Report Hardcopy (Phase 1 – Initial Entry)

## Phase 1 – Initial Entry

### Type of Incident (May select more than one)

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

### General Information Section

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

Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_ AM / PM

What Business Group is accountable for this incident: \_\_\_\_\_

What Business Group SubGroup is accountable for this incident: \_\_\_\_\_

What CH2M HILL Company is accountable for this incident: \_\_\_\_\_

#### Where did the Incident occur?

- United States, Geographic Region: \_\_\_\_\_  
 Canada, Province/Territory: \_\_\_\_\_  
 International, County: \_\_\_\_\_

#### Location of Incident?

- Company Premises, CH2M HILL Office (use 3 letter office code if available): \_\_\_\_\_  
 Project, Project name: \_\_\_\_\_  
 In Transit  
Traveling from: \_\_\_\_\_  
Traveling to: \_\_\_\_\_  
 At Home  
 Other, Specify: \_\_\_\_\_

Describe the incident: \_\_\_\_\_

Describe how this event could have been prevented: \_\_\_\_\_

#### Provide Witness Information:

Name: _____	Phone: _____
Name: _____	Phone: _____
Name: _____	Phone: _____

#### Personnel Notified of Incident (Provide name, date and time):

CH2M HILL Personnel: \_\_\_\_\_

Client Personnel: \_\_\_\_\_

#### Additional Comments:

### Injury/Illness Section [Complete only if Injury/Illness Incident type selected]

#### Who was injured?

- CH2M HILL Employee or CH2M HILL Temp Employee  
 Subcontractor to CH2M HILL (Non-LLC Joint Venture Project)  
 LLC Joint Venture Partner Employee  
 LLC Joint Venture Project Subcontractor/Contractor  
 Other

Name of Injured: \_\_\_\_\_ Job Title: \_\_\_\_\_

Employer Name: \_\_\_\_\_ Supervisor of Employee: \_\_\_\_\_

#### Complete for CH2M HILL Employee Injuries

Business Group of Injured Employee: \_\_\_\_\_

Has the employee called the Injury Management Administrator (1-866-893-2514)?

- Yes  No  Not Sure

Has the injured employee's supervisor been notified of this incident?

- Yes  No  Not Sure

**Complete for Non-CH2M HILL Employee Injuries**

Has the project safety coordinator been notified of this incident?

Yes  No  Not Sure

Project Safety Coordinator: \_\_\_\_\_

Body Part Affected: \_\_\_\_\_

Injury/Illness (Result): \_\_\_\_\_

Describe treatment provided (if medication provided, identify whether over-the-counter or prescription): \_\_\_\_\_

Describe any work restriction prescribed (include dates and number of days): \_\_\_\_\_

**Physician/Health Care Provider Information**

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

Was treatment provided away from the worksite?

No  
 Yes

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

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

City: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Was injured treated in an emergency room?

No  Yes

Was injured hospitalized overnight as an in-patient?

No  Yes

**General Information Environmental Section [Complete only if Environment/Permit or Spill/Release Incident type selected]**

Who had control of the area during the incident?

- CH2M HILL, Company: \_\_\_\_\_
  - Subcontractor, Company: \_\_\_\_\_
  - Joint Venture Partner/Contractor/Subcontractor, Company: \_\_\_\_\_
  - Other, Company: \_\_\_\_\_
- Relationship to CH2M HILL: \_\_\_\_\_

**Property Damage Section [Complete only if Property Damage Incident type selected]**

Property Damaged: \_\_\_\_\_

Property Owner: \_\_\_\_\_

Damage Description: \_\_\_\_\_

Estimated US Dollar Amount: \_\_\_\_\_

**Spill or Release Section [Complete only if Spill/Release Incident type selected]**

Substance: \_\_\_\_\_

Estimated Quantity: \_\_\_\_\_

Did the spill/release move off the property?: \_\_\_\_\_

Spill/Release From: \_\_\_\_\_

Spill/Release To: \_\_\_\_\_

**Environment/Permit Section [Complete only if Environment/Permit Incident type selected]**

Describe Environmental or Permit Issue: \_\_\_\_\_

Permit Type: \_\_\_\_\_

Permitted Level or Criteria (for example, discharge limit): \_\_\_\_\_

Permit Name and Number (for example, NPDES No. ST1234): \_\_\_\_\_

Substance and Estimated Quantity: \_\_\_\_\_

Duration of Permit Exceedance: \_\_\_\_\_



# Lessons Learned

[Date] ESBG LL-11-xx

<b>Subject</b>	[Insert Descriptive Name of Lessons Learned]
<b>CH2M HILL Project?</b>	[Yes or No]
<b>Situation</b>	[Describe incident or situation that occurred in general terms. Try to be brief and avoid unnecessary details such as names of people or projects, business groups, divisions, dates, location, etc.]
<b>Lessons Learned (Recommendations and Comments)</b>	<ul style="list-style-type: none"><li>• Bullet out any lessons learned, recommendations or other important “take away” information that would benefit others. Tie the recommendations to the incident or event, and avoid including information that is not directly tied to the event.</li></ul>
<b>Submitted By</b>	[Name/Office Location/Phone]
<b>Additional Information Contact</b>	[Name/Office Location/Phone]
<b>Keywords/Categories</b>	[Insert any keywords or incident categories that would aid in a search for this lessons learned]

Send completed Lessons Learned to the ESBG HSSE Director for posting and distribution. Please include a recommended distribution list.

**CH2M HILL Health and Safety Plan**  
**Attachment 6**

**Fact Sheets**  
**Tick Fact Sheet**  
**Vehicle Accident Guidance**  
**Working Alone**

# Tick-Borne Pathogens—A Fact Sheet

Most of us have heard of Lyme disease or Rocky Mountain Spotted Fever (RMSF), but there are actually six known tick-borne pathogens that present a significant field hazard. In some areas, these account for more than half of our serious field incidents. The following procedures should be applied during any field activity—even in places that are predominantly paved with bordering vegetation.

## Hazard Recognition

An important step in controlling tick-related hazards is understanding how to identify ticks, their habitats, their geographical locations, and signs and symptoms of tick-borne illnesses.

### Tick Identification

The following are the five varieties of hard-bodied ticks that have been associated with tick-borne pathogens:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick
- Rocky Mountain Wood Tick

The varieties and their geographical locations are illustrated on the following page.

### Tick Habitat

In eastern states, ticks are associated with deciduous forest and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow, and other elements. In the north-central states, is generally found in heavily wooded areas often surrounded by broad tracts of land cleared for agriculture.

On the Pacific Coast, the bacteria are transmitted to humans by the western black-legged (deer) tick and habitats are more diverse. In this region, ticks have been found in habitats with forest, north coastal scrub, high brush, and open grasslands. Coastal tick populations thrive in areas of high rainfall, but ticks are also found at inland locations.

### Illnesses and Signs and Symptoms

There are six known tick-borne pathogens that cause human illness in the United States. The pathogens may be transmitted during a tick bite—normally hours after attachment. The following are the illnesses, presented in approximate order of most common to least:

- Lyme (bacteria)
- RMSF (bacteria)
- Ehrlichiosis (bacteria)
- STARI (Southern Tick-Associated Rash Illness) (bacteria)
- Tularemia (Rabbit Fever) (bacteria)
- Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs & symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. For Lyme disease, the bite area will sometimes resemble a target pattern. A variety of long-term symptoms may result if the illness is left untreated, including debilitating effects and death.



Deer Tick



Distribution of Deer Tick (dark green)



From Left: adult female, adult male, nymph, and larvae Deer Tick (centimeter scale)



Distribution of Pacific Deer Tick (dark green)



Lone Star Tick



Distribution of Lone Star Tick (Green)



Dog Tick



Yellow indicates approximate distribution area



Rocky Mountain Wood Tick



Yellow indicates approximate distribution area

## Hazard Control

The methods for controlling exposure to ticks include, in order of most- to least-preferred:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acaricide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

## Avoidance and Reduction of Ticks

To the extent practical, tick habitats should be avoided. In areas with significant tick infestation, consider stopping work and withdrawing from area until adequate tick population control can be achieved. Stopping and withdrawing should be considered as seriously as entering an area without proper energy control or with elevated airborne contaminants—tick-borne pathogens present risk of serious illness!

In areas where significant population density or infestation exists, tick reduction should be considered. Tick reduction can be achieved by disrupting tick habitats and/or direct population reduction through the use of tick-toxic pesticides (Damminix, Dursban, Sevin, etc.).

Habitat disruption may include only simple vegetative maintenance such as removing leaf litter and trimming grass and brush. Tick populations can be reduced by between 72 and 100 percent when leaf litter alone is removed. In more heavily infested areas, habitat disruption may include grubbing, tree trimming or removal, and pesticide application (Damminix, Dursban, Sevin, etc.). This approach is practical in smaller, localized areas or perimeter areas that require occasional access. Habitat controls are to be implemented with appropriate health and safety controls, in compliance with applicable environmental requirements, and may be best left to the property owner or tenant or to a licensed pesticide vendor. Caution should be exercised when using chemical repellents or pesticides in or around areas where environmental or industrial media samples will be collected for analysis.

## Personal Protection

After other prevention and controls are implemented, personal protection is still necessary to control exposure to ticks. Personal protection must include all of the following steps:

- So that ticks may be easily seen, wear light-colored clothing. Full-body new Tyvek (paper-like disposable coveralls) may also be used
- To prevent ticks from getting underneath clothing tuck pant legs into socks or tape to boots
- Wear long-sleeved shirts, a hat, and high boots
- Apply DEET repellent to exposed skin or clothing per product label
- Apply permethrin repellent to the outside of boots and clothing before wearing, per product label
- Frequently check for ticks and remove from clothing
- At the end of the day, search your entire body for ticks (particularly groin, armpits, neck, and head) and shower
- To prevent pathogen transmission through mucous membranes or broken/cut skin, wash or disinfect hands, and/or wear surgical-style nitrile gloves any time ticks are handled

Pregnant individuals and individuals using prescription medications should consult with their physician and/or pharmacists before using chemical repellents. Because human health effects may not be fully

known, use of chemical repellents should be kept to a minimum frequency and quantity. Always follow manufacturers' use instructions and precautions. Wash hands after handling, applying, or removing protective gear and clothing. Avoid situations such as hand-to-face contact, eating, drinking, and smoking when applying or using repellents.

Remove and wash clothes per repellent product label. Chemical repellents should not be used on infants and children.

Vaccinations are generally not available for tick-borne pathogens. Although production of the LYMERix™ Lyme disease vaccination has been ceased, vaccination may still be considered under specific circumstances and with concurrence from the consulting physician.

## Tick Check

A tick check should be performed after field survey before entering the field vehicle (you do not want to infest your field vehicle with ticks). Have your field partner check your back; the backs of your legs, arms, and neck; and your hairline. Shake off clothing as thorough as possible before entering the vehicle. Once the field day is complete, repeat this procedure and perform a thorough self-check.

If a tick has embedded itself into the skin, remove the tick as described below.

## Tick Removal

1. Use the tick removal kit obtained through the CH2M HILL Milwaukee warehouse, or a fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.
2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens, remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.



3. Avoid squeezing, crushing, or puncturing the body of the tick because its fluids (saliva, hemolymph, gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.
4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.
5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
6. Should you wish to save the tick for identification, place it in a plastic bag, with the date of the tick bite, and place in your freezer. It may be used at a later date to assist a physician with making an accurate diagnosis (if you become ill).

**Note:** Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

## **First-aid and Medical Treatment**

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Individuals previously infected with Lyme disease does not confer immunity—re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

The employee should contact the Injury Management/Return To Work provider (IMRTW), WorkCare using the toll-free number 866-893-2514 to report the tick bite. WorkCare will follow-up with each CH2M Hill employee who reports a tick bite and is at risk of developing Lyme disease by monitoring for symptoms up to 45 days, and will refer the employee to a medical provider for evaluation and treatment as necessary.

## 2011 Vehicle Incident ~~Accident~~ Guidance—ESBG

Remember that if you are **renting** a non-CH2M HILL-owned vehicle (short-term rental) in the U.S., you should carry the [insurance card](#) from the state where your driver’s license is issued.

If you operate a **fleet vehicle**, carry the [insurance card](#) where the vehicle is registered.

### **For ALL Vehicles if you are in an Incident:**

1. If you are injured, call 911 for emergency medical treatment or 1-866-893-2514 to contact the CH2M HILL Occupational Nurse/Physician for minor injuries. If you feel you have not been injured, contact the RHSM for guidance on whether calling the CH2M HILL Occupation Nurse/Physician is applicable.
2. **Call the Police**—For any vehicle Incident/damage, it is recommended that the local police (or site security/emergency services if working on a client site that provides such services) be called to determine if a report needs to be filed. In some instances, a report may not be required (during Incident alerts, or in public parking lots). Document that the authorities were called and follow up with any guidance they give you. State requirements vary. If a report is filed, obtain a copy.
3. Notify Supervisor (and PM/RHSM if working on a project site)
4. Complete a HITS report on the VO.

### **Additional Steps**

To report an automobile Incident, and before a claim can be taken by telephonic reporting, have available your name (the company name alone is no longer accepted, a driver’s name must be provided even for fender benders), location of Incident and your office address if different than the Incident location, business group and project number. A claim cannot be taken without your name, address, business group and your project number. By location the state where the Incident occurred, and which office you are aligned to, that is, Incident occurs in Idaho, but you are out of the Denver office. Advise the claim recorder the Incident occurred in ID, but that your office location is Denver. This will assist the claim intake person in identifying location coding for the claims.

### **Automobile Incidents involve two different sections of an automobile policy:**

1. Liability to others due to Bodily Injury and Property Damage
2. Physical Damage—Comprehensive and Collision. Damage to the vehicle the CH2M HILL employee is driving

CH2M HILL has liability coverage for any automobile. Our policy will respond on either a primary or excess basis.

Refer to the table below for additional notifications to make based on the type of Incident experienced and type of vehicle being used.

### **Liability—Bodily Injury or Property Damage to Others**

Scenario	Which Coverage Responds	What to Do if In An Incident
CH2M HILL fleet, pool or project vehicle - long term lease - lower 48	CH2M HILL - Primary	Contact Broadspire (1-800-753-6737); Jennifer Rindahl/DEN (720-286-2449); Linda George/DEN (720-286-2057)
CH2M HILL fleet, pool or project vehicle - long term lease - Alaska (North Slope)	CH2M HILL - Primary	Contact Jennifer Rindahl/DEN (720-286-2449)
Client vehicle driven by CH2M HILL employee	Client’s auto policy unless client has made CH2M HILL responsible for vehicle	Contact Broadspire (1-800-753-6737); Contact Jennifer Rindahl/DEN (720-286-2449); contact client;

## Liability—Bodily Injury or Property Damage to Others

Scenario	Which Coverage Responds	What to Do if In An Incident
Short term lease (30 days or less)	Rental car company if rented through Enterprise, Budget or Hertz; CH2M HILL excess	Contact Broadspire (1-800-753-6737); Contact local branch of rental car company where vehicle leased (ERAC includes 24 hour roadside assistance) and Jennifer Rindahl/DEN (720-286-2449)
Short term lease (30 days or less)	CH2M HILL - Primary if rented through company other than our national agreements; \$100,000 deductible	Contact Broadspire (1-800-753-6737); Contact rental car company and Jennifer Rindahl/DEN (720-286-2449)
Personal vehicle used on business	Employee's personal automobile policy; CH2M HILL on an excess basis	Contact personal auto insurance company; contact Jennifer Rindahl/DEN (720-286-2449)

## Physical Damage—Damage to Vehicle CH2M HILL Employee was Driving

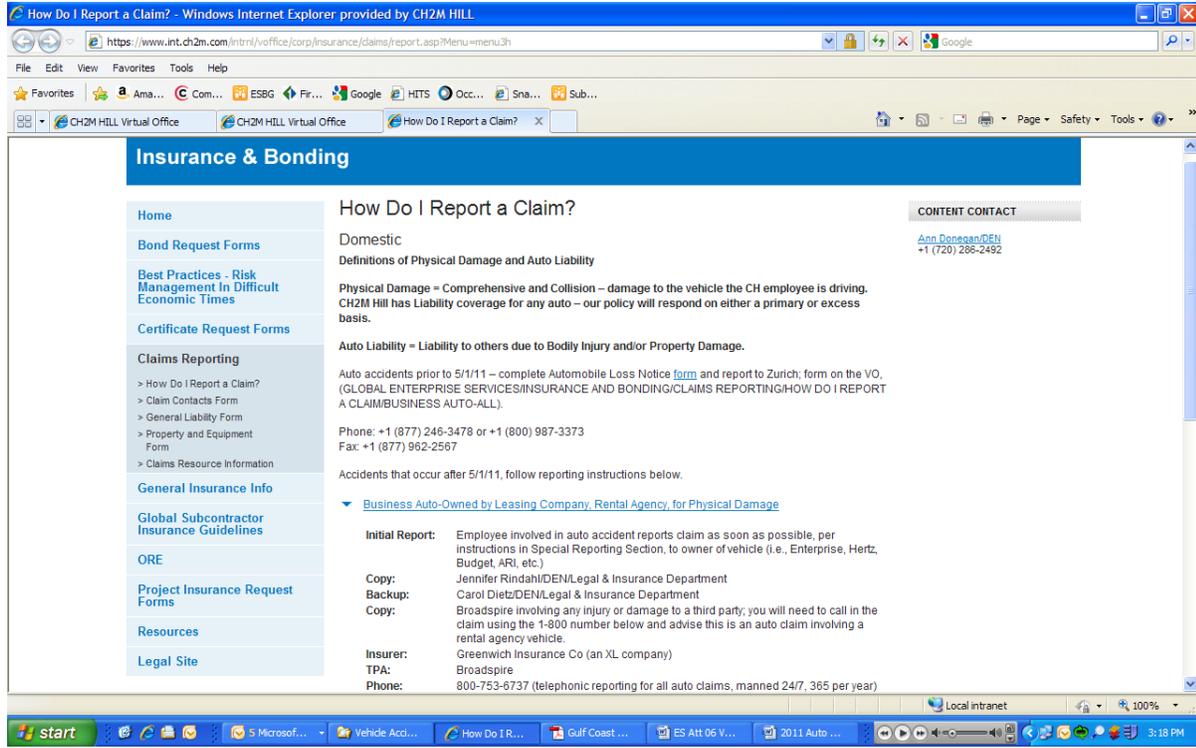
Scenario	Which Coverage Responds	What to do if in an Incident
CH2M HILL fleet, pool or project vehicle - long term lease - lower 48	CH2M HILL ONLY if vehicle is scheduled on policy - \$5,000 deductible	Contact Broadspire (1-800-753-6737); Jennifer Rindahl/DEN (720-286-2449); Linda George/DEN (720-286-2057)
CH2M HILL fleet, pool or project vehicle - long term lease - Alaska (North Slope)	CH2M HILL Equipment Schedule if scheduled on policy	Contact Jennifer Rindahl/DEN (720-286-2449)
CH2M HILL fleet, pool or project vehicle - long term lease	ARI if physical damage coverage purchased - \$500 deductible	Contact Jennifer Rindahl/DEN 720.286.2449; call ARI at 1-800-221-1645 give them Client Code and ARI fleet vehicle number; and notify Linda George/DEN - Fleet Coordinator (720-286-2057)
Client vehicle CH2M HILL Employee is driving	Client's auto policy unless client has made CH2M HILL contractually responsible for vehicle	Contact Jennifer Rindahl/DEN (720-286-2449); contact client; contact Broadspire (1-800-753-6737)
Short-term lease (30 days or less) using corporate VISA	VISA if corporate credit card used and vehicle is not a pickup, truck, cargo van or used off-road	Contact VISA - 1-800-847-2911 or <a href="http://www.visa.com/eclaim">http://www.visa.com/eclaim</a>
Short-term lease (30 days or less) through Enterprise (ERAC) and vehicle is used off-road and physical damage coverage included when vehicle leased	ERAC up to \$3,000 in damage; CH2M HILL's coverage is excess	Notify Rental Car Company; contact Jennifer Rindahl/DEN (720-286-2449) if damage over \$5,000
Short-term lease (30 days or less) did <b>not</b> use corporate VISA	CH2M HILL - \$5,000 deductible (project responsibility)	Contact Broadspire (1-800-753-6737); Contact Jennifer Rindahl/DEN 720-286-2449; contact VISA (1-800-847-2911) or <a href="http://www.visa.com/eclaim">http://www.visa.com/eclaim</a>
Personal vehicle used on business	CH2M HILL will reimburse the amount of the deductible carried on the employee's policy up to \$500, whichever is less	Contact Jennifer Rindahl/DEN (720-286-2449); contact client; contact Broadspire (1-800-753-6737)

Details for reporting a claim on the CH2M HILL Virtual Office are accessed by going to the Virtual Office home page and clicking:

GLOBAL ENTERPRISE SERVICES/INSURANCE & BONDING/CLAIMS REPORTING

HOW DO I REPORT A CLAIM? TAB or access the following URL:

<https://www.int.ch2m.com/intrnl/voffice/corp/insurance/claims/report.asp?Menu=menu3h>



**For Personally Owned Vehicles (POVs):**

CH2M HILL does not provide auto insurance for POVs, it is responsibility of the owner. If you are in a vehicle Incident conducting company business, contact the police as above, supervisor, and 911, or CH2M HILL’s occupational nurse/physician as stated above. Complete a HITS report. Contact Jennifer Rindahl/DEN for assistance for meeting personal insurance deductibles (up to \$500) with proof of insurance and deductible.

If using your POV for extended project use, notify the PM to make sure a rental car is not needed. Check your insurance policy for guidance on using the POV for business use.

**Additional Resources:**

[Claims Resource Manual](#)

**WORKING ALONE PROTOCOL  
CALL-IN CONTACT FORM**

Date of site work: \_\_\_\_\_ Expected start time: \_\_\_\_\_  
Name of CH2M HILL employee in the field: \_\_\_\_\_  
Name of CH2M HILL employee responsible to receive contact: \_\_\_\_\_  
Client Emergency Contact (if any): \_\_\_\_\_  
CH2M HILL employee's contact numbers:  
    Radio # \_\_\_\_\_  
    Cell Phone # \_\_\_\_\_  
Address and Location of work: \_\_\_\_\_  
Directions/Map: \_\_\_\_\_

Planned Activity: \_\_\_\_\_

Specified Frequency and time for call in: \_\_\_\_\_

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Time	Verified	Location
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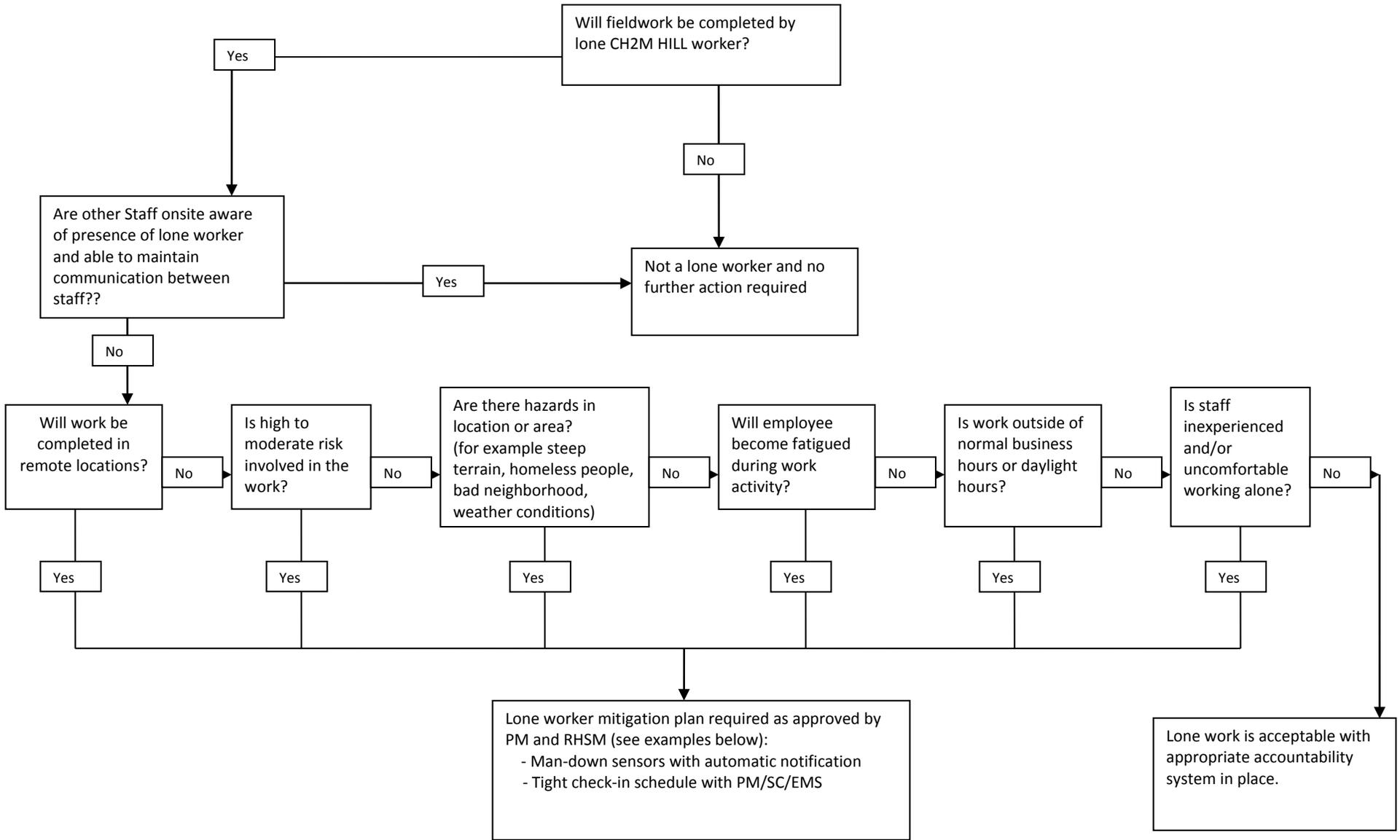
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If lone worker fails to call in at specified frequency/time:

1. Call worker's radio and cell to determine if an emergency exists.
2. If no reply, immediately call client security/emergency service if there is one at the site.
3. If there is no client security, call Emergency Services (911). Inform the dispatcher there is a lone worker that cannot be contacted and there may be an emergency onsite. Provide the lone worker's name, their last known location, and your contact information.
4. After Emergency Services have been contacted, call the other emergency contacts, PM, and Responsible Health and Safety Manager.

# Lone Worker Protocol



# **CH2M HILL HEALTH AND SAFETY PLAN**

## **Attachment 7**

### **Observed Hazard Form**

**OBSERVED HAZARD FORM**

Name/Company of Observer (*optional*):

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

Time reported: \_\_\_\_\_

Contractor/s performing unsafe act or creating unsafe condition:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Unsafe Act or Condition:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Location of Unsafe Act or Condition:

**Name of CH2M HILL Representative:**

\_\_\_\_\_

Corrective Actions Taken: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Project Safety Committee Evaluation: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**CH2M HILL HEALTH AND SAFETY PLAN**  
**Attachment 8**

**Stop Work Order Form**

# Stop Work Order

**REPORT PREPARED BY:**

Name:	Title:	Signature:	Date:

---

**ISSUE OF NONPERFORMANCE:**

Description:	Date of Nonperformance:

**SUBCONTRACTOR SIGNATURE OF NOTIFICATION:**

Name:	Title:	Signature:	Date:

---

*\* Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.\* Work may not resume until authorization is granted by CH2M HILL Constructors, Inc. Representative,*

**SUBCONTRACTOR'S CORRECTIVE ACTION**

Description:	Date of Nonperformance:

**SUBCONTRACTOR SIGNATURE OF CORRECTION**

Name:	Title:	Signature:	Date:

# **CH2M HILL HEALTH AND SAFETY PLAN**

## **Attachment 9**

### **Agency Inspection Target Zero Bulletin**

# TARGET ZERO BULLETIN

**Subject: HSSE Agency Inspections (OSHA, EPA, DOT, State Health Department)**

## **Do you know what YOU would do if an agency inspector arrived at your site unannounced?**

Recently, a State Occupational Safety and Health Administration (OSHA) inspector made an unannounced visit to one of our Federal project sites. OSHA, U.S. Environmental Protection Agency (EPA), and authorized state or local agencies have authority to inspect any facility that is subject to health, safety, and environmental legislation. Inspections may be announced or unannounced. This particular inspector indicated that the project was targeted for an inspection because the work was funded by the American Recovery and Reinvestment Act (ARRA).

Enterprise Standard Operating Procedure (SOP) HSE-201, *Agency Inspections and Communications*, describes the responsibilities, procedures, and requirements associated with inspections conducted by external regulatory agencies, as well as the methods for communicating information to key individuals. This Target Zero Bulletin is a brief summary of what to do in the event of an agency inspection at your site. Refer to the SOP for more specific guidance.

### **Notification of Inspections**

- If the inspection is an announced regulatory agency inspection, the Project Manager (PM) should notify the Responsible Health and Safety Manager (RHSM) and Responsible Environmental Manager (REM) well in advance of the inspection.
- If an unannounced agency inspector visits one of our projects, Field personnel must immediately notify the project Emergency Response Coordinator (ERC). Typically the ERC is the Safety Coordinator (SC).
- The **ERC must immediately notify the RHSM/REM**, as appropriate, of unannounced inspections, or designate someone to call the RHSM/REM. The RHSM/REMs can provide guidance to the field staff and PM.

### **Inspector Credential Verification**

- Upon arrival, the ERC must request the inspector to provide official credentials. Record the inspector's name and office phone number or obtain the inspector's business card.
- The inspector shall sign the visitors log and be given a site-specific health, safety, and environmental protection briefing.
- The inspector shall meet any site access requirements associated with security clearances, specialized training, and medical monitoring. The CH2M HILL representative shall verify that the inspector possesses these requirements; access will only be granted to those areas where appropriate access requirements are met. Some inspectors have the authority to gain access to any work area at any time, such as an inspector with a search warrant. In these cases, we can stop work operations as necessary to protect the safety of the inspector(s).

### **Opening Conference**

- The CH2M HILL Project Manager, ERC, RHSM, or REM, and the inspector shall determine attendees for the opening conference. The RHSM (for OSHA and other worker health and safety inspections) or REM (for environmental inspections) shall join the opening conference via conference call.
- The inspector shall inform CH2M HILL of the purpose of the inspection and provide a copy of the complaint, if applicable.
- The inspector shall outline the scope of the inspection, including employee interviews conducted in private, physical inspection of the workplace and records, possible referrals, discrimination complaints, and the closing conference(s).

### Requests for OSHA Logs

- An OSHA inspector may request to review the project OSHA Injury/Illness log, better known as the OSHA 300 Log. Contact your RHSM for assistance in obtaining the OSHA 300 Log.
- Field projects with a continuous duration of one year or longer are considered to be separate establishments and are required to maintain an OSHA 300 log specific to the project. The project OSHA 300 log should be maintained onsite and kept current.
- Recordable injuries and illnesses sustained on field projects less than one year in duration are maintained on the CH2M HILL office log where the injured employee is based.

### The Inspection

- The scope of the inspection shall be limited to that indicated by the inspector in the opening conference. The inspector shall be escorted to relevant areas only. The ERC or other designated by the RHSM or REM must accompany the inspector during the inspection.
- Ensure that the inspection is limited to the scope that the inspector disclosed during the opening conference. The ERC should always take notes which identify: areas inspected, machinery or equipment and materials examined, employees or other persons interviewed, and photographs taken by the inspector.
- The inspector will observe safety, health, and environmental conditions and practices and document the inspection process. The inspector may also take photos and instrument readings, examine records, collect air samples, measure noise levels, survey existing engineering controls, and monitor employee exposure to toxic vapors, gases, and dusts.
- CH2M HILL should gather duplicate information (photographs, readings, samples) in the same manner and condition as the inspector. If the equipment needed to take duplicate samples is not onsite, ask the inspector if the sampling can wait until the equipment is available. If samples are taken, request a description of the tests that the agency intends to perform on the samples and request results as soon as they are available.
- Employees may be questioned during the inspection tour. The employee can refuse to speak to an inspector, can speak to the inspector with a company representative (including management) present, or can speak to the inspector privately. It is CH2M HILL policy that employees who wish to speak to the inspector are not discriminated against, intimidated, or otherwise mistreated for exercising their rights during compliance inspections.
- Copies of documents should not be provided to the inspector without the approval of the RHSM or REM or Legal Insurance Department (LID). **DO NOT** voluntarily release documents. Respond only to inspection team requests.
- During the course of the inspection, the inspector may point out violations. For each violation, the CH2M HILL representative should ask the inspector to discuss possible corrective action. Where possible, violations detected by the inspector should be corrected immediately and noted by the inspector as corrected.
- For those items which cannot be corrected immediately, an action plan shall be formulated for timely correction. In any instance, employees exposed to hazards shall be removed from the area.

### Closing Conference

After the inspection, a closing conference is normally held as follows:

- The CH2M HILL PM, ERC, RHSM or REM shall be involved via conference call in the closing conference, at a minimum;
- The inspector shall describe the apparent violations found during the inspection and other pertinent issues as deemed necessary by the inspector. CH2M HILL shall be advised of their rights to participate in any subsequent conferences, meetings or discussions. Any unusual circumstances noted during the closing conference shall be documented by the ERC;
- The inspector shall discuss violations observed during the inspection and indicate for which violations a citation and a proposed penalty may be issued or recommended;
- The ERC shall request receipts for all samples and approved documents photocopied by the inspector, request a photocopy of the inspector's photograph log, and request a copy of the final inspection report; and
- Any documentation from an agency inspection must be transmitted immediately to the RHSM or REM, and LID.

**Unannounced regulatory agency inspections may happen at any time on our projects -**

**Get your RHSM/REM and PM involved immediately if an Inspector arrives.**

# **CH2M HILL HEALTH AND SAFETY PLAN**

## **Attachment 10**

### **Completed CH2M HILL AHAs**

# Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	Soil Sampling	Overall Risk Assessment Code (RAC) (Use highest code)			<b>M</b>		
Date prepared:	SIGNATURES	Activity #	387443.FI.FS	AHA #	<b>01</b>		
PWD/OICC/ROICC OFFICE		<b>Risk Assessment Code (RAC) Matrix</b>					
NAME & DATE ACCEPTED BY GDA:		<b>Severity</b>	<b>Probability</b>				
CONTRACT NUMBER:	N62470-11-D-8012		Frequent	Likely	Occasional	Seldom	Unlikely
TASK ORDER/DELIVERY #:	056 Cheatham Annex						
PRIME CONTRACTOR:	CH2M HILL						
SUBCONTRACTOR:							
DATE OF PREPARATORY MEETING:	08 February 2014	Catastrophic	E	E	H	H	M
DATE OF INITIAL INSPECTION:		Critical	E	H	H	M	L
CONTRACTOR COMPETENT PERSON:		Marginal	H	M	M	L	L
SITE SAFETY and HEALTH OFFICER	Kimberly Coke	Negligible	M	L	L	L	L
PSHM REVIEWER:	Rick Cavil, CSP 01/30/2014						
<b>ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)</b>		Review each "Hazard" with identified safety "Controls" and determine (RAC)					
E = EXTREMELY HIGH (PWO/OICC/ROICC)		Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity					
H = HIGH RISK (FEAD DIRECTOR)		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place					
M = MODERATE RISK (CM or ET or PAR)							
L = LOW RISK (ET or PAR)							
		"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.					
<b>Job Steps</b>	<b>Hazards</b>	<b>Controls</b>				<b>RAC</b>	
General preparation	Forgotten safety equipment, no cell phone coverage, lack of emergency preparedness, untimely reporting of an injury or other incident	<ul style="list-style-type: none"> <li>Complete SSHP, AHA review</li> <li>Complete PTSP, daily safety meeting.</li> <li>Check for cell phone coverage.</li> <li>Designate rally point and evacuation point (daily if working in new locations each day).</li> <li>Check daily weather report and plan activities around severe weather.</li> <li>Review, inspect and locate safety equipment including fire extinguisher, first aid kit, insect repellent/bug-out suits, PPE as specified in HSP, water, spill kits, thermometer or stop watch for heat stress monitoring, access to shade, etc.</li> <li>Be sure to review the requirements for incident notification, reporting and investigation section of the HSP. Report all injuries, no matter how minor. If you are unsure whether an event should be reported, contact your RISM. Be sure to report near misses.</li> </ul>				<b>L</b>	

**IAW EM 385 01.A.13 Contractor-Required AHA "Work will not begin until the AHA for the work activity has been accepted by the GDA" The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's**

<p>Hazards and controls applicable to all steps of field work.</p>	<p>Temperature Extremes (<b>heat</b>)</p>	<ul style="list-style-type: none"> <li>• Acclimatize to work in hot weather by working in heat and taking more frequent breaks, systematically building up tolerance to heat</li> <li>• Conduct field activities in the early morning if possible to avoid heat or inclement weather.</li> <li>• CH2M HILL has a specific heat illness prevention regulation that must be implemented. This includes, <ul style="list-style-type: none"> <li>• Having enough water onsite so that each worker can consume at a minimum, one quart per hour per shift.</li> <li>• Frequent reminders and/or water breaks shall be taken so that each person can consume enough water.</li> <li>• Access to shade (i.e., blockage from direct sunlight) shall be provided at all times and shall be reasonably close to the work area. Keep in mind that a vehicle or other enclosed are with no air conditioning is NOT considered shade. Must be a well ventilated area or have air conditioning.</li> <li>• Workers suffering from heat illness-related symptoms OR if needed for preventative recovery shall be provided access to shade for at least 5 minutes, or longer, for recovery. (if heat related symptoms are occurring, contact the RHSM).</li> <li>• Training on risk factors, signs and symptoms of heat illness, importance of hydration and acclimatization, and importance of reporting symptoms and what to do in case of heat illness emergency, and contacting emergency medical services (see HSP, Temperature Extremes section).</li> <li>• Read and follow heat stress precautions specified in the HSP.</li> </ul> </li> <li>• Follow the requirements for physiological monitoring as stated in the HSP. (e.g., During work in Tyvek in temperatures above 70 degrees , perform physiological monitoring—see safety plan if not wearing Tyvek for when to start monitoring) and document on the heat stress physiological monitoring form.</li> <li>• Be conscious of your individual tolerance to work in hot weather and monitor yourself and co-workers for signs and symptoms of heat stress.</li> <li>• Take breaks as necessary in shady or cool areas and drink plenty of liquids.</li> </ul>	<p style="text-align: center;">L</p>
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**IAW EM 385 01.A.13 Contractor-Required AHA “Work will not begin until the AHA for the work activity has been accepted by the GDA”  
The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person’s**

		<ul style="list-style-type: none"> <li>• Take regular breaks in an air-conditioned truck or trailer during warm weather. Use a wide-brim hat or an umbrella or have a place where shade has been set up (tent or other temporary structure) when working under direct sun for extended periods.</li> <li>• Persons who experience signs of heat or cold stress should contact the SC, PM and RHSM. Call the occupational nurse first if symptoms are severe at 1-866-893-2514.</li> </ul>	
	Temperature Extremes <b>(cold)</b>	<ul style="list-style-type: none"> <li>• Read and follow cold stress precautions specified in the HSP.</li> <li>• Wear layers and ensure you're dressed adequately for site conditions.</li> <li>• Takes breaks in a warm location as necessary and stay hydrated with warm fluids (avoid caffeine).</li> <li>• Monitor your co-workers for signs of cold stress.</li> <li>• Persons who experience signs of heat or cold stress should contact the SC, PM and RHSM. Call the occupational nurse first if symptoms are severe at 1-866-893-2514.</li> </ul>	L
	Ticks	<ul style="list-style-type: none"> <li>• Wear light colored long sleeve shirts and pants. Use repellent on exposed skin (with at least 35% DEET) if ticks/other biting insects are suspected in the area. 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. Tape bottoms of pant legs or tuck pants into socks.</li> <li>• Wear protective clothing such as Tyvek or Bug-out suits if ticks are abundant in addition to controls above.</li> <li>• Have tick removal kits accessible. Use the buddy system and perform tick inspections prior to entering the field vehicle. If ticks were not planned to be encountered and are observed, do not continue field work until these controls can be implemented.</li> <li>• See Tick Fact Sheet attached to the HSP for further precautions and controls to implement when ticks are present. If bitten by a tick, follow the removal procedures found in the tick fact sheet, call the occupational nurse at 1-866-893-2514.</li> </ul>	L
	Wasps	<ul style="list-style-type: none"> <li>• Keep exposed skin to a minimum.</li> <li>• Carry a kit if you have had allergic reactions in the past, and inform your supervisor and/or a buddy. When working at a remote location, ensure that first-aid kits contain over-</li> </ul>	L

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		<p>the-counter allergy and itch medication (e.g., Benadryl, Claritin, etc) as well as other over-the-counter medications that may not be available to aid in symptom treatment.</p> <ul style="list-style-type: none"> <li>• If bees or other stinging insects are known to be present, determine whether additional protective clothing should be donned before entering/working in brushy areas.</li> <li>• Consider if heavy-weight clothing or tyvek, or head netting would provide additional protection in areas where wasps/bees are known or suspected. Be aware of heat stress conditions additional clothing may cause.</li> <li>• Use insect repellent on clothing. Wear light-colored clothing and remove bright reflective safety-colored clothing if not working near a roadway as these may attract the wasps.</li> <li>• Wear fragrance-free or lightly-scented sunscreen, and body lotions. Bees are attracted to sweet scents. Avoid using floral scented soaps, shampoos, or conditioners.</li> <li>• If you encounter a wasp, back away slowly and calmly, do not run or swat at the insect. Wait for it to leave, or gently move or brush it off gently with a piece of paper or other light object. Do not use your hand.</li> <li>• If you are stung, contact the occupational nurse at 1-866-893-2514, no matter how minor it may seem. If a stinger is present, remove it as soon as possible using something with a thin, hard edge (e.g., credit card) to scrape the stinger out. Be sure to sanitize the object first with hand sanitizer, alcohol or soap and water. Wash and disinfect the wound, cover it, and apply ice. Watch for an allergic reaction if you have never been stung before. Call 911 if the reaction is severe.</li> <li>• Use wasp/bee spray if necessary in accordance with manufacturer's labeling and direction for use.</li> </ul>	
	Other biological hazards	<ul style="list-style-type: none"> <li>• Refer to the SSHP for controls on other biological hazards possibly present dependent on season/location, including: snakes, spiders, and poisonous plants.</li> </ul>	L
	Inclement weather	<ul style="list-style-type: none"> <li>• Sudden inclement weather can rapidly encroach upon field personnel. Preparedness and caution are the best defenses. Carry clothing appropriate for inclement weather.</li> <li>• Take heed of the weather forecast for the day and pay attention for signs of changing weather that indicate an impending storm. Signs include towering thunderheads, darkening skies, or a sudden increase in wind. If stormy</li> </ul>	L

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		<p>weather ensues, field personnel should discontinue work and seek shelter until the storm has passed.</p> <ul style="list-style-type: none"> <li>• Avoid working during thunderstorms.</li> <li>• If caught in one, seek shelter.</li> <li>• Avoid lone trees as shelter and open, bare areas.</li> <li>• If caught in open area, place feet close together and crouch down as small as possible, without lying on the ground.</li> <li>• Ground strikes are known to be initiated by "leaders", or charges, from the earth making a connection to the charge in the clouds. This may cause your hair to stand up, and since you do not want to be part of a leader that makes the connection to form a cloud-to-ground strike, immediately crouch as described above.</li> <li>• Avoid low lying areas such as washes after rain as they can flood.</li> <li>• Take time to review where the closest structure that can be used when severe weather occurs and what route will be used to get there. Listen to weather reports and plan for severe weather. Designate an emergency evacuation assembly area and evacuation routes for non-weather related emergencies (fire, etc.). Keep a copy of the Emergency Contact page from the HSP accessible.</li> </ul>	
Operating Work Vehicle to site	Traffic accidents	<ul style="list-style-type: none"> <li>• Inspect the vehicle prior to departure.</li> <li>• If driving a rental car, become familiar with the safe operation of vehicles of the type and size to be operated. Large vehicles such as full size vans and pick-ups have different vision challenges and handling characteristics than smaller vehicles.</li> <li>• Drivers shall not use cellular phones, or other two-way communication devices while driving (including hands-free devices). Pull over and park the car to make or take phone calls, text, or e-mail.</li> <li>• Be sure to take adequate rest breaks when driving, especially on long distance trips.</li> <li>• Obey speed limits; be aware of blind spots or other hazards associated with low visibility. Practice defensive driving techniques, such as leaving plenty of room between your vehicle and the one ahead of you.</li> <li>• If vehicle is malfunctioning, don't pull over off the road suddenly. Give the traffic behind you notice that you are</li> </ul>	L

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		<p>pulling off.</p> <ul style="list-style-type: none"> <li>Always wear seatbelt in vehicle, regardless of length of drive.</li> <li>Apply Get Out and Look (GOAL) when returning to the vehicle to prevent property damage and injury by looking for obstructions, personnel or other items. Back slowly and use a spotter when view is obstructed.</li> </ul>	
Loading/Unloading Vehicle	Strains/sprains, pinch points, unsecured equipment	<ul style="list-style-type: none"> <li>Use partner to assist in lift of heavy equipment, be aware of pinch points when using truck lift gates, lift with legs not your back.</li> <li>Tie down all loads securely (rope, bungee cords, load bars)</li> <li>Wear leather gloves, as necessary, when loading equipment</li> </ul>	L
Vehicle Parking	Pedestrian accidents and vehicle fires	<ul style="list-style-type: none"> <li>Vehicles should be parked off road in areas where access to from vehicles is safe and avoids active roadways.</li> <li>Do not park vehicle over grassed areas due to the potential fire hazard from the catalytic converter. Park on gravel or paved areas whenever possible.</li> <li>Do not block any property access roads.</li> <li>Wear reflective orange vests when near traffic.</li> </ul>	L
Site walk, inspection of area	Slips, trips, and falls	<ul style="list-style-type: none"> <li>Inspect area for slip, trip, and fall hazards. Remove hazard, if possible, or mark it. Designate foot traffic around trip hazards.</li> <li>Wear proper footwear, with good tread.</li> <li>Pay attention and constantly observe the work area for hazards, changing weather conditions, biological hazards.</li> <li>Step slowly and tentatively in tall grass where the ground can't be seen to avoid depressions or other obstacles that could cause ankle/knees sprains.</li> <li>Be on the lookout for biological hazards, including poisonous plants...do not begin field work unless you have the means to implement the controls in the safety plan for biological hazards.</li> </ul>	L
Prepare for sample collection (subsurface samples)	Striking or coming into contact with buried utilities may potentially expose personnel to hazards including high voltage, electricity, natural gas, telecommunications	<ul style="list-style-type: none"> <li>Check sample locations for underground utilities. Follow the "Utilities (underground)" section of the HSP. Any deviation from the HSP must be discussed with the RHSM prior to intrusive activities.</li> <li>Obtain work clearance or "dig" permits from CAX (where necessary) Work will not proceed until approved Base dig</li> </ul>	L

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	Strains/sprains	<p>permits, with all required signatures, are obtained.</p> <ul style="list-style-type: none"> <li>Utilize proper lifting procedure when loading and unloading equipment into vehicles. Use mechanical means when available or necessary.</li> <li>Bend down at the knees and lift with your legs rather than bending and lifting with your back. Do not lift and twist.</li> </ul>	
Setting up Site	Unauthorized access by untrained personnel or visitors	<ul style="list-style-type: none"> <li>Use cones or barricades and signage as necessary to identify and control site boundaries and access.</li> </ul>	L
Hand augering	Contact, Exposure, Exertion Hazards	<ul style="list-style-type: none"> <li>Use augers with ergonomic design if extensive augering is taking place;</li> <li>Practice good posturing during augering including keeping feet shoulder width apart, avoid using excessive force, work slowly and methodically. If obstruction is encountered, determine what it is prior to continuing (call PM, client as needed to determine obstacle). Relocation of a hole may be necessary;</li> <li>Augering should be carried out from above knee height and below elbow height. Bending very low while augering low to the ground causes stress on the back during twisting and during lifting the auger out. Extend the auger to maintain this distance; and</li> <li>Keep hand away from pinch points when assembling the hand auger.</li> <li>Wear proper PPE: safety glasses with side shields, hard hat, safety boots, leather gloves, high visibility traffic vest (if necessary), chemical resistant over-gloves, if necessary.</li> <li>Take turns to avoid fatigue.</li> <li>Drink plenty of water, before you feel thirsty (hot, warm, and cold weather).</li> </ul>	M
Receiving sample containers (possibly preserved)	Glass containers/broken glass, cuts to hands Packaging material / acid leak	<ul style="list-style-type: none"> <li>Use caution when opening package and removing containers</li> <li>Wear proper PPE including safety glasses with sideshields or goggles, Nitrile gloves, and splash protection as necessary (apron or tyvek).</li> </ul>	L
Preparation of sample containers	Handling of chemicals/spilling of chemicals on skin, clothes or eyes.	<ul style="list-style-type: none"> <li>Never leave open chemicals unattended.</li> <li>Know location of nearest eyewash station.</li> <li>Wear proper PPE including safety glasses with sideshields or goggles, Nitrile gloves, and splash protection as necessary (apron or tyvek).</li> <li>Keep prep and pack area well ventilated (open window)</li> </ul>	L

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		<ul style="list-style-type: none"> <li>• Read MSDS for preservation material</li> <li>• Know location of MSDS, absorbent spill cloth, Hazmat spill kit</li> <li>• Do not hold sample containers on your lap when adding preservative</li> <li>• Make sure all caps are secure</li> </ul>	
Collecting soil samples	Exposure, Contact, Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Wear proper PPE: safety glasses with side shields, hard hat, safety boots, chemical resistant gloves.</li> <li>• Maintain clean work area, keep walkways clean and clear, tools picked up.</li> <li>• Use dedicated pen for logging information into field book to prevent potential contact with contaminants following logging activities.</li> <li>• Handle sample jars safely, if a jar is broken make sure leather work gloves are used during clean up.</li> <li>• Utilize appropriate nonreactive tools (plastic spoons, stainless steel trowels, etc.) to collect media from the collection equipment.</li> <li>• Air monitoring will be performed in breathing zone in accordance with site HSP. Action levels will be followed in site HSP.</li> </ul>	L
Decontamination of hand auger or other sampling tools	Exposure Hazard	<ul style="list-style-type: none"> <li>• Become familiar with the detergent (i.e. Alconox) MSDS before beginning decontamination.</li> <li>• Be aware of potential slip and trip hazards such as wet surfaces and hoses.</li> <li>• Contain all decon water and dispose of properly</li> <li>• Properly dispose of decontamination water and PPE in designated areas.</li> <li>• Wear appropriate PPE as stated above</li> </ul>	L
Handling/Loading Sample Coolers	Lifting hazards, back injury or strain. Contact with broken glass in coolers. Exposure to potential contaminants due to broken container. Tape gun – sharp edge.	<ul style="list-style-type: none"> <li>• Utilize proper lifting procedure when loading coolers and equipment back into truck. (to avoid lifting heavy/awkward coolers leave cooler on tailgate to load samples and ice into). Maximum weight shall not exceed 40 pounds.</li> <li>• Use mechanical means or a buddy when available or necessary.</li> <li>• Bend down at the knees and lift with your legs rather than bending and lifting with your back. Do not lift and twist.</li> <li>• Use caution when taking contents out of cooler. Inspect coolers for ticks/spiders as well as broken glass. Wear leather gloves if you have to handle broken glass.</li> </ul>	L

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		<ul style="list-style-type: none"><li>• Wear appropriate PPE as stated above for sample handling</li><li>• To extent possible, prepare tape strips separately and apply to sample bottles by hand; break tape by pushing tape gun away from you; ensure hands and legs are not in the path of the tape gun</li></ul>	
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Equipment to be Used	Training Requirements and Competent or Qualified Personnel name(s)	Inspection Requirements	RAC
<ul style="list-style-type: none"> <li>• Sampling tools, containers, coolers, decon supplies</li> <li>• Portable eye wash, fire extinguisher</li> <li>• First Aid/Bloodborne pathogen kit</li> <li>• PPE as noted above, including safety glasses, safety-toed boots, work gloves, as needed, high visibility vests,</li> <li>• Biological hazard precautions (insect spray, tick removal kit, duct tape, Tyvek or bug-out suit, Benadryl)</li> <li>• Sunscreen</li> <li>• Timer, ear thermometer (for heat stress monitoring)</li> <li>• Spill kit/materials</li> <li>• MSDS for any chemicals used onsite</li> </ul>	<ul style="list-style-type: none"> <li>• OSHA 40-hour HAZWOPER initial training, 3-day OJT, current refresher and medical clearance.</li> <li>• Training on CH2M HILL HSP</li> <li>• Hazard Communication training (see HSP for how to document)</li> <li>• VO Modules as required by the CAX AOC2 Health and safety plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect all vehicles, equipment, tools, and PPE prior to each use (remove from service any defective equipment)</li> <li>• Ensure cell phone has coverage and have fully charged.</li> <li>• Determine daily rally point/evacuation route.</li> <li>• Use applicable Self-Assessment Checklists as required per the HSP.</li> </ul>	

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## Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task** – Insert work/task this AHA is written for i.e. excavation, scaffold building, foundation preparation.
2. **PWO/OICC/ROICC** – Insert name of Public Works Office, Officer In Charge of Construction Office or Resident Officer in Charge of Construction (PWD/OICC/ROICC)
3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
12. **Level of government person responsible for accepting the AHA, progressive signatures as level of risk increases.**
13. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and Controls have been assigned**
14. **Schedule number is activity number from production daily reports**
15. **AHA number is the sequential number of all AHA's for this contract.**
16. **Job steps is the complete sequence of work, not general statements to complete the entire activity**
17. **Hazards is the known safety risks associated with completing the task**
18. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
19. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
20. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**
21. **List the training requirements required by EM 385, Safety Spec 01356 or OSHA that apply to this task.**
  - List competent person(s) required for specific tasks in EM 385
  - List qualified person(s) required for specific tasks in EM 385
  - List CPR/First Aid training and qualification dates
22. **List all inspection requirements of EM 385, Governmental Safety Requirements Specifications or OSHA 29 CFR 1926**

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# Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	Utility Locating	Overall Risk Assessment Code (RAC) (Use highest code)				<b>M</b>	
	SIGNATURES	Activity #		AHA #	<b>01</b>		
PWD/OICC/ROICC OFFICE		<b>Risk Assessment Code (RAC) Matrix</b>					
NAME & DATE ACCEPTED BY GDA:		<b>Severity</b>	<b>Probability</b>				
CONTRACT NUMBER:	N62470-11-D-8012		Frequent	Likely	Occasional	Seldom	Unlikely
TASK ORDER/DELIVERY #:	<b>CTO-056</b>						
PRIME CONTRACTOR:	<b>CH2M HILL</b>						
SUBCONTRACTOR:	<b>ECLS, INC.</b>						
NAME AND DATE OF REVIEWER:	<b>Rick Cavil, CSP 04/30/14</b>	Catastrophic	<b>E</b>	<b>E</b>	<b>H</b>	<b>H</b>	<b>M</b>
DATE OF INITIAL INSPECTION:		Critical	<b>E</b>	<b>H</b>	<b>H</b>	<b>M</b>	<b>L</b>
CONTRACTOR COMPETENT PERSON:	Michael Todd Thompson	Marginal	<b>H</b>	<b>M</b>	<b>M</b>	<b>L</b>	<b>L</b>
		Negligible	<b>M</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>
<b>ACCEPTANCE BY GOVERNMENT DESIGNATED AUTHORITY (GDA)</b>		Review each <b>"Hazard"</b> with identified safety <b>"Controls"</b> and determine (RAC)					
<b>E = EXTREMELY HIGH (PWO/OICC/ROICC)</b>		Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard". Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity					
<b>H = HIGH RISK (FEAD DIRECTOR)</b>		<b>"Severity"</b> is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place  <b>"Probability"</b> is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.					
<b>M = MODERATE RISK (CM or ET or PAR)</b>							
<b>L = LOW RISK (ET or PAR)</b>							
<b>Job Steps</b>	<b>Hazards</b>	<b>Controls</b>				<b>RAC</b>	
Mobilization to site	Adverse Weather Road Conditions Other Drivers Fatigue	<ul style="list-style-type: none"> <li>Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly.</li> <li>Frequently observe the horizon for developing storms systems.</li> <li>Bring clothing suitable for anticipated daily weather conditions.</li> <li>Observe proper driving techniques, employ defensive driving skills, wear seat belts, conduct pre-use vehicle inspections.</li> <li>Cell phone use prohibited while driving to, on or from project site.</li> <li>Obtain proper amount of sleep, follow fatigue management requirements.</li> <li>Shut down operations during heavy rain, lightning events or high wind conditions. For storms producing lightning, seek shelter in vehicles, enclosed buildings or low ground. Remain in shelter until 30 minutes past the last visible lightning.</li> </ul>				<b>L</b>	

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		<p>down into shoes and are small enough to crawl through most socks.</p> <ul style="list-style-type: none"> <li>• <b>Wear bug-out suits or Tyvek</b> when required by your safety plan or when site- or task-conditions warrant (e.g. tick endemic areas, vegetation above knee height, having to sit/kneel in vegetation). Bug-out suits can be obtained from the MKE warehouse and are more breathable compared to Tyvek.</li> <li>• <b>Check your body for ticks</b> - Conduct a body check periodically during and after working in potentially tick-infested areas by searching your entire body for ticks. Use a hand-held or full-length mirror to view all parts of your body.</li> <li>• <b>If you are bitten after working in the field</b> - Remove the tick with a tick removal kit or by pulling straight out with narrow tipped tweezers. Thoroughly clean the bite area. Notify your Supervisor.</li> </ul> <p><b>Be aware of symptoms</b> - Lyme Disease: a rash may appear that looks like a bulls eye with a small welt in the center. Rocky Mountain Spotted Fever: a rash of red spots under the skin 3 to 10 days after a bite. For both, chills, fever, headache, fatigue, stiff neck, and bone pain may develop.</p>	
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SUE	Heat/Cold Stress	<p><b>Heat Stress</b></p> <ul style="list-style-type: none"> <li>• Become familiar with signs and symptoms of heat stress (see APP/SSHP)</li> <li>• Drink 16 oz. of water prior to beginning work.</li> <li>• Acclimate by slowly increasing workloads (e.g., do not begin with extremely demanding activities).</li> <li>• Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.</li> <li>• Conduct strenuous field activities in the early morning or evening and rotate shifts of workers, if possible.</li> <li>• Whenever possible, avoid direct sun, 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.</li> <li>• Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).</li> <li>• Maintain good hygiene standards by frequently changing clothing and showering.</li> <li>• Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SSHO to avoid progression of heat-related illness.</li> <li>• To counteract the onset of heat stress symptoms, a work-break regimen must be established during the executed work.</li> </ul>	M
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<b>SYMPTOMS AND TREATMENT OF HEAT STRESS</b>					
	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 thready 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!

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Job Steps	Hazards	Controls	RAC
	Cold Stress	<ul style="list-style-type: none"> <li>• Be aware of the symptoms of cold-related disorders.</li> <li>• Wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>• Implement work/rest regimen as necessary.</li> <li>• Observe one another for initial signs of cold-related disorders.</li> <li>• Obtain and review weather forecast— be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.</li> </ul>	M
SUE	Manual Lifting	<ul style="list-style-type: none"> <li>• Personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions.</li> <li>• Plan storage and staging to minimize lifting or carrying distances.</li> <li>• Split heavy loads into smaller loads.</li> <li>• Barricade off work area if possible.</li> <li>• Have someone assist with the lift— especially for heavy (&gt;40 lbs.) or awkward loads.</li> <li>• Make sure the path of travel is clear prior to the lift.</li> <li>• Employ correct lifting procedures. Bend at the knees, using your legs for the lift, keeping your back straight is proper.</li> <li>•</li> </ul>	L
SUE	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions (well casings).</li> <li>• Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc).</li> <li>• Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices: Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas.</li> </ul> <p>Three points of contact when enter/exiting equipment or when using stairways/ladders.</p>	L

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SUE	Vehicular Traffic	<ul style="list-style-type: none"> <li>• Shut off and secure Site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.</li> <li>• 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.</li> <li>• All staff working in high-traffic areas must wear reflective/high-visibility safety vests and make eye contact before passing in front of other vehicles.</li> </ul>	L
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Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
<p>Level D or Modified Level D PPE *</p> <p>*Hardhats, safety glasses, sturdy safety toe work boots, high visibility vest, and hearing protection.</p> <ul style="list-style-type: none"> <li>- Verifier G-2 magnetic locator</li> <li>- GPR</li> </ul>	<ul style="list-style-type: none"> <li>- PPE Training</li> <li>- Review AHA with all personnel.</li> <li>- Review Site Specific Health and Safety Plan.</li> <li>- First Aid/CPR</li> </ul>	<ul style="list-style-type: none"> <li>- First aid kit checked daily and visually inspected monthly or after use.</li> <li>- Fire extinguisher checked daily and visually inspected monthly.</li> </ul>

Instructions for completing Contractor Activity Hazard Analysis

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3. **Enter name & date AHA accepted by Government Designated Authority (GDA)**
4. **Enter contract number**
5. **Enter Task order or Delivery order number**
6. **Enter Prime Contractors name**
7. **Enter Subcontractors name**
8. **Enter date preparatory meeting was held**
9. **Enter date initial inspection was performed**
10. **Enter name of contractor competent person on site for this activity**
11. **Enter name of Prime Contractor Site Safety and Health Officer**
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List competent person(s) required for specific tasks in EM 385  
List qualified person(s) required for specific tasks in EM 385  
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# **CH2M HILL HEALTH AND SAFETY PLAN**

## **Attachment 11**

### **Material Safety Data Sheets**

# Material Safety Data Sheet

## Hydrochloric acid 32-38% solution

ACC# 11155

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Hydrochloric acid 32-38% solution**Catalog Numbers:** A142-212, A142P-19, A142P-20, A144-212, A144-212LC, A144-500, A144-500LB, A144-500LC, A144-612GAL, A144C-212, A144C-212EA, A144P-19, A144P-20, A144S-212, A144S-212EA, A144S-500, A144SI-212, A466-1, A466-2, A466-250, A466-2LC, A466-500, A481-212, A481-212LC, A508-212, A508-212LC, A508-4, A508-500, A508SK-212, AS481-212LC, NC9373124, S71942SC, S71942SCND, S71943, S71943ND, S80038, SA49**Synonyms:** Muriatic acid; Chlorohydric acid; Hydrogen chloride in aqueous solution.**Company Identification:**Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410**For information, call:** 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	62-68	231-791-2
7647-01-0	Hydrogen chloride	32-38	231-595-7

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear, colorless to pale yellow liquid.

**Danger!** Causes eye and skin burns. Causes digestive and respiratory tract burns. May be fatal if inhaled or swallowed. Repeated or prolonged exposure may cause erosion of exposed teeth.

Corrosive to metal.

**Target Organs:** Respiratory system, gastrointestinal system, teeth, eyes, skin.**Potential Health Effects****Eye:** May cause irreversible eye injury. Vapor or mist may cause irritation and severe burns. Contact with liquid is corrosive to the eyes and causes severe burns.**Skin:** Contact with liquid is corrosive and causes severe burns and ulceration. The severity of injury depends on the concentration of the solution and the duration of exposure.**Ingestion:** Causes severe digestive tract burns with abdominal pain, vomiting, and possible death. May cause corrosion and permanent tissue destruction of the esophagus and digestive tract.**Inhalation:** May be fatal if inhaled. May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the

respiratory tract. Causes corrosive action on the mucous membranes.

**Chronic:** Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. Repeated exposure to low concentrations of HCl vapor or mist may cause bleeding of nose and gums. Chronic bronchitis and gastritis have also been reported.

## Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**Inhalation:** POISON material. If inhaled, get medical aid immediately. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Notes to Physician:** Do NOT use sodium bicarbonate in an attempt to neutralize the acid.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Not flammable, but reacts with most metals to form flammable hydrogen gas. Use water spray to keep fire-exposed containers cool. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

**Extinguishing Media:** Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 3; Flammability: 0; Instability: 1

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Isolate area and deny entry. Provide ventilation. Spill may be carefully neutralized with lime (calcium oxide, CaO). A vapor suppressing foam may be used to reduce vapors. Approach spill from upwind.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse.

Contents may develop pressure upon prolonged storage. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Discard contaminated shoes. Keep away from strong bases and metals. Use caution when opening. Do not use with metal spatula or other metal items. Do not breathe vapor or mist. Use only with adequate ventilation or respiratory protection.

**Storage:** Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area. Do not store in metal containers. Store away from alkalis. Separate from oxidizing materials.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use a corrosion-resistant ventilation system.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Hydrogen chloride	2 ppm Ceiling	50 ppm IDLH	5 ppm Ceiling; 7 mg/m <sup>3</sup> Ceiling

**OSHA Vacated PELs:** Water: No OSHA Vacated PELs are listed for this chemical. Hydrogen chloride: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles and face shield.

**Skin:** Wear appropriate gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear, colorless to pale yellow

**Odor:** strong, pungent

**pH:** 0.01

**Vapor Pressure:** 84 mm Hg @ 20 deg C

**Vapor Density:** 1.27 (air=1)

**Evaporation Rate:** > 1.00 (N-butyl acetate)

**Viscosity:** Not available.

**Boiling Point:** 83 deg C @ 760 mmHg

**Freezing/Melting Point:** -66 deg C

**Decomposition Temperature:** Not available.

**Solubility:** Soluble.

**Specific Gravity/Density:** 1.19 (38%)

**Molecular Formula:** HCl.H<sub>2</sub>O

**Molecular Weight:** 36.46

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Excess heat.

**Incompatibilities with Other Materials:** Metals, strong oxidizing agents, strong reducing agents, bases, acetic anhydride, alcohols, amines, sulfuric acid, vinyl acetate, epoxides (e.g. butyl glycidyl ether), chlorosulfonic acid, carbides, beta-propiolactone, ethyleneimine, propylene oxide, lithium silicides, 2-aminoethanol, 1,1-difluoroethylene, magnesium boride, mercuric sulfate, aldehydes, cyanides, sulfides, phosphides.

**Hazardous Decomposition Products:** Hydrogen chloride, chlorine, hydrogen gas.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 7732-18-5: ZC0110000

**CAS#** 7647-01-0: MW4025000; MW4031000

**LD50/LC50:**

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

CAS# 7647-01-0:

Inhalation, mouse: LC50 = 1108 ppm/1H;

Inhalation, mouse: LC50 = 20487 mg/m<sup>3</sup>/5M;

Inhalation, mouse: LC50 = 3940 mg/m<sup>3</sup>/30M;

Inhalation, mouse: LC50 = 8300 mg/m<sup>3</sup>/30M;

Inhalation, rat: LC50 = 3124 ppm/1H;

Inhalation, rat: LC50 = 60938 mg/m<sup>3</sup>/5M;

Inhalation, rat: LC50 = 7004 mg/m<sup>3</sup>/30M;

Inhalation, rat: LC50 = 45000 mg/m<sup>3</sup>/5M;

Inhalation, rat: LC50 = 8300 mg/m<sup>3</sup>/30M;

Oral, rabbit: LD50 = 900 mg/kg;

Inhalation LC50 (aerosol) rat: 8300mg/m<sup>3</sup>/30M; Oral LDLo Man: 2857 ug/kg; Oral LDLo Woman: 420 uL/kg; Inhalation LCLo Human: 1300 ppm/30M.

**Carcinogenicity:**

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 7647-01-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No data available.

**Teratogenicity:** Female rats were exposed to 450 mg/m<sup>3</sup> of HCl for 1 hour either prior to mating or on day 9 of pregnancy. Developmental effects were observed in the offspring. However, this exposure caused toxic effects, including mortality, in the mothers.

**Reproductive Effects:** No information available.

**Mutagenicity:** See actual entry in RTECS for complete information.

**Neurotoxicity:** No information available.

**Other Studies:**

## Section 12 - Ecological Information

**Clean Air Act:**

CAS# 7647-01-0 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

**Clean Water Act:**

CAS# 7647-01-0 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

CAS# 7647-01-0 is considered highly hazardous by OSHA.

**STATE**

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 7647-01-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations****European Labeling in Accordance with EC Directives****Hazard Symbols:**

C

**Risk Phrases:**

R 34 Causes burns.

R 37 Irritating to respiratory system.

**Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**WGK (Water Danger/Protection)**

CAS# 7732-18-5: No information available.

CAS# 7647-01-0: 1

**Canada - DSL/NDSL**

CAS# 7732-18-5 is listed on Canada's DSL List.

CAS# 7647-01-0 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of E, D1A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

CAS# 7647-01-0 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information
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**MSDS Creation Date:** 7/06/1999

**Revision #20 Date:** 4/01/2008

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any*

**Ecotoxicity:** Fish: Bluegill/Sunfish: 3.6 mg/L; 48Hr; Lethal (unspecified)Fish: Bluegill/Sunfish: LC50; 96 Hr; pH 3.0-3.5 No data available.

**Environmental:** Will exhibit extensive evaporation from soil surfaces. Upon transport through the soil, hydrochloric acid will dissolve some of the soil materials (especially those with carbonate bases) and the acid will neutralize to some degree.

**Physical:** No information available.

**Other:** No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	HYDROCHLORIC ACID	HYDROCHLORIC ACID
<b>Hazard Class:</b>	8	8
<b>UN Number:</b>	UN1789	UN1789
<b>Packing Group:</b>	II	II

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 7732-18-5 is listed on the TSCA inventory.

CAS# 7647-01-0 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 7647-01-0: 5000 lb final RQ; 2270 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

CAS# 7647-01-0: 500 lb TPQ (gas only)

#### SARA Codes

CAS # 7647-01-0: immediate.

#### Section 313

This material contains Hydrogen chloride (CAS# 7647-01-0, 32-38%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

*special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*



## MATERIAL SAFETY DATA SHEET - CALIBRATION CHECK GAS

**PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR**

MSDS NO: 248

Version:3

Date: March, 2012

### 1. Chemical Product and Company Identification

Gasco Affiliates, LLC  
320 Scarlett Blvd.  
Oldsmar, FL 34677

TELEPHONE NUMBER: (800) 910-0051  
FAX NUMBER: (866) 755-8920  
E-MAIL: info@gascogas.com

24-HOUR EMERGENCY NUMBER: 1-800-424-9300

PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR  
CHEMICAL NAME: Isobutylene in air  
COMMON NAMES/ SYNONYMS: None  
TDG (Canada) CLASSIFICATION: 2.2  
WHIMIS CLASSIFICATION: A

### 2. COMPOSITION/ INFORMATION ON INGREDIENTS

INGREDIENT	%VOLUME	PEL-OSHA	TLV-ACGIH	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Isobutylene FORMULA: C <sub>4</sub> H <sub>8</sub>	0.0001-0.9	N/A	N/A	N/A
Air FORMULA: Mixture	99.0 to 99.9999	N/A	N/A	N/A

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Release of this product may produce oxygen-deficient atmospheres (especially in confined spaces or other poorly ventilated environments); individuals in such atmospheres may be asphyxiated. Isobutylene may cause drowsiness and other central nervous system effects in high concentrations; however, due to the low concentration of this gas mixture, this is unlikely to occur.

#### ROUTE OF ENTRY:

Skin Contact  
No

Skin Absorption  
No

Eye Contact  
No

Inhalation  
Yes

Ingestion  
No

#### HEALTH EFFECTS:

Exposure Limits  
Yes

Irritant  
No

Sensitization  
No

Reproductive Hazard  
No

Mutagen  
No

Carcinogenicity: --NTP: No IARC: No OSHA: No

#### EYE EFFECTS:

N/A.

#### SKIN EFFECTS:

N/A.



## MATERIAL SAFETY DATA SHEET - CALIBRATION CHECK GAS

**PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR**

### INGESTION EFFECTS:

Ingestion unlikely. Gas at room temperature.

### INHALATION EFFECTS:

Due to the small size of this cylinder, no unusual health effects from over-exposure are anticipated under normal routine use.

### NFPA HAZARD CODES

Health: 1  
Flammability: 0  
Reactivity: 0

### HMIS HAZARD CODES

Health: 1  
Flammability: 0  
Reactivity: 0

### RATING SYSTEM

0= No Hazard  
1= Slight Hazard  
2= Moderate Hazard  
3= Serious Hazard  
4= Severe Hazard

---

## 4. FIRST AID MEASURES

### EYES:

N/A

### SKIN:

N/A

### INGESTION:

Not required

### INHALATION:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH THE SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

---

## 5. FIRE-FIGHTING MEASURES

These containers hold gas under pressure, with no liquid phase. If involved in a major fire, they should be sprayed with water to avoid pressure increases, otherwise pressures will rise and ultimately they may distort or burst to release the contents. The gases will not add significantly to the fire, but containers or fragments may be projected considerable distances - thereby hampering fire fighting efforts.

---

## 6. ACCIDENTAL RELEASE MEASURES

In terms of weight, these containers hold very little contents, such that any accidental release by puncturing etc. will be of no practical concern.

---

## 7. HANDLING AND STORAGE

Suck back of water into the container must be prevented. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Use only in well-ventilated areas. Do not heat cylinder by any means to increase rate of product from the cylinder. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C).

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Use adequate ventilation for extended use of gas.



## MATERIAL SAFETY DATA SHEET - CALIBRATION CHECK GAS

**PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR**

---

### 9. PHYSICAL AND CHEMICAL PROPERTIES

PARAMETER:	VALUE:
Physical state	: Gas
Evaporation point	: N/A
pH	: N/A
Odor and appearance	: Colorless, odorless gas

---

### 10. STABILITY AND REACTIVITY

Stable under normal conditions. Expected shelf life 48 months.

---

### 11. TOXICOLOGICAL INFORMATION

No toxicological damage caused by this product.

---

### 12. ECOLOGICAL INFORMATION

No ecological damage caused by this product.

---

### 13. DISPOSAL INFORMATION

Do not discharge into any place where its accumulation could be dangerous. Used containers are acceptable for disposal in the normal waste stream as long as the cylinder is empty and valve removed or cylinder wall is punctured; but GASCO encourages the consumer to return cylinders.

---

### 14. TRANSPORT INFORMATION

	<u>United States DOT</u>	<u>Canada TDG</u>
PROPER SHIPPING NAME:	Compressed Gas N.O.S. (Isobutylene in Air)	Compressed Gas N.O.S. (Isobutylene in Air)
HAZARD CLASS:	2.2	2.2
IDENTIFICATION NUMBER:	UN1956	UN1956
SHIPPING LABEL:	NONFLAMMABLE GAS	NONFLAMMABLE GAS

---

### 15. REGULATORY INFORMATION

Isobutylene is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

---

### 16. OTHER INFORMATION

This MSDS has been prepared in accordance with the Chemicals (Hazard Information and Packaging for Supply (Amendment) Regulation 1996. The information is based on the best knowledge of GASCO, and its advisors and is given in good faith, but we cannot guarantee its accuracy, reliability or completeness and therefore disclaim any liability for loss or damage arising out of use of this data. Since conditions of use are outside the control of the Company and its advisors we disclaim any liability for loss or damage when the product is used for other purposes than it is intended.

**MSDS/S010/248/ March, 2012**

**Safety Data Sheet**  
 according to 1907/2006/EC (REACH),  
 1272/2008/EC (CLP), and GHS

Printing date 25.05.2012

Revision: 24.05.2012

### 1 Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**
- **Trade name:** LIQUINOX
- **Application of the substance / the preparation** Hand detergent
- **1.3 Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**  
 Alconox, Inc.  
 30 Glenn St., Suite 309  
 White Plains, NY 10603  
 Phone: 914-948-4040
- **Further information obtainable from:** Product Safety Department
- **1.4 Emergency telephone number:**  
 ChemTel Inc.  
 (800)255-3924, +1 (813)248-0585



### 2 Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**

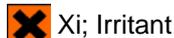


GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2 H319 Causes serious eye irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Xi; Irritant

R36/38: Irritating to eyes and skin.

- **Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

- **Classification system:**

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

- **2.2 Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

- **Hazard pictograms**



GHS07

- **Signal word** Warning

- **Hazard-determining components of labelling:**

Benzenesulfonic Acid, Sodium Salts

- **Hazard statements**

H315 Causes skin irritation.

H319 Causes serious eye irritation.

- **Precautionary statements**

P280

Wear protective gloves/protective clothing/eye protection/face protection.

(Contd. on page 2)

**Safety Data Sheet**  
**according to 1907/2006/EC (REACH),**  
**1272/2008/EC (CLP), and GHS**

Printing date 25.05.2012

Revision: 24.05.2012

**Trade name: LIQUINOX**

(Contd. of page 1)

P264 Wash thoroughly after handling.  
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P321 Specific treatment (see on this label).  
 P362 Take off contaminated clothing and wash before reuse.  
 P332+P313 If skin irritation occurs: Get medical advice/attention.  
 P337+P313 If eye irritation persists: Get medical advice/attention.  
 P302+P352 IF ON SKIN: Wash with plenty of soap and water.

· **Hazard description:**· **WHMIS-symbols:**

D2B - Toxic material causing other toxic effects

· **NFPA ratings (scale 0 - 4)**

Health = 1  
 Fire = 0  
 Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

HEALTH 1 Health = 1  
 FIRE 0 Fire = 0  
 REACTIVITY 0 Reactivity = 0

· **2.3 Other hazards**· **Results of PBT and vPvB assessment**· **PBT:** Not applicable.· **vPvB:** Not applicable.

### 3 Composition/information on ingredients

· **3.2 Mixtures**· **Description:** Mixture of substances listed below with nonhazardous additions.· **Dangerous components:**

CAS: 68081-81-2	Benzenesulfonic Acid, Sodium Salts Xi R38-41 Eye Dam. 1, H318 Skin Irrit. 2, H315	10-25%
CAS: 1300-72-7 EINECS: 215-090-9	sodium xylenesulphonate Xi R36/37/38 Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	2,5-10%
CAS: 84133-50-6	Alcohol Ethoxylate Xi R36/38 Skin Irrit. 2, H315	2,5-10%
CAS: 68603-42-9 EINECS: 271-657-0	Coconut diethanolamide Xi R36/38	2,5-10%
CAS: 17572-97-3 EINECS: 241-543-5	Ethylenediaminetetraacetic acid, tripotassium salt Xi R36/37/38	2,5-10%

(Contd. on page 3)

**Safety Data Sheet**  
**according to 1907/2006/EC (REACH),**  
**1272/2008/EC (CLP), and GHS**

Printing date 25.05.2012

Revision: 24.05.2012

Trade name: LIQUINOX

(Contd. of page 2)

- **Additional information:** For the wording of the listed risk phrases refer to section 16.

#### 4 First aid measures

- **4.1 Description of first aid measures**
- **General information:** Take affected persons out into the fresh air.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:**  
Immediately wash with water and soap and rinse thoroughly.  
If skin irritation continues, consult a doctor.
- **After eye contact:**  
Remove contact lenses if worn.  
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:**  
Do not induce vomiting; call for medical help immediately.  
Rinse out mouth and then drink plenty of water.  
A person vomiting while laying on their back should be turned onto their side.
- **4.2 Most important symptoms and effects, both acute and delayed**  
No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

#### 5 Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **5.2 Special hazards arising from the substance or mixture**  
No further relevant information available.
- **5.3 Advice for firefighters**
- **Protective equipment:**  
Wear self-contained respiratory protective device.  
Wear fully protective suit.

#### 6 Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Ensure adequate ventilation  
Particular danger of slipping on leaked/spilled product.
- **6.2 Environmental precautions:**  
Dilute with plenty of water.  
Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Clean the affected area carefully; suitable cleaners are:  
Warm water
- **6.4 Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.

(Contd. on page 4)

**Safety Data Sheet**  
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 1272/2008/EC (CLP), and GHS

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Trade name: LIQUINOX

See Section 13 for disposal information.

(Contd. of page 3)

## 7 Handling and storage

- **7.1 Precautions for safe handling** No special measures required.
- **Information about fire - and explosion protection:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** None.
- **7.3 Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **8.1 Control parameters**
- **Ingredients with limit values that require monitoring at the workplace:**  
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists valid during the making were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Keep away from foodstuffs, beverages and feed.  
Wash hands before breaks and at the end of work.  
Avoid contact with the eyes and skin.
- **Respiratory protection:** Not required.
- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**

Natural rubber, NR

Nitrile rubber, NBR

Neoprene gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

(Contd. on page 5)

**Safety Data Sheet**  
 according to 1907/2006/EC (REACH),  
 1272/2008/EC (CLP), and GHS

Printing date 25.05.2012

Revision: 24.05.2012

Trade name: LIQUINOX

(Contd. of page 4)

- **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**



Safety glasses

Goggles recommended during refilling

## 9 Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form:	Liquid
Colour:	Light yellow
Odour:	Odourless
Odour threshold:	Not determined.

- pH-value at 20°C: 8,5

- **Change in condition**

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	100°C

- **Flash point:** Not applicable.

- **Flammability (solid, gaseous):** Not applicable.

- **Ignition temperature:**

Decomposition temperature: Not determined.

- **Self-igniting:** Product is not selfigniting.

- **Danger of explosion:** Product does not present an explosion hazard.

- **Explosion limits:**

Lower:	Not determined.
Upper:	Not determined.

- **Vapour pressure at 20°C:** 23 hPa

Density at 20°C:	1,08 g/cm <sup>3</sup>
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.

- **Solubility in / Miscibility with water:**

Fully miscible.

- **Segregation coefficient (n-octanol/water):** Not determined.

- **Viscosity:**

Dynamic:	Not determined.
Kinematic:	Not determined.

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**Safety Data Sheet**  
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· **9.2 Other information**

No further relevant information available.

**10 Stability and reactivity**

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions**  
Reacts with strong oxidizing agents.  
Reacts with strong acids.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**  
Carbon monoxide and carbon dioxide  
Sulphur oxides (SO<sub>x</sub>)  
Nitrogen oxides

**11 Toxicological information**

- **11.1 Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:  
Irritant

**12 Ecological information**

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

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· **12.6 Other adverse effects** No further relevant information available.

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**13 Disposal considerations**· **13.1 Waste treatment methods**· **Recommendation**

Smaller quantities can be disposed of with household waste.

Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.

The surfactant used in this product complies with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.

· **Uncleaned packaging:**

· **Recommendation:** Disposal must be made according to official regulations.

· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

**14 Transport information**· **14.1 UN-Number**

· DOT, ADR, ADN, IMDG, IATA N/A

· **14.2 UN proper shipping name**

· DOT, ADR, ADN, IMDG, IATA N/A

· **14.3 Transport hazard class(es)**

· DOT, ADR, ADN, IMDG, IATA

· Class N/A

· **14.4 Packing group**

· DOT, ADR, IMDG, IATA N/A

· **14.5 Environmental hazards:**

· Marine pollutant: No

· **14.6 Special precautions for user**

Not applicable.

· **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not applicable.

· **UN "Model Regulation":**

-

**15 Regulatory information**· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

· United States (USA)

· SARA

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

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- **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

- **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

- **Proposition 65 (California):**

- **Chemicals known to cause cancer:**

None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

- **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

- **Carcinogenic Categories**

- **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

- **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

- **Canada**

- **Canadian Domestic Substances List (DSL)**

All ingredients are listed.

- **Canadian Ingredient Disclosure list (limit 0.1%)**

None of the ingredients is listed.

- **Canadian Ingredient Disclosure list (limit 1%)**

None of the ingredients is listed.

- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**

H315 Causes skin irritation.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

R36/37/38 Irritating to eyes, respiratory system and skin.

R36/38 Irritating to eyes and skin.

R38 Irritating to skin.

R41 Risk of serious damage to eyes.

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**Safety Data Sheet**  
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1272/2008/EC (CLP), and GHS

Printing date 25.05.2012

Revision: 24.05.2012

**Trade name: LIQUINOX**

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**· Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

ACGIH: American Conference of Governmental Industrial Hygienists

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

# Material Safety Data Sheet

## Nitric acid, 20-70%

ACC# 16550

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Nitric acid, 20-70%

**Catalog Numbers:** AC124660000, AC124660010, AC124660011, AC124660025, AC124660026, AC124665000, AC124665001, AC133620000, AC133620010, AC133620011, AC133620025, AC133620026, AC424000000, AC424000025, AC424000026, AC424000250, AC424005000, AC424005001, AC613205000, A198C-212, A198C4X-212, A200-212, A200-500, A200-500LC, A200-612GAL, A200212LC, A200C-212, A200C212EA, A200C212LC, A200C4X-212, A200C4X212L, A200S-212, A200S-500, A200S212LC, A200SI-212, A206C-212, A206C4X-212, A467-1, A467-2, A467-250, A467-500, A483-212, A509-212, A509-212LC, A509-500, A509SK-212, A509SK-212LC, MCC-030822, NC9596579, S719721, S71972SC

**Synonyms:** Azotic acid; Engraver's acid; Aqua fortis.**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	30-80	231-791-2
7697-37-2	Nitric acid	20-70	231-714-2

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear to yellow liquid.

**Danger!** May be fatal if inhaled. Causes severe eye and skin burns. Causes severe respiratory and digestive tract burns. Strong oxidizer. Contact with other material may cause a fire. Acute pulmonary edema or chronic obstructive lung disease may occur from inhalation of the vapors of nitric acid. Corrosive to metal.

**Target Organs:** Lungs, eyes, skin, mucous membranes.**Potential Health Effects**

**Eye:** Causes severe eye burns. Direct contact with liquid may cause blindness or permanent eye damage.

**Skin:** Causes skin burns. May cause deep, penetrating ulcers of the skin. Concentrated nitric acid dyes human skin yellow on contact.

**Ingestion:** May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause perforation of the digestive tract. May cause systemic effects.

**Inhalation:** Effects may be delayed. Causes chemical burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Aspiration may lead to pulmonary edema. May cause systemic effects. May cause acute pulmonary edema, asphyxia, chemical pneumonitis, and upper airway obstruction caused by edema. Depending on the conditions, the vapor or fumes of nitric acid may actually be a mixture of nitric acid and various oxides of nitrogen. The composition may vary with temperature, humidity, and contact with other organic materials.

**Chronic:** Exposure to high concentrations of nitric acid vapor may cause pneumonitis and pulmonary edema which may be fatal. Symptoms may or may not be delayed. Continued exposure to the vapor & mist of nitric acid may result in a chronic bronchitis, & more severe exposure results in a chemical pneumonitis. The vapor & mists of nitric acid may erode the teeth, particularly affecting the canines & incisors.

## Section 4 - First Aid Measures

**Eyes:** Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with other material may cause fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. May react with metal surfaces to form flammable and explosive hydrogen gas. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

**Extinguishing Media:** Use extinguishing media most appropriate for the surrounding fire.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 4; Flammability: 0; Instability: 0; Special Hazard: OX

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as sawdust. Provide ventilation. Evacuate unnecessary personnel. Approach spill from upwind. Use water spray to cool and disperse vapors and protect personnel.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not breathe dust, mist, or vapor. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Avoid contact with clothing and other combustible materials. Discard contaminated shoes. Do not use with metal spatula or other metal items. Use only with adequate ventilation or respiratory protection.

**Storage:** Do not store near combustible materials. Do not store in direct sunlight. Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from metals. Store away from alkalis. Separate from organic materials. Inspect periodically for damage or evidence of leaks or corrosion.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use a corrosion-resistant ventilation system.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Nitric acid	2 ppm TWA; 4 ppm STEL	2 ppm TWA; 5 mg/m <sup>3</sup> TWA 25 ppm IDLH	2 ppm TWA; 5 mg/m <sup>3</sup> TWA

**OSHA Vacated PELs:** Water: No OSHA Vacated PELs are listed for this chemical. Nitric acid: 2 ppm TWA; 5 mg/m<sup>3</sup> TWA

### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles and face shield.

**Skin:** Wear butyl rubber gloves, apron, and/or clothing.

**Clothing:** Wear appropriate clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear to yellow

**Odor:** strong odor - acrid odor - suffocating odor

**pH:** 1.0 (0.1M soln)

**Vapor Pressure:** 51 mm Hg @ 25 deg C  
**Vapor Density:** 2.17 (air=1)  
**Evaporation Rate:** Not available.  
**Viscosity:** 0.761 cps @ 25 deg C  
**Boiling Point:** 86 deg C  
**Freezing/Melting Point:** -42 deg C  
**Decomposition Temperature:** Not available.  
**Solubility:** Soluble in water.  
**Specific Gravity/Density:** 1.4  
**Molecular Formula:** HNO<sub>3</sub>  
**Molecular Weight:** 63.01

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable. Decomposes when in contact with air, light, or organic matter. The yellow color is due to release of nitrogen dioxide on exposure to light.

**Conditions to Avoid:** High temperatures, light, confined spaces.

**Incompatibilities with Other Materials:** Metals, reducing agents, strong bases, acetic acid, alcohols, acetone, aniline, hydrogen sulfide, metal powders, carbides, aldehydes, organic solvents, combustible materials, chromic acid, flammable liquids, cyanides, sulfides, Incompatible with many substances.

**Hazardous Decomposition Products:** Nitrogen oxides.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS# 7732-18-5:** ZC0110000

**CAS# 7697-37-2:** QU5775000; QU5900000

**LD50/LC50:**

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

CAS# 7697-37-2:

Inhalation, rat: LC50 = 260 mg/m<sup>3</sup>/30M;

Inhalation, rat: LC50 = 130 mg/m<sup>3</sup>/4H;

Inhalation, rat: LC50 = 67 ppm(NO<sub>2</sub>)/4H;

**Carcinogenicity:**

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 7697-37-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. No information available.

**Environmental:** Terrestrial: During transport through the soil, nitric acid will dissolve some of the soil material, in particular, the carbonate based materials. The acid will be neutralized to some degree with adsorption of the proton also occurring on clay materials. However, significant amounts of acid are expected to remain for transport down toward the ground water table. Upon reaching the ground water table, the acid will continue to move, now in the direction of the ground water flow.

**Physical:** No information available.

**Other:** No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	NITRIC ACID	NITRIC ACID
<b>Hazard Class:</b>	8	8
<b>UN Number:</b>	UN2031	UN2031
<b>Packing Group:</b>	II	II

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 7732-18-5 is listed on the TSCA inventory.

CAS# 7697-37-2 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 7697-37-2: 1000 lb final RQ; 454 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

CAS# 7697-37-2: 1000 lb TPQ

#### **SARA Codes**

CAS # 7697-37-2: immediate, delayed, fire.

#### **Section 313**

This material contains Nitric acid (CAS# 7697-37-2, 20-70%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

#### **Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

#### **Clean Water Act:**

CAS# 7697-37-2 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### **OSHA:**

CAS# 7697-37-2 is considered highly hazardous by OSHA.

#### **STATE**

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 7697-37-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

#### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

### **European/International Regulations**

#### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

C

#### **Risk Phrases:**

R 35 Causes severe burns.

#### **Safety Phrases:**

S 23 Do not inhale gas/fumes/vapour/spray.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 36 Wear suitable protective clothing.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### **WGK (Water Danger/Protection)**

CAS# 7732-18-5: No information available.

CAS# 7697-37-2: 1

#### **Canada - DSL/NDSL**

CAS# 7732-18-5 is listed on Canada's DSL List.

CAS# 7697-37-2 is listed on Canada's DSL List.

#### **Canada - WHMIS**

This product has a WHMIS classification of E, C, D1A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

#### **Canadian Ingredient Disclosure List**

CAS# 7697-37-2 is listed on the Canadian Ingredient Disclosure List.

**MSDS Creation Date:** 9/30/1998

**Revision #16 Date:** 2/11/2008

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*

# **CH2M HILL HEALTH AND SAFETY PLAN**

## **Attachment 12**

### **Project Deficiency Tracking Log**



# **CH2M HILL HEALTH AND SAFETY PLAN**

## **Attachment 13**

### **Contractor Incident Report System (CIRS) Form**

- Initial Report
- Follow-up Report
- Initial Report

## Contractor Incident Report System (CIRS)

1. Contract Information		Incident Information	
Prime Contractor:		Cage Code:	
Contract Number:		Installation of Incident:	
Task Order #:		Contracting Activity/ROICC Office:	
Contractor Contact Information			
Name (Last, First):		Phone #:	
Email Address:		Date Notified:	
2. Incident Type		(Please Check/Bold All That Apply)	
<input type="checkbox"/> Assault/Violent Act	<input type="checkbox"/> Extreme Environmental Exposure	<input type="checkbox"/> Man over the side (No water entry)	
<input type="checkbox"/> Diving	<input type="checkbox"/> Falls, slip, trip, or bodily exertion	<input type="checkbox"/> Man Overboard - Water Entry	
<input type="checkbox"/> Electrical Shock/Burns	<input type="checkbox"/> Fires - All Types	<input type="checkbox"/> Material Handling Equipment	
<input type="checkbox"/> Equipment Installation/Repair	<input type="checkbox"/> Hazardous Material (any type)	<input type="checkbox"/> Ordnance-Related (Explosive)	
<input type="checkbox"/> Explosion, Non-Ordnance	<input type="checkbox"/> Industrial (Select Additional Below)	<input type="checkbox"/> Vehicle (Government or Private)	
Industrial Incident Additional Information		(Please Check/Bold All That Apply)	
<input type="checkbox"/> Confined Space	<input type="checkbox"/> Hand and Power Tools	<input type="checkbox"/> Work Platforms and Scaffolding	
<input type="checkbox"/> Demolition/Renovation	<input type="checkbox"/> Rigging	<input type="checkbox"/> Underground Construction, Shafts, and Caissons	
<input type="checkbox"/> Trenching/Entrapment	<input type="checkbox"/> Cranes and Hoisting Equipment	<input type="checkbox"/> Concrete, Masonry, Steel Erection and Residential Construction	
<input type="checkbox"/> Traffic Control	<input type="checkbox"/> Floating Plant and Marine Activities	<input type="checkbox"/> Tree Maintenance and Removal	
<input type="checkbox"/> Welding and Cutting	<input type="checkbox"/> Pressurized Equipment and System	<input type="checkbox"/> Airfield and Aircraft Operations	
<input type="checkbox"/> Control of Hazardous Energy	<input type="checkbox"/> Fall Protection		

**3. General Information Incident Information**

**Date of Incident:**

**Time of Incident:**

**Describe the Incident in detail in your words: (Use the back of page if you need additional space)**

**Exact Location of Incident:**

**Were Hazardous Material(s) Involved**    Y     No

**If Yes, Explain What Hazardous Materials Were Involved and Why:**

**Who Provided Clean-up?**     site    Base     Public

**Activity of the injured person at the time of incident:**

**Personal Protective Equipment: (Check/Bold Response)**

Available and used     Available and not used    Not  required

Not related to Mishap     Wrong PPE for job

**List PPE Used:**

<b>4. Fully Explain What Allowed or Caused the Incident:</b>	<b>Incident Information</b>
--	-----------------------------

**Direct Cause:**

**Indirect Cause:**

**Additional Action Taken:** (Please Include a Begin Date and Est. End Date in Description)

**Additional Action Taken:** (Please Include a Begin Date and Est. End Date in Description) *(Use the back of page if you need additional space)*

<b>5. Contributing Factors:</b>
---------------------------------

<b>Was Visibility Restricted?</b> <input type="checkbox"/> s    No <input type="checkbox"/>	<b>Distance Visibility was restricted:</b>
---	--

**Unit of Measure (Check/Bold):**    feet    ds    Mes    Miles    Nauticalles

**Visibility Restricted By: (Check/Bold all that apply)**

<input type="checkbox"/> Fog	<input type="checkbox"/> Smoke	<input type="checkbox"/> Rain	<input type="checkbox"/> Sleet	<input type="checkbox"/> Snow
<input type="checkbox"/> Mist	<input type="checkbox"/> Dust	<input type="checkbox"/> Sandstorm	<input type="checkbox"/> Unknown Object	<input type="checkbox"/> Other

<b>Lighting Conditions at Site of Mishap:</b> (Please Check)  <input type="checkbox"/> Adequate <input type="checkbox"/> adequate    U <input type="checkbox"/> nown	<b>Was Noise Level a Factor:</b> (Please Check)  <input type="checkbox"/> Yes <input type="checkbox"/> Un <input type="checkbox"/> own	<b>Was Carbon Monoxide (CO) a Factor:</b> (Please Check) <input type="checkbox"/> Yes    No <input type="checkbox"/>  <b>If Yes CO Alarm Manufacturer:</b>
---	---	---



<b>1. Injured Data</b>			(if applicable) <b>Person #</b>
<b>Age:</b>	<b>Gender: (Check/Bold)</b> <input type="checkbox"/> Male <input type="checkbox"/> Female	<b>Prime Contractor Company Name:</b>	<b>Subcontractor Company Name:</b>
<b>2. General Information</b>			
<b>Drug or Alcohol Involved: (Check/Bold all that apply)</b>			
<input type="checkbox"/> None	<input type="checkbox"/> Unknown	<input type="checkbox"/> Alcohol	<input type="checkbox"/> Drugs <input type="checkbox"/> Alcohol and Drugs
<b>Who Provided First Aid?</b> <input type="checkbox"/> Onsite <input type="checkbox"/> Base <input type="checkbox"/> Public <input type="checkbox"/>			
<b>Was Ergonomics a Factor: (Check/Bold)</b> Y <input type="checkbox"/> No <input type="checkbox"/>			
<b>Type of Ergonomic Injury: (Check/Bold All That Apply)</b>			
<input type="checkbox"/> Lifting	<input type="checkbox"/> Positioning	<input type="checkbox"/> Bending	<input type="checkbox"/> Equipment Placement <input type="checkbox"/> Office
<input type="checkbox"/> Equipment	<input type="checkbox"/> Placement Industrial	<input type="checkbox"/> Repetitive Motion	<input type="checkbox"/> Impact Strain
<b>3. Injury Illness/Fatality Information</b>			
<b>Severity of Injury/Illness: (Check/Bold)</b>			
<input type="checkbox"/> Fatality	<input type="checkbox"/> Lost Workday Case Involving Days Away From Work		
<input type="checkbox"/> Temporary Disability	<input type="checkbox"/> Recordable Workday Case Involving Restricted Duty		
<input type="checkbox"/> Permanent Total Disability	<input type="checkbox"/> Other Recordable Case	<input type="checkbox"/> Recordable First Aid Case	
<input type="checkbox"/> Permanent Partial Disability	<input type="checkbox"/> Non-Recordable Case	<input type="checkbox"/> No Injury	
<b>Where There Days Lost: (Check/Bold)</b>	<b>Where There Days Hospitalized: (Check/Bold)</b>	<b>Where There Days Restricted Duty: (Check/Bold)</b>	
<input type="checkbox"/> Yes <input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/>	
<b>Part of Body Affected:</b>			
<b>Nature of Injury or Illness:</b>			
<b>Event or Exposure:</b>			
<b>Source of Injury or Illness:</b>			
<b>General Location Description:</b>			
<b>Injury Activity Code:</b>			





**4. License****(if applicable) Property Damage**Are Appropriate License and Certification/Medical Current: (Check/Bold) s No 

Describe or Explain:

**Attach Image of License or Certification  
Name/Description:****Date Added:****Uploaded By:**

<b>Attach Image of License or Certification Name/Description:</b>	<b>Date Added:</b>	<b>Uploaded By:</b>

**5. Training**Was all the contract-required training provided to the employee? (Check/Bold) s No 

Explain:

# CONTRACTOR INCIDENT REPORT SYSTEM (CIRS) INSTRUCTIONS

Complete Only Sections Appropriate to Incident (Rev. 03/11).

**NOTE: THE ATTACHED CIRS FORM IS TO BE USED BY CONTRACTORS TO RECORD THE RESULTS OF THEIR INCIDENT INVESTIGATIONS AND SHALL BE PROVIDED TO THE CONTRACTING OFFICER WITHIN THE REQUIRED TIMEFRAMES.**

**GENERAL.** Complete a separate report for each person who was injured in the Incident pages 5-6. A report needs to be completed for all OSHA recordable Incidents and property damage cases. Please type or print legibly. Appropriate items shall be Checked/Bolded, non-applicable sections shall be marked "N/A". If additional space is needed, provide the information on a separate sheet of paper and attach to the completed form.

## Mark the report: (Check/Bold)

Initial: If this form is being used as initial notification of a Fatality or High Visibility Mishap. The initial form is due within 4 hours of a serious Incident. A form marked 'Follow-up' or 'Final' is required within 5 days.

Follow-Up: If you are providing additional information on a report previously submitted.

Final: If you are providing a completed report and expect no changes.

## Incident Information

### Section 1 Contract Information – Incident Information

Prime Contractor: Name as it appears on contract documents.

Cage Code: If known.

Contract Number: Number as it appears on the contract documents.

Installation: Name of installation where incident occurred.

Task Order #: Insert number if applicable.

Contracting Activity/ROICC Office: Enter the name and address of the Contracting Office administering the contract under which the mishap took place (e.g. ROICC MCBH, ROICC NORFOLK, PWC GUAM, etc.).

Contractor Contact Information: (Contractor point of contact information for the individual responsible for completing the form) Self Explanatory

**Section 2 Incident Type:** Check/Bold most applicable category, if you select Industrial you must Check/Bold at least one additional category from the **Industrial Incident Additional Information Section**.

### Section 3 General Information Incident Information

Date of Incident: Enter the month, day, and year of Incident.

Time of Incident: Enter the local time of Incident in military time. Example: 14:30 hrs (not 2:30 p.m.).

Describe the Incident in Detail in your words: Fully describe the Incident in the space provided. If property damage involved, give estimated dollar amount of damage and/or repair costs involved. If additional space is needed continue on a separate sheet and attach to this report. Give the sequence of events that describe what happened leading up to and including the Incident. Fully identify personnel and equipment involved and their role(s) in the Incident. Ensure that relationships between personnel and equipment are clearly specified. Ensure questions below regarding direct cause(s), indirect cause(s), and actions taken are answered. **NOTE!** Review questions in Section 4 (Fully Explain What Allowed or Caused the Incident - Incident Information) below before completing.

Exact Location of Incident: Enter facts needed to locate the Incident scene (e.g. installation/project name, building/room number, street, direction and distance from closest landmark, etc.).

Were Hazardous Material(s) Involved s  No

If Yes, Explain What Hazardous Materials Were Involved and Why: Check or Bold appropriate block and list name(s) and quantities of hazardous materials spilled/released during the mishap. List why the hazardous chemicals were being used.

Activity at the time of incident: What type of work/task was being performed by the injured when the injury took place or property damage occurred.

Personal Protective Equipment: Check/Bold appropriate items and list PPE which was being used by the injured person at the time of the Incident (e.g. protective clothing, shoes, glasses, goggles, respirator, safety belt, harness, etc.)

#### **Section 4 Fully Explain What Allowed or Caused the Incident - Incident Information**

Direct Cause(s): The direct cause is that single factor which most directly lead to the Incident. See examples below.

Indirect Cause(s): Indirect cause are those factors, which contributed to, but did not directly initiate the occurrence of the Incident.

Examples for Direct and Indirect Cause:

1. Employee was dismantling scaffold and fell 12 feet from unguarded opening.

*Direct cause:* Failure to provide fall protection at elevation

*Indirect causes:* Failure to enforce safety requirements: improper training/motivation of employee (possibility that employee was not knowledgeable of fall protection requirements or was lax in his attitude toward safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

2. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by contractor vehicle. (note contractor vehicles was in proper safe working condition.)

*Direct cause:* Failure of contractor driver to maintain control of and stop contractor vehicle within safe distance.

*Indirect cause:* Failure of employee to pay attention to driving (defensive driving).

Additional Action Taken: Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar Incidents/illnesses. Continue in the additional box and or on additional sheets of paper if necessary to fully explain and attach to the completed report form.

Please Include a Begin Date and Estimated Completion Date in Description

(1) Begin: Enter the date when the corrective action(s) identified above will begin.

(2) Est. End Date - Enter the date when the corrective action(s) identified above will be completed.

**Section 5 Contributing Factors Incident Information:** Check/Bold appropriate items fill in information where required

Other Contributing Factors: Describe in detail any additional contributing factors not listed in previous information provided.

**Section 6 Attached Documents:** Provide the appropriate information for each document/file attached or uploaded.

### **Injured Data Person #**

Complete Pages 5 and 6 for each injured person At the upper right hand corner of page 5 and 6 differentiate between each person by using a numerical value (e.g. Person #1, Person #, Person #3, etc.)

**Section 1 Injured Data:** Fill in all applicable information, Check/bold appropriate responses.

**Section 2 General Information:**

Check/bold appropriate responses

**Section 3 Injury/Illness Fatality Information:** Check/bold appropriate responses

Part of Body Affected: Enter the most appropriate primary and when applicable, secondary, etc. body part(s) affected (e.g. arm: wrist: abdomen: single eye; jaw: both elbows: second finger: great toe: collar bone: kidney, etc.).

Nature of Injury/Illness: Describes the manner in which the injury or illness was inflicted or produced. It attempts to answer the broad question of “how” work injuries and illnesses occurred. (e.g. Fall, Struck By, Caught By, Repetitive Motion, Rubbed or Abraded By, etc.)

Event or Exposure: Describes what was produced by the injury or illness was produced or inflicted. (e.g. Infectious Parasitic Diseases, Traumatic Injuries and Disorders, Open Wounds, Burns, Intracranial Injuries, etc.)

Source of Injury Illness: Identifies the object, substance, bodily motion, or exposure, which directly produced or inflicted the previously identified injury or illness. (e.g. Acids, Chemical Products, Furniture and Fixtures, Machinery, Structures and Surfaces, Tools Instruments and Equipment, etc.)

General Location Description: Describes where the injury occurred (e.g. Industrial Facilities, Operational Industrial Building Plant, Roadway, etc.)

Injury Activity Code: Describes what the injured person was doing when the injury occurred. (e.g. Operating Type of Equipment, Construction Activity Being Performed, Industrial Operation Being Conducted, etc.)

#### **Section 4 License:**

Are Appropriate License and Certification/Medical Current: Did the injured employee have the appropriate license/certification or medical evaluations completed to conduct the work/task being performed.

Describe/Explain: Describe the required (licensing/certification/medical evaluation) for job/task being performed, date when license was issued, and expiration date. (e.g. “Powdered Actuated Tools, Hilti DX-350, License issued 11/29/2011, expires 3-years from issue date.” “Respirator Semi Annual Medical Evaluation, conducted 12/30/2011, expires on 12/30/2013”, etc.)

Attach Image of License or Certification: Self-Explanatory

#### **Section 5 Training:**

Was all the contract-required training provided to the employee: Self-Explanatory

Explain: If no, to the previous questions explain why the employee was not trained.

#### **Section 6 Attached Documents:**

Self-Explanatory use this for photos, drawings, diagrams, or other relevant documents.

## **Property Damage**

**Section 1 Involved Person Data:** Fill in all applicable information, Check/bold appropriate responses.

#### **Section 2 Attached Documents:**

Self-Explanatory use this for photos, drawings, diagrams, or other relevant documents.

#### **Section 3 Property Damaged:**

Check/bold appropriate responses. Other Headings Self-Explanatory.

#### **Section 4 License:**

Are Appropriate License and Certification/Medical Current: Did the equipment operator have the appropriate license/certification or medical evaluations completed to conduct the work/task being performed.

Describe/Explain: Describe the required (licensing/certification/medical evaluation) for job/task being performed, date when license was issued, and expiration date. (e.g. “State Issued Driver, License issued 11/29/2011, expires on MM/DD/YYYY” “Scissor Lift, JLG Model 260MRT conducted 12/30/2011, does not expire.”)

Attach Image of License or Certification: Self-Explanatory

#### **Section 5 Training:**

Was all the contract-required training provided to the employee: Self-Explanatory