

REPORT DOCUMENTATION PAGE

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**Final Safety, Health, and Emergency Response Plan for
Environmental Services at RVAAP-34 Sand Creek Disposal Road Landfill,
RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site
Version 1.0**

**Ravenna Army Ammunition Plant
8451 St. Route 5
Ravenna, Ohio 44266-9297**

**Contract No. W912QR-08-D-0013
Delivery Order 0002**

Prepared for:



**US Army Corps
of Engineers®**
Louisville District

**600 Martin Luther King, Jr. Place
Louisville, Kentucky 40202**

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October 14, 2009

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CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Shaw Environmental & Infrastructure, Inc. has completed the *Final Safety Health and Emergency Response Plan for Environmental Services at RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site*. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy, principles, and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets customer's needs consistent with law and existing Corps policy.

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Health and Safety Manager

*Safety, Health, and Emergency Response Plan Disclaimer*_____

This Safety, Health, and Emergency Response Plan (SHERP) was prepared for use by Shaw Environmental & Infrastructure, Inc. (Shaw) and its subcontractors for the execution of work under U.S. Army Corps of Engineers (USACE), Louisville District (CELRL) Contract No. W912QR-08-D-0013/Delivery Order 0002. The SHERP has incorporated elements of the Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant (RVAAP) prepared by Science Applications International Corporation (SAIC, 2001) and operational requirements provided to Shaw.

The enclosed SHERP has been designed for the methods presently contemplated by Shaw for execution of the proposed work. Therefore, the SHERP may not be appropriate if the work is not performed by or using the methods presently contemplated by Shaw.

In addition, as the work is performed, conditions different from those anticipated may be encountered and the SHERP may have to be modified through SHERP Amendments. Therefore, Shaw makes no representations of warranties as to the adequacy of the SHERP, except for warranties specifically stated in the SHERP itself.

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Acronyms and Abbreviations

°F	degrees Fahrenheit
ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
AIDS	acquired immunodeficiency syndrome
ANSI	American National Standards Institute
AOC	Areas of Concern
APR	air purifying respirator
C	ceiling
Ca	carcinogen
CELRL	U.S. Army Corps of Engineers, Louisville District
CFR	Code of Federal Regulation
CNS	central nervous system
COR	Contracting Officer's Representative
CPR	cardiopulmonary resuscitation
CRZ	Contamination Reduction Zone
DEET	N,N-Diethyl-m-toluamide
EMS	Emergency Medical Service
EPA	Environmental Protection Agency
EZ	Exclusion Zone
GI	gastrointestinal
HARP	Hazard Assessment Resolution Process
HAZMAT	hazardous materials
HBV	hepatitis B virus
HIV	human immunodeficiency virus
HMX	Cyclotetramethylenetetranitramine
HSM	Health and Safety Manager
HTRW	Hazardous, Toxic, and Radioactive Waste
IDLH	immediately dangerous to life and health
IRP	Installation Restoration Program
JSA	Job Safety Analysis
LEL	lower explosive limit
MEC	munitions and explosives of concern
mg/m ³	milligram(s) per cubic meter
MSDS	Material Safety Data Sheet
NC	nitrocellulose
ND	not determined
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NQ	nitroguanidine
Ohio EPA	Ohio Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PEL	permissible exposure limit

Acronyms and Abbreviations (continued)

PFD	personal flotation device
PPE	personal protective equipment
ppm	part(s) per million
PVC	polyvinyl chloride
RDX	Cyclonite
Shaw	Shaw Environmental & Infrastructure, Inc.
SHERP	Safety, Health, and Emergency Response Plan
SMAC	Sequential Multiple Analyzer Computer
SOP	standard operating procedure
SSHO	Site Safety and Health Officer
STEL	short-term exposure limit
TLV	threshold limit value
TWA	time-weighted average
URT	upper respiratory tract
USACE	U.S. Army Corps of Engineers

1.0 Introduction

This Safety, Health, and Emergency Response Plan (SHERP) describes the safety and health guidelines developed to protect on-site personnel, subcontractors, Government personnel, and members of the public in accordance with the project *Scope of Work*. This *SHERP* is being prepared by Shaw Environmental & Infrastructure, Inc. (Shaw) under Indefinite Delivery/Indefinite Quantity Contract No. W912QR-08-D-0013, Delivery Order (DO) 0002 for Environmental Services at the following Ravenna Army Ammunition Plant (RVAAP) Areas of Concern (AOCs): Sand Creek Disposal Road Landfill (RVAAP-34), Open Detonation Area #1 (RVAAP-03), and Mustard Agent Burial Site (RVAAP-28). The DO was issued by the U.S. Army Corps of Engineers, Louisville District (CELRL) on September 22, 2008.

This SHERP is intended to encompass the general scope of authority, responsibilities for accident and incident prevention and provide basic guidelines for implementing, enforcing, and monitoring safe work practices and procedures.

This SHERP is prepared in accordance with the standards established by the United States Occupational Safety and Health Administration (OSHA) for regulated sites. Specifically, this SHERP complies with the appropriate standards contained in 29 Code of Federal Regulations (CFR) 1910.120; 29 CFR 1926.65; the *Safety and Health Requirements Manual* (U.S. Army Corps of Engineers [USACE], 2008); and *Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities* (USACE, 2003). The safety and health measures presented are in effect for the duration of the project. This document is intended for use by Shaw personnel and subcontractors. All personnel working on the project sites are required to abide by these measures. Where not specifically mentioned, all personnel are required to comply with the applicable regulations contained in 29 CFR 1910, 29 CFR 1926, and the *Safety and Health Requirements Manual*. Each person working on this project must sign the SHERP Acknowledgment Form (Appendix A). The procedures and guidelines contained herein are based upon the best available information at the time of the plan's preparation. Any revisions to this plan will be made with the knowledge and concurrence of Shaw, CELRL, and the Ohio Environmental Protection Agency (Ohio EPA). Revisions to this SHERP will be included as a SHERP Amendment (Appendix B). This SHERP used in conjunction with the

Activity Hazard Analyses (Appendix C) and SHERP Addenda, if applicable (Section 1.1), will also serve as the project's:

- Accident Prevention Plan
- Emergency Response Plan
- Emergency Action Plan
- Fire Prevention Plan

1.1 Safety, Health, and Emergency Response Plan Addenda

A SHERP Addendum will be prepared for activities that are necessary to complete the project, but not covered by this SHERP. The SHERP Addenda will be specific to the work to be accomplished and will provide the following:

- Scope of work
- Chemical hazards specific to the scope of work
- Activity Hazard Analyses (AHA) (described in Section 3.14 of this document), which identify the specific hazards associated with the scope of work and the measures required to control those hazards
- Personal protective equipment (PPE) requirements for the specific activities
- Monitoring requirements

All SHERP Addenda will become a component of this SHERP. The SHERP Addenda will be attached to this SHERP as Appendix B.

1.2 Site Description and Background

The RVAAP is located in northeastern Ohio within Portage and Trumbull Counties, approximately 1.6 km (1 mile) northwest of the city of Newton Falls and 4.8 km (3 miles) east northeast of the city of Ravenna. The facility is a parcel of property approximately 17.7 kilometers (11 miles) long and 5.6 kilometers (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east.

The facility was active from 1941 to 1992. On-site activities included loading, assembling, storing and packing military ammunition, demilitarization of munitions, production of ammonium nitrate fertilizer, and disposal of "off-spec" munitions. Munitions handled on the installation included artillery rounds of 90 mm or more and 2000-pound bombs. A number of Areas of Concern (AOCs) have been identified.

As of February 2006, a total of 20,403 acres of the former 21,683-acre RVAAP have been transferred to the United States Property and Fiscal Officer for Ohio and subsequently licensed to the Ohio Army National Guard for use as a training site. Currently, RVAAP consists of 1,280 acres in several distinct parcels scattered throughout the confines of the Camp Ravenna Joint Military Training Center (Camp Ravenna). RVAAP's remaining parcels of land are located completely within Camp Ravenna. Camp Ravenna did not exist when RVAAP was operational, and the entire 21,683-acre parcel was a government owned, contractor operated industrial facility.

The RVAAP Installation Restoration Program (IRP) encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP; therefore, references to the RVAAP in this document are considered to be inclusive of the historical extent of the RVAAP, which is inclusive of the combined acreages of the current Camp Ravenna and RVAAP, unless otherwise specifically stated. The Ohio EPA is the lead regulatory agency for investigation and remediation conducted by the Army under the U.S. Department of Defense IRP.

1.3 Safety and Health Policy Statement

The Shaw Group Inc. is firmly committed to operating all of our facilities and projects in a safe, efficient manner and in compliance with all applicable safety, health and environmental laws, rules and regulations. Through the adoption of these sustainable practices, we are committed to securing a high quality of life for current and future generations, restoring and sustaining a healthy environment and increasing value for our customers, shareholders, and business partners.

We expect all of our employees, clients and partners to uphold the highest environmental, health, and safety standards, to promote a positive and proactive safety attitude and to exhibit a heightened awareness of their surroundings both on and off the job. We must identify risks and hazards in order to provide an injury-free work environment where people, equipment, and the environment are not placed at unreasonable threat of injury or damage. We will continually strive to be good citizens in our own community, as well as in every community in which we operate.

Through compliance with this policy, we will all actively participate in this process and advocate this philosophy. Together we can accomplish our goals and exceed the minimum requirements provided by applicable laws and regulations. Together we can be proud to be a part of a team that truly values the importance of health, safety and respect for the environment. Together we can become a recognized leader in all of our businesses as a steward for our fellow employees, the environment and the communities in which we live and work.

We are committed to the spirit and intent of this policy and the laws, rules and regulations at its foundation.

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2.0 Organization, Qualifications, and Responsibilities

There will be numerous personnel required to complete the tasks for this project. The necessary personnel will be on-site Shaw project personnel, various subcontractors, off-site project team members, and government employees. All project personnel share the responsibility for safely completing project activities.

2.1 On-Site Personnel

All on-site personnel are responsible for continuous adherence to safety and health procedures during the performance of assigned work. In no case may work be performed in a manner that conflicts with the inherent safety and environmental precautions outlined in this SHERP. After due warning personnel violating safety procedures will be dismissed from the site and possibly terminated from further work.

Any person who observes unsafe acts or conditions or other safety problems has “Stop Work Authority” and shall immediately report the deficiency to supervisory personnel. If there is any dispute with regard to safety and health, on-site staff will attempt to resolve the issue and if the issue cannot be resolved on-site, they will consult off-site technical staff and supervisors for assistance. The specific task or operation in question shall remain discontinued until the issue is resolved.

2.2 Program Manager/Project Manager

The Program Manager/Project Manager (hereafter understood to be the Project Manager) shall be the primary point of contact with the CELRL and Ohio EPA. He has ultimate authority and responsibility for the establishment and maintenance of project administration control procedures. The Project Manager is the focal point of contact with CELRL regarding the project. The Project Manager issues communications to the CELRL on the project status. Specifically, the Project Manager is ultimately responsible for the development, implementation, and enforcement of the comprehensive Safety and Health Program.

2.3 Site Supervisor

The Site Supervisor is the primary safety official and emergency response coordinator at the project. The Site Supervisor is responsible for the field implementation and enforcement of this SHERP. The Site Supervisor is also responsible for maintaining contact with the Project Manager and Program Health and Safety Manager (HSM) for matters regarding project health and safety. The Site Supervisor reports to the Project Manager.

2.4 *Program Health and Safety Manager*

The Program HSM is responsible for the following actions:

- Develop, maintain, and oversee implementation of this SHERP
- Visit the project as needed to audit the effectiveness of the SHERP
- Remain available for project emergencies
- Develop modifications to this SHERP as needed
- Evaluate occupational exposure monitoring/air sampling data and adjust SHERP requirements as necessary
- Approve this SHERP by signature

2.5 *Site Safety and Health Officer*

The Site Safety and Health Officer (SSHO) verifies operations are conducted in accordance with the SHERP, USACE requirements, and OSHA regulations. The SSHO has the authority to suspend operations at the project due to non-compliance.

The SSHO has the overall responsibility to conduct exposure monitoring and/or air sampling and to select and/or adjust PPE use. The SSHO shall have the authority and is responsible for the following actions:

- Be present during operations to implement the SHERP
- Inspect site activities to identify safety and occupational health deficiencies and correct them
- Coordinate changes/modifications to the SHERP with the HSM, Project Manager, and Contracting Officer's Representative (COR)
- Conduct project-specific training

Inspections completed by the SSHO will also be used to determine if operations are being conducted in accordance with the SHERP, USACE requirements, and OSHA regulations. These inspections shall be documented – deficiencies to be corrected shall be noted as an action item list and provided to the HSM for follow-up. Daily safety inspections shall be documented on the Daily Safety Inspection Report (Appendix D). Copies of the inspections will be provided to CELRL, if requested.

Other SSHO responsibilities include the following:

- General Safety and Health Program administration
- On-site contact for regulatory agencies on matters of safety and health

- Establish employee exposure monitoring notification programs
- Investigate significant accidents and illnesses and implement corrective action plans
- Implement all safety procedures and operations on site
- Observe work party members for symptoms of on-site exposure or stress
- Arrange for the availability of on-site emergency medical care and first aid, as necessary
- Determine evacuation routes, verify that an effective means of emergency communication is always available while workers are on site, establish and post local emergency telephone numbers, and arrange emergency transportation
- Establish work zones
- Present tailgate safety meetings and maintain attendance logs and records
- Verify that the respiratory protection program is implemented, when necessary
- Verify that decontamination procedures meet established criteria, when necessary
- Monitor employee work hours and limit those work hours that are excessive

At a minimum, the SSHO must have completed the 30-hour OSHA construction safety class or as an equivalent, 30 hours of formal construction safety and health training covering the subjects of the OSHA 30-hour course applicable to the work to be performed and given by qualified instructors. An alternate SSHO will be assigned when the primary SSHO is not available on-site. The Site Supervisor may serve as the SSHO for the project.

2.6 *Subcontractor Personnel*

Both Shaw and subcontractors share the responsibility for the safety and health of their employees. Subcontractors are also responsible for complying with the standards established in this SHERP, the guidelines established in Shaw standard operating procedure (SOP) EI-HS011, “Health & Safety Rules for Contractors”; *Safety and Health Requirements Manual* (USACE, 2008); and all other project safety requirements. Subcontractors shall be pre-qualified according to the requirements of Shaw SOP EI-PS104, “Qualification of Sources.” The following are some of the requirements that apply to subcontractors:

- All subcontractors under the direction of Shaw will report to the Site Supervisor.
- An assigned safety representative for each subcontractor shall be present on any day that work is being performed. The name of the assigned safety representative shall be conveyed to the Site Supervisor.
- Subcontractors shall submit all training and medical surveillance documents to Shaw prior to mobilization.

- Planned operations for the day shall be verbally conveyed to the Site Supervisor at the beginning of each day.
- All subcontractor employees working on site shall sign the Site Entry Log (Appendix D) at the beginning and end of each workday.
- All subcontractor personnel shall attend a project safety orientation prior to beginning work on site.
- All subcontractor personnel shall attend the morning tailgate safety meeting and prepare Job Safety Analyses. If scheduling precludes attendance at the Shaw meeting, then subcontractors shall hold and document their own safety meeting. Safety meeting documentation, using the Safety Meeting/Training Log form (Appendix D), is to be submitted to the SSHO.
- All accidents, fires, injuries, illnesses, and spills shall be immediately reported to the SSHO.
- Heavy equipment is to be inspected prior to use at the project site by a competent mechanic using the USACE Safety Inspection Checklist for Construction Equipment (Appendix D). Heavy equipment shall be inspected daily by the equipment operator using the Daily Equipment Inspection form (Appendix D). Inspection documentation is to be submitted to the SSHO.
- Vehicles, such as trucks and automobiles are to be inspected daily by the individual driving using the Vehicle Inspection form (Appendix D). Inspection documentation is to be submitted to the SSHO.
- Subcontractors are required to frequently inspect work sites for safety deficiencies and correct all deficiencies. Documentation of these inspections, as well as the corrective actions implemented, is to be submitted to the SSHO. The Project Safety Inspection Report (Appendix D), Daily Safety Inspection Report (Appendix D), or equivalent shall be used.

2.7 Visitors and Other On-Site Personnel

Visitors and other on-site personnel shall check in with the SSHO in order to verify that all appropriate entry requirements are met in accordance with Sections 6.0 and 9.0. All visitors will be briefed by the SSHO on the hazards to be expected on the site(s) and the safety and health controls required (i.e., hardhat, foot protection, etc.). The SSHO will verify that all visitors entering the site are properly protected and are wearing or provided with the appropriate PPE. A stock of common PPE (i.e., hard hats, eye protection, hearing protection, reflective vests, etc.) shall be maintained at the project for use by visitors. Visitors are responsible for providing their own respiratory protection, if required, as Shaw cannot provide respiratory protection to visitors. The SSHO will provide an escort for all visitors while on site.

3.0 *Accident Prevention Plan*

This section addresses general safety areas specified in Appendix A of the *Safety and Health Requirements Manual* (USACE, 2008), as components of the Accident Prevention Plan.

3.1 *Project Safety Goal*

Safety is Shaw's highest priority. Shaw and project personnel have targeted a goal of zero injuries, illnesses, and environmental incidents for the duration of this project. Additionally, there is a goal in place for experiencing zero vehicle incidents. All activities shall be conducted in a manner that supports these goals.



3.2 *Indoctrination of New Employees*

Both Shaw and subcontractor personnel are required to attend a safety-orientation meeting prior to commencing work. Safety-orientation meetings shall be documented and kept on file. Refer to Section 9.4 for an outline of the information that is conveyed to all personnel.

3.3 *Fire Prevention and Protection*

This section details fire prevention and protection procedures/resources to be used at the RVAAP project.

3.3.1 *Workplace Fire Hazards*

The primary fire hazards at each project consist of fueling operations, storage of fuels, other flammable liquids at the project sites, and welding and cutting activities.

3.3.2 *Potential Ignition Sources*

The potential ignition sources at the project include smoking materials, welding/cutting equipment, vehicle/equipment exhaust, catalytic converters, and engine block surfaces. Personnel shall also be alert for other ignition sources such as, static electricity, lightning, and electrical equipment.

3.3.3 *Fire Control Systems, Equipment, and Procedures*

Depending on the nature and extent of any fire, the following fire control systems and equipment shall be evaluated or provided at the project:

- The City of Ravenna Fire Department is the available fire fighting service for the project. In the event of an emergency, the fire department should be contacted through Post 1 by dialing 330-358-2017. For general information, the fire department can be reached at 330-297-5738.
- Post 1 shall be contacted prior to beginning new operations at the RVAAP to alert the local fire department if necessary. Post 1 shall also be contacted at the conclusion of operations.
- Fire extinguishers shall be provided at work areas. Project vehicles and heavy equipment shall also be equipped with fire extinguishers.
- A Shaw Hot Work Permit (Appendix D) is required before a flame or spark-producing activity is to commence (Section 4.2.3).
- The AHA for fueling operations shall be followed (Appendix C, AHA 6.0, Fueling Operations).
- Flammable and oxidizing materials shall be stored in marked (No Smoking, Matches, or Open Flame) flammable materials storage areas with fire extinguishers available.
- Smoking shall only be permitted in designated areas. Personnel shall never discard cigarette butts into the environment while working at the project.
- All fires, no matter how small, shall be reported to Post 1, immediately.
- Project personnel are only permitted to extinguish small fires in their incipient stages.
- Fighting fires is prohibited by project personnel and shall only be performed by fire department personnel (Section 11.5).

3.3.4 *Fire Control Equipment Maintenance Responsibilities*

The SSHO is responsible for performing the monthly inspections (documented on the Emergency Eyewash Station/Fire Extinguisher Inspection Checklist [Appendix D]) and obtaining annual service for all Shaw fire extinguishers used at the project. Subcontractors are responsible for performing the monthly inspections and obtaining annual service for their fire extinguishers used at the project. Vehicle and heavy equipment operators are responsible for the inspection of fire extinguishers on vehicles/equipment.

3.4 *Housekeeping*

Housekeeping shall be a priority at each work site. The following provisions are specified to maintain a high standard of housekeeping:

- The importance of housekeeping and the expectations that good housekeeping shall be maintained will be regular topics of the morning safety meetings.
- Job sites and work areas shall be cleaned up on a daily basis.
- Subcontractors are required to maintain good housekeeping practices.
- Dumpsters and adequate waste/trash receptacles shall be provided as necessary in sufficient quantities in active work areas and are to be emptied regularly. Potentially contaminated waste shall be segregated from sanitary waste for proper characterization and/or disposal. Hazardous waste containers shall be labeled according to applicable regulations.
- Housekeeping is an operational/safety item, which shall be regularly considered during routine inspections.
- Nails shall be bent-over or removed from scrap lumber immediately.

3.5 *Mechanical Equipment Inspections*

Before any machinery or mechanized equipment is placed in use, it shall be inspected and tested in accordance with the manufacturer's recommendations and requirements of the *Safety and Health Requirements Manual* (USACE, 2008) and shall be certified in writing by a competent person to meet the manufacturer's recommendations and requirements of the manual. Subsequent re-inspections will be conducted at least annually thereafter. These inspections shall be documented on the USACE Safety Inspection Checklist for Construction Equipment (Appendix D). All safety deficiencies noted during the inspection shall be corrected prior to the equipment being placed in service at the project. If at any time the machinery or mechanized equipment is removed and subsequently returned to the project (other than equipment removed for routine off-site operations as part of the project), it shall be re-inspected and recertified prior to use. All heavy equipment shall be inspected by each operator prior to use on the project and shall then be inspected on a daily basis. Daily inspections shall be documented on the Daily Equipment Inspection form (Appendix D). Deficiencies in the equipment shall be noted on the form. All inspection documentation shall be submitted to the SSHO prior to using the equipment if safety deficiencies are observed and at the end of the day if no safety deficiencies are observed.

The SSHO shall immediately evaluate the inspection forms and determine if the equipment is in need of immediate repairs and if it should be "red tagged" and taken out of service. Replacement equipment will be made available within 24 hours as needed. If the equipment is taken out of service, then the equipment shall not be used until the SSHO is satisfied that the necessary

repairs have been made. For minor deficiencies that do not compromise the safe operation of the equipment, repairs shall be made at the discretion of the equipment owner. All inspection records are to be kept on file in the Shaw field office.

3.6 *First Aid and Medical Facilities*

The following addresses first aid and medical facilities:

- Effective emergency communication devices must always be available while personnel are present at the site.
- Employees working alone in a remote location or away from other workers shall be provided an effective means of emergency communications. This means of communication could include a cellular phone, two-way radios, hard-line telephones or other acceptable means. The cellular phone may not be relied upon as the sole means of communication and must be backed up by two-way radio or other acceptable means to enable communication in areas of limited or no cell phone coverage. The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. An employee check-in/check-out communication procedure shall be developed to assure employee safety (see Section 4.4.1, Lone Worker Procedure).
- Emergency telephone numbers shall be posted at all Shaw-controlled telephones (Section 11.2).
- A large first aid kit shall be provided and maintained at the project. First aid kits shall contain the items listed on the First Aid Kit Inspection Log (Appendix D). The first aid kit shall be inspected weekly by the SSHO. A seal may be placed on first aid kits to allow for less frequent inspections, such as, if the seal is not broken, then an inspection is not required. There shall be a small first aid kit available in all project vehicles. First aid kits in project vehicles do not need to be inspected if the factory plastic wrapping is intact. First aid kits shall be inspected using the First Aid Kit Inspection Log (Appendix D).

- The nearest hospital for the project is:

Robinson Memorial Hospital
6847 N. Chestnut Street
Ravenna, Ohio
Telephone: 330-297-2449

- The nearest approved medical clinic for the project is:

Corporate Care
1296 Tod Place NW #200
Warren, Ohio 44485
Telephone: 330-306-5030

Shaw employees shall utilize this clinic for injuries that do not require assistance or transport by Emergency Medical Services.

The route maps to the clinic and hospital shall be available in all project vehicles (Section 11.3); however, the facility to care for serious medical emergencies shall be determined by the Emergency Medical Services responding to the incident. At a minimum, the SSHO and at least one other on-site employee, including subcontractors, shall be certified in first aid and cardiopulmonary resuscitation (CPR) during intrusive activities. First aid and CPR training/certification must be made by a reputable provider, such as, the American Red Cross or American Heart Association.

3.7 Sanitation

The following provisions shall be made to address sanitation:

- Portable toilets shall be provided, as necessary, at convenient locations at the project site. Arrangements shall be made for the routine servicing and cleaning of these units.
- Safe drinking water is to be provided at each work site and provisions shall be made as necessary to provide safe drinking water at individual field locations. One-serving size individual bottle of water or disposable sanitary cups shall be provided along with receptacles for their disposal. All outlets dispensing non-potable water (under Shaw or subcontractor control) shall be posted with appropriate warning signs. Systems furnishing non-potable water and systems furnishing potable water shall be constructed to remain completely independent of each other.
- Portable washing facilities shall be provided as necessary at project sites and in Contamination Reduction Zones (CRZ). Portable washing facilities shall consist of, at a minimum, soap, water, and paper towels.

3.8 Illumination

Adequate lighting shall be provided to perform all activities in a safe manner. Work shall be scheduled, when possible, during daylight hours. When work is performed before sunrise, after sunset, inside buildings, or within other structures, the minimum lighting requirements specified in Table 7-1 of the *Safety and Health Requirements Manual* (USACE, 2008) shall be provided.

3.9 Engineering and Administrative Controls

The use of engineering and administrative controls shall be the preferred method of controlling or eliminating hazards. Only in cases where the use or application of engineering and administrative controls is deemed to be not feasible, then PPE may be used.

3.10 Signs, Labels, and Tags

Hazard warning signs shall be used to define specific hazards of a nature, such that failure to designate them may lead to accidental injury to workers or the public, or both, or to property damage. All new and replacement signs shall be in accordance with the requirements contained in 29 CFR 1910.145.

All containers of hazardous materials shall be labeled as to contents and the associated hazards. Hazard warning labels, whether on containers or equipment, shall not be removed by employees without the permission of the SSHO.

Tags shall be used as a means to prevent accidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment, or operations, which are out of the ordinary, unexpected, or not readily apparent. Tags shall be used until the identified hazard is eliminated or the hazardous operation is completed. Tags need not be used where signs, guarding, or other positive means of protection are being used. All equipment that is in need of repair for safety-related reasons shall be tagged as “Out of Service” until the equipment has been satisfactorily repaired.

3.11 Safety Promotions

The following methods for promoting accident prevention will be enacted:

- Accident prevention will be a regular topic discussed at safety meetings.
- All personnel will be encouraged to sign a Zero Accident Pledge poster (Appendix D) that is to be posted at the project.
- A Safety Incentive Award Program shall be implemented to reward safe employee behavior.
- A Safety Observer Program will be in place during on-site activities (see Safety Observation Reporting Card in Appendix D).

3.12 Accident Reporting

All accidents, regardless of their severity, shall be reported to the Site Supervisor, SSHO, Project Manager, HSM, and on-site CELRL representative. Other provisions for accident reporting and investigation are addressed later in this SHERP (Section 13.3).

3.13 *Scope of Work*

Shaw is responsible for all efforts needed to support the selected installation restoration efforts at the RVAAP. Activities may include, but are not limited to the following:

- Planning
- Project management
- Operations support (including data gathering and permit preparation)
- Investigations (including geophysical and laboratory services)
- Conceptual design
- Design
- Construction
- Value engineering
- Operation and monitoring
- Optimization of environmental treatment and control systems

If a specific field activity is not covered by this SHERP, a SHERP Addendum shall be completed.

3.14 *Activity Hazard Analyses*

Activity Hazard Analyses are developed for all major tasks performed for the project and included in this SHERP. The AHAs identify potential safety, health, and environmental hazards associated with specific tasks and provide protective measures for personnel, the community, and the environment. The applicable AHA(s) (Appendix C) will be reviewed by all members of the crew performing the activity. An AHA will also be prepared when new tasks are added, the job situation changes, or when it becomes necessary to alter safety requirements. Work will not proceed on a particular task/phase until the AHA has been reviewed with the work crews. Additions or changes to the AHAs, which are less conservative or allow for a downgrade in PPE requirements, must have written approval from the HSM. In addition, changes to this SHERP must be attached as an SHERP Amendment (Appendix B). Any amendments must have written approval from the HSM.

The names of the competent/qualified person(s) required for a particular activity (*i.e.*, excavations, scaffolding, fall protection, and other activities), as specified by OSHA, will be identified and included in the AHA.

The AHAs will be reviewed and modified throughout the workday, as necessary, to address changing site conditions, operations, or changes of competent/qualified person(s). The AHAs will also be reviewed and modified during the daily tailgate safety and Job Safety Analyses (JSA) meetings. Modifications will be handwritten in ink on the specific AHA. If more than one competent/qualified person will be used on the AHA, a list of names will be included as an

attachment to the AHA. Those listed will be competent and qualified for the type of work involved and familiar with current site safety issues. If a new competent/qualified person (not on the original list) is added, the list will be updated (this is an administrative action not requiring an updated AHA). The new person will acknowledge in writing that he/she has reviewed the AHA and is familiar with current site safety issues.

3.15 Job Safety Analyses

Job Safety Analyses must be completed by the crews each day for each task that will be accomplished, as required by Shaw SOP EI-HS045, "Job Safety Analysis (JSA)." The JSA shall be revised, as necessary, when unforeseen circumstances arise or work-site conditions change. Any revisions shall be immediately communicated with the affected site workers. If the need to complete an unplanned task becomes necessary at any point throughout the day, then a new JSA shall be prepared to cover that task. Job Safety Analyses shall be completed using the JSA Checklist Form and JSA Worksheet Form, both of which can be found in Appendix D.

3.16 Hazard Assessment Resolution Process

Hazard Assessment Resolution Process (HARP) is a brief, paperless, general risk assessment made by employees in each work area. The objective of HARP is to identify and eliminate or control potential real-time workplace hazards, which could lead to an accident.

Hazard Assessment Resolution Process requires workers to take time (less than two minutes) before starting a job to become aware of the immediate work environment so as to detect conditions unanticipated by our work planning. This involves a three-step process:

- Assess the hazard(s) and risk(s) to identify what could go wrong and what is the worst thing that could happen.
- Analyze the situation to determine how to reduce the risks. Evaluate each identified risk and implement the appropriate safeguards to control the hazards.
- Act to ensure safe operations:
 - Take the necessary steps to complete the job safely.
 - Follow written standards and procedures (SHERP, AHAs, JSAs, Standard Operating Procedures, etc.).
 - Do not proceed until it is safe.

In performing the HARP, focus attention on surroundings, equipment, tools, PPE, and critical steps prior to focusing on the task; consider the chemical, physical, and environmental hazards associated with the task.

Risk reduction is a critical component of HARP. The following risks shall be avoided:

- Hurrying

- Thinking the job is routine or simple
- Believing nothing bad can happen
- Not talking about precautions with co-workers
- Not raising a “gut feel”

The appropriate hazard resolution and corrective actions must take place before proceeding with the task:

- Communicate hazards and precautions to take with co-workers and supervisor.
- Eliminate or control the hazards. The implementation of administrative controls is sometimes effective, that is, marking the hazard with warning tape, signs, or tags.

If the risk is unacceptable or if a hazard cannot be satisfactorily controlled, then stop work and contact the SSHO or HSM.

3.17 Safety and Health Bulletin Board

A safety and health bulletin board shall be maintained in an area commonly accessed by workers at the Field Office. The bulletin board shall be maintained current, in clear view of on-site workers, and protected against the elements and unauthorized removals. The SSHO shall evaluate the content of the bulletin board each week, at a minimum, and update if necessary. It shall contain at least the following safety and health information:

- Map denoting the route to the nearest emergency care facility.
- Emergency telephone numbers.
- Copy of the most up-to-date SHERP shall be mounted on or adjacent to the bulletin board or state the location, which will be accessible on the site by all workers.
- Copy of current SHERP Addenda shall be mounted on or adjacent to the bulletin board or state the location, which will be accessible on the site by all workers.
- Copy of current AHA(s) shall be mounted on or adjacent to the bulletin board or state the location, which will be accessible on the site by all workers.
- Occupational Safety and Health Administration Form 300A shall be posted in accordance with OSHA requirements and mounted on or adjacent to the bulletin board or state the location, which will be accessible on the site by all workers.
- Copy of Safety and Occupational Health Deficiency Tracking Log (Appendix D) shall be mounted on or adjacent to the bulletin board or state the location where it will be accessible by all workers upon request (Appendix D).
- Safety and health promotional posters (includes Environmental, Health, and Safety Mission Vision Poster [Appendix D]).
- Date of last lost workday injury.
- OSHA Safety and Health Poster.

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4.0 Project Hazards and Hazard Control Measures

There are potential chemical, physical, and environmental hazards present at the project sites. The anticipated hazards at the project sites and the recommended control measures are presented in this section. Additional information on specific hazards and control measures are outlined in the AHAs and any SHERP Addenda.

4.1 Chemical Hazards

Previous field investigations performed at the RVAAP Areas of Concern (AOCs) Open Demolition Area 1 (ODA1) and the Sand Creek Disposal Road Landfill indicate the presence of organic and inorganic chemicals in the soil and sediment, which will require additional investigation and sampling activities. The maximum detected concentrations of chemical contaminants in soil and sediment at ODA1 and the Sand Creek Disposal Road Landfill are presented in Table 1, Maximum Detected Concentration of Contaminants.

There is potential for exposure to personnel through all routes (i.e., dermal contact, inhalation of dust and vapors, and ingestion). The use of PPE and proper decontamination procedures are required when performing work with contaminated media.

4.1.1 Inorganic Chemicals

Various hazardous inorganic chemicals were detected in soil and sediment at ODA1 and Sand Creek Disposal Road Landfill, which will require further investigation and sampling. These inorganic chemicals are considered toxic and some are identified as being carcinogenic. Calcium, iron, magnesium, potassium, and sodium were detected in soils at ODA1 and Sand Creek Disposal Road Landfill as listed in Table 1; however, as these inorganic constituents are essential nutrients, and not hazardous, their adverse health effects are not identified herein. Information about the hazardous inorganic chemicals detected in soil and sediment at ODA1 and Sand Creek Disposal Road Landfill are summarized in the following:

- **Aluminum.** Aluminum compounds target the skin and respiratory system. Symptoms of exposure include eye, skin, and respiratory system irritation (National Institute for Occupational Safety and Health [NIOSH], 2005). (Permissible Exposure Limit (PEL)-time-weighted average (TWA): 15 milligrams per cubic meter [mg/m^3] total/5 mg/m^3 respirable; threshold limit value (TLV)-TWA: 1 mg/m^3 respirable.) TLV Basis: Pneumoconiosis, lower respiratory tract irritation; neurotoxicity (American Conference of Governmental Industrial Hygienists [ACGIH], 2009).
- **Antimony.** Antimony compounds target the eyes, skin, respiratory system, and cardiovascular system. Symptoms of exposure include irritation of eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly (NIOSH, 2005). (PEL: 0.5

mg/m³; IDLH: 50 mg/m³; TLV-TWA: 0.5 mg/m³.) TLV Basis: skin and upper respiratory tract irritation (ACGIH, 2009).

- **Arsenic.** Arsenic compounds target the liver, kidneys, skin, lungs, and lymphatic system (lung and lymphatic cancer). Symptoms of exposure include dermatitis, ulceration of the nasal septum, gastrointestinal (GI) disturbances, respiratory irritation, hyper pigmentation of the skin, and degeneration of the peripheral nervous system and central nervous system (CNS) (NIOSH, 2005). Arsenic is considered a confirmed human carcinogen (ACGIH, 2009). (PEL-TWA: 0.01 mg/m³ for inorganic arsenic; immediately dangerous to life and health (IDLH): NIOSH Potential Occupational Carcinogen [Ca] [5 mg/m³]; TLV-TWA: 0.01 mg/m³.) TLV Basis: lung cancer (ACGIH, 2009).
- **Asbestos.** Asbestos is an inert, inorganic mineral with fibrous properties. Asbestos fibers primarily affect the lungs and eyes during exposures. Symptoms of exposure to asbestos include Asbestosis (chronic exposure): dyspnea (breathing difficulty), interstitial fibrosis, restricted pulmonary function, finger clubbing; irritation eyes; [potential occupational carcinogen]. Exposures to asbestos fibers are associated with chronic lung disease; asbestosis, lung cancer, and malignant mesothelioma (NIOSH, 2005). Asbestos is a confirmed human carcinogen (ACGIH, 2009). Any work with materials containing asbestos shall be performed in compliance with all applicable federal, state, and local regulations. If materials are suspected to contain asbestos, then these materials are presumed to contain asbestos unless proven otherwise by testing. (OSHA PEL: 0.1 fiber/cubic centimeters, OSHA short-term exposure limit [STEL]: 1.0 fiber/cubic centimeters – 30 minute excursion limit; IDLH: [carcinogenic]; TLV-TWA: 0.1 fiber/cubic centimeters.) TLV Basis: pneumoconiosis; lung cancer; mesothelioma (ACGIH, 2009).
- **Barium.** Barium targets the CNS, respiratory system, heart, skin, and eyes. Symptoms of exposure include irritation of eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia (NIOSH, 2005). Barium is not classifiable as a human carcinogen (ACGIH, 2009). (PEL-TWA: 0.5 mg/m³; TLV-TWA: 0.5 mg/m³; IDLH: 50 mg/m³.) TLV Basis: eye, skin, and GI irritation; muscular stimulation (ACGIH, 2009).
- **Beryllium.** Beryllium targets the eyes, gastrointestinal tract, CNS, kidneys, blood, and gums (lead line). Symptoms of exposure include berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; (potential occupational carcinogen) (NIOSH, 2005). Beryllium is a confirmed human carcinogen and a sensitizer (ACGIH, 2009). (PEL-TWA: 0.002 mg/m³, 0.005 mg/m³ – PEL-ceiling [C]; 0.025 mg/m³ – 30-minute maximum peak; IDLH: Ca [4 mg/m³]; TLV-TWA: 0.00005 mg/m³ inhalable fraction) TLV Basis: Beryllium sensitization; Beryllium disease (berylliosis) (ACGIH, 2009).
- **Cadmium.** Cadmium targets the respiratory system, blood, kidneys, and prostate. Symptoms of exposure include pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache;

chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen] (NIOSH, 2005). Cadmium is considered a suspected human carcinogen (ACGIH, 2009). (PEL-TWA: 0.005 mg/m³; IDLH: [Ca] 9 mg/m³; TLV-TWA: 0.01 mg/m³; 0.002 mg/m³ – respirable fraction.) TLV Basis: kidney damage (ACGIH, 2009).

- **Chromium.** Chromium compounds target the liver, kidneys, blood, eyes, skin, and respiratory system (symptoms include fibrosis of the lungs). Symptoms of exposure include irritations (i.e., eyes and respiratory system), sensitization dermatitis, liver and kidney damage, nasal septum perforation, increased/decreased blood leukocytes, increased blood monocytes, eosinophilia, eye injury, conjunctivitis, skin ulcer, shortness of breath, coughing, tightness in chest, pain below the sternum, fluid accumulation in the lungs, headaches, chills and muscle aches, nausea, diarrhea, loss or impairment of the sense of smell, emphysema, and anemia (NIOSH, 2005). Hexavalent chromium compounds, including chromic acid, are confirmed human carcinogens (ACGIH, 2009) and corrosive to body tissues. Trivalent chromium compounds are not classifiable as a human carcinogen (ACGIH, 2009). Chromium III (PEL-TWA: 0.5 mg/m³; IDLH: 25 mg/m³; TLV-TWA: 0.5 mg/m³.) TLV Basis – Critical Effect(s): upper respiratory tract and skin irritation (ACGIH, 2009). Chromium VI (PEL-TWA: 0.005 mg/m³; IDLH: Ca 15 mg/m³; TLV-TWA: 0.05 mg/m³ – water-soluble, 0.01 mg/m³ – insoluble.) TLV Basis – Critical Effect(s): upper respiratory tract and skin irritation; cancer, and lung cancer (ACGIH, 2009).
- **Cobalt.** Cobalt compounds target the skin and respiratory system. Symptoms of exposure include cough, dyspnea (breathing difficulty), decreased pulmonary function, low weight, dermatitis, diffuse nodular fibrosis, respiratory hypersensitivity, asthma (NIOSH, 2005). Cobalt is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2009). (PEL-TWA: 0.1 mg/m³; IDLH: 20 mg/m³; TLV-TWA: 0.02 mg/m³.) TLV Basis: Asthma; pulmonary function; myocardial effects (ACGIH, 2009).
- **Copper.** Copper compounds target the eyes, skin, respiratory system, liver, kidneys (increased risk with Wilson's disease). Symptoms of exposure include irritation eyes, nose, and pharynx; nasal septum perforation; metallic taste; dermatitis (NIOSH, 2005). (PEL: 1.0 mg/m³; IDLH: 100 mg/m³; TLV-TWA: 1.0 mg/m³.) TLV Basis: irritation; GI (ACGIH, 2009).
- **Lead.** Lead targets the eyes, gastrointestinal tract, central nervous system, kidneys, blood, and gingival tissue. Symptoms of exposure include lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension (NIOSH, 2005). Lead is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2009). (PEL-TWA: 0.050 mg/m³; IDLH: 100 mg/m³; TLV-TWA: 0.05 mg/m³.) TLV Basis: CNS impairment; peripheral nervous system impairment; hematological effects (ACGIH, 2009).

- **Manganese.** Manganese targets the respiratory system, central nervous system, blood, and kidneys. Symptoms of exposure include Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage (NIOSH, 2005). (PEL-C: 5 mg/m³; IDLH: 500 mg/m³; TLV-TWA: 0.2 mg/m³.) TLV Basis: CNS impairment (ACGIH, 2009).
- **Mercury.** Mercury targets the eyes, skin, respiratory system, central nervous system, and kidneys. Symptoms of exposure include Irritation eyes, skin; cough, chest pain, dyspnea (shortness of breath), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria (NIOSH, 2005). Mercury is not classifiable as a human carcinogen (ACGIH, 2009). (PEL-C: 0.1 mg/m³; IDLH: 10 mg/m³; TLV-TWA: 0.025 mg/m³ with a skin notation.) TLV Basis: CNS impairment; kidney damage (ACGIH, 2009).
- **Nickel.** Nickel targets the nasal cavities, lungs, and skin. Symptoms of exposure include sensitization dermatitis, allergic asthma, pneumonitis; (potential occupational carcinogen) (NIOSH, 2005). Nickel (insoluble inorganic compounds) is a confirmed human carcinogen (ACGIH, 2009). (PEL-TWA: 1 mg/m³; IDLH: Ca [10 mg/m³]; TLV-TWA: 0.1 mg/m³- inhalable fraction.) TLV Basis: dermatitis; pneumoconiosis; lung damage; nasal cancer; lung cancer (ACGIH, 2009).
- **Selenium.** Selenium compounds targets the upper respiratory system, eyes, skin, liver, kidneys, spleen, and blood. Symptoms of exposure include irritation to the eyes, skin, nose, and throat, dyspnea (shortness of breath), bronchitis, headaches, chills and fever, visual disturbances and blurred eyes, metallic taste and garlic breath, dermatitis, anemia, liver necrosis and cirrhosis, kidney and spleen damage, and GI disturbances (NIOSH, 2005). (PEL-TWA: 0.2 mg/m³; IDLH: 1 mg/m³; TLV-TWA: 0.2 mg/m³.) TLV Basis: Eye and upper respiratory tract irritation (ACGIH, 2009).
- **Silver.** Silver targets the nasal septum, skin, and eyes. Symptoms of exposure include blue-gray eyes; nasal septum, throat, skin irritation; ulceration skin; gastrointestinal disturbance (NIOSH, 2005). (PEL-TWA: 0.01 mg/m³; IDLH: 10 mg/m³; TLV-TWA: 0.01 mg/m³) TLV Basis: Argyria (ACGIH, 2009).
- **Thallium.** Thallium compounds targets the eyes, respiratory system, skin, central nervous system, liver, kidneys, gastrointestinal tract, and hair. Symptoms of exposure include nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peripheral neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; and paresthesia legs (NIOSH, 2005). (PEL-TWA: 0.1 mg/m³; IDLH: 15 mg/m³; TLV-TWA: 0.1 mg/m³ with a skin notation.) TLV Basis: Alopecia (ACGIH, 2009).
- **Vanadium.** Vanadium compounds targets the eyes, skin, and respiratory system, blood. Symptoms of exposure include irritation to the eyes, skin, throat; green tongue, metallic taste, eczema; cough; fine rales, wheezing, bronchitis, dyspnea (breathing

difficulty) (NIOSH, 2005). Vanadium pentoxide is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2009). (PEL-C: 0.5 mg/m³; IDLH: 35 mg/m³; TLV-TWA: 0.05 mg/m³ - inhalable fraction.) TLV Basis: lower respiratory tract and upper respiratory tract irritation (ACGIH, 2009).

- **Zinc.** Zinc targets the respiratory system. Symptoms of exposure include metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function (NIOSH, 2005). (PEL-TWA: 5 mg/m³ – respirable dust; IDLH: 500 mg/m³; TLV-TWA: 1 mg/m³; TLV-STEL: 2 mg/m³.) TLV Basis: lower respiratory tract and upper respiratory tract irritation (ACGIH, 2009).

4.1.2 Organic Compounds

Several hazardous organic chemicals were detected in soil and sediment at ODA1 and Sand Creek Disposal Road Landfill, which will require further investigation and sampling. Information about the hazardous organic chemicals detected in soil and sediment at ODA1 and Sand Creek Disposal Road Landfill are summarized in the following:

- **Acetone.** Acetone targets the eyes, skin, respiratory system, and central nervous system. Symptoms of exposure include irritation eyes, nose, and throat; dizziness; headache; dermatitis; CNS depression (NIOSH, 2005). Acetone is not classifiable as a human carcinogen (ACGIH, 2009). (PEL-TWA: 1,000 part per million [ppm]; IDLH: 2,500 ppm [10 percent lower explosive limit (LEL)]; TLV-TWA: 500 ppm, TLV-STEL: 750 ppm.) TLV Basis: Upper respiratory tract and eye irritation; CNS impairment; hematologic effects (ACGIH, 2009).
- **Bis(2-ethylhexyl)phthalate.** Bis(2-ethylhexyl)phthalate [di(2-ethylhexyl)phthalate] targets the eyes, respiratory system, central nervous system, liver, reproductive system, and gastrointestinal tract. Symptoms of exposure include irritation eyes, mucous membrane; in animals: liver damage; teratogenic effects; (potential occupational carcinogen) (NIOSH, 2005). Bis(2-ethylhexyl)phthalate is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2009). (PEL-TWA: 5 mg/m³ ; IDLH: Ca [5,000 mg/m³]; TLV-TWA: 5 mg/m³) TLV Basis: lower respiratory tract irritation (ACGIH, 2009).
- **Chloroethane.** Chloroethane, also known as ethyl chloride, targets the CNS, liver, kidneys, cardiovascular system, and respiratory system. Symptoms of exposure include incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage (NIOSH, 2005). Chloromethane is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2009). (PEL-TWA: 1,000 ppm, IDLH: 3,800 ppm [10 percent LEL]; TLV-TWA: 100 ppm with a skin notation) TLV Basis: liver damage (ACGIH, 2009).
- **Polycyclic Aromatic Hydrocarbons.** Polycyclic aromatic hydrocarbons (PAH) target the respiratory system, skin, bladder, and kidneys [lung, kidney, and skin cancer]. Symptoms of exposure include dermatitis and bronchitis; (potential occupational

carcinogen) (NIOSH, 2005). Exposure limits have not been established for many specific PAHs in this large group of compounds. Coal tar pitch volatiles are a confirmed human carcinogen (ACGIH, 2009). (PEL-TWA: 0.2 mg/m³ – diphenyl; IDLH: Ca [80 mg/m³]; TLV-TWA: 0.2 mg/m³.) TLV Basis: cancer (ACGIH, 2009).

- ***Toluene***. Toluene targets the CNS, skin, eyes, liver, kidneys, and respiratory system. Symptoms of exposure include irritated eyes and nose, headaches, dizziness, lassitude, confusion, euphoria, muscle fatigue, insomnia, anxiety, liver and kidney damage, lacrimation, paresthesia, dermatitis, and dilated pupils (NIOSH, 2005). Toluene is not classifiable as a human carcinogen (ACGIH, 2009). (PEL-TWA: 200 ppm, PEL-C: 300 ppm, PEL-10-minute maximum peak in any 3 hours: 500 ppm, IDLH: 500 ppm; TLV-TWA: 20 ppm) TLV Basis: visual impairment; female reproductive; pregnancy loss (ACGIH, 2009).

4.1.3 Explosive Compounds

Explosive compounds were utilized in operations at RVAAP. These explosives may still be found as explosive and combustion by-product contaminants in soil and water. All explosive contaminants and residues are considered to be toxic. Information about the explosive compounds detected in soil and sediment at ODA1 and Sand Creek Disposal Road Landfill are summarized in the following:

- ***Cyclonite or Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)***. Cyclonite (RDX) has not been identified as being present at work locations under this phase of work; however, is being included for use in presenting hazards associated with HMX. RDX targets the eyes, skin, and CNS. Symptoms of exposure include irritability, weakness, headache, dizziness, nausea, vomiting, convulsions, irritation to eyes and skin, fatigue, and insomnia (NIOSH, 2005). Cyclonite is not classifiable as a human carcinogen (ACGIH, 2009). (TLV-TWA: 0.5 mg/m³ with a skin notation.) TLV Basis: liver damage (ACGIH, 2009).
- ***2,4- and 2,6-Dinitrotoluene***. Dinitrotoluene targets the blood, liver, cardiovascular system, and reproductive system. Symptoms of exposure may include anoxia, cyanosis; anemia, jaundice; reproductive effects; [potential occupational carcinogen]. Dinitrotoluene is mutagenic in some testing animals and NIOSH considers it a potential human carcinogen (NIOSH, 2005). Dinitrotoluene is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2009). (PEL-TWA: 1.5 mg/m³ with a skin notation; IDLH: Ca 50 mg/m³; TLV-TWA: 0.2 mg/m³ with a skin notation.) TLV Basis: cardiac impairment; reproductive effects (ACGIH, 2009).
- ***Cyclotetramethylenetetranitramine (HMX)***. Cyclotetramethylenetetranitramine is a compound unique to the explosive industry and is present as an impurity to RDX. Symptoms from HMX exposure appear to be similar to RDX although less severe. Skin irritation can occur following dermal contact.
- ***Nitrobenzene***. Nitrobenzene targets the eyes, skin, blood, and liver, kidneys, respiratory system, cardiovascular system, and reproductive system. Symptoms of exposure include irritation eyes and skin; anoxia; dermatitis; anemia;

methemoglobinemia; in animals: liver, kidney damage; testicular effects (NIOSH, 2005). Chlorobenzene is a confirmed animal carcinogen with unknown relevance to humans (ACGIH, 2009). (PEL-TWA: 1 ppm with a skin notation; IDLH: 200 ppm; TLV-TWA: 1 ppm with a skin notation) TLV Basis: methemoglobinemia (ACGIH, 2009).

- **Nitrocellulose.** Nitrocellulose is a white, odorless solid. Generally found in a fibrous, flake, or granular form. Nitrocellulose (NC), also known as gun cotton, has been used as a propellant and as a constituent of propellant mixtures. At present, there are no recommended airborne levels established for NC. During manufacture and shipment, NC is normally packed in at least 25 percent water, as dry NC is very sensitive to sparks and will burn violently. The manufacturer recommends limiting airborne concentration, although no limits have been established. There have been no identified health risks associated with NC, but irritation to the eyes and exposed skin has been reported. After contact, flush with large volumes of water, wash with soap and water, and if irritation persists, seek medical attention.
- **Nitroguanidine.** Nitroguanidine is a white, odorless, solid crystalline material. Nitroguanidine (NQ) is utilized as a propellant and as a constituent in other propellant compounds. At present, there are no recommended airborne levels established for NQ. The manufacturer recommends limiting airborne exposures utilizing the ACGIH standards for nuisance dust. The TWA exposure should not exceed 10-mg/m³ total dust or 5 mg/m³ for respirable dusts. There are no known health effects from exposure to NQ. The primary route of entry is assumed to be inhalation due to the crystalline structure of the material.
- **1,3,5-Trinitrobenzene.** 1,3,5-trinitrobenzene symptoms of exposure may include headache, nausea, dizziness, cyanosis, and anemia. Exposure limits have not been established for trinitrobenzene.
- **2,4,6-Trinitrotoluene.** Trinitrotoluene is a yellow solid used as an explosive. Exposure to trinitrotoluene targets the respiratory system, blood, liver, kidneys, eyes, skin, CVS, and CNS. Symptoms of exposure include irritation of the skin and mucous membranes, sneezing, cough, sore throat, jaundice, muscular pain, sensitization dermatitis, cyanosis, change in white blood cell count, cataracts, kidney and liver damage, anemia, irregular heartbeat, and peripheral neuropathy (NIOSH, 2005). (PEL-TWA: 1.5 mg/m³ with a skin notation; IDLH: 500 mg/m³; TLV-TWA: 0.1 mg/m³ with a skin notation.) TLV Basis: methemoglobinemia; liver damage; cataracts (ACGIH, 2009).

4.1.4 Raw Sewage

There is little potential for contacting raw sewage during project activities.

4.1.5 Munitions and Explosives of Concern

There is potential for Munitions and Explosives of Concern (MEC) to be encountered. All work shall utilize appropriate MEC avoidance procedures; a UXO Technician shall clear all work areas prior to commencing activities. If suspected or known MEC is encountered, the field crew

shall immediately stop work, leave the exclusion zone (EZ), and contact the Site Supervisor and/or SSHO. The MEC shall not be probed, touched, or handled by unauthorized personnel under any circumstance. The basic guidelines for MEC safety are listed below:

- Do not continue to move towards suspected MEC.
- Once you recognize a MEC hazard, do not move any closer.
- Stop all work.
- Make all radio transmissions at least 100 meters away from a MEC hazard.
- Do not try to remove anything that is on or near MEC.
- Do not touch, move, or disturb the MEC.
- Stay away from MEC.
- Mark a MEC hazard area properly so that other personnel will stay away from it.
- Evacuate all non-essential personnel from a MEC hazard area.
- Report through your chain of command all MEC hazards that affect operations.

Specific emergency procedures for MEC encounters are included in Section 11.7.

4.1.6 Radiological Hazards

There is little potential for radiological hazards to be encountered during project activities. If a suspected radiological hazard is identified (radium painted dials, vacuum tubes, trefoil symbols, etc.), the field crew shall immediately stop work, exit the area, and contact the Site Supervisor or SSHO.

4.1.7 Operational Chemicals/Hazard Communication Program

Hazardous chemicals will be brought to project sites for use in activities supporting the planned work. These chemicals are used as fuels, construction materials, solvents, cements, cleaning solutions, paints, etc. The use of operational chemicals is regulated by OSHA under the Hazard Communication Standard (29 CFR 1910.1200). A written hazard communication program has been established as Shaw SOP EI-HS060, "Hazard Communication Program," which includes the following elements:

- **Container Labeling**—Project personnel will ensure that all containers are labeled according to their contents. This requirement will apply to containers from manufacturers and those produced on site by operations. The labels on all incoming and outgoing containers will be checked for identity, hazard warning, and the name and address of the responsible party.
- **Material Data Safety Sheets (MSDS)**—MSDSs will be provided on site for each hazardous chemical used or known to be present at the site.
- **Employee Information and Training**—Employees will receive annual chemical hazard safety training, supplemented by informal daily safety meetings. Project-specific chemical hazards will be communicated to employees through an

initial site orientation meeting and daily safety meetings. Employees may request copies of specific MSDSs by completing the “Employee Request for Material Safety Data Sheet (MSDS)” form provided in Appendix D.

The written hazard communication program will be available at the project site for personnel review and provides requirements for the safe use of operational chemicals. Proper ventilation and PPE shall be used when working with operational chemicals. Air monitoring may be performed as needed to assess and control exposures resulting from the use of operational chemicals. Both an inventory list of the operational chemicals (Hazardous Chemical Inventory List) used and a MSDS for operational chemicals shall be made available at the project site (Appendix E). A copy of the MSDSs shall be provided to Post 1 and the Ravenna Fire Department upon request.

4.2 *Physical Hazards*

There will be numerous physical hazards associated with site operations that require consideration. Some of these physical hazards are as follows:

- Noise and hearing conservation
- Slips, trips, and falls
- Fires, explosions, and hot work
- Use of ladders and scaffolding
- Use of small tools
- Use of cutting tools
- Use of heavy and mechanized equipment
- Operation of motor vehicles
- Material handling
- Hazardous energies (i.e., electrical, mechanical, and pressure)
- Air compressor use
- Portable generator use
- Intrusive activities
- Excavation
- Confined space entry
- Dust
- Use of pressure washers and steam washers
- Excessive work hours
- Working over or near water
- Workplace reproductive hazards

4.2.1 *Noise and Hearing Conservation*

There may be hazardous levels of noise at each work location. Noise may be generated from the use of equipment and tools. Hearing loss, resulting from occupational exposure to noise, can be prevented. Shaw SOP EI-HS402, "Hearing Conservation Program," shall be implemented whenever there are employee noise exposures equal to or exceeding an eight-hour TWA of 85 decibels, A-scale. As part of the criteria for a hearing conservation program, audiometric testing of personnel must be conducted annually. The SSHO shall conduct noise surveys as necessary to determine if engineering controls should be implemented and/or if hearing protection is adequate. Personnel shall wear hearing protection when working with or around heavy equipment, power tools, as noise monitoring indicates, or in areas posted as such. Warning signs shall be posted in areas where noise (greater than 85 decibels) necessitates the use of hearing protection.

4.2.2 *Slips, Trips, and Falls*

The following details procedures to prevent slips, trips, and falls:

- Personnel shall keep work areas clean and orderly. Tools, equipment, and materials shall be used and stored in a fashion to minimize tripping hazards.
- Debris shall not be left lying around in any place, particularly in areas where personnel walk.
- Spills shall be cleaned up immediately.
- Personnel are prohibited from walking or working on surfaces or equipment that are not intended as walking or working surfaces.
- Personnel shall take extra precautions, such as establishing firm handholds, wearing suitable footwear, and walking slowly when walking on surfaces during wet, snowy, or icy weather.
- Walking and working surfaces shall be properly maintained during inclement winter weather, as feasible.
- Personnel shall not jump from elevated places or equipment.
- Personnel using hand and mechanical tools shall position themselves properly and consider the events if a tool slips or suddenly moves.
- Electrical extension cords and electrical wiring shall be kept clear of walking and working areas and/or covered, buried, or otherwise secured.
- Running is prohibited on job sites unless under emergency conditions.
- Employees exposed to fall hazards shall be protected by standard guardrail, catch platforms, temporary floors, safety nets, personal fall protection devices, or the equivalent. No employee may be exposed to a fall of over 6 feet without being adequately protected.

- Shaw E&I. Procedure No. HS301, “Fall Protection,” shall be followed when there is a fall hazard of 6 feet or greater.

4.2.3 Hot Work

Hot work (e.g., welding, burning, and cutting) conducted on site shall comply with the following requirements:

- Shaw SOP EI-HS314, “Hot Work in Hazardous Locations,” shall be followed whenever there is spark/ignition producing activities in progress at the project site.
- The SSHO shall establish areas approved for welding, cutting, and other hot work.
- The SSHO is responsible for authorizing welding, cutting, and other hot work in areas not specifically designed or approved for such operations (Hot Work Permit).
- All personnel shall be protected from welding radiation, flashes, sparks, molten metal, and slag.
- All welding, burning, and cutting equipment shall be inspected daily by the operator. Defective equipment shall be tagged and removed from service, replaced or repaired, and re-inspected before again being placed in service.
- All welders, cutters, and their supervisors shall be properly trained in the safe operation of their equipment, safe welding/cutting practices, and welding/cutting respiratory and fire protection.
- The handling of compressed gas cylinders shall comply with the requirements established in Shaw SOP EI-HS304, “Compressed Gas Cylinders.”
- Cutting, welding, or other hot work shall be permitted only in areas that are or have been made fire safe.
- Cutting or welding shall not be permitted in the following situations:
 - In areas not authorized by the SSHO.
 - In the presence of explosive atmospheres (i.e., mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside un-cleaned or improperly prepared drums, tanks, or other containers, and equipment that has previously contained such materials.
 - In any area where combustible gas indicator readings are in excess of 10 percent of the lower explosive limit.
 - On storage or process vessels or lines in service that contain flammable or combustible liquids, gases, vapors, or solids.
- Before any welding, cutting, or other hot work is permitted, the area shall be inspected by the SSHO to verify that the following requirements have been met:
 - Cutting and welding equipment to be used shall be in safe operating condition and in good repair.

- Where practical, all combustible material shall be relocated at least 50 feet away from the hot work site. Where relocation is impractical, combustibles shall be protected with flameproof covers or otherwise shielded.
- At a minimum, two fully charged and operable fire extinguishers, appropriate for the type of possible fire (4-A:60-B:C), shall be available at each work area.
- A fire watch shall be required whenever hot work is performed in hazardous locations.
- Combustible gas indicator readings shall be taken to verify the work area is free of combustible gases and vapors.
- The work area is free of toxic contaminants at concentrations in excess of established TLVs or all personnel who will work in the area have been provided respiratory protection and protective apparel appropriate for the degree of exposure.
- When hot work is to be performed on tanks or other vessels that contain or have contained flammable or combustible liquids, the vessel shall be properly isolated, purged, cleaned, or inerted as appropriate, to reduce the concentrations of flammable/combustible vapors to safe levels.
- A Hot Work Permit (Appendix D) shall be completed by the SSHO, reviewed with personnel who will perform the hot work, and posted near the job site.
- A Hot Work Permit is good only for the date issued and valid only for the 8-hour shift for which it is issued. If the work area is completely vacated by personnel, such as, during lunch, a new permit may need to be issued.
- If at any time during the hot work operation a change in conditions at the work site is suspected, such as a release of flammable gases or vapors in the work area, work shall be stopped immediately and the SSHO shall be notified. Such work stoppage invalidates the Hot Work Permit, and a new permit shall be completed after inspections and tests have been performed by the SSHO.
- No erasures or changes of dates on Hot Work Permits shall be permitted.

4.2.4 *Use of Ladders and Scaffolds*

Ladders and scaffolding shall only be used at each project under the following conditions:

- Ladder use shall comply with Shaw SOP EI-HS302, “Ladder Safety.”
- Scaffold erection and use shall comply with all applicable OSHA regulations. A trained competent person shall supervise all scaffold erection and use.

4.2.5 *Use of Small Tools*

Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and will be used only for the purpose for which designed. A copy of the manufacturer's instructions and recommendations shall be maintained at the project site. The following requirements shall be adhered to:

- Tools designed to accommodate guards will be equipped with such guards when in use.
- Tools shall be inspected to ascertain safe operating conditions and are to be kept clean and free of accumulated dirt.
- Electric power tools and extension cords shall be used with ground fault circuit interrupter.
- Portable power cords will be designated as hard usage or extra hard usage and shall not be used if damaged, patched, oil-soaked, worn, or frayed.
- Connections on pneumatic lines shall be secured with a safety lashing.
- Explosive-actuated tools will meet the design requirements of American National Standards Institute A10.3 and only be operated by a qualified operator.
- Explosive-actuated tools and charges shall be secured at all times to prevent unauthorized possession or use.
- Explosive-actuated tools shall not be loaded until just prior to the intended firing time; neither loaded nor empty tools are to be pointed at any employees; hands shall be kept clear of the open barrel end.
- Hand tools, such as hammers and chisels, shall be inspected and dressed if necessary to remove mushroomed heads, which may separate and become projectile hazards.

4.2.6 *Use of Cutting Tools*

Proper cutting tools, such as scissors, snips, side cutters, etc., are to be used when possible in lieu of box cutters or knives. Furthermore, if box cutters are determined to be the appropriate tool for the job, the only type that should be used is the design that has a self-retracting blade capability. Employees must utilize appropriate PPE (leather gloves) to allow for further protection. There are many cutting tool manufacturers that offer a variety of safety knives, which are available for all types of cutting. The SSHO shall evaluate each cutting task in order to determine that the safest and most appropriate cutting tool is used. The SSHO shall also provide training in the proper use of the selected cutting tool. The following evaluation shall be made for each cutting task:

- Determine that hand knives are actually the most practical tool for the task. Where possible, use the safest cutting tool for the job (e.g., scissors, snips, or wire strippers).

- If a knife happens to be the correct tool, keep the knife sharp and clean. A dull blade can cause accidents because more force is needed to cut an object. However, a knife or any other unprotected blade tool must be the last resort when choosing a cutting tool.
- Maintain a supply of either replacement knives and/or blades and make them readily available.
- Cut away from yourself, ending the knife stroke away from your body. Hold the item you are cutting firmly, and do not cut downwards and towards your body. Cut into the air or onto hard surface.
- Confirm that appropriate PPE (e.g., gloves) specific to the task is available to employees and used when the possibility of injury exists.
- Personal knives (e.g., pocketknives) shall not be considered as a tool for any type of work-related cutting. Employees are required to ask for a cutting tool from their supervisor, thereby resulting in an additional review of using the right cutting tool for the job.
- The SSHO is to inspect material cutting activities to verify that leather gloves are being used to protect hands.

4.2.7 Use of Heavy and Mechanized Equipment

Excavators, front-end loaders, drill rigs, direct-push rigs, and other types of specialized equipment may be used to accomplish the work at the project. The use of this equipment can be dangerous. Extra care shall be exercised in its use and while working in the vicinity of this equipment.

4.2.7.1 Heavy Construction Equipment

Various types of heavy construction equipment will be used for project activities. All operators of this equipment shall be familiar with the requirements for inspection and operation of the equipment that they will be using. Before equipment is placed into use and on a daily basis, the operator is to inspect and verify that it is in safe operating condition, as described in Section 3.5. The following guidelines shall be adhered to while operating heavy construction equipment:

- Equipment shall not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
- Getting on or off of equipment while it is in motion is prohibited.
- Equipment shall be operated in accordance with the manufacturer's instructions and recommendations.
- Determinations of road conditions and structures shall be made in advance to verify that clearances and load capacities are safe for the passage of equipment.
- All machinery or equipment shall be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done. Equipment designed to be serviced while running is exempt from this requirement.

- Buckets, blades, dump bodies, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. All controls shall be in a neutral position, with the engines stopped and brakes set, unless work being performed on the machine requires otherwise, per manufacturer recommendations.
- No guard, safety appliance, or device shall be removed from machinery or equipment, or made ineffective except for making immediate repairs, lubrications, or adjustments, and then only after the power has been shut off. All guards and devices will be replaced immediately after completion of repairs and adjustments and before power is turned on.
- Mechanized equipment shall be shut down prior to and during fueling operations. Closed systems, with automatic shut-off, which prevent spillage if connections are broken, may be used to fuel diesel powered equipment left running.
- Each piece of heavy equipment and other similar equipment shall be equipped with at least one dry chemical or carbon dioxide fire extinguisher with a minimum rating of 10-B:C.
- Personnel shall not work, pass under, or ride in the buckets or booms of loaders in operation.
- All self-propelled construction equipment, whether moving alone or in combination, shall be equipped with a reverse signal alarm.
- Seat belt use is required while operating equipment.

Spotters for the operator shall be the only personnel allowed in the vicinity of the heavy equipment. Spotters shall stay out of the boom radius area. Personnel needing to approach heavy equipment while operating shall observe the following protocols:

- Wear Class 2 high visibility vests meeting American National Standards Institute (ANSI) specifications
- Make eye contact with the operator (and spotter)
- Signal the operator to cease heavy equipment activity
- Approach the equipment only after the operator has given signal to do so

4.2.7.2 Mechanized Equipment – Use of Quick Connect/Disconnect Systems

The manufacturer's specifications and operating manuals for hydraulic equipment and attachments utilizing quick connect/disconnect systems shall be followed. After completing a switch in attachments, the equipment operator shall take the actions necessary to verify the quick connect/disconnect system is positively engaged.

4.2.7.3 *Hydraulic Excavators, Wheel Loaders, Track Loaders, and Backhoe/Loaders Used to Transport or Hoist Loads with Rigging*

When hydraulic excavating equipment is to be used, as allowed by the manufacturer, to transport or hoist loads utilizing hooks, eyes, slings, chains, or other rigging, the following requirements shall apply:

- A Lift Plan Worksheet (Hydraulic Equipment) (Appendix D) shall be completed.
- Operations involving the use of hydraulic excavating equipment and rigging to transport or hoist loads require different operator skills and considerations than the standard excavating operations routinely performed with hydraulic excavating equipment. An AHA specific to the transporting or hoisting operation shall be prepared. The AHA shall include, but not be limited to the following:
 - Written proof of qualifications of equipment operators, riggers, and others involved in the transporting and hoisting operations
 - Performance of the operational test described in section 16.F of the *Safety and Health Requirements Manual* (USACE, 2008)
 - Proper operating procedures in accordance with the equipment manufacturers operating manual
 - Proper use and on site availability of manufacturer's load rating capacities or charts
 - Proper use of rigging, including positive latching devices to secure the load and rigging
 - Inspection of rigging (complete a "Rigging Inspection Checklist [Appendix D])
 - Use of tag lines to control the load
 - Communications
 - Establishment of a sufficient swing radius (equipment, rigging, and load)
 - Stability of surfaces beneath the hydraulic excavating equipment.
- An operational test with the selected hydraulic excavating equipment will be performed in the presence of the Government Designated Authority, if available. The operational test shall consist of a demonstration that the test load and selected rigging can be safely lifted, maneuvered, controlled, stopped, and landed. The operational test shall be representative of the complete cycle of the proposed transporting or hoisting operation, including configuration, orientation, and positioning of the excavating equipment and the use of identical rigging. The test load shall be equivalent to the maximum anticipated load, but shall not exceed 100 percent of the manufacturer's load rating capacity for the excavating equipment as configured. Written documentation of the performance of the operational test outlining test procedures and results shall be maintained at the on-site project office.
- All rigging and rigging operations shall comply with the requirements of Section 15 of the *Safety and Health Requirements Manual* (USACE, 2008). Hooks, eyes, slings,

chains, or other rigging shall not be attached to or hung from the teeth of a bucket during the transporting or hoisting of a load by hydraulic excavating equipment.

- After the completion and acceptance of an operational test described in 16.F (USACE, 2008), if repairs, major maintenance, or reconfiguration are required to be performed on the hydraulic excavating equipment or attachments, another operational test as described in 16.F shall be performed to demonstrate that the completed repairs are satisfactory and that the test load and selected rigging can be safely lifted, maneuvered, controlled, stopped, and landed.
- Loads shall be lifted the minimum height necessary to clear the ground or other obstacles and carried as low as possible when the equipment is traveling.
- Loads shall not be lifted over personnel.
- Adequate clearances shall be maintained from electrical sources.
- Hydraulic excavating equipment shall not be used to hoist personnel. The riding of personnel on loads, hooks, hammers, buckets, or any other hydraulic excavating equipment attachment is prohibited.

4.2.7.4 *Drill Rig /Direct-Push Safety*

All drilling operations are to comply with Shaw SOP EI-HS316, “Drill Rig Operations.” All members of the drill/direct-push crew(s) shall receive site-specific training prior to beginning work. The Shaw Field Team Leader must have successfully completed Shaw’s in-house training pertinent to competent person drilling oversight training. The Field Team Leader is required not only to have successfully completed competent person drilling oversight training, but to have an appropriate educational background, coupled with field experience and the authority to make changes to correct deficiencies, or to stop the job if need be. The driller is responsible for the safe operation of the drill/direct-push rig, as well as the crew’s adherence to the requirements of this SHERP. The driller is to verify that all safety equipment is in proper condition and is properly used. The members of the crew shall follow all instructions provided by the manufacturer of the drill/direct-push rig, wear the required PPE, and be aware of all hazards and control procedures. The drill/direct-push crews shall participate in the daily tailgate safety meeting and be aware of all emergency procedures.

All drilling/direct-push activities must comply with Shaw SOP EI-HS308, “Underground/Overhead Utility Contact Prevention.” After all mark-outs have been completed and documented on the Utility Mark-Out Documentation form (Appendix D), each bore or probe-hole location must be advanced by hand digging, probing, posthole digging, and/or air knifed to 5 feet below ground surface. Should the local geology be prone to refusal or should there be any other reason the above methods cannot be used to ensure the 5 feet clearance, ground-penetrating radar or other methods would then be required to ensure the boring or probe hole is cleared (5 feet minimum). Besides utilization of ground penetrating radar or other methods mentioned above, anytime the 5 feet clearance cannot be obtained, the SSHO must

obtain a written variance (Regional Vice President and Regional Health and Safety Manager, or their designees). This would include a telephone call to both the Regional Vice President and Regional Health and Safety Manager and signed approval by all parties involved. The Pre-drilling/Boring/Geoprobe Checklist and the Direct-Push Rig Inspection Checklist and/or Drill Rig Inspection Checklist (Appendix D) must be completed prior to drilling, boring, or direct-push activity.

4.2.8 Operation of Motor Vehicles

All company owned, leased, or rented vehicle operations shall comply with the requirements of Shaw SOP EI-HS800, “Motor Vehicle Operation: General Requirements” and Shaw SOP EI-HS810, “Commercial Motor Vehicle Operation and Maintenance.” Shaw vehicles shall be inspected on a daily basis. Additionally, all Shaw vehicles shall be inspected prior to any trip, which is 50 miles or greater. Vehicle inspections shall be documented on the Vehicle Inspection form (Appendix D).

Subcontractors operating motor vehicles at projects shall comply with all federal, state, and local traffic regulations. Subcontractors shall only use vehicles that are in good condition and safe to operate. Subcontractors shall inspect their vehicles on a daily basis and submit the inspection documentation to the SSHO. Vehicle inspections shall be documented on the Vehicle Inspection form (Appendix D).

All personnel shall drive defensively and wear seat belts while vehicles are in motion. All personnel must observe the maximum-posted speed limits on the installation roadways and in parking lots. Vehicles must not be parked closer than 15 feet from active fire hydrants. Vehicle must pull over to the right side of the road when approached by emergency vehicles – remain stopped until the emergency vehicles have safely passed. All Shaw employees are required to attend a defensive driving training course.

Operators of vehicles may only use cellular telephones with hands-free devices while the vehicle is in motion. Prior to using a hand-held cellular telephone, drivers shall find a safe place to bring their vehicle to a stop. This requirement does not preclude passenger(s) from using cellular telephones while the vehicle is in motion. The use of headphones and earphones for music or radio is prohibited while operating a motor vehicle.

Since backing accidents at these types of projects are frequent, the following guidelines shall be observed:

- Backing of vehicles shall be avoided when possible.
- Extra care shall be taken to back vehicles when unavoidable.

- Back-up slowly and back-up the shortest distance necessary to accomplish the maneuver.
- When parking vehicles, vehicles shall be backed into the space whenever possible.
- Before entering a vehicle, which has been parked, the driver should first physically perform a 360 degree walk around the vehicle to observe all areas and especially the area behind the vehicle.
- Spotters shall be used to back vehicles whenever possible or necessary.

4.2.9 *Material Handling*

Various materials and equipment may be handled manually during project operations. Care should be taken when lifting and handling heavy or bulky items to avoid back injuries. The following fundamentals address the proper lifting techniques that are essential in preventing back injuries:

- Size, shape, and weight of the object to be lifted shall first be considered. No individual employee is permitted to lift any object that weighs over 60-pounds. Multiple employees or the use of mechanical lifting devices is required for objects over the 60-pound limit.
- Anticipated path to be taken by the lifter should be inspected for the presence of slip, trip, and fall hazards.
- Feet shall be placed far enough apart for good balance and stability (typically shoulder width).
- Worker shall get as close to the load as possible. Legs shall be bent at the knees.
- Back shall be kept as straight as possible and abdominal muscles should be tightened.
- Twisting motions should be avoided when performing manual lifts.
- To lift the object, the legs are straightened from their bending position.
- Take small turning steps without twisting the knees or the back if it is necessary to turn with the load.
- A worker shall never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees and the object lowered.

When two or more workers are required to handle the same object, coordination is essential for sharing the weight between the individuals carrying the load and to make a uniform lift. When carrying the object, each worker, if possible, shall face the direction in which the object is being carried. In handling bulky or heavy items, the following guidelines shall be followed to avoid injury to the hands and fingers:

- A firm grip on the object is essential; leather gloves shall be used as necessary.

- Hands and the object shall be free of oil, grease, and water, which might prevent a firm grip. Fingers shall be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- Item shall be inspected for metal slivers, sharp or jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

4.2.10 Hazardous Energies (Electrical, Mechanical, and Pressurized Systems)

All portable electrical equipment and extension cords shall be protected with a ground fault circuit interrupter as part of the circuit. Applicable OSHA standards for electrical power, 29 CFR 1926 Subpart K and Section 11 of the *Safety and Health Requirements Manual* (USACE, 2008) apply.

Only qualified electricians may work on electrical circuits. Qualified personnel shall be trained with the proper use of the special precautionary techniques, PPE, including arc-flash, insulating and shielding materials, and insulated tools and test equipment.

Live parts to which an employee might be exposed shall be put into an electrically safe work condition (de-energized) before an employee works on or near them, unless it can be demonstrated that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations. This rule applies to all electrical work, including changing a light bulb.

Where work is performed in locations containing un-insulated energized overhead lines that are not guarded or isolated, precautions shall be taken to prevent employees from contacting such lines directly with any unguarded parts of their body or indirectly through conductive materials, tools, or equipment. Refer to Table 2 when working near overhead power lines. Where the work to be performed is such that contact with un-insulated energized overhead lines is possible, the lines shall be de-energized and visibly grounded at the point of work, or suitably guarded.

Employees working in areas where electrical hazards are present shall be provided with, and shall use PPE that is designed and constructed for the specific part of the body to be protected and for the work to be performed, as required by Section 130.7 of National Fire Protection Association (NFPA) 70 E (2004), *Standard for Electrical Safety in the Workplace*. Refer to Appendix F.

Employees shall use insulated tools and/or handling equipment when working inside the Limited Approach Boundary of exposed live parts where tools or handling equipment might make accidental contact. Insulated tools shall be protected from damage to the insulating material.

Before starting each electrical job, the qualified employee in charge shall conduct a job briefing with the employees involved. The briefing shall cover such subjects as hazards associated with

the job, work procedures involved, special precautions, energy source controls, and PPE requirements.

Only hard or extra-hard usage extension cords shall be used. Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas.

The handling of compressed gas cylinders shall comply with the requirements established in Shaw SOP EI-HS304. All pressure vessels shall be designed, inspected, and tested in accordance with ASTM International standards.

Lockout/tagout procedures are to be implemented during servicing or maintenance of machines and equipment to preclude the unexpected release of stored energy or inadvertent energizing. These procedures are contained in Shaw SOP EI-HS315, "Control of Hazardous Energy Sources," and comply with the requirements established in 29 CFR 1926.417. The appropriate logs and forms found in Appendix D and listed below shall be completed for all lockout/tagout:

- Lockout Log
- Lockout/Tagout for Compressed Air and Gases
- Lockout/Tagout for Electrical Equipment
- Lockout/Tagout for Hydraulic Equipment
- Lockout/Tagout for Steam, Water, and Fluid Lines
- Lockout/Tagout Procedure for Specific Equipment

Subcontractors may implement their own lockout/tagout procedure if the SSHO has approved its use and verifies that it is no less protective than the Shaw E&I Procedure.

4.2.11 Air Compressor Use

Refer to the air compressor manufacturer's instructions for safe operation. Prior to use, the Checklist – Portable Air Compressor (Appendix D) shall be completed. Never use an air compressor in enclosed or partially enclosed spaces due to the quick build-up of high levels of carbon monoxide. The concentration of carbon monoxide shall be monitored when using generators in areas of poor ventilation. The concentration of carbon monoxide in the work area shall not be allowed to exceed 25 ppm.

All air compressors and hoses shall be inspected before use, operated, and maintained by designated, qualified personnel. All air compressors shall be equipped with a pressure gauge and relief-valve, and only be operated at design pressures. Chicago fittings shall be secured together with tie-wire or equivalent and secured with safety lashings.

Before refueling the air compressor, shut it off and let it cool down. Gasoline spilled on hot engine parts could ignite. A 20-B:C fire extinguisher shall be readily available in locations where an air compressor is being used.

Use hearing protection when working near an air compressor.

4.2.12 *Portable Generator Use*

Refer to the generator manufacturer's instructions for safe operation. Never use a generator in enclosed or partially enclosed spaces due to the quick build-up of high levels of carbon monoxide. The concentration of carbon monoxide shall be monitored when using generators in areas of poor ventilation. The concentration of carbon monoxide in the work area shall not be allowed to exceed 25 ppm.

Keep the generator dry and do not use in rain or wet conditions. To protect from moisture, operate it on a dry surface under an open, canopy-like structure. Dry your hands, if wet, before touching the generator. Use a heavy duty, outdoor-rated extension cord that is rated (in watts or amps) at least equal to the sum of the connected appliance loads. Check that the entire cord is free of cuts or tears and that the plug has all three prongs, especially a grounding pin. Ground generators by using a hand-inserted ground-rod, if recommended by the manufacturer.

Before refueling the generator, turn it off and let it cool down. Gasoline spilled on hot engine parts could ignite. A 20-B:C fire extinguisher shall be readily available in locations where a generator is being used.

Use hearing protection when working near a generator.

4.2.13 *Intrusive Activities*

Intrusive activities are defined as any activity that produces a man-made cut, cavity, trench, or depression into the earth's surface formed by earth removal or any activity that results in an object placed into the earth below the surface. These activities include excavating, drilling, augering, boring, shoveling, fence post driving, driving stakes, etc. Intrusive activities can be dangerous and can result in severe personal injury or death. Intrusive activities can also cause significant property damage to utilities, structures, and operational equipment. Breaching underground utilities can result in electrocution from damaged electrical lines, fires from broken fuel/gas lines, and disruption of telephone service. All intrusive activities must comply with Shaw SOP EI-HS308.

Before any intrusive activity begins, positive steps shall be taken to determine if the area contains underground utilities or overhead hazards. It is important to understand that underground utilities have been found in areas that have been properly investigated and thought

not to have utilities present. Personnel shall always be alert for marking tape, wires, pipes, previously disturbed soils, crushed stone or sand bedding/backfill, containers, discolored soil, MEC, or anything else unusual.

The Intrusive Activities Clearance Procedure shall be followed. The procedure is designed to identify and protect underground installations or indicate that none exists. Intrusive activity shall not begin until the SSHO has signed off on the Intrusive Activities Permit form (Appendix D).

Intrusive Activities Clearance Procedure

The SSHO will:

- Verify that all personnel involved in the intrusive activities have received MEC Awareness Training.
- Prepare a map indicating the area(s) where intrusive activity is planned to occur.
- Perform the necessary reviews.
- Contact Post 1 and the Ohio Utilities Protection Service (telephone: 1-800-362-2764) to notify them of intent to initiate intrusive activity at the given property location. This notification is to be made a minimum of two working days prior to the initiation of intrusive activity (excluding Saturdays, Sundays, and Holidays) but not greater than 14 days.
- Verify that all underground installations have been located, physically marked, and then noted on the map.
- Mark all overhead utilities with kilovolts rating on the map. Refer to Table 2 and Section 4.2.10 when working near overhead power lines.
- Contact CELRL to determine if there is a Real Estate Access Agreement in place or one needs to be prepared. A photocopy of the agreement should be obtained and kept on file.
- Complete the Utility Mark-Out Documentation form (Appendix D).
- The signature of the SSHO shall be obtained on the Intrusive Activities Permit before beginning intrusive activities.

A safety meeting shall be held and a JSA completed by all personnel involved in the intrusive activities prior to initiating work.

4.2.14 Excavation

When performing excavation activities, Shaw SOP EI-HS307, "Excavation and Trenching" and Shaw SOP EI-HS308 shall be followed. Any excavation 5 feet deep or greater, into which persons will enter and perform work, shall be shored, sloped, or otherwise made safe for entry. Excavations less than 5 feet in depth in which a competent person, as defined in 29 CFR 1926.650, examines and determines there to be no potential for cave-in, do not require

protective systems. Certain excavations and trenches are considered confined spaces that require a confined space entry permit (Section 4.2.15).

Daily inspections of the excavation shall be made using an Excavation Inspection form (Appendix D) and a Soils Classification Worksheet (Appendix D) completed by a competent person as defined in 29 CFR 1926.650. All excavated materials shall be placed at least 2 feet from the edge of the excavation. Perimeter protection shall be provided for unattended excavations as specified in Section 25.B of the *Safety and Health Requirements Manual* (USACE, 2008). Open excavations shall be lighted at night. The SSHO shall evaluate the exposure of the excavation to employees, the public, vehicles, and equipment. This evaluation shall be used in determining the class of perimeter protection.

All project personnel shall participate in the site-specific training session and be instructed on the following requirements:

- Before commencing intrusive activities such as excavating, etc., the existence and location of underground pipes, electrical equipment, communication lines, gas lines, etc. shall be determined and documented. Only hand digging is permitted within 3 feet of underground high voltage, product, or gas lines. Once the line is exposed, heavy equipment can be used but must remain at least 3 feet from the exposed line.
- Operations shall be suspended, ignition sources eliminated, and the area shall be ventilated if the concentration of flammable/combustible vapors reach or exceed 10 percent of the lower explosive limit. A combustible gas indicator shall be used to make this determination.
- If excavating equipment is being operated in the vicinity of overhead power lines, Table 2 will be used to determine safe working distances.
- Personnel entry into any excavation 5 feet deep or greater is only permitted if the necessary protective systems are in place. Employees shall wear a harness with a lifeline securely attached to it when entering excavations classified as confined spaces or that otherwise present the potential for emergency rescue.
- Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. If water is controlled or prevented from accumulating by the use of water removal equipment, the process shall be monitored by a competent person to ensure proper operation.
- Excavations greater than 4 feet in depth, which require personnel to enter, shall have sufficient means of entry and egress (e.g., stairs, ladders, and ramps). Ladders will be provided and secured as necessary. Ladders shall extend at least 3 feet above grade. Means of entry/egress shall not require personnel to travel laterally more than 25 feet.

4.2.15 Confined Space Entry

A confined space is defined as a space large enough and so configured that an employee can bodily enter and perform assigned work, has limited means for entry or exit, and is not designed for continuous employee occupancy. Confined space work may pose additional hazards such as chemical exposures, flammable/explosive atmospheres, electrocution, oxygen deficiency, etc. Shaw Environmental, Inc. has detailed training for confined space entry: only properly trained personnel shall supervise and participate in confined space entry procedures or serve as standby attendants.

Entering a trench greater than 5 feet deep, entering a sewer, or entering a tank may be potential confined space entries. Personnel shall never enter a confined space without a permit issued by the SSHO. If personnel are uncertain about whether their activity involves a confined space entry, they shall stop work and notify their supervisor or the SSHO. Shaw SOP EI-HS300, "Confined Spaces," shall be followed for all confined space entries, if such an activity is needed.

All confined spaces are initially considered permit required. Under certain conditions, a space may be re-classified as a non-permit, confined space provided the SSHO approves the reclassification and the space meets the criteria outlined in Shaw SOP EI-HS300.

Shaw SOP EI-HS300 identifies the tug signals that may be used during entry as referenced on the Entry Permit for Permit-Required Confined Space (Appendix D).

4.2.15.1 Rescue and Emergency Services

The company recommends the use of non-company rescue services whenever possible. In certain instances, such as unavailability of a qualified outside provider, company employees can participate in rescues if they have been provided the required equipment and training.

4.2.15.2 Outside Rescue Services

Prior to designating a non-company rescue service, an evaluation of their capabilities must be conducted. This documented evaluation can be conducted by an entry supervisor or a health and safety representative. The Rescue Service Evaluation form (Appendix D) can be used to document this evaluation. The rescue service must be certified by the evaluator as capable of performing rescues prior to being identified as the rescue service provider.

Each selected rescue service will be informed of the hazards they may encounter at the location. They will also be provided access to all Permit-Required Confined Spaces from which a rescue may be necessary.

4.2.15.3 Company Rescue Services

Company personnel assigned to provide emergency entry and rescue services will be trained annually in the proper use of personal protective and rescue equipment. Such training will include a simulated rescue exercise. Company rescue services will be evaluated using the Rescue Service Evaluation form (Appendix D) and must be certified by the evaluator as capable of performing rescues prior to being identified as the rescue service provider.

4.2.16 Dust

The generation of dust and fugitive emissions shall be prevented when possible and controlled when necessary. Work practices shall be adjusted in a manner to minimize dust generation, such as lowering excavation rates, not letting soils free-fall from equipment buckets, and traveling slow on dirt or gravel roads. Personnel shall avoid working in dust by positioning themselves upwind of dust generating activities. Excessive dust shall be controlled by suppression with potable water. Dust that is not controlled may necessitate the use of respiratory protection.

4.2.17 Use of Pressure Washers or Steam Washers

The use of steam/pressure washers shall comply with Shaw SOP EI-HS303, "Pressurized Water Cleaning and Cutting Equipment." All personnel using steam/pressure washers shall wear Level D – Modified PPE, at a minimum. Eye, face, and shin/metatarsal protection is mandatory.

The pressure/steam washer shall be inspected before each use. The manufacturer's instruction manual shall be used to guide the inspection process.

Personnel shall be trained in the use of the washing equipment. All personnel working in the equipment decontamination area shall be trained in the emergency shut-off procedures for the equipment being used. The minimum amount of steam/pressure that will complete the job should be used. Pressure washers exceeding 3,000 pounds per square inch shall not be used without the approval of the HSM.

The spray from such equipment shall only be directed at surfaces to be cleaned and never at body parts or other personnel; high-pressure water can easily cut through skin and flesh! Personnel working in the immediate area shall also use eye, face, and shin/metatarsal protection.

Personnel shall keep a firm grip on the wand and not point it at anything that is not being washed. Pressure washer operators must maintain good footing. The trigger on the wand shall never be wired/fixed open. Operators are to take adequate breaks to avoid fatigue.

Hot surfaces shall be avoided. Pressure or steam washing equipment shall be shut off and allowed to cool prior to re-fueling.

4.2.18 Excessive Work Hours

The following workday duration limitations for hours worked on the projects are in effect:

- Personnel working on projects, including those who are operating hoisting equipment or mobile construction equipment, may work up to 12 hours at the site, which includes travel time to housing, but excludes non-compensated time. This workday duration is subject to reduction by the other requirements and factors described below. The 12-hour limit is primarily due to motor vehicle driving restrictions.
- Personnel shall not operate motor vehicles after being in a duty status (regardless of their role or function) for more than 12 hours during any 24-hour period without at least eight consecutive hours of rest. A minimum of eight consecutive hours shall be provided for rest in each 24-hour period.
- No employee may drive continuously for more than 10 hours in any single on-duty period. (Continuous period of more than 10 hours in any 24-hour period without at least eight consecutive hours of rest.)

For each project effort, the SSHO is responsible for adjusting the workday duration within the limits set above.

The following factors will be considered by the SSHO for adjusting the workday duration:

- Time of year (e.g., reduce workday duration because there is less daylight in winter).
- Temperature/weather (e.g., reduce workday duration when the temperature is very cold, very hot, or very windy).
- Type of work (e.g., reduce workday duration for personnel involved in physically demanding phases of work).
- Individual personnel limitations (e.g., reduce workday duration for personnel with minor head colds or suffering from temporary effects of allergies).

For any questions regarding the implementation of this policy, contact the HSM.

4.3 General Work Rules

While all the procedures outlined in this SHERP are required, the following list presents general work rules that must be strictly enforced by the Site Supervisor and Subcontractor Supervisors:

- Loose jewelry, clothing, or long hair is not permitted on or near equipment with moving parts.
- Personnel shall not enter a restricted area unless authorized.
- All work zones, as established on the site, shall be observed. All required PPE shall be worn prior to entering these zones.

- Legible and understandable labels shall be affixed prominently to the containers of waste materials.
- An emergency eyewash unit shall be located immediately adjacent to employees who handle hazardous or corrosive materials, such as battery acid, etc. All operations involving the potential for eye injury, splash, etc. shall have eyewash units locally available and capable of delivering at least 0.4 gallons per minute for at least 15 minutes. The eyewash unit maintenance shall be documented on the Emergency Eyewash Station/Fire Extinguisher Inspection Checklist (Appendix D)
- If on-site activities continue later than dusk, adequate lighting shall be provided.
- Field activities shall be suspended during severe weather such as thunderstorms, lightning, and winter storm warnings.
- Damaged PPE shall be immediately repaired or replaced, as appropriate.
- Personnel shall thoroughly wash their hands and face before eating, smoking, or drinking.
- Unauthorized removal of materials from the project is prohibited.
- Possession of controlled substances and prohibited items, such as alcohol, illicit drugs, firearms, and weapons while working on site is strictly prohibited.
- Operations involving the potential for fire hazards shall be conducted in a manner as to minimize the risk of fire.
- Overhead and underground utility hazards shall be identified and/or located prior to conducting operations.

4.3.1 Disciplinary Actions

A successful safety program is achieved by assigning qualified personnel, providing the necessary training and orientation, adequately planning for the work and following the plans, adhering to the policies and procedures, reinforcing positive behavior, and rewarding safe performance. A mechanism is also necessary to consistently apply disciplinary action to employees who jeopardize the safety of themselves and their coworkers by not following the established plans, policies, and procedures. Therefore, Shaw E&I Guide – 004, Guidelines for Standard Safety Disciplinary Actions, February 23, 2006 (or most current version).

4.4 Buddy System

The “buddy system” will be used at all times while working on-site – this requires that personnel maintain visual, voice, cellular telephone, or radio communication.

4.4.1 Lone Worker Procedure

Occasionally, only one worker may be present at the project to perform routine operations. Routine operations include performing paperwork in the office, drive-by site inspections while remaining in vehicle, and meeting drivers for delivery of equipment and materials in the support

zone. During these routine operations, there will be no “buddy” present on site as defined in Section 4.4. Even though there will be no buddy present on site at these times, communications must still be maintained. The lone field worker shall carry a cellular telephone or two-way radio on their person, at all times, while working at the project site (a landline telephone will suffice if the worker is in an office). Arrangements shall be made by the lone field workers, with at least one other person (monitor), to maintain hourly communications. This hourly communication shall convey the following information:

- Present location
- Present status
- Anticipated activities and location of anticipated activities (include routes of expected travel)
- Estimated duration of anticipated activities
- Identify other anticipated activities, projected travel routes, and activity locations if the lone field worker will complete the initial task prior to making the next scheduled contact with the other employee

The lone field worker should initiate the hourly communication to the monitor at a pre-designated time (e.g., the top of the hour). If the monitor does not receive the status call at the pre-designated time, then the monitor shall try to establish communications with the lone employee. If the lone field employee answers, then the update shall be made and the schedule of calls shall continue. If the lone field employee does not answer, the monitor shall try again in five minutes. If the lone field employee does not answer, try again in five minutes, and then the monitor shall notify Post 1. Post 1 will then notify the Ravenna Fire Department/Emergency Medical Services at 330-297-5738. All information provided from the last communication (see above) shall be provided to the emergency services. Additionally, the telephone number of the monitor (or other means of contact) shall be provided to the emergency services.

Upon mobilization to the project, the SSHO shall verify that emergency communications are established for all activities.

Important: This procedure applies to routine tasks only. Non-routine tasks require the buddy system to be in effect.

4.5 Environmental Hazards

In addition to chemical and physical hazards, there are environmental hazards that may be present. For the purposes of this SHERP, the environmental hazards are comprised of extreme ambient temperatures, insects, spiders, rodents, poisonous plants, and sunburn. Since some people are more sensitive or allergic to various biological hazards, the Allergy/Sensitivity

Questionnaire (Appendix D) may be voluntarily completed by personnel during site orientation training. This form is used to alert the SSHO of these sensitivities so that additional precautions may be made.

4.5.1 Heat Stress

Heat stress is of concern for worker safety during the summer months or when working in areas containing steam lines or other heat generating equipment. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, PPE, workload, and individual characteristics. Heat stress can cause physical discomfort, loss of efficiency, or personal illness/injury.

Individuals vary in their susceptibility to heat stress. Factors that may predispose individuals to heat stress include the following:

- Lack of physical fitness and/or obesity
- Insufficient acclimation
- Age
- Dehydration
- Alcohol and/or drug use
- Infection
- Sunburn
- Diarrhea
- Chronic disease
- Medical conditions and/or the use of some medications, such as beta-blockers for high blood pressure

The amount and type of PPE worn, directly influences reduced work tolerance and the increased risk of heat stress. Personal protective equipment adds weight, bulk, reduces the body's capability for physiological thermoregulation (i.e., evaporation, convection, and radiation), and increases energy expenditure.

4.5.1.1 Signs and Symptoms of Heat Stress

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur – ranging from mild to fatal.

These physical reactions to excessive heat include the following:

- Heat rash is caused by continuous exposure to heat and humidity and aggravated by chafing clothes. Heat rash decreases the body's ability to tolerate heat in addition to being a nuisance.

- Heat cramps are caused by profuse perspiration with inadequate electrolytic fluid replacement. Heat cramps cause painful muscle spasms and pain in the extremities and abdomen.
- Heat exhaustion is caused by increased stress on various organs to meet increased demand to cool the body. Heat exhaustion causes shallow breathing; pale, cool, moist skin; profuse sweating; and dizziness.
- Heat stroke is the most severe form of heat stress. Heat stroke symptoms include hot, dry skin; no perspiration; nausea; dizziness; confusion; strong, rapid pulse; coma; and sometimes death. Heat stroke is a serious medical emergency. The affected person shall be cooled down rapidly and medical attention must be given immediately (Section 4.5.1.4 for heat stroke first aid treatment).

The ACGIH states that excessive heat stress may be marked by one or more of the following symptoms, and an individual's exposure to heat stress should be discontinued when any of the following occur (ACGIH, 2009):

- Sustained (several minutes) heart rate is in excess of 180 beats per minute minus the individual's age in years (180 minus age) for individuals with assessed normal cardiac performance; or
- Body core temperature is greater than 101.3 degrees Fahrenheit (°F) for medically selected and acclimatized personnel; or greater than 100.4°F in unselected, un-acclimatized workers; or
- Recovery heart rate at 1 minute after a peak work effort is greater than 120 beats per minute; or
- There are symptoms of sudden and severe fatigue, nausea, dizziness, or lightheadedness.

An individual may be at greater risk of heat stress if the following symptoms occur:

- Profuse sweating is sustained over several hours
- Weight loss over a shift is greater than 1.5 percent of body weight
- 24-hour urinary sodium excretion is less than 50 millimoles (ACGIH, 2009)

4.5.1.2 Heat Stress Prevention

The following practices will help prevent heat stress:

- Acclimatize workers to hot working conditions.
- Provide plenty of liquids to replace the body fluids lost by perspiration. Fluid intake should be forced because, under conditions of heat stress, the normal thirst mechanism is not adequate to bring about a voluntary replacement of lost fluids.
- Provide personal cooling devices.

- Conduct strenuous field operations in the early morning and provide shade when possible.
- Train personnel to recognize the signs and symptoms of heat stress, its prevention, and treatment.
- Rotate personnel to various job duties and establish adequate work/rest cycles.
- Provide shade or shelter during rest periods.

4.5.1.3 Heat Stress Treatment

Workers expressing the symptoms of heat stress shall notify the SSHO immediately. At the onset of heat related illness, activities must be halted and treatment initiated. Early detection and treatment of heat stress helps to prevent further serious illness or injury. Individuals that have experienced heat related illness could become more sensitive and predisposed to additional future heat stress related problems.

Heat exhaustion can be alleviated by having the affected person rest in a cool, shaded location and have them drink cool water. To cool down the affected person's body:

- Remove impermeable PPE
- Remove worker from direct sunshine
- Apply copious amounts of cool, not cold, water on them
- Have them drink cool water, not cold, if conscious

4.5.1.4 Heat Stroke Treatment

Heat stroke is a true medical emergency. In a heat stroke situation, the body must be cooled immediately to prevent severe injury or death – medical attention must be immediately obtained. The following shall be performed if heat stroke is suspected:

- Transportation of the victim to a medical facility must not be delayed – contact Post 1.
- Apply cold packs, if available; place under the arms, around the neck, or groin to cool large surface blood vessels.
- If transportation to a medical facility is delayed, reduce body temperature by immersing victim in a cool water bath (however, be careful not to over-chill the victim once body temperature is reduced below 102°F). If this is not possible, continuously douse victim with cool water and fan for evaporative cooling.

4.5.1.5 Acclimatization

Physiologically adjusting or acclimatizing personnel to hot conditions is extremely important. Supervisors shall provide the necessary time for adequate worker acclimatization, due to each individual's physical condition and his or her ability to work in hot and humid environments.

4.5.1.6 *Physiological Monitoring*

Adequate work/rest periods shall be implemented as necessary to prevent heat stress on personnel. However, since individuals vary in their susceptibility to heat stress, Shaw will also utilize physiological monitoring to aid in measuring each individual's response to heat stress. The initiation of physiological monitoring will be required when employees are working in environments exceeding 90°F ambient air temperatures. Physiological monitoring is also required when ambient temperatures exceed 70°F and impermeable garments are worn. Ambient air temperatures shall be recorded on the Ambient Air Temperature Log (Appendix D) when ambient temperatures exceed 70°F. The two physiological parameters that each individual will monitor are as follows:

- **Heart Rate**—Each individual will count his/her radial (wrist) pulse as early as possible during each rest period. If the heart rate of any individual exceeds 75 percent of their calculated maximum heart rate (maximum heart rate equals 200 minus age) at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. An individual is not permitted to return to work until his/her sustained heart rate is below 75 percent of their calculated maximum heart rate.
- **Body Temperature**—Each individual will measure his/her body temperature with an intra-aural (ear) thermometer, as directed by the thermometer manufacturer's instructions, as early as possible in the first rest period. If the temperature exceeds 99.6°F at the beginning of the rest period, then the work cycle shall be decreased by one-third. The rest period will remain the same.

An individual is not permitted to return to work if his/her temperature exceeds 100.4°F. Physiological monitoring data will be recorded on the Employee Physiological Monitoring Record for Heat Stress (Appendix D).

4.5.1.7 *Training*

Personnel, including subcontractor employees, who may be exposed to hot working environments shall be trained on the following:

- Employees:
 - Sources of heat stress, influence of protective clothing, and importance of acclimatization
 - How the body handles heat
 - Heat-related illnesses and their recognition (signs and symptoms)
 - Preventive/corrective measures
 - Individual factors, such as age, weight, gender, level of acclimatization, etc. that may predispose some workers to heat stress

- Medical conditions and use of prescription drugs, such as beta blockers, that may modify a worker's ability to adapt physiologically to heat stress
- Physiological monitoring, record keeping of oral temperature/pulse, and establishment of work-rest regimes
- First aid procedures
- Supervisors:
 - Physiological monitoring, record keeping of oral temperature/pulse, and establishment of work-rest regimes
 - First aid procedures

4.5.2 Cold Stress

The adverse effects of cold weather are of concern at this project. While hypothermia should be recognized as a potential hazard and guarded against, frostbite is of greater concern. Workplace monitoring shall begin where the environmental temperatures fall below 60.8°F so that the ACGIH Cold Stress Standard (TLV) (2009) can be applied.

4.5.2.1 Signs and Symptoms

Control measures to prevent adverse physiological effects from cold weather should be implemented prior to the exhibition of any signs or symptoms.

Frostbite occurs when the extremities do not get sufficient heat from the central body stores. The fluids around the cells of the body tissues can freeze from exposure to low temperatures. This freezing can result in damage and loss of tissue. The most vulnerable areas for frostbite are the nose, cheeks, ears, fingers, and toes.

Skin and tissue damage from frostbite can result in scarring, tissue death, permanent loss of movement, or amputation. The three degrees of frostbite are as follows:

- First Degree—freezing without blistering or peeling
- Second Degree—freezing with blistering or peeling
- Third Degree—freezing with skin tissue death and possible deeper tissue damage

Symptoms of frostbite include the following:

- Skin color changes to white or grayish-yellow, to reddish-violet, and finally black as the tissue dies
- Coldness or numbness of the affected part
- Pain may be felt at first, but subsides

Hypothermia, or a drop in body core temperature, is another dangerous condition resulting from cold stress. Employees should be protected from exposure to cold so that their deep-core body temperature does not fall below 96.8°F. A lower body temperature can result in reduced mental alertness, reduction in rational decision-making, or loss of consciousness with the threat of fatal consequences. The symptoms of hypothermia are as follows:

- First, uncontrollable shivering and the sensation of cold
- Heartbeat slows and may become irregular
- Pulse weakens and the blood pressure changes
- As the body's core temperature drops, other signs may include cool skin, slow irregular breathing, slurred speech, loss of coordination, and apparent exhaustion
- Victim may become listless, confused, exhibit severe shivering, or develop severe pain in the extremities
- Advanced/final signs of hypothermia are a significant drop in blood pressure, fatigue, shallow respiration, coma, and death

4.5.2.2 *Control Measures*

When the ambient air temperature falls below 36°F, the following requirements shall apply:

- If wind chill is a factor, the cooling effect of the wind shall be reduced by shielding the work area or providing employees an outer wind-breaking layer of clothing.
- Extremities (i.e., fingers, ears, toes, and nose) shall be protected from extreme cold by protective clothing.
- Employees performing light work and whose clothing may become wet shall wear an outer layer of clothing that is impermeable to water.
- Employees performing moderate to heavy work and whose clothing may become wet shall wear an outer layer of clothing that is water repellent.
- Outer garments shall provide for ventilation to prevent wetting of inner clothing by sweat.
- If clothing is wet, the employee shall change into dry clothes before entering a cold environment.
- Workers shall change socks and removable felt insoles at regular daily intervals or use vapor barrier boots.
- Workers who become immersed in water or whose clothing becomes wet shall immediately be provided a change of clothing and be treated for hypothermia if necessary. If the clothing becomes wet from sweating, the employee may finish the task that caused the sweating before changing into dry clothes.
- Metal handles of tools and control bars will be covered by thermal insulating materials when temperatures fall below 30°F.

4.5.2.3 *Cold Stress Treatment*

Individuals or coworkers expressing the symptoms of hypothermia or frostbite shall notify the SSHO immediately. At the onset of cold related illness, activities must be halted and treatment initiated. Early detection and treatment of hypothermia or frostbite will prevent further serious illness or injury.

Having the affected body parts gently warmed with room temperature water can alleviate frostbite. Never rub frostbitten skin. Seek medical attention for all but the mildest cases of frostbite. In a hypothermic situation, the body must be warmed immediately to prevent severe injury or death – medical attention must be immediately obtained. To warm up the affected person's body do the following:

- Bring affected person to a warm room
- Remove impermeable PPE and wet clothing
- Wrap person in warm coats
- Have them drink warm liquids, if conscious

4.5.3 *Ticks and Tick-Borne Diseases*

Working in tall grass, especially in or at the edge of wooded areas, increases the potential for ticks to bite workers. Ticks can be particularly numerous in the spring and fall. Ticks are vectors of many different diseases including Rocky Mountain spotted fever, Q fever, ehrlichiosis, tularemia, Colorado tick fever, Lyme, and Lyme like disease. Ticks attach to the skin and intravenously feed on blood, creating an opportunity for disease transmission.

The symptoms of tick-borne diseases are high fever, head and joint aches, nausea, and vomiting. Additionally, persons infected with Rocky Mountain spotted fever may develop a red, spotty rash. Symptoms of tularemia may also include occasional cough, chest pain, swollen lymph glands, and severe pneumonia. Lyme disease usually (60 to 80 percent of the cases) presents a distinctive bull's eye rash at the site of the bite in addition to flu-like symptoms and swollen lymph nodes. If tick-borne diseases are not properly treated with the appropriate antibiotic(s), then arthritis, heart disease, brain/nerve disorders, liver damage, and kidney damage are possible.

Wearing long-sleeved, light-colored shirts, light-colored trousers tucked into the socks, and the use of insect repellent containing N,N-Diethyl-m-toluamide (DEET) help prevent tick bites.

Periodically during the workday, employees should inspect themselves for the presence of ticks. If a tick is discovered, the following procedure should be used to remove it:

- Do not try to detach a tick with your bare fingers; bacteria from a crushed tick may be able to penetrate even unbroken skin. Fine-tipped tweezers should be used.

- Grip the tick as close to your skin as possible and gently pull it straight away from you until it releases its hold.
- Do not twist the tick as you pull and do not squeeze its body. That may actually inject bacteria into your skin.
- Thoroughly wash your hands and the bite area with soap and water, and then apply an antiseptic to the bite area.
- Save the tick in a small container noting the date and the location on the body of the bite.
- Notify the SSHO and HSM of any tick bites as soon as possible.

All personnel sustaining a tick bite should consult a physician. Consult <http://www.osha.gov> for more information concerning ticks and tick-borne illnesses.

4.5.4 Chiggers

Chiggers may be a problem while working at some project locations. Chiggers, also known as “red-bugs” or “harvest mites,” are the immature stages of a tiny red mite. They inhabit areas of tall grass, associated with low, wet spots, ponds and stream banks, wild berry patches, and forest underbrush. The larvae attach themselves to the clothing of people or to the fur of passing animals. Before settling down to feed, chiggers move to a constriction, such as sock tops, waistbands, or armpits. Feeding chiggers inject a salivary fluid, which dissolves the host’s cells, and then they suck up the liquefied tissue. Within a few hours, small, reddish, intensely itching welts appear. These bites may continue to itch for several days up to two weeks after the chigger is dislodged. Following are suggestions that should provide some protection from chiggers:

- Stay out of areas where chiggers are likely to be present including wood lots, pastures, roadside ditches, or other areas with tall grasses and weeds. Chiggers are especially common in moist low-lying areas.
- Wear loose-fitting clothing (if possible) when working outdoors. Vehicles should be frequently vacuumed to reduce the number of chiggers that may have been deposited.
- Apply a repellent containing DEET to shoes, socks, and trousers before entering chigger-infested areas. Caution: some individuals may be sensitive to DEET – always read and follow label directions.
- Immediately after possible exposure to chiggers, take a bath, thoroughly scrubbing the body with hot soapy water. This will kill or dislodge many of the chiggers. The clothes that were worn when the bite(s) occurred should be placed in a plastic bag for temporary storage until they can be laundered.
- When bites begin to itch, one course of treatment is to apply rubbing alcohol, followed by one of the nonprescription local anesthetics. A baking soda paste, calamine lotion, or product such as “After-Bite” or “Chigarid” also will help reduce discomfort. Avoid scratching bites since this only increases irritation and may lead to a secondary infection of the bite.

4.5.5 *Poisonous Plants*

Three or five leaves radiating from a stem identify poison ivy, poison oak, and poison sumac. Poison ivy is in the form of a vine (and sometimes low-lying) while oak and sumac are bush-like. All of these plants can produce a delayed allergic reaction. The plant tissues have an oleoresin, urushiol, which is active in live, dead, and dried parts. The urushiol may be carried through smoke, dust, contaminated articles, and the hair of animals. Additionally, when operating a chain saw to clear brush in the winter or early spring, saw dust may be contaminated with enough urushiol to cause a severe rash. Symptoms usually occur 24 to 48 hours after exposure resulting in rashes that itch and blister. Should exposure to any of these plants occur, perform the following:

- First, cleanse exposed skin with generous amounts of isopropyl (rubbing) alcohol. (Avoid returning to the area of the poison ivy on the same day. Alcohol removes your skin's protection along with the urushiol and any new contact will cause the urushiol to penetrate twice as fast.)
- Second, wash skin with water. (Water temperature does not matter; if you're outside, it's likely only cold water will be available.)
- Third, take a regular shower with soap and warm water. Do not use soap before this point because "soap will tend to pick up some of the urushiol from the surface of the skin and move it around."
- Clothes, shoes, tools, and anything else that may have been in contact with the urushiol should be wiped off with alcohol and water. Be sure to wear gloves or otherwise cover your hands while doing this and then discard the hand covering.

The Food and Drug Administration considers over-the-counter topical corticosteroids (commonly called hydrocortisones under brand names such as Cortaid and Lanacort) safe and effective for temporary relief of itching associated with poison ivy. The best preventative measure for poisonous plants is recognition and avoidance. The use of disposable gloves and Tyvek[®] coveralls is recommended to help prevent skin contact with these plants.

4.5.6 *Flying Insects*

Flying insects such as mosquitoes, wasps, hornets, and bees may be encountered while working at project sites. Personnel who are allergic to bee stings should notify their supervisor and the SSHO. A voluntary Allergy/Sensitivity Questionnaire (Appendix D) may be completed by employees to help identify personnel who are allergic or sensitive to insect bites or stings. Mosquito bites can be effectively prevented by the use of insect repellants containing DEET. Insect repellant containing DEET shall be available to personnel while working on site. Additionally, special insecticide preparations, such as Repel Permanone, shall be available for treating worker's clothing. Commercially prepared ointments for treatment of insect bites and

bee stings shall be available on site. All personnel shall immediately report any bee stings to their supervisor and the SSHO.

4.5.7 Spiders

Personnel shall be alert to the potential for spider bites. Spiders sometimes establish residence in dark places, stored clothing, and PPE. It is advisable for personnel to inspect clothing and PPE for spiders prior to donning. If a spider bite is sustained, personnel shall report it to the SSHO.

4.5.8 Sunburn

Personnel working in direct sunlight, are encouraged to apply sunscreen to all unprotected skin surfaces. The benefits of preventing sunburn and skin cancer are self-evident. Sunscreen will be provided for use by project personnel while working on site.

4.5.9 Inclement Weather

Inclement weather can pose hazards to project personnel. The Site Supervisor or SSHO will evaluate weather conditions each day and take the appropriate precautions to minimize the hazards associated with the weather. Additional information on severe weather is provided in Section 11.9.

4.5.10 High Winds

If high winds are anticipated or underway, the following precautions shall be taken:

- Secure lightweight or loose items.
- Avoid handling items with large surface areas, such as plywood and polyethylene sheeting.
- Use caution and keep a firm grip when opening doors.
- Wear dust proof goggles if dust and soil particles are airborne.
- If cranes are being used, follow manufacturer recommendations for operating in wind.

4.5.11 Heavy Rain

Most outdoor activities will be suspended during heavy rain. Personnel shall not work outdoors if heavy rain is accompanied by lightning (Section 11.9.2). Personnel shall exit all excavations until inspected by a competent person; excavations shall be inspected with a higher frequency during periods of heavy rain. Electric tools and equipment shall not be used outdoors while raining, unless designed for use under wet conditions.

4.5.12 Snow and Ice

The Site Supervisor or SSHO will make the determination if conditions are suitable for continuing work. Personnel shall wear appropriate footwear when walking or working on snowy

and icy surfaces. It may be necessary at time to use salt or gravel on some surfaces to allow for the continuation of work activities.

5.0 *Personal Protective Equipment*

When engineering and administrative controls are not feasible or adequate to protect personnel from the hazards associated with project activities, PPE use will be required.

5.1 *Levels of Protection*

The following are general and typical descriptions of the PPE that will be required during project activities. The U.S. Environmental Protection Agency terminology for levels of PPE is used: Levels A, B, C, and D.

5.1.1 *Level A Protection*

Level A protection use is not anticipated during this project.

5.1.2 *Level B Protection*

Level B protection use is not anticipated during this project. In the event that Level B PPE becomes necessary to protect personnel, an addendum to this SHERP shall be prepared.

5.1.3 *Level C Personal Protective Equipment*

Level C protection use is not anticipated during this project. In the event that Level C PPE becomes necessary to protect personnel, an addendum to this SHERP shall be prepared.

5.1.4 *Level D – Modified Protection*

Level D – modified PPE shall be worn by personnel for certain tasks or as directed by the SSO.

Level D – modified protection generally consists of the following PPE:

- Work clothing as prescribed by weather
- Hard hat meeting ANSI Z89.1 specifications
- Safety-toed work boots meeting ANSI Z41 specifications
- Safety glasses with side shields meeting ANSI Z87.1 specifications
- Nitrile surgical gloves (inner or double layer)
- Nitrile or PVC gloves (outer, as necessary)
- Disposable Tyvek[®] coveralls with hoods, elastic wrists, and ankles (as necessary)
- Tychem[®] QC coveralls with hoods, elastic wrists, and ankles (if contact with contaminated sediments or wet soil is possible)
- Chemical resistant boot covers and/or outer boots (PVC/latex/neoprene when there is potential for shoe/boot contact with contaminated soil, sediments, or water)
- Hearing protection (if necessary or required)

- High visibility vests (when working near mobile equipment or vehicular traffic)
- Splash shield (when using pressure washer and as necessary)
- Shin/metatarsal protection (when using pressure washer)
- Work gloves, such as leather, cotton, or other material that provides cut/abrasion resistance (as necessary)

Employees working in areas where electrical hazards are present shall be provided with, and shall use, protective equipment as required by Section 130.7 of NFPA 70 E (2004) that is designed and constructed for the specific part of the body to be protected and for the work to be performed. Refer to Appendix F: Hazard/Risk Category Classifications; Protective Clothing and PPE Matrix; and Protective Clothing Characteristics).

5.1.5 Level D Protection

Level D protection is the minimum level of protection that will be used for activities at the project. Level D PPE shall, at a minimum, consist of:

- Safety-toed work boots meeting ANSI Z41 specifications
- Safety glasses with side shields meeting ANSI Z87.1 specifications
- Hard hat meeting ANSI Z89.1 specifications
- Hearing protection (if necessary or required)
- High visibility vests (when working near mobile equipment or vehicular traffic)
- Work gloves, such as leather, cotton, or other material that provides cut/abrasion resistance (as necessary)

5.2 Activity-Specific Levels of Protection

The required level of personal protection is specific to the activity being conducted and are outlined in Table 3. Levels of PPE are subject to change or to modification. Upgrading of PPE may occur when air monitoring action levels are exceeded or when specified by the SSHO. Levels of PPE shall not be downgraded without prior approval from the HSM.

6.0 Site Control and Work Zones

The purpose of site control is to minimize chemical exposures to workers, protect the public from hazards due to site activities, and prevent vandalism. The work areas that pose chemical and physical hazards to personnel may be regarded as regulated or restricted. To prevent both exposures to unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas known to contain contamination will be clearly identified.

Shaw will designate work zones at the project as suggested in *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (NIOSH et al., 1985). Regulated work areas are divided into the following three zones:

- EZ
- CRZ
- Support Zone

6.1 Exclusion Zone

The EZ is, in general, the area where chemical, physical, or other hazards occur/exist during project work. All employees are required to follow the established procedures when working in these areas. Fencing, banner tape, signs, or other appropriate means will identify the location of each EZ. An Exclusion Zone Entry log shall be maintained by the SSHO.

6.2 Contamination Reduction Zone

Personnel and equipment decontamination will be performed in the CRZ. All personnel and equipment entering or leaving an EZ will pass through the CRZ in order to prevent cross-contamination and for the purpose of accountability. Personal protective equipment will be removed in the CRZ, cleaned, and properly stored or disposed of. All water generated from equipment and personal decontamination will be contained on site and disposed of in an appropriate manner.

6.3 Support Zone

The Support Zone, or clean zone, will be the area outside the EZ and CRZ and within the geographic perimeters of the site. The Support Zone is used for staging of materials, parking of vehicles, office facilities, sanitation facilities, and receipt of deliveries. Eating, drinking, and smoking will only be allowed in this area.

6.4 Project Site Security

All equipment shall be locked when project personnel are not present.

6.5 *Site Entry Requirements*

In order to allow an individual into regulated areas of the site (i.e., EZ and CRZ) he/she must meet the following requirements:

- Documentation of completing training requirements as described in Section 9.0 (including review of this SHERP and signing off as such)
- Documentation of completing medical surveillance requirements as described in Section 10.0
- Attend the site-specific safety orientation training session (Section 9.4)
- Review the specific AHA(s)
- Obtain authorization from SSHO
- Don the appropriate PPE
- Sign the site entry log

6.6 *Posting Site*

Appropriate warning signs shall be strategically placed to give adequate warning and caution of hazards, instructions, and directions to workers and non-project personnel.

7.0 Personal Hygiene and Decontamination

Decontamination of equipment and personnel will be performed to limit the migration of contaminants off site and between work zones. Decontamination will generally occur at the edge of an EZ. This section describes the necessary procedures for personnel and equipment decontamination. In general, everything that enters the EZ at the site shall either be decontaminated or properly discarded upon exit from the EZ. All personnel shall enter and exit an EZ through a CRZ.

7.1 Personnel Decontamination

Personnel decontamination consists of discarding disposable PPE, cleaning reusable PPE, and washing the hands and face. All personnel shall wash hand and face prior to eating, drinking, or using tobacco products.

7.1.1 Decontamination Procedures for Level D – Modified Personal Protective Equipment

In general, the personnel decontamination procedure for activities conducted in Level D – modified consists of personnel discarding disposable PPE, washing reusable PPE, then washing hands and face. In some circumstances, disposable wet napkins may be used in the field to wash hands and face until personnel have access to potable water.

7.2 Suspected Contamination

Any employee suspected of experiencing skin or clothing contact with a hazardous chemical is to remove affected clothing, thoroughly wash the affected area(s), and don clean clothes. Following this, he/she shall report to the SSHO.

7.3 Procedures for Equipment Decontamination

Equipment contacting contaminated soil or water will be pressure washed, dry brushed, wet-wiped, or washed with detergent and water. All wash waters will be collected for treatment or disposal, as required. Equipment decontamination will be conducted prior to removing equipment from the work area. The SSHO (or designee) will inspect all equipment leaving the site for adequacy of decontamination (visually clean unless otherwise specified).

7.4 Decontamination Equipment and Supplies

Decontamination equipment and supplies may consist of, but are not limited to, the following:

- Potable water
- Washtubs
- Non-phosphate detergent, such as Alconox

- Brushes, hand sprayers
- Pressure or steam washer
- Paper towels
- Plastic sheeting
- 5-gallon buckets with lids
- Garbage bags
- 55-gallon drums or similar container for collection of decontamination fluids
- Labels or paint sticks for marking contents of containers

7.5 Procedures for Emergency Decontamination

In the event of an accident and if immediate medical treatment is required to save a life, decontamination should be delayed until the victim is stabilized. Proceed with decontamination if it can be performed without interfering with essential life-saving techniques or first aid. If a worker has been exposed to corrosive materials such as sample preservative or battery acid, decontamination must be performed immediately. If an emergency due to a heat-related illness develops, protective clothing should be removed from the victim as soon as possible to reduce further stress.

If decontamination can be done:

- Wash, rinse, and/or remove protective clothing and equipment.

Note: In the event that corrosive materials get in the eyes, first aid personnel should begin to administer a 15-minute eye irrigation with water while Emergency Medical Service (EMS) personnel are responding to the incident. Similarly, if a corrosive material is on an injured employee's skin, first aid personnel should flush the material off of the skin in conjunction with other first aid procedures being administered. Emergency Medical Service personnel should always be summoned as quickly as possible so as not to delay professional medical treatment.

If decontamination cannot be done:

- Alert medical personnel to potential contamination and instruct them about specific decontamination procedures, if necessary.
- Provide site personnel familiar with the incident at the medical facility.

8.0 *Environmental and Ambient Air Monitoring Program*

Environmental and ambient air monitoring shall be conducted to determine the concentrations of toxic/flammable/combustible vapors and gases, oxygen, and noise levels, and meteorological conditions. Ambient air monitoring is primarily used to verify that administrative controls, engineering controls, and PPE are effectively preventing harmful exposures to project personnel. Meteorological data (ambient air temperature) shall be obtained as described in Sections 4.5.1.6 for determining if physiological monitoring should be activated for heat stress. The results of monitoring shall be conveyed to project personnel.

8.1 *Types of Monitoring*

The following monitoring will be performed as necessary:

- Real-time air monitoring
- Time-integrated personal air sampling
- Noise surveys/noise dosimetry

Refer to Table 4.

8.1.1 *Real-Time Air Monitoring*

Real-time air monitoring will be conducted during boring, direct-pushing, groundwater sampling, and subsurface soil/sediment sampling activities. This type of monitoring will also be performed prior to confined space entries (not anticipated), hot work permitting, and during spills. The Site Supervisor, or SSHO, shall use the following real-time instrumentation as specified during the project:

- Photoionization detector for volatile organic compounds monitoring
- Oxygen meter to measure for oxygen deficient/enriched atmospheres
- Combustible gas indicator for flammable/combustible atmospheres
- Hydrogen sulfide meter for measuring hydrogen sulfide concentrations
- Carbon monoxide meter when internal combustion engines are operated near confined spaces while personnel are working in those spaces and in or near other poorly ventilated areas

8.1.1.1 Photoionization Detector

A Photovac 2020 photoionization detector, or equivalent, equipped with a 10.6-electron volt lamp shall be used to determine the concentration of volatile organic compounds in the breathing zone of personnel. Refer to Table 4 for additional information.

8.1.1.2 Combustible Gas Indicator/Oxygen Meter/Hydrogen Sulfide Meter/Carbon Monoxide Meter

An MSA Model FiveStar, or equivalent, shall be used to determine the concentration of flammable gases, oxygen, hydrogen sulfide, and carbon monoxide. Refer to Table 4 for additional information.

8.1.2 Real-Time Air Monitoring Action Levels

Real-time air monitoring action levels have been set for all direct-reading instruments. The following action levels are established for the collected air monitoring data:

- Volatile organic chemical concentration greater than 10 ppm but less than 50 ppm sustained for one minute, in the breathing zone.
- Volatile organic chemicals concentration greater than 50 ppm sustained for five seconds, in the breathing zone.
- Oxygen: less than 20 percent, confirmed instantaneous reading.
- Oxygen: greater than 22 percent, confirmed instantaneous reading.
- Combustible Gas: greater than 10 percent of LEL, confirmed instantaneous reading.
- Hydrogen Sulfide: greater than 5 ppm, confirmed instantaneous reading
- Carbon Monoxide (work area): greater than 15 ppm, confirmed instantaneous reading.

Unexpected instrument readings at or above action levels generally warrant the following:

- All personnel will stop work in the area, exit the work area, and assemble upwind.
- Contact the HSM.

Refer to Table 4 for additional information.

8.1.3 Personal Air Sampling (Time-Integrated)

Time-integrated air sampling may be performed at the discretion of the HSM, if air-monitoring action levels are exceeded (Section 8.1.2). Air samples will be collected and analyzed following OSHA or NIOSH methods. An American Industrial Hygiene Association accredited laboratory shall be used to analyze all personal air samples.

8.1.4 Noise Surveys/Noise Dosimetry

The SSHO shall conduct noise monitoring with a Sound Level Meter when it is suspected that equipment is producing noise at sound pressure levels greater than 80 decibels. Areas that are

surveyed at sound pressure levels greater than 85 decibels shall be posted as a noise hazard area. Actual employee exposures for personnel working in noise hazard areas shall then be determined with a noise dosimeter. The equipment/area shall then be evaluated to determine if it is feasible to implement engineering controls.

8.2 Calibration, Handling, and Maintenance

All monitoring equipment will be maintained and calibrated by according to the manufacturer's recommendations. Care shall be given by the operator to the handling of instruments so that the accuracy and fitness for use are maintained. Calibration checks on real-time monitoring instruments shall be performed using standards, which are National Institute of Standards and Testing traceable. Calibration for all instruments will be performed and documented before and after each use. Only properly functioning instrumentation shall be used.

8.3 Record Keeping

The SSHO is responsible for maintaining all air and noise monitoring records. The SSHO shall also obtain copies of air and noise monitoring records generated by subcontractors for inclusion into project files. The following records shall be maintained:

- Date, time, location, and operations performed
- Meteorological data
- Equipment identification, calibration data
- Monitoring/sampling data
- Engineering controls used to reduce exposure
- Description of PPE worn

Specifically, the following air and noise monitoring data and calibration records (Appendix D) shall be maintained, controlled, and retrievable at all times by the SSHO:

- Air Monitoring Data Record
- Air Sampling Data Record
- Employee Notification of Industrial Hygiene Monitoring Results
- Noise Dosimeter Field Data Log
- Noise Survey Field Data Log
- Sound Level Meter/Noise Dosimeter Calibration Log

These records shall be maintained in the field office files by the SSHO and stored in the permanent project files. Any Employee Notification of Industrial Hygiene Monitoring Results records for Shaw personnel will be forwarded to the Shaw HSM for inclusion in personnel files when appropriate. Any Employee Notification of Industrial Hygiene Monitoring Results records for subcontractor personnel will be forwarded to the Subcontractor Human Resources

Department (or equivalent safety records personnel) for inclusion in personnel files when appropriate.

8.4 Quality Assurance/Quality Control

Monitoring instruments shall be properly maintained and calibrated before and after use. The calibration and field maintenance of monitoring instruments shall be performed against known standards and manufacturer specifications. Instruments shall be calibrated to plus or minus 5 percent against the known standards. If instruments cannot be calibrated within this tolerance or if operation becomes erratic, then the instruments shall not be used and dispatched for maintenance by qualified and authorized technicians. Replacement instruments will be made available within 24 hours as needed.

9.0 Training Requirements

This section describes general training, safety meetings, site-specific training, hazard communication, first aid and CPR, and other additional training, certification, and licenses needed to work on the project sites.

9.1 General Training

The SSHO is responsible for informing all site personnel and all visitors of the contents of this SHERP and ensuring that each person signs off on the Safety, Health, and Emergency Response Plan Acknowledgment Form (Appendix A). Documentation of certification of training requirements will be reviewed by the SSHO, placed in the project files, and submitted to the CELRL (as required).

9.2 Hazardous Waste Operations Training

All site personnel working in regulated areas at this project will meet the minimum training requirements as specified in 29 CFR 1926.65 and 29 CFR 1910.120. The following criteria are used to determine the level of training required:

- Personnel engaged in activities, which expose or potentially expose them to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off site and three days of supervised field experience.
- Personnel who perform limited activities at the site and are not potentially exposed to contaminant levels above the PEL shall receive a minimum of 24 hours of instruction off site, and one day of supervised field experience.

9.2.1 40-Hour Training

The following is a general list of topics covered in the 40-hour course:

- General site safety
- Chemical, physical, and environmental hazards
- Key management positions responsible for site safety and health
- Safety, health, and other hazards (including noise)
- PPE
- Work practices by which employees can minimize risks from hazards
- Safe use of engineering controls and equipment on site
- Medical surveillance requirements including recognition of signs and symptoms of exposure

- Hazard communication (Worker Right-to-Know)
- Engineering controls and safe work practices
- Components of the site Safety and Health Program
- Decontamination practices for personnel and equipment
- Confined space entry procedures
- Emergency response procedures

9.2.2 24-Hour Training

The same topics presented in the 40-hour course are reviewed in the 24-hour course but with less time and detail spent on each topic.

9.2.3 Supervisory Training

Field supervisory personnel including the SSHO will receive eight additional hours of specialized training. The following topics are discussed:

- Overall safety and health program
- PPE program
- Spill containment program
- Health hazard monitoring procedures and techniques

9.2.4 Refresher Training

Personnel covered by Sections 9.2.1 and 9.2.2 are required to complete 8 hours of refresher training annually on the following topics:

- Safe work practices
- Chemical hazard awareness
- Hearing conservation
- Hazard communication
- Respirator refresher
- Confined space entry refresher

9.2.5 Supervised Field Experience

Personnel covered by Section 9.2.1 will receive a minimum of 3 days actual field experience under the direct supervision of a trained, experienced supervisor. A minimum of 1 day is required for personnel who fall under the requirements of Section 9.2.2.

9.2.6 Visitor Training

Site access by personnel making deliveries or performing repairs to utilities, public or government officials, visitors, or local residents will be limited to support areas only. These

persons will not be required to comply with the medical and training requirements as defined in this SHERP. Support Zone access will be limited to designated work, delivery, or observation areas to minimize any potential exposure to site contaminants. Site observation areas will be located upwind from the EZ. Weather conditions or other site activities may restrict access to these areas. Authorization for limited site access will be determined on a case-by-case basis by the SSHO in consultation with the HSM, Project Manager, RVAAP, the Ohio EPA, and the CELRL. These personnel will be escorted on-site and will be strictly prohibited from entering the EZ or CRZ.

9.3 *Safety Meetings*

Employees shall be provided continuing safety and health training to enable them to perform their work in a safe manner.

9.3.1 *Morning Safety Meetings*

The SSHO shall conduct a safety meeting at the beginning of each shift. The topics discussed at this daily “tailgate” safety meeting shall include safety and health considerations for the day’s activities, pertinent aspects of JSAs, necessary PPE, problems encountered, and new operations. Attendance records and meeting notes shall be documented on the Safety Meeting/Training Log form (Appendix D) and are maintained with the project files. At the conclusion of each shift, a debriefing for site employees will be held, if necessary.

9.4 *Site-Specific Training*

All personnel, including subcontractors, working at the project sites and falling within the scope and application of 29 CFR 1926.65 and 29 CFR 1910.120 shall attend a site-specific orientation covering the following topics:

- Purpose and review of this SHERP including emergency response procedures as outlined in Section 11.0
- The pertinent provisions for safety and health contained in *Safety and Health Requirements Manual* (USACE, 2008)
- MEC Awareness
- Review of applicable AHAs
- Names of personnel responsible for site safety
- The provisions for medical care and facilities and the names of CPR and first aid trained personnel assigned to the project
- Morning safety and preparatory meeting procedures
- Safety and health hazards on site and the means to control/eliminate those hazards

- Responsibilities for accident prevention and maintaining safe and healthful work environments
- Stop Work authority
- Procedures for reporting and correcting unsafe conditions or practices
- Responsibilities for reporting all accidents and illnesses
- PPE (use and care)
- Location of safety equipment (i.e., fire extinguishers, first aid kits, eyewash stations, etc.)
- Standard operating procedures, safety rules, and safe work practices for the project
- Work zones and site control measures
- Hazard Communication Program (includes discussion of MSDSs on site)
- Hot work procedures
- Lockout/tagout procedures
- Fall protection
- Fire prevention
- Housekeeping

The content of the training will be derived from information contained within this SHERP.

9.5 *Hazard Communication*

All personnel performing field activities involving hazardous operational chemicals shall receive basic hazard communication training, which involves a review of the Shaw written hazard communication program, MSDSs, container labeling, chemical health hazards, and chemical hazard control procedures. Personnel shall be notified of the hazards of chemical contamination on site (if present) by a review of Section 4.1 of this SHERP. Material Safety Data Sheets for additional materials brought on site shall be reviewed with personnel prior to the use.

9.6 *First Aid and Cardiopulmonary Resuscitation*

There shall be at least two persons trained and certified in both American Red Cross first aid techniques and CPR on site whenever there are two or more employees working at the project. Those Shaw employees who are trained in first aid techniques and CPR will meet both the training and vaccination requirements of Shaw SOP EI-HS512, "Handling of Blood or Other Potentially Infectious Material."

9.7 *Additional Training, Certification, and Licenses*

In addition to the training, certification, and licensing previously detailed, the following shall also be required:

- All personnel operating motor vehicles shall hold a valid operator's license.
- All crane operators shall be designated as qualified meeting the specifications in the *Safety and Health Requirements Manual* (USACE, 2008). Qualification is to be renewed every 3 years.
- Personnel operating powered industrial trucks (forklifts) shall have a certificate designating them as a qualified operator.
- Any employee operating a powder-actuated tool shall be qualified as an operator of that tool as specified by the manufacturer. Recertification, if any, shall be obtained as specified by the manufacturer.
- Confined space entry, attendant, and supervisory personnel shall be trained and certified as specified in 29 CFR 1910.146. Confined space rescue personnel shall be trained and certified as specified in 29 CFR 1910.146 and shall practice rescues (from similar types of confined spaces) on an annual basis.
- The certification and recertification requirements for first aid (3 years) and CPR (1 year) are applicable. First aid and CPR training/certification must be made by a reputable provider.
- Personnel working from ladders shall be initially trained as specified in Shaw SOP EI-HS302.
- Personnel inspecting cranes shall have a certificate designating them as a competent person.
- Personnel inspecting excavations shall have a certificate designating them as a competent person.
- Personnel supervising scaffold erection shall have a certificate designating them as a competent person.
- Personnel operating arc-welding equipment shall have a certificate designating them as a qualified operator.
- Personnel operating gas welding and cutting equipment shall have a certificate designating them as a qualified operator.
- Personnel may only use portable fire extinguishers to extinguish small fires, if the employee has been trained and the employee is confident that the small fire can be safely extinguished.

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10.0 *Medical Surveillance*

Shaw Environmental, Inc. utilizes the services of an occupational medicine physician for the medical surveillance requirements of all projects. Dr. William Nassetta (below) reviews all Shaw medical examinations and is available for medical consultation on an “as-needed” basis.

Dr. William Nassetta, MD, MPH
CORE Health Services
12091 Bricksome Avenue, Suite B
Baton Rouge, Louisiana 70816
225-756-2673 (office)
225-295-4846 (fax)

Subcontractors should also utilize the services of an occupational medicine physician of their choice to meet any medical surveillance requirements.

10.1 *Medical Examination*

As required by Shaw SOP EI-HS100, “Medical Policies and Procedures,” all personnel on site with the potential for exposure to contamination will have successfully completed a pre-placement or periodic/updated physical examination, as required by OSHA regulations.

10.1.1 *Pre-Placement Examination*

On-site personnel with the potential for exposure to contamination shall undergo a pre-placement examination that complies with 29 CFR 1926.65, 29 CFR 1910.120, and *Safety and Health Requirements Manual* (USACE, 2008) requirements for hazardous waste site operations and hazardous, toxic, and radioactive waste activities. Specifically, the following on-site personnel shall be required to participate in this medical surveillance program:

- All employees who are or may be exposed to hazardous substances or health hazards at or above the established PEL, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more than a year.
- All employees who wear a respirator for 30 days or more a year or as required by 29 CFR 1910.134.
- All employees who are injured, become ill, or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.
- Members of hazardous materials (HAZMAT) teams.

Pre-placement medical examinations consist of the following:

- Medical and occupational history questionnaire, which includes information on past gastrointestinal, hematological, renal, cardiovascular, reproductive, immunological, and neurological problems.
- Physical examination.
- Chest X-ray (no more frequently than every 4 years).
- Blood pressure.
- Complete blood count and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology.
- Blood urea nitrogen and serum creatinine.
- Sequential Multiple Analyzer Computer Profile (SMAC 24).
- Pulmonary function test.
- Audiogram.
- Electrocardiogram for employees over 35 years old or when other complications indicate the necessity.
- Stress test (as directed by the occupational physician based on electrocardiogram/pulmonary function testing).
- Visual acuity.
- Urinalysis, as necessary, for metals.

The medical surveillance provided to the employee includes a written opinion by the medical examiner of the employee's ability to use the necessary respiratory protective equipment. Any employee found to have a medical condition, which could directly or indirectly be aggravated by exposure to any chemical substance present, or by the use of respiratory equipment will not be employed for the project. A copy of the medical examination shall be provided at the employee's request.

The employee will be informed of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites.

10.1.2 Annual Exam

Site personnel may be required to receive an annual, updated exam meeting the requirements of 29 CFR 1926.65 and 29 CFR 1910.120. The results of these exams are compared to previous results and the baseline physical to determine if any medical effects due to exposure have occurred. Appropriate actions shall be taken as recommended by the physician should the results indicate an exposure; otherwise, employees are cleared for continued work.

In general, an annual exam is required when the employee meets at least one of the following criteria:

- All employees who are or may be exposed to hazardous substances or health hazards at or above the established PEL, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more than a year
- All employees who wear a respirator for 30 days or more than a year or as required by 29 CFR 1910.134
- All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation
- Members of HAZMAT teams

When an annual examination is required, the frequency shall be at least once every 12 months unless the attending physician believes a longer interval (not greater than biennially) is appropriate.

10.1.3 Exit Exam

Shaw offers exit physical exams (optional) for all employees involved in the medical surveillance program who are leaving the company for any reason.

10.1.4 Other Exams

Periodically, the need arises to conduct medical examinations at times other than those previously discussed. These include reassignment in accordance with 29 CFR 1910.120 (f)(3)(i)(C) and 29 CFR 1926.65 (f)(3)(i)(C), if an employee develops signs or symptoms of illnesses relating to work place exposure, if the physician determines examinations needing to be conducted more often than once a year, and whenever an employee sustains a lost time injury or develops a lost time illness.

10.1.5 Hearing Conservation Program

Personnel, including subcontractors, shall participate in a continuing, effective hearing conservation program, as described in 29 CFR 1910.95 (c), whenever employee noise exposures equal or exceed an 8-hour TWA sound level of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of 50 percent.

10.2 Subcontractor Requirements

Subcontractors shall certify that their employees have successfully completed a physical examination by a qualified physician on the Training Acknowledgment Form (Appendix D), when applicable. The physical examinations shall meet the requirements of 29 CFR 1926.65 and

29 CFR 1926.103. The subcontractor requirements for physical examination are the same as for Shaw employees (Section 10.1).

10.3 Medical Records

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1926.65 and 29 CFR 1910.120 and will be kept for a minimum of 30 years. The confidentiality of employee medical records shall be maintained. The written medical opinion from the occupational physician is kept in site files.

10.4 Medical Restrictions

When a medical care provider identifies a need to restrict work activity, the employee's home office will communicate the restriction to the employee SSHO and HSM. The terms of the restriction will be discussed with the employee and the SSHO. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction.

10.5 Drug and Alcohol Testing

Shaw Environmental, Inc. is firmly committed to providing employees a safe and healthful workplace, and to providing clients and the public safe and efficient services. Employee involvement with the use, possession, or sale of alcohol, illegal drugs, or any substance represented as a controlled substance creates an impediment toward meeting these commitments and is prohibited.

At no time while on duty may employees use or be under the influence of alcohol, narcotics, intoxicants, or similar mind-altering substances. Employees found under the influence of or consuming such substances will be immediately removed from the job site, as specified in the *Safety and Health Requirements Manual* (Section 01.C.02) (USACE, 2008).

All employees of Shaw and its subcontractors are subject to drug and alcohol testing as described in Shaw SOP EI-HS101, "Drug and Alcohol Testing."

11.0 Emergency Response Plan and Contingency Procedures

An emergency is defined as a sudden, generally unexpected occurrence demanding immediate action. Emergencies at project sites include accidents, injuries requiring medical care, fires, explosions, spills and significant releases of hazardous substances to the environment, and extreme weather events. Upon mobilization to the project, the Site Supervisor shall provide a means for effective emergency communications (landline telephone, cellular phone, two-way radio) prior to commencing site activities.

In the event that an emergency arises, the appropriate immediate response must be taken by the first person to recognize the situation. The field crew shall immediately notify the Site Supervisor or SSHO of the incident and contact Post 1 at 330-358-2017. A list of emergency contacts is provided in Table 5. A copy of the emergency telephone numbers and directions to the nearest hospital and approved clinic shall be posted at the project site and provided in project vehicles.

The Project Manager, HSM, and the COR shall be notified of any accident, injury, or illness.

In the case of injury or illness, a trained person will render the proper emergency first aid care. First aid equipment shall be available at the area of fieldwork. Personnel will be notified as to the locations of first aid equipment during the initial safety briefing session.

If the injury or illness is from exposure to a hazardous substance, the MSDS shall be provided to the medical personnel. Material Safety Data Sheets are provided for operational chemicals. The MSDS details first aid procedures to follow in the event an exposure occurs.

Unless the emergency event is extreme and obvious, the decision to cease all field activities and evacuate the site shall be made by the Site Supervisor or SSHO. Field personnel will report to the pre-designated area, if possible.

11.1 Personnel Roles/Lines of Authority

The responsibilities of specific project individuals and the coordination of emergency service personnel are defined in the following subsections.

11.1.1 Site Supervisor

At all times during scheduled work activities, a Site Supervisor, or SSHO, will be present on site. This individual will be responsible for implementing these procedures and determining appropriate response actions. Specific responsibilities for the Site Supervisor include the following:

- Evaluating and assessing emergency incidents or situations
- Coordinating response activities on site
- Informing field personnel of the potential hazards associated with the site
- Summoning emergency response personnel
- Notifying the Project Manager and HSM of an emergency situation
- Verifying that all emergency equipment is routinely inspected and functional
- Informing the appropriate emergency response agencies of the provisions made herein
- Evaluating the safety of site personnel in the event of an emergency and providing evacuation coordination if necessary

The Site Supervisor, or SSHO, will direct all emergency response activities conducted or managed by Shaw.

11.2 List of Emergency Contacts and Notification

Post 1 shall be contacted prior to initiating new site activities. They shall be frequently advised and notified about upcoming site activities and potential emergencies. This shall be done to ascertain response capabilities and to obtain a response commitment.

The Site Supervisor, or SSHO, will be notified immediately in the event of an emergency. The Site Supervisor, or SSHO, will immediately evaluate the incident and, if necessary, contact Post 1 to notify emergency response personnel. If not previously notified, the COR will be advised of the situation. Telephone numbers for emergency contact personnel are listed in Table 5 of this SHERP. The list will be maintained with current contacts and telephone numbers, and provided in all project vehicles.

The information provided to the emergency contact should include the nature of the incident and the exact location. Specifically, the information should include the following:

- Name and telephone number of the individual reporting the incident
- Location and type of incident
- Nature of the incident
- Number and nature of medical injuries
- Potential for additional risks or dangers

- Potential off-site risks or dangers
- Movement or direction of spill/vapor/smoke
- Response actions currently in progress
- Estimate of quantity of any released materials
- Status of incident
- Other pertinent information.

When reporting spills only (Post 1), the following information is to be provided:

- Name and telephone number of person making notification
- Exact location, cause and time of spill or emergency
- Type and description of emergency
- Estimate of amount and type of material spilled
- Extent of actual or potential environmental damage
- Injuries or property damage, if any
- Possible hazards to off-post human health and environment
- Immediate response actions taken

11.3 Medical Emergency Response

Minor injuries will be treated on-site by qualified First Aid/CPR providers. Injuries and illnesses that do not require immediate medical assistance or transport by Emergency Medical Services shall be treated at the selected medical care facility (Corporate Care). The EMS shall be summoned by Post 1 in the event of moderate to severe physical injury, which requires immediate emergency care. In all cases, the Site Supervisor, or SSHO, shall accompany the injured worker to the appropriate medical care facility. Figure 2 indicates the location of the nearest hospital. Figure 3 indicates the location of the nearest Core network clinic.

The route maps to the selected Core network clinic and the hospital shall be available in all project vehicles.

11.4 Personal Exposure or Injury

The following procedures will be implemented in the event of a personal injury (other than first aid only).

11.4.1 Serious Injuries Requiring Transport by Ambulance

The SSHO shall make the decision to call 911 and will provide any necessary support to emergency responders. The City of Cleveland (Division of Emergency Medical Services) recommends that the EMS should be called for the following:

- Suspected heart attack - symptoms may include chest pain or pressure, severe palpitations, heavy perspiration and shortness of breath. Chest pain is not always present—especially in women.
- Suspected stroke - symptoms are sudden and may include numbness or weakness of the face, arm or leg, especially on one side of the body; confusion, trouble speaking, understanding, or walking; loss of balance or coordination; severe headache with no known cause.
- Bleeding with weakness or drowsiness - even if bleeding has stopped.
- Severe pain.
- Burn larger than two to three inches around involving all layers of skin or that appears black or dry and white.
- Severe allergic reaction or asthma attack.
- Poisoning - but only if the victim is comatose or having difficulty breathing, otherwise call the National Poison Control Center first at 1-800-222-1222 or 216-231-4455.
- Severe traumatic injuries.

Upon the realization that an individual(s) needs emergency medical care with transport by ambulance, the following procedure will be used when applicable:

- Administer first aid and contact Post 1 to arrange for dispatch of the EMS.
- Notify the Site Supervisor, the SSHO, and the HSM.
- Provide an individual to meet the EMS at the project site entrance, to minimize time in locating the injured worker(s).
- Wait for emergency care, document the event, and maintain communication with the Site Supervisor, or SSHO.

In the event of a chemical exposure, the following procedures shall be followed after summoning the EMS:

- **Skin Contact:**
 - Flush with water
 - Remove clothing, flush skin
 - Obtain prompt medical attention, as necessary

- **Inhalation:**
 - Remove the person from the area
 - Administer first aid/CPR, as needed
 - Obtain immediate medical attention.
- **Ingestion:**
 - Contact the Poison Center for immediate treatment, then obtain immediate medical attention
 - Inducing vomiting may cause further injury to the victim; follow instructions from the MSDS and/or Poison Center
- **Eye Contact:**
 - Flush eyes immediately with water for a minimum of 15 minutes
 - Obtain immediate medical attention

11.5 *Fire Control*

In the event of a fire or explosion at the site, the following actions shall be implemented:

- Evacuate all personnel to a safe location upwind or crosswind of the incident. Contact the Site Supervisor or SSHO.
- Concurrently with the above, contact Post 1 by dialing 330-358-2017.
- If personnel are present who have had training in the use of fire extinguishers, use available fire extinguishers to extinguish small fires, if the fire can be safely extinguished.
- Alert EMS (through Post 1) about the possibility of fire victims, as appropriate.
- Document the incident in the field logbook and follow the procedures for incident reporting in Section 13.3.

11.6 *Spill Prevention and Control*

This spill prevention and control section sets forth the procedures for the coordination of and response to potential spills/discharges of hazardous materials or wastes.

11.6.1 *Preemptive Measures*

The following measures shall be taken to minimize the possibility of spills/discharges:

- Site controls are to be maintained so that only authorized personnel have access to work areas.
- Site personnel will be advised of appropriate spill/discharge control measures.
- Appropriate secondary containment structures will be used for storage of hazardous materials and wastes on site.

- Storage containment shall be examined daily.

11.6.2 Spill Response

If a hazardous material or waste release is observed at the site, the SSHO will be immediately notified. An assessment will be made of the magnitude and potential impact of the release. If it is safe to do so, site personnel will attempt to locate the source of the release, prevent further release, and contain the spilled and/or affected materials as follows:

- The spill or release area will be approached from upwind.
- Hazards will be identified based on available information from witnesses or material identification documents (*i.e.*, placards, MSDSs, and logbooks). The potential hazards will be evaluated to determine the proper personal protection levels, methods, and equipment necessary for response.
- If necessary, the release area will be evacuated, isolated, and secured.
- Work zones shall be set up.
- If possible, spill containment will initially be made without entering the immediate hazard area.
- Entry to the release area will be made by personnel with the PPE, training, methods, and equipment necessary to perform the work. Hazardous spill containment and collection will be performed as follows:
 - Contain the spill with absorbent socks, booms, granules, or construction of temporary dikes.
 - Control the spill at the source by plugging leaks, up-righting containers, over packing containers, or transferring contents of a leaking container.
 - Collect the spilled material with shovels, pumps, or heavy equipment as necessary.
- Store the spilled material for treatment or disposal. Treatment and/or disposal options of the material will depend on the amount and type of material.

If site personnel cannot safely respond to an environmental release, evacuation of the area may be warranted. The fire department shall be notified in the event of a significant spill. Upon their arrival at the site, the SSHO will brief emergency responders of the status and any potential hazards.

11.7 Munitions and Explosives of Concern Discovery

In the event known or suspected MEC is encountered, the following procedures shall be implemented:

- Workers shall flag visibly, for example, up in a tree, next to where the MEC find is located by means of a rag or surveyors flagging. This will enable a MEC Specialist to locate the ordnance/explosive find later.

- Evacuate all personnel to a safe location upwind of the MEC. Contact the Site Supervisor, or SSHO.
- Secure area against trespassers.
- The Site Supervisor, or SSHO, will notify Post 1 at 330-358-2017 and the COR. Post 1 will contact the RVAAP Facility Manager to address the MEC.
- The work area will remain evacuated until clearance has been given from the Project Manager and COR.

11.8 Site Evacuation Procedures

Voice, radio, or cellular telephone communication may be used to alert site workers and provide special instructions on site evacuation. Personnel shall evacuate to a designated safe, upwind location and perform a “head count.” The Site Supervisor, or SSHO, is to remain in frequent contact for proper execution of the evacuation procedures.

Situations requiring evacuation may include unusually severe weather conditions or fires. In the event of project evacuation, other than weather related, Post 1 will be notified immediately. A site emergency map that delineates evacuation routes, emergency air horn locations, first aid kit locations, and rally point(s) shall be prepared once the Site Supervisor, or SSHO, has physically evaluated the site.

11.9 Adverse Weather Conditions

Personnel should be aware of the possibility for the occurrence of severe weather such as lightning, thunderstorms, high winds, or winter storms/blizzards. Necessary precautions or response, directed by the Site Supervisor or SSHO, will be taken in the event of severe weather. Personnel may be advised to leave the project site and take refuge at home or a motel when high winds, heavy rain, or snowstorms are predicted and imminent. Outdoor operations will be suspended when the potential for lightning occurs.

Local weather broadcasts will be monitored by the Site Supervisor, or SSHO, when the likelihood for severe weather exists. Generally, cellular telephone communication or the backup 2-way radios will be utilized to alert crews to threatening weather. A severe weather shelter shall be identified and the location communicated with the crew(s) upon project mobilization.

11.9.1 Tornado Safety

In the event of a tornado, personnel should take cover in a basement, ditch, culvert, or interior room of a strong building. Personnel shall identify the nearest tornado shelter at each active remote work location prior to beginning operations. When a tornado has been sighted, go to your shelter immediately. Stay away from windows, doors, and outside walls.

- In a small building, go to the basement or storm cellar. If there is no basement, go to an interior room on the lower level (bathrooms, closets, interior hallways).
- Interior hallways on the lowest floor are usually safest. Stay away from open spaces and windows.
- Get under a piece of sturdy furniture such as a workbench or heavy table or desk and hold on to it.
- Use arms to protect head and neck.
- If in a trailer or vehicle, get out immediately and go to a more substantial structure.
- If there is no shelter nearby, lie flat in the nearest ditch, ravine, or culvert with your hands shielding your head.
- If in a car, get out and take shelter in a nearby building. Do not attempt to out-drive a tornado since they are erratic and move swiftly.
- Personnel should be aware that ditches and culverts may fill up with water quickly and should only use these as shelters as a last resort.

11.9.2 Lightning Safety

Outdoor activities will be suspended when the potential for lightning occurs. The following measures, offered by the National Lightning Safety Institute of Louisville, Colorado shall be taken to minimize the possibility of injury to personnel by lightning:

- The Site Supervisor, or SSHO, is responsible to monitor weather conditions.
- Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (i.e., inside vehicles or buildings). When clouds with dark bases appear and wind speeds pick up, anticipate thunderstorms. Seek shelter immediately.
- The Site Supervisor, or SSHO, will continue to monitor weather conditions.
- Outdoor activities may resume 30-minutes after the last bolt of lightning was observed and the last clap of thunder was heard.

People who have been struck by lightning do not carry an electrical charge and are safe to handle. Apply first aid immediately, if you are qualified to do so. Get emergency help promptly.

SAFE AREAS INCLUDE:

- Fully enclosed metal-topped vehicles with windows up
- Substantial and permanent buildings

UNSAFE AREAS INCLUDE:

- Small structures including huts and rain shelters
- Nearby metallic objects like fences, gates, instrumentation and electrical equipment, wires, and power poles

The following shall be avoided when lightning is in the area:

- Trees
- Water
- Open fields
- Using hard-wired telephones and headsets

If hopelessly isolated from shelter during close-in lightning, adopt a low crouching position with feet together (up on toes, if possible) and hands on ears. If hair stands on end or rises on back of neck, a lightning strike is imminent.

Remember the warning phrase from the National Lightning Safety Institute: “If you can see it (lightning), flee it; if you can hear it (thunder), clear it.”

11.10 Emergency Equipment

At a minimum, the following emergency equipment shall be maintained at the project site(s):

- Fire extinguishers (type of fire extinguisher needed is dependent on work/activity being performed, refer to Sections 4.2.3 [Hot Work], 4.2.7.1 [Heavy Construction Equipment], 4.2.11 [Air Compressor Use], and 4.2.12 [Portable Generator Use]);
- First aid kits (contents listed in First Aid Kit Inspection Log, Appendix D);
- Blood-borne pathogen control supplies or kit (Section 12.0);
- Emergency eyewash, if corrosive materials are being used (Section 4.3);
- Spill control (Section 11.6); and
- Communication devices (Sections 3.6 and 4.4.1).

This equipment is to be inspected by the SSHO on a weekly basis to verify that they are in good condition, ready to use, and easily accessible. Note: a seal may be maintained on first aid kits to indicate if the kit has been accessed within the preceding week. The weekly inspection of the

first aid kit will only be necessary if the seal has been broken. The first aid kit shall be re-stocked and re-sealed immediately after the emergency has ended.

11.11 Critique and Follow-Up of Emergency Procedures

The COR shall be verbally notified immediately and receive a written notification within 24 hours of all accidents or incidents including releases, fires, or explosions. The report shall include the following items:

- Name, organization, telephone number, and location of the contractor
- Name and title of the person(s) reporting
- Date and time of accident/incident
- Location of accident/incident
- Brief summary of accident/incident including pertinent details, such as, type of operation ongoing at time of accident
- Cause of accident/incident, if known
- Casualties
- Details of any contamination
- Estimated property damage, if applicable
- Nature of damage, effect on contract schedule
- Action taken by Shaw to maximize safety and security
- Other damage or injuries sustained (public or private)

The Site Supervisor and/or SSHO will investigate the cause of the incident to prevent its re-occurrence. The investigation should begin as soon as practical after the incident is under control but not later than the first workday after the incident. Investigations will follow the procedures described below:

- Interview witnesses and participants as soon as possible or practical
- Determine the chronological sequence of events (opinions as to cause should not be solicited at this time)
- Note any movement, sounds, noises, or other sensory perceptions experienced by the participants or witnesses
- Obtain weather data
- Ascertain the location and position of all switches, controls, etc.
- Verify the condition of all safeguards
- Determine if a revision to emergency procedures is warranted

After the facts have been collected, causal factors should be identified and controlled/eliminated.

11.12 Hospital Information

The local hospital is:

Robinson Memorial Hospital
6847 N. Chestnut Street
Ravenna, Ohio
Telephone: 330-297-2449

The travel directions to the hospital from RVAAP are as follows:

Robinson Memorial Hospital is located approximately 9.6 miles from the site at 6847 N. Chestnut Street in Ravenna, Ohio. It can be reached by taking Highway 5 West approximately 6 miles, Highway 59 for 1 mile, then right onto Highway 14 and 44 for 2 miles, then left onto North Chestnut Street. Travel time to the hospital is approximately 14 minutes from the RVAAP. The route map to the hospital is depicted on Figure 2.

11.13 Medical Services Clinic Information

The approved clinic for the project is:

Corporate Care
1296 Tod Place NW #200
Warren, Ohio 44485
Telephone: 330-306-5030

The travel directions to the clinic from RVAAP are as follows:

Corporate Care Clinic is located approximately 15.2 miles from the site at 1296 Tod Place NW #200 in Warren, Ohio 44485. It can be reached by taking Highway 5 East approximately 11.4 miles to West Market Street. Bear right on West Market Street for 2.5 miles, then left (north) onto Ohio Avenue NW for 0.4 miles (road name changes to Summit Street NW for another 0.4 miles), then left (north) onto Tod Avenue NW for 0.2 miles, then straight onto Tod Place NW. Travel time to the clinic is approximately 23 minutes from the RVAAP. The route map to the clinic is depicted on Figure 3.

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12.0 *Blood-Borne Pathogen Exposure Control Plan*

Blood-borne pathogens are microorganisms (i.e., bacteria, virus) sometimes present in blood and certain body fluids, which are capable of causing human disease or death. These pathogens can also be present on objects and surfaces that have had contact with infected blood or certain body fluids. Blood-borne pathogens are also capable of causing human disease or death to unprotected people who are exposed to infected blood or body fluids. Diseases caused by blood-borne pathogens include, but are not limited to, hepatitis A, hepatitis B, hepatitis C, malaria, acquired immunodeficiency syndrome (AIDS), and other sexually transmitted diseases. The most significant of these and of greatest concern are hepatitis B and AIDS.

Hepatitis B is a serious disease caused by the hepatitis B virus (HBV), which attacks the liver. The virus can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. Exposure symptoms include fever, fatigue, nausea, vomiting, muscle aches, loss of appetite, and jaundice (yellowing of the eyes or skin). Hepatitis diagnosis is difficult because some symptoms are similar to the flu and may remain mild for an extended period. The HBV can remain infectious for up to 10 days, even in dried blood. Hepatitis B vaccine is available for all age groups to prevent HBV infection.

Human immunodeficiency virus (HIV) is the virus that causes AIDS. People with HIV have what is called HIV infection. Some of these people will develop AIDS because of their HIV infection. Humans may be infected with HIV for many years without experiencing any symptoms. Upon development of AIDS, symptoms may include weight loss, skin lesions, dry cough, fever, fatigue, diarrhea, swelling of the lymph glands, and death. Presently, no cure exists for HIV or AIDS, and no vaccination is currently available.

A hazard exists for blood and other bodily fluids to be infected with dangerous, infectious pathogens. Employees could become infected if they are exposed to these blood-borne pathogens.

The purpose of this Blood-borne Pathogen Exposure Control Plan is to provide the information, procedures, and requirements necessary to prevent employee exposure to blood-borne pathogens.

12.1 *Regulatory, Requirement, and Policy Compliance*

This Blood-borne Pathogen Exposure Control Plan has been prepared in compliance with:

- 29 CFR 1910.1030, Blood-borne Pathogens
- Shaw SOP EI-HS512

12.2 Exposure Determination

The OSHA requires employers to perform an exposure determination, identifying employees who may incur occupational exposure to blood or other potentially infectious materials. The exposure determination is made without regard to the use of PPE. For exposure determination purposes, employees are considered to be exposed, even if they wear PPE.

In general, it is anticipated that project activities will not present a high risk of employee exposure to blood or other body fluids. An exception to this would be under circumstances when personnel administer first aid care or CPR to injured workers and when personnel clean-up areas and equipment that may have been exposed to blood because of the incident. In these cases, there is reasonable potential for employee skin, eye, mucous membrane, or potential contact with blood or other bodily fluids.

The OSHA requires a listing of job classifications with identification of tasks performed in which some employees may have potential for occupational exposure. This requirement is for employees to clearly understand the tasks that they may perform have a potential for occupational exposure to infectious materials. The job classifications and associated tasks with an exposure potential are as follows:

- Site Supervisor—Administer first aid or CPR; decontaminate or disinfect surfaces and articles that have contacted infectious materials, and prepare biohazard waste for temporary storage and subsequent disposal.
- Site Safety and Health Officer—Administer first aid or CPR; decontaminate or disinfect surfaces and articles that have contacted infectious materials, and prepare biohazard waste for temporary storage and subsequent disposal.
- Subcontractor Supervisors—Administer first aid or CPR; decontaminate or disinfect surfaces and articles that have contacted infectious materials, and prepare biohazard waste for temporary storage and subsequent disposal.
- Laborer—Administer first aid or CPR; decontaminate or disinfect surfaces and articles that have contacted infectious materials, and prepare biohazard waste for temporary storage and subsequent disposal.

These employees have potential for exposure to blood-borne pathogens when administering first aid or CPR and when performing post-accident clean-up operations due to the following:

- Contact or absorption of blood or blood-contaminated objects through open or broken skin (i.e., cuts, scratches, and rashes)
- Blood splashes to their eyes, nose, or mouth, or other mucous membranes
- Punctures through the skin with a contaminated sharp object (i.e., scissors)

Workers can reduce their risk of contacting blood-borne pathogens by implementing the recommended work practices (outlined in this plan) before, during, and after responding to emergency medical incidents primarily involving personal injuries.

12.3 *Schedule of Implementation*

The procedures in this Blood-borne Pathogen Exposure Control Plan are to be implemented immediately.

Implementation includes:

- Verifying personnel who are available to voluntarily provide first aid care and CPR hold a valid training certificate from a reputable training provider (American Red Cross or American Heart Association).

The Site Supervisor, or SSHO is responsible for verifying that an appropriate number of personnel have been trained in and hold valid certification to perform first aid and CPR.

- Verifying that personnel voluntarily providing first aid care, CPR, post-accident clean-up operations, and biohazard waste handling have received the specialized training meeting the requirements of 29 CFR 1910.1030; and Shaw SOP EI-HS512. This training is required for applicable personnel prior to the commencement of work and at least annually thereafter. This training shall cover the following elements:
 - Copy of 29 CFR 1910.1030 and this procedure including an explanation of the contents
 - General explanation of the epidemiology and symptoms of blood-borne diseases
 - Explanation of the modes of transmission of blood-borne pathogens
 - Explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials
 - Explanation of the use and limitations of practices that will prevent or reduce exposure including appropriate engineering controls, work practices, and PPE
 - Information on the types, proper use, location, removal, handling, decontamination, and/or disposal of PPE
 - Explanation of the basis for selection of PPE
 - Information on the hepatitis B vaccine, including information on its efficacy, safety, and the benefits of being vaccinated
 - Information on the appropriate actions to take and persons to contact in an emergency
 - Explanation of the procedure to follow if an exposure incident occurs including the method of reporting the incident and the medical follow-up that will be made available

- Information on the medical counseling that is provided for exposed individuals
- Explanation of required signs and labels

The Site Supervisor, or SSHO, is responsible for verifying that this blood-borne pathogen training has occurred.

- Verifying that engineering controls are readily available at the project for use in an emergency. Engineering controls for this project include the following:
 - Red-bags for temporary storage of contaminated PPE and cleaning materials
 - Appropriately labeled, 30-gallon hard-plastic container for the temporary storage of red-bagged waste
 - Whisk-broom and dust pan for cleaning up contaminated broken glass
 - Gallon container of Clorox[®] household bleach
 - Large utility sponge
 - Rolls of paper towels
 - Container of liquid disinfectant hand soap
 - “Biohazard” warning labels
 - Individually packaged disinfectant towelettes
 - CPR barriers

The Site Supervisor, or SSHO, is responsible for verifying that this inventory of engineering controls is readily available at the project site for emergency use.

Personal protective equipment is necessary to prevent employee exposures to infectious materials. The necessary PPE, which shall be maintained separately for use in an emergency include the following:

- P-100 Particulate filtering face-piece respirator (3-M 8293 or equivalent)
- Face-shields with ratcheting head-suspension
- Safety glasses with clear lens
- Disposable nitrile examination gloves
- PVC Monkey Grip work gloves
- Poly-coated or Saran-coated disposable Tyvek[®] coveralls with attached hood
- Vinyl or latex disposable boot covers
- Fluid-resistant surgical hoods

The Site Supervisor, or SSHO, is responsible for verifying that the above inventory of PPE is readily available at the project site for emergency use.

12.4 Work Practice Controls

Work practice controls reduce the likelihood of exposure by altering the manner in which a task is performed. The work practice controls outlined in this section are applicable to the administration of first aid and the subsequent clean-up operations.

Work practice controls shall be instituted whenever there is potential for employee contact with blood and bodily fluid. Situational examples where these controls are to be implemented include, but are not limited to:

- The voluntary administration of first aid care, such as application of bandages to minor or major cuts and abrasions of another person. This care may allow for contact with sores, wounds, broken skin, blood, or other bodily fluids.
- The voluntary administration of first aid care, such as providing CPR.
- Clean-up activities involving handling soiled articles (e.g., gauze, bandages, compresses, etc.) and the decontamination or disinfecting of surfaces and articles that have contacted potentially infectious materials, such as blood or other bodily fluids.
- Prepare biohazard waste for temporary storage and subsequent disposal.

Based upon professional judgment, an employee may choose to temporarily forego the use of PPE if the employee determines that the use of the PPE will further jeopardize his well-being or that of the injured worker. This limited application must be carefully evaluated and considered by the employee. If this situation does occur, Shaw will investigate and document the circumstances in an effort to provide alternative means to avoid further occurrence.

The following are specific work practice controls that shall be implemented in the above noted situations or whenever an employee determines that the implementation of these work practices is prudent or necessary:

- The appropriate PPE shall be donned prior to engaging in any activities that have the potential for employee contact with potentially infectious materials, such as blood or other bodily fluids.
- Hands and face will be washed as soon as possible after engaging in any activities that have the potential for employee contact with potentially infectious materials, such as blood or other bodily fluids. If wash facilities are not readily available, individually packaged disinfectant towelettes may be used in the interim.
- Eating, drinking, or smoking is not allowed in any work area where a potential exists for occupational exposure to blood-borne pathogens.
- Open wounds or cuts shall be promptly bandaged.
- Work surfaces and areas shall be cleaned and disinfected immediately after being contacted by potentially infectious materials. A 10 percent bleach solution (one part

bleach added to nine parts water) shall be applied and allowed to have a contact time of 15 minutes. Non-disposable articles, equipment, or materials contaminated with potentially infectious materials shall be similarly cleaned/disinfected prior to reuse.

- All bins, pails, cans, and similar receptacles intended for reuse, which have become contaminated with blood or other potentially infectious materials shall be cleaned and disinfected immediately after use.
- Broken glassware, which may be contaminated, shall not be picked up directly by hand. Broken glass shall be picked-up using mechanical means, such as by using a whiskbroom and dustpan.
- All PPE shall be immediately removed upon leaving the potentially contaminated work area, or as soon as possible if visibly contaminated. The contaminated PPE shall be placed in a labeled “red-bag” and then placed in the 30-gallon container for temporary storage and subsequent disposal.
- Any clothing that has contacted blood or other potentially infectious fluids shall be removed as soon as possible.
- Any clothing that has contacted blood or infectious fluids shall be placed in a labeled “red-bag” and then placed in the 30-gallon container for temporary storage and subsequent disposal.

12.4.1 *Universal Precautions*

Universal precautions is a method of infection control, which operates on the assumption that all human blood and bodily fluids are to be treated as if they are known to be infectious for HIV, HBV, or other blood-borne pathogens. Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Universal precautions consist of the following practices:

- All workers shall routinely use appropriate barrier precautions to prevent skin and mucous-membrane exposure when contact with blood or other bodily fluids is anticipated. Gloves should be worn for touching blood and bodily fluids, mucous membranes, or non-intact skin and for handling items or surfaces contaminated with blood or body fluids. Masks and protective eyewear or face shields shall be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Protective suits shall be worn during procedures that are likely to generate splashes of blood or other bodily fluids.
- Hands and other skin surfaces shall be washed immediately and thoroughly if contaminated with blood or other bodily fluids. Hands shall be washed immediately after gloves are removed, using a disinfectant soap.
- Cardiopulmonary resuscitation barriers or other ventilation devices should be available for use in areas in which the need for resuscitation is foreseeable.
- Workers who have exudative lesions or weeping dermatitis shall be excluded from handling potentially infectious materials until the condition resolves.

- Pregnant workers should be especially familiar with and strictly adhere to precautions to minimize the risk of transmission.

12.4.2 *Personal Protective Equipment*

The proper use of PPE is an effective work practice control. The following requirements for PPE are mandatory whenever there is potential for employee contact with blood and bodily fluid:

- Inspect PPE prior to use to verify it is in good working order and without defects.
- Blood or other potentially infectious materials.
- Disposable (single use) gloves, such as surgical or examination gloves shall be replaced when visibly soiled, torn, punctured, or when their ability to function as a barrier is compromised. Gloves should be changed as soon as possible after contact with blood or bodily fluids. After use, remove gloves from top to bottom inside out, not allowing unprotected skin to contact the exterior of the gloves. Hands and other skin surfaces shall be washed with disinfectant soap immediately after care has been rendered or clean up has been completed. Gloves reduce the incidence of blood contamination of hands, but they cannot prevent penetrating injuries caused by sharp objects. Do not reuse gloves once removed. A CPR barrier shall be used when administering CPR.
- Protection for the eyes, face, hands, body, feet, and against inhalation hazards shall be provided as appropriate for each job.
- Gloves shall be worn when employees have the potential for direct skin contact with or when handling items or surfaces soiled with blood, other potentially infectious materials, mucous membranes, and non-intact skin.
- Polyvinyl chloride work gloves may be disinfected for immediate reuse if the integrity of the glove is not compromised; however, gloves must be discarded if they are cracked, peeling, discolored, torn, punctured, or exhibit other signs of deterioration. All gloves shall be discarded at the conclusion of the activity or at the end of the shift – whichever comes first.
- Masks and eye protection or chin-length face shields shall be worn whenever splashes, spray, splatter, droplets, or aerosols of blood or other potentially infectious materials may be generated and there is a potential for eye, nose, or mouth contamination.
- Fluid-resistant clothing (e.g., coated Tyvek[®] suits) shall be worn if there is a potential for splashing or spraying of blood or potentially infectious materials. Coated Tyvek[®] coveralls shall also be worn during clean-up activities involving decontamination or disinfecting of surfaces and articles that have contacted potentially infectious materials, and when preparing biohazard waste for temporary storage and subsequent disposal.
- Fluid-resistant clothing (e.g., coated Tyvek[®] suits) shall be worn if there is a potential for clothing becoming soaked with blood or other potentially infectious materials.
- Surgical caps or hoods shall be worn if there is a potential for splashing or splattering of blood or potentially infectious materials on the head.

- Fluid-proof coverings shall be worn if there is a potential for shoes or boots to contact blood or other potentially infectious materials.
- Disposable nitrile or vinyl gloves shall be worn for touching blood and bodily fluids requiring universal precautions, mucous membranes, or non-intact skin and for handling items or surfaces soiled with blood or bodily fluids to which universal precautions apply.

12.4.3 Waste Handling

All wastes generated because of administering emergency first aid care and the subsequent clean-up activities shall be placed in red-bags, labeled as a biohazard, and kept separately from other trash. Wastes used in medical emergency treatment (i.e., gloves, towels, and gauze) shall also be bagged and stored in an identical manner. Red-bagged, biohazard waste shall be placed in the 30-gallon collection container, labeled, and secured for temporary storage and disposal. Additional containers shall be obtained as needed and containers shall not be overfilled.

12.5 Biohazard Waste Disposal

A Shaw Transportation and Disposal Coordinator shall be contacted to arrange for proper disposal of biohazard wastes. The waste shall remain secured on site in labeled container(s) until disposal arrangements have been made at an approved disposal facility. Disposal of the infectious waste container(s) shall be in accordance with applicable local, state, and federal rules, laws, and regulations.

12.6 Medical Requirements

Employees receive medical evaluations in accordance with Shaw SOP EI-HS100. The medical requirements of this exposure control plan include provisions for vaccinations to all exposed employees as well as for post-exposure procedures and evaluations. All employees with potential for occupational exposure to blood-borne pathogens shall receive the hepatitis B vaccination and tetanus vaccination prior to workplace exposure, unless they read and sign the Hepatitis B and Tetanus Vaccination Declination form (Appendix D).

12.6.1 Hepatitis B Vaccination

All potentially exposed employees will have made available to them, at no cost, a hepatitis B vaccination. Recombivax or Accelerated Recombivax vaccines shall be utilized. If the employee has previously received the hepatitis B vaccination and/or antibody testing reveals that the employee is immune, a new vaccination is not required. Employees may be subjected to occupational exposure immediately after receiving the first shot in the hepatitis B vaccination series. Antibody testing shall be performed 30-days after completing the hepatitis B vaccination series. Employees unable to develop immunity shall be precluded from further occupational exposure. If a physician recommends a booster dose(s), the doses shall be provided according to

standard recommendations for medical practice. The employee will also receive training as to the vaccine's efficacy, safety, benefits, and consequences prior to administration. The vaccination series may also be initiated within 24-hours of an incident with exposure potential.

12.6.2 Tetanus Vaccination

All employees subject to this policy shall maintain current status documentation of their tetanus vaccination (current status for tetanus vaccination is within 5 years). All potentially exposed employees shall be offered a tetanus vaccination at no cost.

12.6.3 Post-Exposure Procedures and Evaluation

All exposure incidents shall be reported as required by Shaw SOP EI-HS020, "Accident Prevention Program: Reporting, Investigation and Review." The occupational medicine physician shall be advised in addition to standard notification procedures.

Following a report of an exposure incident, each involved employee shall be offered a confidential medical evaluation and follow-up, which includes at least the following elements:

- Documentation of the route(s) of exposure.
- Hepatitis B virus and HIV antibody status of the source patient(s) (if known), and how the exposure occurred.
- The medical confidentiality rights of the source patient shall be preserved at all times.
- If the source patient can be determined and permission is obtained, collection of and testing of the source patient's blood to determine the presence of HIV or HBV infection shall be conducted under the direction of the attending physician.
- Collection of blood from the exposed employee as soon as possible after the exposure incident for the determination of HIV and/or HBV status. Actual core antibody and surface antigen testing of the blood or serum sample may be done at that time or later if the employee so requests. If the test is deferred, arrangements shall be made through the attending physician to properly archive the specimen.
- Follow-up of the exposed employee including antibody and antigen testing, counseling, illness reporting, and safe and effective post-exposure prophylaxis, according to standard recommendations for medical practice as defined by the occupational medicine physician.

Where applicable laws require employee consent, documented consent shall be obtained prior to testing. If an employee refuses the blood test, documentation of the refusal will be made. Documentation of the test results shall be made available to the exposed employee(s). All test results shall be kept confidential.

12.6.4 *Physician Information*

The following information shall be provided to the evaluating physician:

- Copy of 29 CFR 1910.1030 and its appendices
- Description of the affected employee's duties as they relate to the employee's occupational exposure

12.6.5 *Physician Opinion*

For each potentially exposed employee evaluation, the employee shall receive a copy of the evaluating physician's written opinion within 15 working days of the completion of the evaluation. The written opinion shall be limited to the following information:

- The physician's recommended limitations upon the employee's ability to receive the hepatitis B vaccination.
- A statement that the employee has been informed of the results of the medical evaluation and that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials, which require further evaluation or treatment.
- Specific findings or diagnoses, which are related to the employee's ability to receive the HBV vaccination. Any other findings and diagnoses shall remain confidential.

12.6.6 *Hazard Communication*

There are regulatory requirements for labels, signs, and training. The provisions and exceptions for these are contained in the subsections below.

12.6.7 *Warning Labels*

Containers used for disposal of blood-contaminated supplies and waste will be labeled in accordance with the word "biohazard." The following symbol shall be an integral part of the label:



12.6.8 *Warning Signs*

There will be no designated areas for medical treatment on project sites, because first aid is provided on an emergency basis only; therefore, warning signs are not applicable. In cases of potential exposure, observers and nonessential personnel should be verbally warned to keep a safe distance from injured personnel.

12.6.9 Employee Training Program

All employees who are first aid/CPR trained and may provide assistance shall be trained in the requirements for voluntary providers as described in Shaw SOP EI-HS512, this SHERP, and the general provisions of this procedure.

12.7 Recordkeeping

There are federal record-keeping requirements for training, medical, and incident reporting documentation. The provisions for keeping these records are contained in the subsections below.

12.7.1 Training Records

All employees covered under this exposure plan shall be trained as required. A record of the training shall be appropriately generated. The training record will contain the date of the training session(s), the contents or a summary of the training session(s), the names of persons conducting the training, and the names of all persons attending the training sessions.

The training records will be maintained by the Shaw Training Department for at least 5 years from the training date.

12.7.2 Medical Records

Medical records necessary for Shaw employees will include documentation of HBV vaccination status (as required), medical follow-ups, post-exposure testing, and a medical professional's written evaluation.

The employee medical records will be forwarded to and maintained by CORE Health Services, 12091 Bricksome Avenue, Suite B, Baton Rouge, Louisiana 70816 for inclusion in the employee's medical file. Confidentiality of all medical records shall be maintained.

Shaw maintains employee medical records for the duration of the employee's employment plus 30 years thereafter. If, for whatever reason, Shaw no longer does business and no successor exists, Shaw will notify the director of NIOSH in writing 3 months prior to the disposal of records. If so directed, the records shall be transferred to the director of NIOSH.

12.7.3 Incident Recording

An incident that occurs because of rendering emergency medical care will be recorded on the OSHA 300 log as OSHA defines work-related injuries and illnesses. All injuries involving the release of blood or bodily fluids must be immediately reported to the HSM for proper reporting and follow-up.

12.8 Plan Review and Update

This Blood-borne Pathogen Exposure Control Plan shall be reviewed and updated on an annual basis.

13.0 Logs, Reports, and Record Keeping

Proper record keeping and data management are essential in the implementation of this SHERP. The forms associated with the record keeping and data management requirements shall be completed in an accurate, timely fashion and appropriately filed. The proper completion of forms is the responsibility of the Site Supervisor, or SSHO. Completed forms will be kept and maintained by Shaw for a 5-year period. Subcontractors will also be responsible for keeping a copy of the forms pertaining to their activities.

Copies of all pertinent site safety and health forms and logs are provided in Appendix D.

13.1 Daily Safety Log

The SSHO will maintain and complete a daily log for each day's work. The daily log will document each day's safety and health activities in sufficient detail for future reference as needed.

The following items will be developed as applicable and maintained on site by the SSHO as part of the daily safety log:

- Daily safety meeting logs
- Employee/visitor sign-in logs
- Noise survey data
- Confined space entry permits
- Hot Work Permits
- Air monitoring/sampling data forms
- Project safety inspections (daily and monthly)
- Contractor safety inspections
- Hazard Communication Program audits
- Warnings given related to safety infractions
- AHAs
- JSAs
- Accident investigation reports
- First aid log
- Personnel training and medical certificates

All personnel will be required to log in and out of the Exclusion Zone. The Exclusion Zone sign-in log, maintained as part of the daily safety log, provides a project record of the following information for each shift's activities:

- Worker's name

- Work area
- Duties performed
- Level of protection
- Time in/time out

A visitor's sign-in (Site Entry Log) sheet will be maintained at the Shaw Project Support Area. Visitors requesting access to regulated areas shall have appropriate project approval, be medically qualified, and have the safety and health training prerequisites for hazardous waste site operations.

13.2 *Safety Inspections/Audits*

Shaw's accident prevention program is centered on the following key procedures:

- Investigating, reporting, and reviewing of all near misses, incidents, and accidents
- Managing reviews of all incident/accident reports, corrective action, and project safety concerns
- Reviewing of project, operations, and construction activities by safety and health professionals and supervisory personnel

Safety reviews and inspections are conducted by all tiers of the management structure and are documented. A list of all corrective action items shall be maintained showing the corrective action, responsible person, and the date the action is to be completed. Follow-up inspections are conducted by safety and health personnel to verify that corrective actions or measures have been implemented.

The Site Supervisor will inspect the site daily and identify areas of safety concerns or ideas for safety improvement. Crew leaders will also inspect site conditions and activities daily to identify changing conditions or potential hazards. Daily safety inspections shall be documented on the Daily Safety Inspection Report (Appendix D). Identified safety and occupational health deficiencies and suggested corrective measures will be brought to the attention of the Project Manager and HSM.

Safety and occupational health deficiencies shall be tracked on the Safety and Occupational Health Deficiency Tracking Log (Appendix D), which provides the following information:

- Date deficiency identified
- Description of deficiency
- Name of person responsible for correcting deficiency
- Projected resolution date
- Date actually resolved

The Site Supervisor will immediately notify the HSM of any OSHA or other regulatory agency inspections. (The inspection will not be delayed due to the Government Designated Authority being unavailable.) The Site Supervisor shall provide the HSM a copy of any citations or reports issued by the inspector and any corrective action responses to the citation(s) or report(s).

13.3 Accident Investigation and Reporting

Project personnel are required to report all near misses, injuries, illnesses, and accidents to their immediate supervisor. The Site Supervisor, or SSO, shall immediately arrange appropriate medical care as required. Once immediate medical care for the injured personnel or other critical emergency procedures has been accomplished, the Site Supervisor shall follow Appendix G. The appropriate form(s) to be completed are in Appendix D and include the following:

- Supervisor's Employee Injury/Illness Report Form
- Authorization for Release of Protected Medical Information
- Authorization for Treatment for Occupational Injury/Illness
- Vehicle Accident Report
- Equipment, Property Damage and General Liability Loss Report
- Underground Utility Hits Tip Sheet for Incident Investigations
- Incident Investigation Report
- Injured Employee Statement
- Employee Witness Statement
- Near Miss Report
- Accident Review Board

All incidents shall be immediately reported to the Project Manager and HSM.

The Site Supervisor shall immediately investigate all near misses, injuries, illnesses, and accidents. Corrective actions will be determined and implemented to prevent the recurrence of the accident, and responsibility for implementation of corrective actions will be assigned. The final report and required forms will be submitted within five days of the incident to the HSM.

In the event that an accident results in an employee being sent to a doctor, the Return-to-Work Examination Form (Appendix D) shall be completed by the attending physician, on the date of treatment stating that either:

- Employee may return to full duty work
- Employee may return to limited duty (with type of limitations)
- Employee is unable to return to work

A copy of this release shall accompany the accident report. In addition to the requirement for maintaining a log of OSHA recordable injuries/illnesses, a separate log will be maintained for all first aid treatments not otherwise recordable/reportable.

14.0 References

American Conference of Governmental Industrial Hygienists (ACGIH), 2009, *Threshold Limit Values and Biological Exposure Indices*, Cincinnati, Ohio.

Code of Federal Regulations (CFR), Title 29, Part 1910, *Safety and Health Regulations for General Industry*, U.S. Government Printing Office, Washington, D.C., <<http://www.access.gpo.gov/nara/cfr/index.html>>.

Code of Federal Regulations (CFR), Title 29, Part 1926, *Safety and Health Regulations for Construction*, U.S. Government Printing Office, Washington, D.C., <<http://www.access.gpo.gov/nara/cfr/index.html>>.

National Fire Protection Agency (NFPA) 70E, 2004, *Standard for Electrical Safety in the Workplace*, National Fire Protection Association 1, Batterymarch Park, Quincy, Massachusetts.

National Institute for Occupational Safety and Health (NIOSH), 2005, *Pocket Guide to Chemical Hazards*, Publication No.2005-149, Cincinnati, Ohio, September.

National Institute for Occupational Safety and Health, Occupational Safety and Health Administration, U.S. Coast Guard, and U.S. Environmental Protection Agency (NIOSH et al.), 1985, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH Publication No. 85-115, Cincinnati, Ohio, October.

Science Applications International Corporation (SAIC), 2001, *Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant*, Final, Ravenna, Ohio, March.

Shaw Environmental & Infrastructure, Inc. (Shaw), 2009, *Health and Safety Policies and Procedures Manual*, March <<http://shawnet3.shawgrp.com/sites/handspps/default.aspx>>.

U.S. Army Corps of Engineers (USACE), 2003, *Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities*, ER 385-1-92, Washington, D.C., July 1.

USACE, 2004, *Munitions and Explosives of Concern (MEC) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities*, EP 75-1-2, Washington, D.C., August 1.

USACE, 2004, *Basic Safety Concepts and Considerations for Munitions and Explosives of Concern (MEC) Response Action Operations*, EM 385-1-95a, Washington, D.C., August 27.

USACE, 2008, *Safety and Health Requirements Manual*, EM 385-1-1, Washington, D.C., September 15.

U.S. Army Corps of Engineers (USACE), 2008, *Safety and Health Requirements Manual*, EM 385-1-1, Washington, D.C., September 15.

U.S. Department of Defense Explosives Safety Board (DDESB), 2004, *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*, DDESB TP 18, Alexandria, VA, December 20.

FIGURES

**Figure 1
Site Location Map**

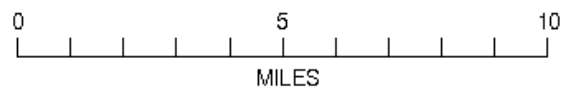


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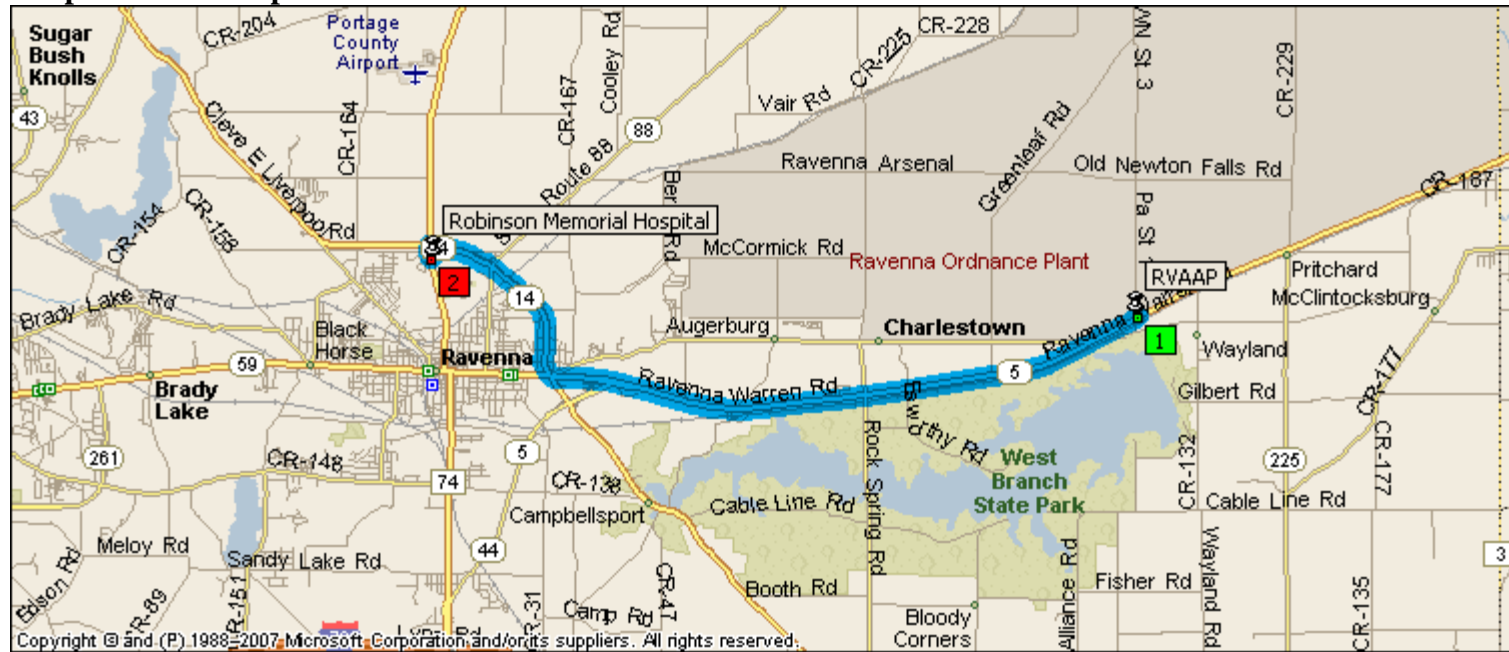
Notes:

Arrow next to map denotes North.

Scale:

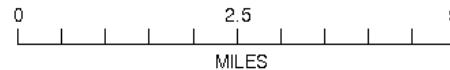


**Figure 2
Hospital Route Map**



Notes:

Arrow next to map denotes North.



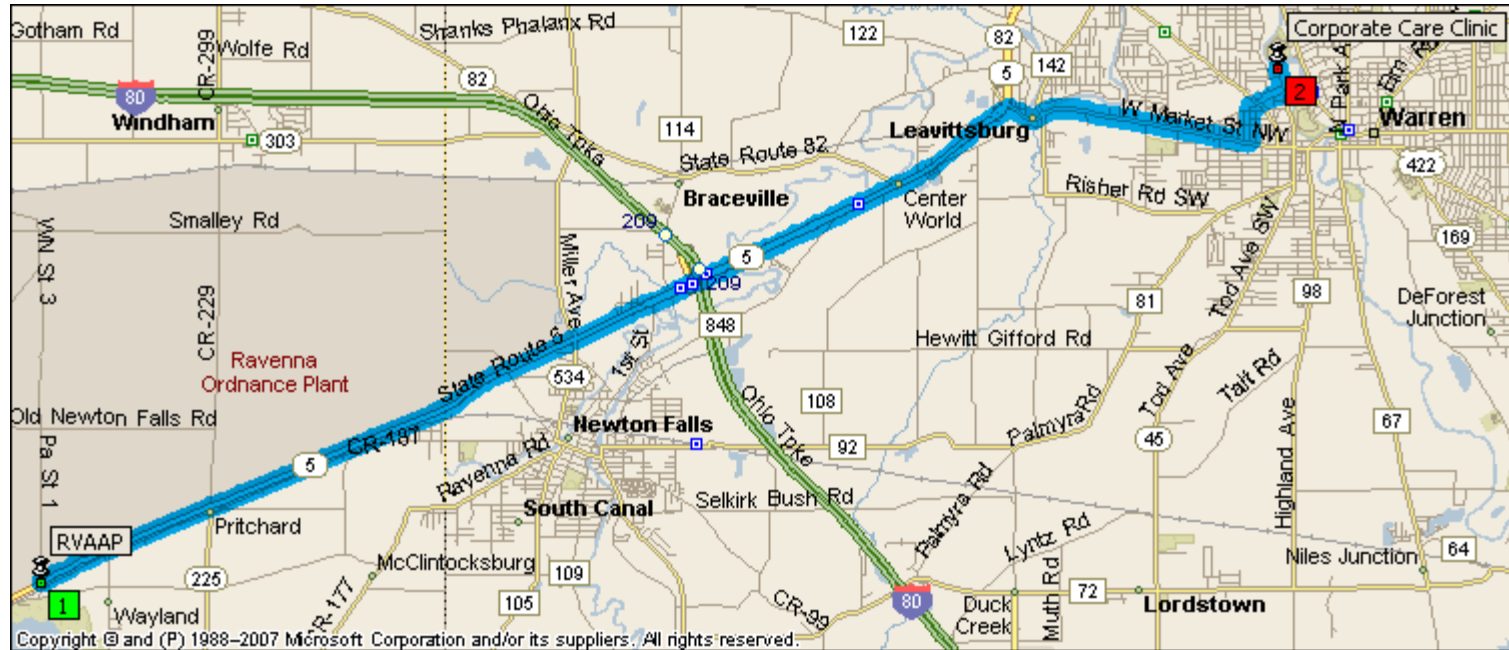
Robinson Memorial Hospital

6847 North Chestnut Street
Ravenna, Ohio
Telephone: (330) 297-2449

Robinson Memorial Hospital can be reached by taking Highway 5 West approximately 6 miles, Highway 59 for 1 mile, then right onto Highway 14 and 44 for 2 miles, then left onto North Chestnut Street.

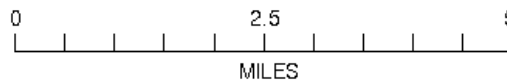
Driving distance: 9.6 miles
Trip duration: 14 minutes

**Figure 3
Medical Clinic Route Map**



Notes:

Arrow next to map denotes North.



Corporate Care
1296 Tod Place NW #200
Warren, Ohio 44485
Telephone: 330-306-5030

Driving distance: 15.2 miles
Trip duration: 23 minutes

Corporate Care Clinic can be reached by taking Highway 5 East approximately 11.4 miles to West Market Street. Bear right on West Market Street for 2.5 miles, then left (north) onto Ohio Avenue NW for 0.4 miles (road name changes to Summit Street NW for another 0.4 miles), then left (north) onto Tod Avenue NW for 0.2 miles, then straight onto Tod Place NW.

TABLES

Table 1
Maximum Detected Concentration of Contaminants

Analyte	Sand Creek Disposal Road Landfill Soil (mg/kg)	Sand Creek Disposal Road Landfill Sediment (mg/kg)	Open Demolition Area 1 Soil (mg/kg)
Aluminum	17,000	14,000	252,000
Antimony	25	0.086	9.2
Arsenic	100	15	29.3
Barium	1,600	62	252
Beryllium	1.2	0.67	1
Cadmium	40	0.39	25.9
Calcium	38,000	3,300	17,100
Chromium	230	19	249
Cobalt	26	13	40.8
Copper	470	26	74,200
Iron	44,000	30,000	35,900
Lead	1,600	40	2,370
Magnesium	5,100	4,800	5,430
Manganese	4,800	960	947
Mercury	130	0.66	31.9
Nickel	110	29	156
Potassium	2,400	2,300	2,720
Selenium	3.2	0.57	1.3
Silver	630	40	0.48
Sodium	550	170	1,030
Thallium	0.58	0.36	78.8
Vanadium	25	21	27.3
Zinc	620	170	32,100
Acetone	ND	0.011	ND
Chloroethane	0.091	ND	ND
Toluene	ND	ND	0.18
Nitrobenzene	ND	ND	0.18
1,3,5-Trinitrobenzene	ND	ND	6.6

Table 1 (Continued)
Maximum Detected Concentration of Contaminants

Analyte	Sand Creek Disposal Road Landfill Soil (mg/kg)	Sand Creek Disposal Road Landfill Sediment (mg/kg)	Open Demolition Area 1 Soil (mg/kg)
2,4,6-Trinitrotoluene	0.0051	ND	ND
2,4-Dinitrotoluene	0.0037	ND	ND
2,6-Dinitrotoluene	0.170	0.110	ND
Nitrocellulose	5	0.98	1.0
Nitroguanidine	ND	0.5	ND
HMX (Cyclotetramethylenetetranitramine)	ND	ND	2.6
Phenanthrene	0.089	ND	ND
Fluoranthene	0.52	ND	ND
Pyrene	0.53	ND	ND
Benzo(a)anthracene	0.31	ND	ND
Chrysene	0.29	ND	ND
Bis(2-ethylhexyl)phthalate	0.09	ND	ND
Benzo(b)fluoranthene	0.3	ND	ND
Benzo(k)fluoranthene	0.33	ND	ND
Benzo(a)pyrene	0.29	ND	ND
Indeno(1,2,3-cd)pyrene	0.13	ND	ND
Dibenz(a,h)anthracene	0.69	ND	ND
Benzo(g,h,i)perylene	0.13	ND	ND

Note(s):
 No chemicals of concern have been identified for the Mustard Agent Burial Site
 mg/kg = milligram(s) per kilogram
 blank space indicates that no data were available.
 ND = not detected.

REFERENCES:
 Final Data Quality Objectives Report for the RVAAP-34 Sand Creek Disposal Road landfill, Shaw Environmental & Infrastructure, July 2009.
 Draft Data Quality Objectives Report for the RVAAP-03 Open Demolition Area #1, Shaw Environmental & Infrastructure, August 2009.

Table 2
Minimum Clearance from Energized Overhead Electric Lines

Nominal System Voltage	Minimum Required Clearance
0 to 50 kilovolts	3 meters (10 feet)
51 to 200 kilovolts	4.5 meters (15 feet)
201 to 300 kilovolts	6 meters (20 feet)
301 to 500 kilovolts	7.5 meters (25 feet)
501 to 750 kilovolts	10.5 meters (35 feet)
751 to 1,000 kilovolts	13.5 meters (45 feet)

REFERENCE:

Table 11-1, Minimum Clearance from Energized Overhead Electric Lines, U.S. Army Corps of Engineers (USACE), 2008, *Safety and Health Requirements Manual*, EM 385-1-1, Washington, D.C., September 15.

Table 3
Task Protection Levels

Task	Initial PPE Level	Upgrade PPE Level	Skin Protection	Respiratory Protection	Other PPE
Mobilization and general site activities	Level D	Level D – Modified	Generally none: some activities may require Tyvek® coveralls to prevent insect bites / contact with poisonous plants	Initial - None	Hearing protection >85 dBA, leather work-gloves.
Collect surface soil and sediment samples	Level D – Modified	NA	See Section 5.1.4.	Initial - None	Hearing protection >85 dBA.
Collect subsurface soil samples	Level D – Modified	NA	See Section 5.1.4.	Initial - None	Hearing protection >85 dBA, leather work-gloves.
Geophysical investigating	Level D – Modified	NA	Disposable boot covers if walking in areas with potential contamination; some activities may require Tyvek® coveralls to prevent insect bites / contact with poisonous plants	Initial - None	Hearing protection >85 dBA.
Equipment decontamination	Level D – Modified	NA	See Section 5.1.4.	Initial - None	Hearing protection >85 dBA, face-shield, shin/metatarsal protection.

Note(s):
dBA = decibels, A-scale.
NA = not applicable.
PPE = personal protective equipment.

Table 4
Direct Reading Air Monitoring Requirements

Monitoring Device / Contaminant	Monitoring Location / Personnel	Monitoring Frequency	Action Level	Action
Combustible Gas Indicator/Oxygen Meter (Lower Explosive Limit [LEL]/ oxygen [O ₂])	In the work area and breathing zone of personnel during subsurface sampling activities.	A minimum of twice per hour (LEL) at each well installation location when free-phase LNAPL is expected or observed until activity at that location has been completed.	<10% LEL 20 - 22% O ₂	Continue work with caution.
	In the work area prior to hot work activities. In the confined space prior to entry. In the work area during fuel spill clean-up activities.	A minimum of once per sampling event (LEL) at each sampling location when free-phase LNAPL is expected or observed (groundwater and subsurface soil/sediment). At any time in any work location where personnel observe odors. Prior to issuing a hot work permit or confined space entry permit. Continuous during fuel spill clean-up activities. At the discretion of the SSHO.	>10% LEL <20% O ₂ or >22% O ₂	Stop work, evacuate area, and contact HSM.
Carbon Monoxide (CO)	In the work area near the breathing zone of personnel.	A minimum of once per hour when internal combustion engines are being operated in poorly ventilated areas. At the discretion of the SSHO.	<15 ppm CO	Continue work with caution.
			>15 ppm CO	Stop work, evacuate area, and contact HSM.
Hydrogen Sulfide (H ₂ S)	In the work area and breathing zone of personnel during subsurface sampling activities in or near the Sand Creek Disposal Road Landfill.	Continuous at each subsurface soil sampling location within 500 feet of a landfill until activity at that location has been completed. At any time in any work locations where personnel observe rotten egg odors. At the discretion of the SSHO.	<5 ppm H ₂ S	Continue work with caution.
			>5 ppm H ₂ S	Stop work, evacuate area, and contact HSM.

Table 4 (Continued)
Direct Reading Air Monitoring Requirements

Monitoring Device / Contaminant	Monitoring Location / Personnel	Monitoring Frequency	Action Level	Action
Photoionization Detector (volatile organic compounds)	In the breathing zone of personnel during subsurface soil sampling. In the breathing zone of personnel during fuel spill clean-up activities.	A minimum of once per sampling event at each subsurface sampling location. Continuous during fuel spill clean-up activities. At any time in any work location where personnel observe odors. At the discretion of the SSHO.	> 10 ppm but < 50 ppm above background, sustained for one minute in the breathing zone	Stop work, evacuate area, and contact HSM.
			> 50 ppm above background, sustained for five seconds in the breathing zone	Stop work, evacuate area, and contact HSM.

Note(s):
HSM = Health and Safety Manager.
mg/m³ = milligram(s) per cubic meter.
PPE = personal protective equipment.
ppm = part(s) per million.
SSHO = Site Safety and Health Officer.

**Table 5
Emergency Telephone Numbers**

Name/Organization	Telephone Numbers
*Emergency – Post 1	Post 1 by dialing 330-358-2017 or 911
Ambulance	Post 1 by dialing 330- 358-2017 or 911
Fire	Post 1 by dialing 330- 358-2017 or 911 217-892-8401 (non-emergency)
Police	Post 1 by dialing 330- 358-2017 or 911 217-892-2103 (non-emergency)
Robinson Memorial Hospital 6847 N. Chestnut Street Ravenna, Ohio	330- 297-2449
Corporate Care 1296 Tod Place NW #200 Warren, Ohio 44485	330- 306-5030
Ohio EPA Spill Response	800-282-9378
Nat Peters (USACE Contracting Officer Representative)	502-315-6333 (office)
Derek Kinder (USACE Project Manager)	502-315-6393 (office)
Eileen Mohr (Ohio EPA Facility Coordinator)	330-963-1221 (office)
Dave Cobb (Shaw Project Manager)	617-589-5561 (office) 508-667-3608 (cellular)
David Crispo, PE (Shaw Technical/Regulatory Lead)	617-589-8146 (office) 617-834-5230 (cellular)
James Joice, CIH, CSP, CHMM (Shaw HSM)	419-424-4960 (office) 419-306-3637 (cellular)
Shaw Help Desk / Hot Line	866-299-3445
Core (Medical – Injuries and Illnesses)	877-347-7429
National Poison Control Center	800-222-1222 or 216-231-4455

Note(s):

*** In the event of an emergency notify Post 1 as the first course of action**

CIH = Certified Industrial Hygienist.

CSP = Certified Safety Professional.

CHMM = Certified Hazardous Materials Manager.

EPA = Environmental Protection Agency.

HSM = Health and Safety Manager.

PE = Professional Engineer.

Shaw = Shaw Environmental, Inc.

USACE = US Army Corps of Engineers.

APPENDIX A
SAFETY, HEALTH, AND EMERGENCY RESPONSE PLAN
ACKNOWLEDGEMENT

APPENDIX B
SAFETY, HEALTH, AND EMERGENCY RESPONSE PLAN
AMENDMENTS AND ADDENDA

(Reserved for Future Changes)



SHERP Addendum 2009-01

Geophysical Prove Out and Vegetation Clearing

Addendum Number: 2009-01

Date Effective: October 19, 2009

Addendum Summary

This *Safety, Health and Emergency Response Plan (SHERP) Addendum* is applicable to the following activities:

- MEC Avoidance at RVAAP-03 Open Demolition Area #1 (ODA1), RVAAP-28 Mustard Agent Burial Site (MABS) and RVAAP-34 Sand Creek Disposal Road Landfill (Sand Creek)
- Geophysical prove out at Load Line #7 to support geophysical investigation activities at ODA1, MABS and Sand Creek
- Vegetation Clearing at ODA1, MABS and Sand Creek

The specific requirements of this *Addendum* and the general requirements of the *Safety, Health, and Emergency Response Plan for Environmental Services at RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site* are mandatory for all personnel performing the aforementioned activities.

Reviewed / Approved by:

Handwritten signature of David Cobb in black ink.

David Cobb
Project/Program Manager

Date: 10/6/2009

Prepared by:

Handwritten signature of David Crispo in black ink.

David Crispo, P.E.
Technical/Regulatory Lead

Date: 10/6/2009

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Acronyms and Abbreviations

ACM	asbestos-containing material
AHA	Activity Hazard Analysis
AOC	Area of Concern
C&D	construction & demolition
CAIS	Chemical Agent Identification Set
COC	Chemical of Concern
DDESB	Department of Defense Explosives Safety Board
DGM	Digital Geophysical Mapping
GPO	Geophysical Prove Out
MABS	Mustard Agent Burial Site
MEC	Munitions and Explosives of Concern
MSDS	Material Safety Data Sheet
NACA	National Advisory Committee for Aeronautics
OB	open burning
OD	open detonation
ODA 1	Open Demolition Area #1
OHARNG	Ohio Army National Guard
PPE	Personal Protective Equipment
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
Shaw	Shaw Environmental & Infrastructure, Inc.
SHERP	Safety, Health and Emergency Response Plan
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
UXO	Unexploded Ordnance

1.0 Introduction

All work activities in this *Safety, Health, and Emergency Response Plan (SHERP) Addendum 2009-01*; hereafter referred to as ‘*Addendum*’, will be performed using safe work practices as detailed in the *Safety, Health, and Emergency Response Plan for Environmental Services at RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site* (Shaw, 2009b), prepared by Shaw Environmental & Infrastructure, Inc. (Shaw). The *SHERP* and this *Addendum* were prepared in accordance with the *Final Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant (SAIC, 2001)* and the U.S. Army Corps of Engineers *Safety and Health Requirements Manual, EM 385-1-1* (USACE, 2008). Shaw’s *SHERP* presents the requirements applicable to general site activities and expected hazards and safety issues. This *Addendum* presents the requirements applicable to the field activities specifically associated with conducting a geophysical prove out (GPO) at Load Line #7 to support geophysical investigation activities at RVAAP-34 Sand Creek Disposal Road Landfill (Sand Creek), RVAAP-03 Open Demolition Area #1 (ODA1) and RVAAP-29 Mustard Agent Burial Site (MABS) and vegetation clearing at the three areas of concern (AOCs). Munitions and Explosives of Concern (MEC) avoidance activities will be conducted at the GPO area and all three AOCs for the duration of activities.

2.0 Personnel Qualifications and Responsibilities

Personnel performing MEC avoidance work shall meet the applicable minimum qualification standards for unexploded ordnance (UXO) Technicians as defined in Department of Defense Explosives Safety Board (DDESB) technical pamphlet TP-18. For this project, MEC avoidance will be performed by a UXO Technician III or above. Further discussion regarding MEC avoidance activities during the GPO and vegetation clearing activities is presented in Section 4.1 of this *Addendum*.

3.0 AOC Backgrounds

3.1 Sand Creek Disposal Road Landfill

The Sand Creek Disposal Road Landfill is a former open dump area at the RVAAP. Construction and demolition (C&D) type material were delivered to the site and dumped over an embankment located immediately adjacent to Sand Creek. The dump site extended along the embankment for approximately 1200 feet and varied in width from 20 to 40 feet from the top of the bank to the bottom. The bank slopes from east to west towards Sand Creek at 40 to 60

degrees from the horizontal. There are no records indicating the quantities or materials dumped at the site and the dates of operation for the landfill are unknown. Several buildings associated with the former Sand Creek Sewage Treatment Plant are located northeast of the site. Surface water runoff follows the topography of the site and flows in a westerly direction where it enters Sand Creek. A very narrow floodplain occupies the land between the bottom of the embankment and Sand Creek. An inactive railroad bed bisects the AOC.

Preliminary site assessments found the site very overgrown with mature trees and ground level vegetation. The entire site was littered with C&D materials with large piles of debris concentrated mostly in the southern portion of the site. Some of the types of C&D materials identified during the preliminary site assessment included:

- Asbestos Containing Material (ACM) (i.e., large piles of corrugated transite roofing and flat transite siding)
- Rubble (i.e., concrete, brick and masonry fragments)
- Drywall and plaster
- Glass bottles, fluorescent light tubes, and broken glass
- Scrap metal items including wire fencing
- Wooden debris

Recent walkovers at the site have revealed that the corrugated iron culvert beneath the former railroad bed that crossed over Sand Creek has collapsed. The culvert and associated railroad ballast are now lying in Sand Creek adjacent to the site.

3.2 *Open Demolition Area #1*

ODA1 lies immediately south of the National Advisory Committee for Aeronautics (NACA) crash strip opposite the access road. Prominent features of ODA 1, as derived from aerial photos of the site circa 1940s and 1950s, depict an oval open burning (OB) open detonation (OD) area surrounded by an earthen berm that is approximately 7.6-meters (25-feet) wide at the top. The top of the berm appears to have been an extension of Demolition Road. Following, and possibly concurrent with, its use as a demolition area, the area outside of the berm (plane storage area) was used to stage aircraft used during NACA operations (1947–1953).

Fragments, fuzes, booster cups, and other debris are visible on the bare soil surface outside the berm. The occurrence of these materials on the ground surface outside the thermal demolition area suggests that kickouts and shrapnel were generated during thermal destruction of ammunition or that small areas within the plane storage area were also used for periodic thermal treatment of munitions. In addition, environmental investigations have indicated that, when they

became congested with debris, burning areas were cleared using heaving equipment by pushing the debris to the periphery of the area.

The site currently is covered with grass and is mowed periodically. Topographic relief across the site varies by only a few feet. Surface water drainage is primarily to the south. A small culvert beneath the south end of the berm drains the former OB/OD area and discharges to a shallow ditch flowing south until dissipating into a wooded area about 46 meters (150 feet) south of the AOC. A low area immediately east of the AOC also collects runoff during rainfall events.

Areas within NACA adjoining RVAAP-03 have been used since 1969 for dismounted troop training, bivouac (temporary encampment), and vehicle parking by the Ohio Army National Guard (OHARNG). The following restrictions apply to training activities at the former NACA test area: (1) parking and vehicle traffic is limited to the former NACA crash strip and established trails, (2) digging of soil is prohibited, (3) disposal of trash is prohibited other than in designated above-ground receptacles, and (4) disposal of gray water is prohibited.

3.3 Mustard Agent Burial Site

The MABS is a location where Chemical Agent Identification Sets (CAIS), believed to consist of sulfur mustard agent, are suspected to have been buried. The CAIS mustard agent was developed by the Department of the Army from the 1930s through the 1960s. The mustard agent was reportedly buried at RVAAP in the 1950's. The depth at which the CAIS may have been buried is not known. Of the various types of CAIS glass containers that have been identified as potentially containing mustard agent, all are believed to have been packed in metal, either metal paint/coffee-type cans, 55-gallon drums, or steel shipping cylinders called PIGs.

In 1969, the U.S. Army excavated a possible mustard agent burial site west of the NACA Test Area. One 50-gallon drum and seven small rusted cans were discovered. All recovered items were empty and no contamination was discovered according to reports (USACHPPM 1996). An unidentified and undocumented source reported that the first site excavated was incorrectly identified, and that the mustard agent was buried nearby (USACHPPM, 1996). The second proposed site for the mustard agent burial is located in the wooded area approximately 500 feet south of Hinckley Creek along an abandoned power line right-of-way. The suspected site was marked and fenced; however, only remnants of the fence still exist. The area is currently marked with Seibert stakes. A third area was identified by a former employee to be adjacent to the concrete pad at the west end of the NACA crash strip. This location is near the 1969 excavation area and is non-forested and flat.

4.0 *Scope of Work*

The objective of the scope of work covered by this *Addendum* is to safely conduct a GPO and perform vegetation clearing to support geophysical investigation activities at the Sand Creek, ODA1 and MABS AOCs. The following activity hazard analyses (AHA) have been generated and are, or may be applicable, for these activities:

- AHA 1.0, Field Mobilization
- AHA 2.0, Vehicle Operations
- AHA 3.0, Geophysical Survey Operations
- AHA 6.0, Fueling Operations
- AHA 8.0, Vegetation Removal
- AHA 9.0, MEC Avoidance

The AHAs are provided in Appendix C of the *Addendum to the Facility-Wide Safety and Health Plan* (Shaw, 2009b).

4.1 *MEC Avoidance Activities*

All work in this *Addendum* shall utilize the appropriate MEC avoidance procedures as presented in Section 4.1.5 of the *SHERP* (Shaw, 2009b). Shaw will provide a UXO Technician III or higher for performing initial ground clearance of potential MEC with a Schonstedt Model GA-52Cx magnetometer at the three AOCs and the GPO plot prior to performing any vegetation removal and intrusive GPO activities. In accordance with Section 11.7 of the *SHERP* (Shaw, 2009b), if MEC is encountered, the UXO Technician will immediately stop work, document the location of the MEC, evacuate the work area and immediately notify the Installation/Army. The MEC shall not be probed, touched, or handled by unauthorized personnel under any circumstance. The UXO Technician will remain on-site for the duration of all activities to implement the MEC avoidance procedures in the event that unanticipated MEC is encountered.

4.2 *Geophysical Prove Out Activities*

The GPO plot was assigned by the RVAAP Facility Manager and consists of an approximately one-acre area at the southern end of Load Line #7. The GPO plot was selected based on site access, representativeness to the digital geophysical mapping (DGM) survey area, site conditions, access to survey control and avoidance of obvious MEC issues and known contamination.

Once the ground surface of the plot area is cleared by the UXO Technician, Shaw will mow overgrown grass and shrubs to a maximum height of 12 inches above the ground surface. Shaw will then conduct a pre-seed survey using geophysical instruments to identify existing anomalies,

if any. Once the subsurface of the plot area is cleared, Shaw will then proceed with burying the seed items to a maximum depth between 6 to 7 feet below ground surface. Additional details regarding the GPO activities, including excavation and placement of seed items are presented in the *Final Geophysical Investigation Plan for RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site* (Shaw, 2009a).

4.3 *Vegetation Clearing and Removal Activities*

The vegetation at Sand Creek is thickly wooded with considerable canopy. Both ODA1 and the MABS sites are open with vegetation coverage consisting of primarily grass; however, dense shrubbery on the perimeter boundaries of these AOCs will require clearing. Depending on the time of year, more extensive vegetation removal, to include small trees, scrub brush and hanging vegetation may be required to allow for the performance of the geophysical survey and sampling activities. Clearing activities at each of the AOCs will be minimized to the extent possible to allow for the execution of work which will include full DGM coverage at all three AOCs with the exception of transect mapping in the wooded areas of ODA1.

The objective of this task is to provide adequate clearance so personnel and equipment can safely access the designated geophysical locations. Shaw will work around the larger trees and other obstructions; however, the vegetation requiring removal consists of trees and vegetation less than 2-3 inches in diameter, tree limbs less than six feet from the ground and areas of overgrown vegetation higher than two feet. Ground disturbance is not expected as part of the proposed activities except for the foot traffic associated with performing the clearing work; however, to mitigate any potential impact to Sand Creek, Shaw proposes to install silt fence along the base of the slope. Shaw will use brush cutters for most of the vegetation clearing activities and chain saws for any larger tree limb removal. Shaw will only clear vegetation that impedes or interferes with the safe and effective implementation of the project. All cleared vegetation at each of the AOCs will be collected and consolidated at each site at locations designated by OHARNG/Camp Ravenna.

5.0 *Chemical Hazards*

Chemicals of concern (COCs) consisting of inorganics, organics and explosive compounds have been identified in soil at ODA1 and in soil and sediment at Sand Creek. No COCs have been identified in environmental media at MABS. The COCs and maximum concentrations at each of the AOCs are provided in Table 1 in the *SHERP* (Shaw, 2009b). In addition to COCs, asbestos has been identified as a potential hazard associated with past dumping activities at Sand Creek; however, no concentrations have been detected in soil or sediment during the most recent

sampling activities at the AOC. A description of each of the chemical hazards is identified Section 4.0 of the *SHERP* (Shaw, 2009b).

Various operational chemicals may be used to complete the scope of work covered under this *Addendum*. These operational chemicals may include, but are not limited to fuels, lubricants, and paint. Personnel shall review the Material Safety Data Sheets (MSDS) for these chemicals on a frequent basis and follow the recommended precautionary guidelines. Proper ventilation, minimizing dust generation, and personal protective equipment (PPE) shall be used when working with operational chemicals.

The tasks the various operational chemicals identified above will be used and the special precautions/guidelines for each of these chemicals/tasks are as follows:

- Fuels, such as gasoline and diesel fuel will be used to power equipment such as a backhoe and brush clearing equipment. All ignition sources shall be controlled in areas where fuels are used or stored. Fire extinguishers shall be available as specified in the *SHERP* (Shaw, 2009b). Personnel shall avoid skin and eye contact by wearing gloves and safety glasses when handling fuels. Personnel shall only handle fuels in well-ventilated areas. AHA 6.0, Fueling Operations shall be followed for all fueling activities.
- Lubricants, such as grease may be used at the project site for maintaining the backhoe or other excavating equipment to be used for the GPO. Personnel shall avoid skin and eye contact by wearing gloves and safety glasses when using grease. As grease is a slippery compound, all spills of grease shall be immediately cleaned-up.

6.0 Physical Hazards and Hazard Controls

There are numerous physical hazards associated with the work. These hazards include noise and hearing conservation; slips, trips and falls; use of small tools; working around heavy and mechanized equipment; operation of motor vehicles; material handling; excavation; working over or near water; poisonous plants; and insects. There are no known unique or special physical hazards, which are not addressed in the *SHERP* (Shaw, 2009b) or the AHAs. The specified hazard control measures outlined in the *SHERP* (Shaw, 2009b) and the AHAs shall be followed. Equipment operations and maintenance manuals shall be consulted for additional guidance when appropriate.

7.0 *Personal Protective Equipment*

At a minimum, all work activities in this *Addendum* shall be performed in Level D PPE, as specified in Section 5.0 of the *SHERP* (Shaw, 2009b). Level D – Modified PPE will be used during specified field activities as discussed below.

7.1 *Level D Personal Protective Equipment*

As previously discussed, at a minimum, Level D PPE shall be used for all activities discussed in this *Addendum* unless Level D – Modified PPE is otherwise specified. Level D PPE consists of:

- Work clothing as prescribed by weather
- Safety glasses with side shields meeting ANSI Z87.1 specifications
- Hard hat meeting ANSI Z87.1 specifications
- Safety-toed work boots meeting ANSI Z41 specifications
- Hearing protection (when operating equipment, using power tools, or when working in the vicinity of operating equipment or power tools, including generators and/or air compressors)
- Leather gloves (as necessary).

7.2 *Level D – Modified Personal Protective Equipment*

Level D – Modified PPE shall be worn by personnel when performing vegetation clearing and removal activities that will consist of:

- Work clothing as prescribed by weather.
- Safety glasses with side shields meeting ANSI Z87.1 specifications
- Face shield (when working with chain saws or other potentially harmful brush cutting equipment)
- Leg protection (when working with chain saws or other potentially harmful brush cutting equipment)
- Hard hat meeting ANSI Z89.1 specifications.
- Safety-toed work boots meeting ANSI Z41 specifications.
- Tychem[®] QC coveralls with hoods, elastic wrists, and ankles (if contact with contaminated sediments or wet soil is possible)
- Chemical resistant boot covers and/or outer boots (PVC/latex neoprene when there is potential for shoe/boot contact with contaminated soil and/or sediments)
- Hearing protection (when operating direct-push rigs, using power tools, or when working in the vicinity of operating equipment or power tools, including generators)
- High visibility vests (when working near mobile equipment or vehicular traffic)
- Leather work gloves.

Level D – Modified PPE will be worn by the UXO Technician when performing MEC avoidance that shall consist of:

- Safety glasses with side shields
- Hard hats, when an overhead hazard exists. If a hard hat is worn, the hard hat should be securely attached to the wearer
- Non-steel-toed safety boots, meeting ASTM F2413-05 specifications
- Inner or outer garments having static electricity-generating characteristics are prohibited.

8.0 Monitoring Requirements

There are no monitoring requirements specified during this scope of work.

9.0 References

Science Applications International Corporation (SAIC), 2001a, *Final Facility-Wide Sampling and Analysis Plan for Environmental Investigations at the Ravenna Army Ammunition Plant*, Ravenna, Ohio, March.

SAIC, 2001b. *Final Facility-Wide Safety and Health Plan for Environmental Investigations at the Ravenna Army Ammunition Plant*, Ravenna, Ohio, March.

Shaw Environmental & Infrastructure, Inc. (Shaw), 2009a. *Final Geophysical Investigation Plan for RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site*, July 16.

Shaw, 2009b. *Safety, Health, and Emergency Response Plan for Environmental Services at RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site*, September.

U.S. Army Corps of Engineers (USACE), 2004, *Munitions and Explosives of Concern (MEC) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities*, EP 75-1-2, Washington, D.C., August 1.

USACE, 2004, *Basic Safety Concepts and Considerations for Munitions and Explosives of Concern (MEC) Response Action Operations*, EM 385-1-95a, Washington, D.C., August 27.

USACE, 2008, *Safety and Health Requirements Manual*, EM 385-1-1, Washington, D.C., September 15.

U.S. Department of Defense Explosives Safety Board (DDESB), 2004, *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*, DDESB TP 18, Alexandria, VA, December 20.

APPENDIX C
ACTIVITY HAZARD ANALYSES

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 1.0 – Mobilization				Risk Assessment Code (RAC):	L
Date Prepared (mm-dd-yyyy):	09-02-2009					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

Recommended Protective Clothing & Equipment: Level D: hard hat, safety glasses, safety-toed boots, work gloves Equipment: ground fault circuit interrupters, extension cords, temporary lights, hand tools, fire extinguishers, emergency eyewash, personal fall protection equipment,		E= Extremely High Risk	Probability				
		H = High Risk					
		M = Moderate Risk					
		L = Low Risk	Frequent	Likely	Occasional	Seldom	Unlikely
	Severity	Catastrophic					
Severity	Critical						
Severity	Marginal				X		
Severity	Negligible						

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Travel at project site.	Vehicle Operation.	See AHA 2.0.	18.A
Arrival of new personnel at site.	Untrained personnel.	All personnel working on hazardous, toxic, and radioactive waste (HTRW) shall submit HAZWOPER training certificates (40-hour, 8-hour (if applicable), and supervisor (if applicable) to a Site Safety and Health Officer (SSHO). All personnel shall attend a site safety orientation. Other training certifications shall also be made available on site. All applicable training certifications must be submitted to the RVAAP Installation Manager prior to day of arrival at the facility.	01.B.03 01.E.01 28
	Medical qualifications.	All personnel working on HTRW shall submit current physician's certificate stating that employee is participating in an appropriate medical surveillance program meeting 29 Code of Federal Regulation (CFR) 1910.120. All applicable medical certifications must be submitted to the RVAAP Installation Manager prior to day of arrival at the facility.	01.C.01
	Allergies.	All personnel should complete the Known Allergies Questionnaire (voluntary only).	01.C.01

Activity Hazard Analysis (AHA)

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Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Arrival of new personnel at site (continued).	Unfamiliarity with: site, general (chemical, physical, environmental) site hazards, project safety rules and hazard control procedures, chain of command, and emergency procedures.	All personnel shall attend the site orientation training. The site orientation shall include a review of the phone locations, evacuation routes, and any special requests from the manager of the facility. After personnel are trained in the contents of the Safety, Health, and Emergency Response Plan (SHERP), SHERP Addenda, and they shall sign the SHERP Acknowledgment Form. Personnel who may participate in intrusive activities shall attend Munitions and Explosives of Concern Awareness Training. All pertinent AHAs shall be reviewed with personnel (as applicable). Post all hazard warning signs, emergency maps, and emergency phone numbers.	01.B.03 01.E.01 28 03.A.01.b
Unload equipment/prepare site.	Failure to properly plan daily activities. Heavy lifting, strains, and sprains.	A Job Safety Analysis, as required by Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, "Job Safety Analysis (JSA)," shall be prepared by the crew prior to commencing daily activities. The JSA may be used as a component of the morning Tailgate Safety Meeting. The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change. Personnel shall implement Hazard Assessment Resolution Program. No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit.	14.A.01

Activity Hazard Analysis (AHA)

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Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Unload equipment/prepare site (continued).	Use of mechanical equipment.	<p>Only qualified personnel shall be permitted to operate equipment. Mechanical equipment shall be inspected daily. Deficiencies in equipment shall be noted on the inspection form. Equipment found to be unsafe shall not be used.</p> <p>All equipment shall be operated at safe speeds and in a safe manner. Equipment operators shall wear safety belts and hearing protection.</p> <p>Ground personnel shall not position themselves between equipment and stationary objects. Personnel are only permitted to approach equipment after a signal from the operator.</p>	18.G
Rigging Competent Person:	Use of hydraulic equipment with rigging.	Follow EM 385-1-1 requirements if using hydraulic excavators, wheel loaders, track loaders and backhoe/loaders transport or hoist loads with rigging.	16.S
	Use of rigging.	Rigging shall be inspected before each use. Deficiencies shall be noted on the inspection form. Rigging found to be unsafe shall not be used, tagged, and taken out of service.	15
	Overhead.	Vehicle drivers and equipment operators must be aware of overhead hazards and maintain safe clearances - use spotters when necessary. Post hazard warning signs. De-energize lines as necessary. Provide insulation as necessary.	08.B.04 11.F
	Slips, trips, and falls.	Work areas clear shall be kept organized during site set-up. Housekeeping shall be maintained. Personnel shall not jump from equipment or elevated surfaces.	14.C.01 -10

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 1.0 – Mobilization			Risk Assessment Code (RAC):	L
Date Prepared (mm-dd-yyyy):	09-02-2009				
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Prepare site.	Hand injuries.	Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.	05.A.08
	Electrical.	Ground-fault circuit interrupters shall be used on all power tools and extension cords. Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas. Keep extension cords off of roads.	11.A
	Fire.	Fire extinguishers shall be placed in work areas. The SSHO shall establish smoking areas in compliance with the facility policy. Engines shall be shut off before refueling. A 40-B:C fire extinguisher shall be available at refueling areas. Smoking shall not be permitted near fueling areas. Use caution with vehicle exhaust systems in grassy areas.	09.E.01 09.A.06
	Chemical hazards.	The Exclusion Zones and Contamination Reduction Zones shall be set-up and appropriately marked with signage. The Emergency Eyewash station shall be inspected, cleaned, filled, and then placed in service. Notify all personnel of the emergency eyewash station location.	28 06.B.02.b 06.B.01.b

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Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Prepare site (continued).	Insect bites and stings.	Review injury and illness potential with workers. Inspect work areas for bee nests and activity prior to commencing work in that area. Wear PPE, such as disposable coveralls, to keep insects away from the skin. Use protective insect repellents containing N,N-Diethyl-m-toluamide (DEET) to prevent insect bites, unless individual allergies and sensitivities prevent its use. Check limbs/body for insects/ insect bites upon removing PPE and again during showering. Consider applying Permethrin (Repel Permanone or equivalent) preparations to clothing to repel ticks, chiggers, mosquitoes, and/or spiders. Immediately notify supervisor or safety officer of insect bites, stings, irritations, or flu-like symptoms. Notify Site Safety and Health Officer (SSHO) of flu-like symptoms.	06.D.01
	Contact dermatitis and poison ivy.	Check around work areas to identify if poison ivy is present. Wear long-sleeve shirts/trousers or Tyvek [®] coveralls to avoid skin contact with plants or other skin irritants. Learn to identify poisonous plants. Avoid unnecessary clearing of plant/vegetation areas. Cover vegetation with plastic (visqueen) where sampling position raises exposure potential. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. Identify workers who are known to contract poison ivy.	06.D.03
	Noise.	Equipment operators and ground personnel working with or near equipment shall wear hearing protection to reduce exposures to below the limits required by EM 385-1-1.	05.C

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Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Prepare site (continued).	Severe weather.	The SSHO will monitor weather conditions each day in order to plan and prepare for hazardous conditions. The SSHO will identify a suitable tornado shelter at each work location. Work activities will be suspended prior to weather conditions becoming hazardous so that workers have ample time to seek shelter. Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (inside vehicles, buildings, or tornado shelters as appropriate). Follow procedures outlined in the SHERP.	06.I
Setting up field support trailers.	Personnel or property struck by moving equipment.	Clearance of overhead utilities shall be verified before backing. Spotters shall be used to back trailers. Trailer tires shall be chocked.	08.B.04
	Emergency egress.	Trailers shall be positioned in a fashion to allow for safe and efficient egress during an emergency evacuation.	01.E
	Electrocution.	Only qualified electricians shall make electrical and grounding connections. Follow National Fire Protection Association 70 E for personal protective equipment and insulated tool requirements. All electrical work shall comply with National Electric Code standards. All circuit breakers shall be labeled. Personnel shall be instructed in main disconnect location.	05.I 11.A.01.a, b, c
	Slips, trips, and falls.	Landings, stairs, and handrails shall be constructed for each doorway leading to the outside of a trailer, which meet the requirements specified in 29 CFR 1910 Subpart D. Housekeeping shall be maintained.	14.C.01-10
	Fire.	Each trailer shall be immediately equipped with at least one 2-A: 10-B:C fire extinguisher.	09.E.01

Activity Hazard Analysis (AHA)

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Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Setting up field support trailers (continued).	High wind.	All trailers shall be appropriately anchored.	04.A.02.c 04.A.03
	Sanitation.	Washing, toilet, and trash disposal facilities (dumpster) shall be installed prior to occupying trailers.	02.A
	Exposure to traffic.	Personnel shall park completely off roads. Personnel shall not perform work on active roads. Personnel shall wear high visibility work vests.	05.F

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 2.0 – Vehicle Operations				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-02-2009					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

Recommended Protective Clothing & Equipment: Level D PPE Equipment: Vehicles		E= Extremely High Risk	Probability				
		H = High Risk					
		M = Moderate Risk	Frequent	Likely	Occasional	Seldom	Unlikely
		L = Low Risk					
	Severity	Catastrophic					
Severity	Critical						
Severity	Marginal			X			
Severity	Negligible						

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Project vehicle use.	Operation of motor vehicles and trucks-General.	All company owned, leased, or rented vehicle operations shall comply with the requirements of Shaw Environmental & Infrastructure, Inc. (Shaw E & I) Procedure No. HS800, "Motor Vehicle Operation: General Requirements." All company owned, leased, or rented commercial vehicle operations shall comply with the requirements of Shaw E & I Procedure No. HS810, "Commercial Motor Vehicle Operation And Maintenance." Subcontractors operating motor vehicles shall comply with all federal, state, and local traffic regulations. Subcontractors shall only use vehicles that are in good condition and safe to operate. All personnel shall drive defensively and wear seat belts while vehicles are in motion.	18.A.01 18.A.02 18.A.03 18.C.02 18.C.03
	Operation of motor vehicles and trucks-Accidents	In the event of an accident: Stop; call for medical assistance; notify police; complete Vehicle Accident Report and submit to your supervisor.	01.D.01

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 2.0 – Vehicle Operations				Risk Assessment Code (RAC):	M
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Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Project vehicle use (continued).	Operation of motor vehicles and trucks-Accidents (continued)	If a Shaw employee is injured, the Return to Work, Medical Release, and Treatment of Injury/Illness forms must completed at the health clinic or Emergency Room.	
	Operation of motor vehicles and trucks-Backing	<p>Back into parking spaces upon arrival, whenever possible.</p> <p>When preparing to move or back vehicles at the project site, walk around the vehicle before backing to identify any new conditions or obstructions.</p> <p>Use a spotter when backing whenever possible, and sound horn prior to backing.</p> <p>Determine and agree upon hand signals (between spotter and driver) before attempting to back vehicle.</p> <p>Check the rear-view and side mirrors prior to backing (Note: All vehicles, other than automobiles, must have small convex mirrors attached to the side mirrors.)</p> <p>Back slowly in areas of obstructed vision.</p> <p>Anticipate others who may be backing out into your pathway and adjust accordingly.</p>	<p>18.C.14 08.B.04</p> <p>08.B.06</p>
	Operation of motor vehicles and trucks - Unfamiliar with the vehicle	Familiarize yourself with the vehicle before moving. Review the dashboard controls, steering radius, overhead and side clearances. Locate windshield wipers and lights.	

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 2.0 – Vehicle Operations		
Date Prepared (mm-dd-yyyy):	09-02-2009		Risk Assessment Code (RAC): M
Project:	RVAAP IRP	Job:	133616
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Project vehicle use (continued).	Operation of motor vehicles and trucks - Unfamiliar with the vehicle (continued)	Properly adjust mirrors and seat.	
	Operation of motor vehicles and trucks-Speed	Obey all posted speed limits. Radar detectors are prohibited in all company owned, leased, or rented vehicles. Reduce travel speed during hazardous conditions (i.e., rain, fog, snow).	18.C.05 18.C.04 18.C.05
	Operation of motor vehicles and trucks-Spacing/Distance	Identify if your vehicle has Anti-Lock Brakes. Follow the 3-second rule. Increase the 3-second rule as necessary during hazardous travel conditions. Always leave yourself an “out” during travel – this applies to stoplights as well. When stopping, make sure that you leave enough distance between you and the car in front of you (you should be able to see the rear tires of the vehicle in front, when stopped). When at a red light, and it turns green, use the “delayed start” technique, by counting to three before you take your foot off the brake. DO NOT TAILGATE! Allow extra spacing and braking time for trucks and vehicles towing trailers. Trailers shall be equipped with brakes	

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 2.0 – Vehicle Operations				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-02-2009					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Project vehicle use (continued).	Operation of motor vehicles and trucks-Skids	<p>If the vehicle has begun to skid out of control, turn the steering wheel in the direction of the skid and re-adjust the wheel, as necessary.</p> <p>Slow travel speeds during hazardous travel conditions.</p> <p>Use 4-wheel drive, if available, when driving vehicles off road, on steep inclines, muddy conditions, etc.</p> <p>Do not take vehicles “off road” if they cannot be operated safely.</p>	18.C.05
	Operation of motor vehicles and trucks-Blind Spots	<p>Become familiar with any blind spots associated with your vehicle.</p> <p>Adjust mirrors properly.</p> <p>Make sure you use your directional signals.</p> <p>Always look over your shoulder to assure the lane is clear when changing lanes.</p>	
	Operation of motor vehicles and trucks-Cellular phones	<p>Exercise caution when approaching other driver’s blind spots.</p> <p>Do not use handheld cellular phones while driving</p> <p>Pull over to the side of the road when making a call.</p>	18.C.01
	Operation of motor vehicles and trucks-Equipment Failure	<p>Perform daily inspections of your vehicle.</p> <p>Any vehicle with mechanical problems that may endanger the safety of the driver, passengers, or the public shall not be used.</p>	18.A.03 18.A.04

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 2.0 – Vehicle Operations				Risk Assessment Code (RAC):	M
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JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Project vehicle use (continued).	Operation of motor vehicles and trucks-Spacing/Distance (continued)	<p>Ensure safety equipment is in the vehicle. Safety equipment should include a spare tire, jack, first-aid kit, fire extinguisher, and flashlight. Flares and/or reflective triangles shall be available in larger trucks.</p> <p>Verify that the proper documentation is in the vehicle - documentation includes an operations manual for the vehicle, insurance card, vehicle registration, and Shaw Accident forms.</p>	18.A.03
	Operation of motor vehicles and trucks- Influenced by drug and alcohol	<p>Never drive under the influence of drugs or alcohol. Disciplinary action, including termination, will be taken against anyone who is convicted of or who pleads no-contest to the charges of driving under the influence in accordance with Shaw E & I Procedure No. HS800.</p> <p>Project-assigned hourly employees are not permitted to operate company owned, leased, or rented vehicles after 10:00 p.m. without written authorization from their supervisor.</p>	01.C.02
	Operation of motor vehicles and trucks-Driver Attitude/Fatigue.	<p>Do not operate any vehicle when abnormally tired, temporarily disabled, or under the influence of drugs or alcohol.</p> <p>Keep an even temper when driving. Do not let the actions of others affect your attitude.</p> <p>Avoid “highway-hypnosis” and “falling asleep at the wheel.” Take plenty of breaks when driving long distances. Rotate driving responsibility with your partner.</p>	

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 2.0 – Vehicle Operations						Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-02-2009							
Project:	RVAAP IRP	Job:	133616					
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo					

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Project vehicle use (continued).	Operation of motor vehicles and trucks-Driver Attitude/Fatigue (continued).	<p>No employee is authorized to operate a company vehicle (including rentals) after having been on-duty for a period of 12-hours.</p> <p>No employee may drive for more than 10-hours in a single on-duty period.</p>	01.C.04
	Operation of motor vehicles and trucks-Vehicle Loading	<p>DO NOT OVERLOAD the vehicle.</p> <p>Secure all equipment within the body of the vehicle.</p> <p>Do not block side view mirrors with load.</p> <p>Do not transport Department of Transportation manifested hazardous materials without a commercial driver's license.</p> <p>Dispatch all equipment and personnel with proper forms and identification.</p>	<p>18.C.13</p> <p>18.C.16</p>

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 3.0 – Geophysical Survey Operations				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-02-2009					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

	E= Extremely High Risk	Probability					
Recommended Protective Clothing & Equipment:	H = High Risk						
Level D: hard hat, safety glasses, safety-toed boots, work gloves, personal flotation device (PFD) Equipment: First aid kit, survey equipment	M = Moderate Risk						
	L = Low Risk	Frequent	Likely	Occasional	Seldom	Unlikely	
	Severity	Catastrophic					
	Severity	Critical				X	
	Severity	Marginal					
Severity	Negligible						

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Arrival of new personnel at site. Geophysical survey operations.	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures. Poor planning. Heavy lifting, strains, and sprains. Struck-by/Against.	All personnel shall attend the site orientation training. Complete Job Safety Analysis for each task, as specified in Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, "Job Safety Analysis (JSA)." Use Hazard Assessment Resolution Program frequently – for each task to be completed. No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit. Wear reflective warning vests when exposed to vehicular traffic. Personnel working on or near roads and only remain on road long enough to complete work. Personnel walking along roadway shall stay off roadway as far as possible and walk on the side facing traffic.	01.B.03 01.E.01 28 14.A.01 05.F

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 3.0 – Geophysical Survey Operations					Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-02-2009						
Project:	RVAAP IRP	Job:	133616				
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo				

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Geophysical survey operations (continued).	Munitions and explosives of concern (MEC).	Non-Unexploded Ordnance (UXO) qualified Personnel shall attend MEC Awareness training if involved in intrusive sampling activity in a Munitions Response Site (MRS). Personnel must be accompanied by a UXO Technician using MEC avoidance techniques per EP 75-1-2.	33.A.01 33.A.02 33.A.03
	Intrusive activities.	Follow procedure for Intrusive Activities Permit in Safety, Health, and Emergency Response Plan (SHERP) prior to driving stakes. Check location with magnetometer prior to driving stakes. Do not perform intrusive activities in Mustard Agent Burial Site (MABS).	25.A.01
	Slips, trips, and falls.	Keep work areas clear and maintain housekeeping. Personnel shall not jump from elevated surfaces. Personnel shall use caution when walking on rocky, slippery, or uneven terrain	14.C.01-10
	Hand injuries.	Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.	05.A.08

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 3.0 – Geophysical Survey Operations				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-02-2009					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Geophysical survey operations (continued).	Insect bites and stings.	Review injury and illness potential with workers. Inspect work areas for bee nests and activity prior to commencing work in that area. Wear PPE, such as disposable coveralls, to keep insects away from the skin. Use protective insect repellents containing N,N-Diethyl-m-toluamide (DEET) to prevent insect bites, unless individual allergies and sensitivities prevent its use. Check limbs/body for insects/ insect bites upon removing PPE and again during showering. Consider applying Permethrin (Repel Permanone or equivalent) preparations to clothing to repel ticks, chiggers, mosquitoes, and/or spiders. Immediately notify supervisor or safety officer of insect bites, stings, irritations, or flu-like symptoms. Notify Site Safety and Health Officer (SSHO) of flu-like symptoms.	06.D.01
	Contact dermatitis and poison ivy.	Check around work areas to identify if poison ivy is present. Wear long-sleeve shirts/trousers or Tyvek [®] coveralls to avoid skin contact with plants or other skin irritants. Learn to identify poisonous plants. Avoid unnecessary clearing of plant/vegetation areas. Cover vegetation with plastic (visqueen) where sampling position raises exposure potential. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. Identify workers who are known to contract poison ivy.	06.D.03

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 3.0 – Geophysical Survey Operations				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-02-2009					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Geophysical survey operations (continued).	Severe weather.	The SSHO will monitor weather conditions each day in order to plan and prepare for hazardous conditions. The SSHO will identify a suitable tornado shelter at each work location. Work activities will be suspended prior to weather conditions becoming hazardous so that workers have ample time to seek shelter. Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (inside vehicles, buildings, or tornado shelters as appropriate). Follow procedures outlined in the SHERP.	06.I
	Hazardous atmospheres.	Personnel shall immediately notify the SSHO if odors are detected.	
	Heat stress and cold stress.	Follow procedures outlined in the Site Safety and Health Plan.	06.I
	Fire.	Smoking shall be permitted in designated areas. Vehicles shall not be parked in tall dry grass. Engines shall be shut off before refueling. A 10-B:C fire extinguisher shall be available when refueling. Smoking shall not be permitted near fueling areas. Gasoline shall be stored in safety cans with flash arrestors and spring-loaded vents.	09.E.01 09.A.06 09.B.08

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 4.0 – Surface Soil and Sediment Sampling			Competent Person:		
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):		L
Project:	RVAAPIRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

	E= Extremely High Risk	Probability				
Recommended Protective Clothing & Equipment:	H = High Risk					
Level D – Modified personal protective equipment (PPE): hard hats, safety glasses, Tyvek® coveralls, protective gloves (nitrile), leather gloves, safety-toed boots, disposable boot covers Equipment: high visibility vests, fire extinguishers, non-sparking sampling tools, hearing protection	M = Moderate Risk					
	L = Low Risk	Frequent	Likely	Occasional	Seldom	Unlikely
	Severity	Catastrophic				
	Severity	Critical				
	Severity	Marginal				X
	Severity	Negligible				

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain surface soil and sediment samples.	Failure to properly plan daily activities.	Complete a Job Safety Analysis for each task, as specified in Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, “Job Safety Analysis (JSA).” Use Hazard Assessment Resolution Program frequently – for each task to be completed.	01.A.09
	Munitions and explosives of concern (MEC).	Non-Unexploded Ordnance (UXO) qualified Personnel shall attend MEC Awareness training if involved in intrusive sampling activity in a Munitions Response Site (MRS). Personnel must be accompanied by a UXO Technician using MEC avoidance techniques per EP 75-1-2.	33.A.01 33.A.02 33.A.03
	Hand injuries.	Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.	05.A.08
	Noise.	Equipment operators and ground personnel working with or near equipment shall wear hearing protection to reduce exposures to below the limits required by EM 385-1-1.	05.C

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 4.0 – Surface Soil and Sediment Sampling		Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009		Risk Assessment Code (RAC):	L
Project:	RVAAPIRP	Job:	133616	
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo	

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain surface soil and sediment samples (continued).	Chemical contamination.	Follow procedures in Safety, Health and Emergency Response Plan (SHERP). Wear disposable glove, at a minimum. Boot covers and disposable coveralls may be necessary.	05.A
	Struck-by equipment.	Ground personnel, working near heavy equipment, shall wear American National Standards Institute Class 2 high visibility conspicuity vests. Ground personnel shall not enter the swing radius of excavators and stay clear of other equipment.	05.F
	Heavy lifting, strains, and sprains.	No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit. Do not over-load coolers.	14.A.01
	Insect bites and stings.	Review injury and illness potential with workers. Inspect work areas for bee nests and activity prior to commencing work in that area. Wear PPE, such as disposable coveralls, to keep insects away from the skin. Use protective insect repellents containing N,N-Diethyl-m-toluamide (DEET) to prevent insect bites, unless individual allergies and sensitivities prevent its use. Check limbs/body for insects/ insect bites upon removing PPE and again during showering. Consider applying Permethrin (Repel Permanone or equivalent) preparations to clothing to repel ticks, chiggers, mosquitoes, and/or spiders. Immediately notify supervisor or safety officer of insect bites, stings, irritations, or flu-like symptoms. Notify Site Safety and Health Officer (SSHO) of flu-like symptoms.	06.D.01

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 4.0 – Surface Soil and Sediment Sampling			Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):	L
Project:	RVAAPIRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain surface soil and sediment samples (continued).	Contact dermatitis and poison ivy.	Check around work areas to identify if poison ivy is present. Wear long-sleeve shirts/trousers or Tyvek® coveralls to avoid skin contact with plants or other skin irritants. Learn to identify poisonous plants. Cover vegetation with plastic (visqueen) where sampling position raises exposure potential. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. Identify workers who are known to contract poison ivy.	06.D.03
	Slips, trips, and falls.	Keep work areas clear and maintain housekeeping. Personnel shall not jump from elevated surfaces. Personnel shall use caution when walking on rocky, slippery, or uneven terrain.	14.C.01-10
	Fire.	Fire extinguishers shall be available in work areas. Smoking shall only be allowed in designated areas.	09.E.01
	Use of sampling tools.	All sampling tools shall be constructed of non-sparking materials. Hand tools shall be inspected daily and before each use. Tools, which are damaged, shall be removed from service. Personnel shall work in a manner and pace to reduce strains and overexertion.	13.A.02
	Heat stress and cold stress.	Follow procedures outlined in the SHERP.	06.I

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 4.0 – Surface Soil and Sediment Sampling			Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):	L
Project:	RVAAPIRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain surface soil and sediment samples (continued).	Severe weather.	The SSHO will monitor weather conditions each day in order to plan and prepare for hazardous conditions. The SSHO will identify a suitable tornado shelter at each work location. Work activities will be suspended prior to weather conditions becoming hazardous so that workers have ample time to seek shelter. Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (inside vehicles, buildings, or tornado shelters as appropriate). Follow procedures outlined in the Accident Prevention Plan.	06.I

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 5.0 – Subsurface Soil and Sediment Sampling		Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009		Risk Assessment Code (RAC):	L
Project:	RVAAPIRP	Job:	133616	
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo	

	E= Extremely High Risk	Probability					
Recommended Protective Clothing & Equipment:	H = High Risk						
Level D – Modified personal protective equipment (PPE): hard hats, safety glasses, Tyvek® coveralls, protective gloves (nitrile), leather gloves, safety-toed boots, disposable boot covers Equipment: high visibility vests, fire extinguishers, non-sparking sampling tools, hearing protection	M = Moderate Risk						
	L = Low Risk	Frequent	Likely	Occasional	Seldom	Unlikely	
	Severity	Catastrophic					
	Severity	Critical					
	Severity	Marginal				X	
Severity	Negligible						

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain subsurface soil and sediment samples.	Failure to properly plan daily activities.	Complete a Job Safety Analysis for each task, as specified in Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, “Job Safety Analysis (JSA).” Use Hazard Assessment Resolution Program frequently – for each task to be completed.	01.A.09
	Munitions and explosives of concern (MEC).	Non-Unexploded Ordnance (UXO) qualified Personnel shall attend MEC Awareness training if involved in intrusive sampling activity in a Munitions Response Site (MRS). Personnel must be accompanied by a UXO Technician using MEC avoidance techniques per EP 75-1-2.	33.A.01 33.A.02 33.A.03
	Hand injuries.	Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.	05.A.08
	Noise.	Equipment operators and ground personnel working with or near equipment shall wear hearing protection to reduce exposures to below the limits required by EM 385-1-1.	05.C

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 5.0 – Subsurface Soil and Sediment Sampling		Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009		Risk Assessment Code (RAC):	L
Project:	RVAAPIRP	Job:	133616	
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo	

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain subsurface soil and sediment samples (continued).	Chemical contamination.	Follow procedures in Safety, Health and Emergency Response Plan (SHERP). Wear disposable glove, at a minimum. Boot covers and disposable coveralls may be necessary.	05.A
	Struck-by equipment.	Ground personnel, working near heavy equipment, shall wear American National Standards Institute Class 2 high visibility conspicuity vests. Ground personnel shall not enter the swing radius of excavators and stay clear of other equipment.	05.F
	Heavy lifting, strains, and sprains.	No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit. Do not over-load coolers.	14.A.01
	Insect bites and stings.	Review injury and illness potential with workers. Inspect work areas for bee nests and activity prior to commencing work in that area. Wear PPE, such as disposable coveralls, to keep insects away from the skin. Use protective insect repellents containing N,N-Diethyl-m-toluamide (DEET) to prevent insect bites, unless individual allergies and sensitivities prevent its use. Check limbs/body for insects/ insect bites upon removing PPE and again during showering. Consider applying Permethrin (Repel Permanone or equivalent) preparations to clothing to repel ticks, chiggers, mosquitoes, and/or spiders. Immediately notify supervisor or safety officer of insect bites, stings, irritations, or flu-like symptoms. Notify Site Safety and Health Officer (SSHO) of flu-like symptoms.	06.D.01

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 5.0 – Subsurface Soil and Sediment Sampling		Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009		Risk Assessment Code (RAC):	L
Project:	RVAAPIRP	Job:	133616	
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo	

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain subsurface soil and sediment samples (continued).	Contact dermatitis and poison ivy.	Check around work areas to identify if poison ivy is present. Wear long-sleeve shirts/trousers or Tyvek® coveralls to avoid skin contact with plants or other skin irritants. Learn to identify poisonous plants. Cover vegetation with plastic (visqueen) where sampling position raises exposure potential. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. Identify workers who are known to contract poison ivy.	06.D.03
	Slips, trips, and falls.	Keep work areas clear and maintain housekeeping. Personnel shall not jump from elevated surfaces. Personnel shall use caution when walking on rocky, slippery, or uneven terrain.	14.C.01-10
	Fire.	Fire extinguishers shall be available in work areas. Smoking shall only be allowed in designated areas.	09.E.01
	Use of sampling tools.	All sampling tools shall be constructed of non-sparking materials. Hand tools shall be inspected daily and before each use. Tools, which are damaged, shall be removed from service. Personnel shall work in a manner and pace to reduce strains and overexertion.	13.A.02
	Heat stress and cold stress.	Follow procedures outlined in the SHERP.	06.I

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 5.0 – Subsurface Soil and Sediment Sampling		Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009		Risk Assessment Code (RAC):	L
Project:	RVAAPIRP	Job:	133616	
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo	

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
Obtain subsurface soil and sediment samples (continued).	Severe weather.	The SSHO will monitor weather conditions each day in order to plan and prepare for hazardous conditions. The SSHO will identify a suitable tornado shelter at each work location. Work activities will be suspended prior to weather conditions becoming hazardous so that workers have ample time to seek shelter. Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (inside vehicles, buildings, or tornado shelters as appropriate). Follow procedures outlined in the Accident Prevention Plan.	06.I
	Use of direct push equipment.	Inspect direct-push equipment prior to use and daily thereafter - particular attention shall be given to hydraulic lines and fittings. Verify all personnel are instructed in emergency shut-down procedures. All crewmembers, including geologists, shall know the location and operation of the kill switch. Personnel shall be cautious of moving equipment, such as the hydraulic cylinder and rams. Be aware of pinch-point hazards and work in a manner to prevent injuries. Direct push crewmembers shall not wear loose clothing or jewelry. The operator shall verbally alert employees and visually verify employees are clear from dangerous parts of equipment prior to starting or engaging equipment. Be aware of and avoid hot surfaces from heat generated from engine. Review operator’s manual and Geoprobe Systems safety information: http://www.geoprobe.com/service/safety.htm	18.G 18.H

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 6.0 – Fueling Operations			Competent Person:		
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):		L
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

<p style="text-align: center;">Recommended Protective Clothing & Equipment:</p> <p>Level D – Safety glasses and disposable nitrile gloves</p> <p>Equipment: Fire extinguisher (2-A:10-B), saddle tanks, bonding cable, eye wash bottle, five-gallon safety cans (equipped with self-venting cap and flash arrestor)</p>		E= Extremely High Risk	Probability				
		H = High Risk					
		M = Moderate Risk					
		L = Low Risk	Frequent	Likely	Occasional	Seldom	Unlikely
	Severity	Catastrophic					
Severity	Critical						
Severity	Marginal				X		
Severity	Negligible						

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Fueling operations.	Exposures to fuels.	<p>Personnel shall periodically review the Material Safety Data Sheets (MSDS) for the fuels that are being used at the project.</p> <p>The handling and use of fuels shall be performed in well-ventilated areas – preferably outside of buildings.</p> <p>Personnel shall avoid skin and eye contact with fuels. Safety glasses and disposable nitrile gloves shall be worn while handling fuels. A small eyewash bottle shall be readily available when fueling equipment. If personnel get fuel in their eyes, then the eyes shall be irrigated with the entire contents of the eye wash bottle and then the employee shall seek medical assistance. If personnel sustain skin contact with fuels, then the affected area shall be immediately washed with soap and water. If fuel contact with clothing is made, then clothing shall be removed and changed immediately.</p>	<p>06.B.01</p> <p>09.B.07</p> <p>05.B.01</p> <p>09.B.05</p>

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 6.0 – Fueling Operations			Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):	L
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Fueling operations (continued).	Fire: extinguisher requirements.	A 2-A: 40-B fire extinguisher shall be <u>readily</u> available when fueling equipment at any location on site. Trucks with flammable/combustible fuels must be equipped with a 20-B:C fire extinguisher. Personnel who intend to extinguish small fires shall be trained in the use of fire extinguishers. Equipment and property are of secondary concern in a fire situation - personnel shall never try to extinguish a fire if there is any doubt that it can be extinguished safely.	09.E.03 09.B.03
	Fire: elimination of ignition sources – hot surfaces.	All vehicles and equipment shall be shut down prior to fueling. Small equipment, such as generators, mowers, pressure washers, etc. shall be allowed to cool prior to re-fueling. Heavy equipment with the fuel cap near the engine or near other hot surfaces shall also be allowed to cool prior to re-fueling.	09.B.21
	Fire: elimination of ignition sources – arcs/sparks/open flames.	Smoking shall not be allowed within 50 feet of fueling operations. Personnel shall visually survey the immediate area for open flames and other ignition sources prior to commencing fueling operations. Personnel are prohibited from using cell-phones or two-way radios during all fueling operations.	09.B.02
	Fire: elimination of ignition sources – static electricity.	Personnel shall never fill portable fuel cans that are in the bed of a pickup truck or in the trunk of an automobile. Filling fuel containers on plastic pickup truck bed-liners can cause static electric discharges, which may ignite the fuel. The fuel can(s) shall be removed from the truck bed or automobile trunk and placed on the ground before adding fuel.	

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 6.0 – Fueling Operations			Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):	L
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Fueling operations (continued).	<p>Fire: elimination of ignition sources – static electricity (continued).</p> <p>Storage and transportation: five-gallon cans in pick-up trucks.</p>	<p>Electrical continuity shall be maintained between the portable fuel can and the tank being filled. A bonding cable shall be used to maintain continuity between the metal fuel container and the equipment fuel tank. Allowing free-fall of fuel into the tank is prohibited.</p> <p>Personnel shall not re-enter vehicles while fueling is underway due to the static electric charge generated between clothing and vehicle seats. If you absolutely have to get in your vehicle while the gas is pumping, make sure you get out, close the door touching the metal, before you pull the nozzle out. This way the static from your body will be discharged before you remove the nozzle.</p> <p>Gasoline shall be stored and transported in properly marked/labeled five-gallon safety cans (equipped with self-venting cap and flash arrestor). Gasoline cans shall be secured to prevent movement during transportation.</p> <p>No more than six - five gallon containers of gasoline may be transported in vehicles (back of pick-up trucks or trailers) at the same time unless all the Department of Transportation (DOT) Hazardous Material Regulations are complied with, such as proper packaging, completing shipping papers, placarding (as required), and the appropriate HM 126 Training (as well as having been provided emergency response information and training.) The total quantity of hazardous materials may never exceed 440 pounds total. Hazardous materials must be secured prior to transporting.</p>	<p style="text-align: center;">09.B.21</p> <p style="text-align: center;">09.B.08 09.B.11</p>

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 6.0 – Fueling Operations			Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):	L
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Fueling operations (continued).	Communication of hazards.	Drivers must be notified that they are transporting hazardous materials. Drivers shall review MSDS for the fuels transported in their vehicle.	01.B.01
	Storage of fuels on-site.	Portable safety gasoline cans must be stored within a flammable materials storage area, have appropriate warning signs, be posted as “No Smoking”, and have a fire extinguisher available in the area.	09.B.02 09.B.18
	Spills.	All spills shall be immediately cleaned-up. Spill control equipment shall be readily available. All spills shall be reported to the Site Safety and Health Officer.	09.B.19
	Storage and transportation: safety containers and saddle tanks in pick-up trucks.	Gasoline shall not be transported in portable saddle tanks – only diesel fuel shall be transported in saddle tanks. All portable saddle tanks mounted in pick-up trucks shall be manufactured to meet DOT specifications. Portable saddle tanks shall be securely mounted to the pick-up truck, as recommended by the manufacturer. Saddle tanks shall be properly marked (see 49 Code of Federal Regulation 172.101) with the proper shipping name and labeled for “No Smoking.” No more than 110 gallons of diesel fuel may be transported in a saddle tank unless all the DOT Hazardous Material Regulations are complied with, such as proper packaging, completing shipping papers, placarding, and the appropriate HM 126 Training (as well as having been provided emergency response information and training.)	09.B.08

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 6.0 – Fueling Operations			Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):	L
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Fueling operations (continued).	Bulk storage of diesel fuel on-site.	Caps on saddle tanks shall be securely closed. Saddle tanks shall be inspected weekly to check for leaks. Bulk storage tanks shall not be permitted on site without express permission from the RVAAP, OHARNG, Shaw Project Manager and Health and Safety Manager.	

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 7.0 – Equipment Decontamination			Competent Person:		
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):		L
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo			

<p style="text-align: center;">Recommended Protective Clothing & Equipment:</p> <p>Level D - Modified: hard hats, Tyvek coveralls, protective gloves, vinyl rain-gear, steel-toed boots, protective over-boots</p> <p>Equipment: temporary lighting, GFCIs, extension cords, pressure washer, fire extinguishers, carbon monoxide monitor, chemical splash goggles, emergency eyewash station, spill control equipment</p>		E= Extremely High Risk	Probability				
		H = High Risk					
		M = Moderate Risk					
		L = Low Risk	Frequent	Likely	Occasional	Seldom	Unlikely
	Severity	Catastrophic					
	Severity	Critical					
Severity	Marginal				X		
Severity	Negligible						

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Clean Equipment.	Failure to properly plan daily activities.	Complete Job Safety Analysis for each task, as specified in Shaw Environmental & Infrastructure, Inc. (Shaw E & I) Procedure No. HS045, "Job Safety Analysis (JSA)." Use Hazard Assessment Resolution Program frequently – for each task to be completed.	
	Exposure to contaminants.	Maintain work zones and decontamination areas. Level D - Modified personal protective equipment shall be worn as required in the Accident Prevention Plan or Site Safety and Health Plan. Personnel shall perform proper decontamination procedures each time when exiting the Exclusion Zone.	28 05.A.01
	Poor lighting.	Additional lighting shall be put in place as necessary. Temporary lighting shall be protected with ground fault circuit interrupters (GFCI).	07.A.01 11.D.05
	Slips, trips, and falls.	Work areas shall be kept organized during work activities. Housekeeping shall be maintained. Personnel shall use caution when walking/working on wet surfaces.	14.C

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 7.0 – Equipment Decontamination		Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009		Risk Assessment Code (RAC):	L
Project:	RVAAP IRP	Job:	133616	
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo	

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Clean Equipment (continued).	Electrical.	GFCIs shall be used on all power tools and extension cords. Extension cords, power tools, and lighting equipment shall be inspected before each use, protected from damage, and kept out of wet areas.	11.D.05 11.A.03
	Heavy lifting.	No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit.	14.A.01
	Noise.	Personnel shall wear hearing protection when operating pressure washer.	05.C
	Fire.	Fire extinguishers shall be placed in work areas. Smoking shall only be allowed in designated areas.	09.E.01 09.A.06
	Heat Stress.	Personnel shall drink plenty of cool water. Personnel shall pace themselves while performing strenuous work and take adequate breaks in a cool area.	06.I 02.C
	Use of pressure or steam washer.	The pressure/steam washer shall be inspected before each use. The manufacturer's instruction manual shall be used to guide the inspection process. Personnel shall be trained in the use of the washing equipment. All personnel working in the equipment decontamination area shall be trained in the emergency shut-off procedures for the equipment being used. The minimum amount of steam/pressure that will complete the job should be used. Pressure washers exceeding 3000 psi	13.A.02

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 7.0 – Equipment Decontamination			Competent Person:	
Date Prepared (mm-dd-yyyy):	09-02-2009			Risk Assessment Code (RAC):	L
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	Dave Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Clean Equipment (continued).	Use of pressure or steam washer (continued).	<p>shall not be used without the approval of the Health and Safety Manager. The spray from such equipment shall only be directed at surfaces to be cleaned and never at body parts or other personnel.</p> <p>Personnel in the immediate area shall use face shields and metatarsal/shin guards. Personnel shall keep firm grip on wand and not point it at anything that is not being washed. Pressure washer operators must maintain good footing. The trigger on the wand shall never be wired/fixed open. Operators are to take adequate breaks to avoid fatigue.</p> <p>Hot surfaces shall be avoided. Units shall be shut off and allowed to cool prior to re-fueling (if gas-powered).</p> <p>Carbon monoxide shall be monitored if gas-powered pressure washers are used. Carbon monoxide concentrations shall not be allowed to exceed 25 parts per million within any indoor areas.</p>	<p>13.A.02</p> <p>09.B.21</p> <p>13.A.12</p>
	Spills of decontamination water.	<p>All waste handling activity shall be performed on visqueen (polyethylene sheeting) lined work surfaces. Waste liquids shall be stored with secondary containment. Lids and bungs shall be secured when drums are in storage or are being moved. Spill cleanup equipment shall be readily available when handling wastes. Drums containing waste shall be inspected on a daily basis. Spills shall be immediately reported to the Site Safety and Health Officer.</p>	<p>09.B.18</p>

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Vegetation Removal				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-28-09					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	David Crispo			

	E= Extremely High Risk	Probability					
Recommended Protective Clothing & Equipment:	H = High Risk						
Level D - Modified: hard hats, safety glasses, Tyvek® coveralls, protective gloves, leather gloves, safety-toed boots, helmet systems for chain saw use, protective chaps Equipment: Chain saws, bar oil, extra chains, fire extinguishers, excavator, hearing protection, high weed mower, brush cutters, wood/brush chipper, plastic or wood wedges	M = Moderate Risk						
	L = Low Risk	Frequent	Likely	Occasional	Seldom	Unlikely	
	Severity	Catastrophic					
	Severity	Critical				X	
	Severity	Marginal					
Severity	Negligible						

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Arrival of new personnel at site. Vegetation removal.	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures. Poor planning. Heavy lifting, strains, and sprains. Struck-by/Against.	All personnel shall attend the site orientation training. Complete Job Safety Analysis for each task, as specified in Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, "Job Safety Analysis (JSA)." Use Hazard Assessment Resolution Program frequently – for each task to be completed. No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit. Wear reflective warning vests when exposed to vehicular traffic. Personnel working on or near roads and only remain on road long enough to complete work. Personnel walking along roadway shall stay off roadway as far as possible and walk on the side facing traffic.	01.B.03 01.E.01 28 14.A.01 05.F

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Vegetation Removal			Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-28-09				
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	David Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Vegetation removal (continued).	Munitions and Explosives of Concern (MEC) / Unexploded Ordnance (UXO).	Non-UXO personnel shall attend site-specific MEC Awareness (and recognition) Training if entering an area designated as a Munitions Response Site (MRS) (Sand Creek). Personnel must be accompanied by a UXO Technician using MEC avoidance techniques per EP 75-1-2	01.B.01 33.A.01 33.A.02 33.A.03
	Blast overpressure fragmentation blast.	If performing vegetation removal at an MRS, the UXO Safety Officer is responsible for the location of each UXO team. Minimum safe distance maintained between two teams will never be less than 200 feet or the K40 overpressure distance in the formula: Minimum safe distance = 40 times the cube root of the net explosive weight of the munition with the greatest fragmentation distance at the Munitions Response Site.	33.A.01 33.A.02 33.A.03
	Accidental detonation of MEC.	When performing vegetation removal at an MRS, observe the requirements of Explosives Safety and Health Manual EM 385-1-97. Be alert and mark all MEC located. UXO trained personnel will escort non-UXO personnel at all times. Surface sweeps will be conducted with magnetometers or other suitable geophysical instrumentation to identify potential MEC.	33.A.01 33.A.02 33.A.03
	Intrusive activities.	Follow procedure for Intrusive Activities Permit in Appendix D of the SHERP prior to commencing clearing and grubbing activities. Follow MEC avoidance techniques in accordance with EP 75-1-2 during all vegetation removal.	25.A.01

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Vegetation Removal				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-28-09					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	David Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Vegetation removal (continued).	Slips, trips, and falls.	Keep work areas clear and maintain housekeeping. Personnel shall not jump from elevated surfaces. Personnel shall use caution when walking on rocky, slippery, or uneven terrain	14.C.01-10
	Hand injuries.	Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch point hazards.	05.A.08
	Use of heavy equipment.	Only qualified personnel shall be permitted to operate equipment. Heavy equipment shall be inspected daily after the initial U.S. Army Corps of Engineers inspection (and documented.) Do not use unsafe equipment. All equipment shall have backing alarms. All equipment shall be operated at safe speeds and in a safe manner. Equipment operators shall wear safety belts. Personnel are only permitted to approach equipment after a signal from the operator. Ground personnel, working near heavy equipment, shall wear high visibility conspicuity vests. Ground personnel shall not enter the swing radius of equipment. Ground personnel shall not position themselves between equipment and stationary objects. Personnel shall verify all mechanical guards are in place and functioning properly. Moving equipment shall be equipped with a back-up alarm. All equipment shall be shut down with energies dissipated prior to performing maintenance activities - lock out/tag out procedures may apply. Only qualified mechanics shall work on or repair heavy equipment. Heavy equipment shall be equipped with Falling Object Protective Structure. Ground personnel shall stay clear at least twice the distance of the height of the tree being pushed over.	18.A 18.G 18.B 05.F 18.B.12

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Vegetation Removal				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-28-09					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	David Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Vegetation removal (continued).	Injury from chain saws, wood/falling trees, chips, cuts, and noise.	Chain saw operators shall wear a specially designed helmet system (consisting of head, face, and hearing protection). Use gloves and chaps at all times when using saw. Operators shall wear chain saw protective boots with steel toes. Secure loose fitting clothing with duct tape. Keep other personnel at least two tree lengths away from tree being felled. Operators shall have escape routes planned that are at 45 degrees from the projected direction of the falling tree. Keep escape routes clear of all tools, materials, and wood/brush. Always cut away from the body. Shut off chain saws when walking between work areas. Have spotter assist when falling large or tall trees. Only cut trees, logs, or branches from ground height. Shut off engines before freeing pinched chains. Chain saw operators shall always hold the saw with both hands during cutting operations. Inspect chain saw before each use. Do not use saws in which any safety feature is not functioning. Frequently check and adjust tension on chain. Do not use saws with or dull cutters. Do not increase force used as cutters become dull. The idle speed shall be properly adjusted to prevent the chain from moving when the engine is idling. Keep bar groove clean. Use only new chains or professionally sharpened chains. Replace sprockets, which show signs of wear. Remain alert to kickback hazards and keep a firm, proper grip on chain saw at all times. All chain saws shall be equipped with automatic chain brake and other anti-kickback devices. Use wedges to prevent binding of the chain. Do not cut with the tip (nose) of the bar. Do not use dull chains. Do not overreach with chain saw. Personnel shall not operate chain saws above shoulder height. Personnel shall be familiar with cutting techniques.	13.F 13.A 31.C

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Vegetation Removal		
Date Prepared (mm-dd-yyyy):	09-28-09		Risk Assessment Code (RAC): M
Project:	RVAAP IRP	Job:	133616
Prepared By:	James Joice, CIH, CSP	Reviewed By:	David Crispo

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Vegetation removal (continued).	<p>Tree pruning, falling, and brush removal/chipping.</p> <p>Fatigue.</p> <p>Insect bites/West Nile Virus.</p>	<p>Machete use is prohibited. Personnel operating weed whackers or brush cutters shall wear hearing protection and eye/face protection. Steel blade use on weed whackers or brush cutters is prohibited. The procedures outlined in <i>Safety and Health Requirements Manual</i>, Sections 31.C, 31.D and 31.E shall be conveyed to all personnel involved in the operations. Remain clear of feed and discharge chutes on chippers.</p> <p>Chainsaw and equipment operators shall be given ample rest breaks.</p> <p>Wear personal protective equipment (PPE) and tape joints to keep insects away from the skin. Use protective insect repellents containing N,N-Diethyl-m-toluamide, such as, 3M Ultrathon or equivalent and clothing insecticide preparations containing permethrins (Repel Permanone or equivalent) to prevent insect bites. Check limbs/body for insects/insect bites before showering. Notify Site Safety and Health Officer (SSHO) of flu-like symptoms.</p>	<p>31.C 31.D 31.E</p> <p>06.D.01</p>

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Vegetation Removal				Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-28-09					
Project:	RVAAP IRP	Job:	133616			
Prepared By:	James Joice, CIH, CSP	Reviewed By:	David Crispo			

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Vegetation removal (continued).	Contact dermatitis and poison ivy.	<p>Check around work areas to identify if poison ivy is present. Wear long-sleeve shirts/trousers or Tyvek® coveralls to avoid skin contact with plants or other skin irritants. Learn to identify poisonous plants.</p> <p>Avoid unnecessary clearing of plant/vegetation areas.</p> <p>Cover vegetation with plastic (visqueen) where sampling position raises exposure potential. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. Identify workers who are known to contract poison ivy.</p>	06.D.03
	Severe weather.	The SSHO will monitor weather conditions each day in order to plan and prepare for hazardous conditions. The SSHO will identify a suitable tornado shelter at each work location. Work activities will be suspended prior to weather conditions becoming hazardous so that workers have ample time to seek shelter. Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (inside vehicles, buildings, or tornado shelters as appropriate). Follow procedures outlined in the APP.	06.I
	Hazardous atmospheres.	Personnel shall immediately notify the SSHO if odors are detected.	
	Heat stress and cold stress.	Follow procedures outlined in the Site Safety and Health Plan.	06.I
	Dust.	Dust shall be monitored and controlled. PPE use is required when working in contaminated areas.	28

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Vegetation Removal			Risk Assessment Code (RAC):	M
Date Prepared (mm-dd-yyyy):	09-28-09				
Project:	RVAAP IRP	Job:	133616		
Prepared By:	James Joice, CIH, CSP	Reviewed By:	David Crispo		

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE HAZARDS	EM 385-1-1 (PARA REF)
Vegetation removal (continued).	Fire.	Smoking shall be permitted in designated areas. Vehicles shall not be parked in tall dry grass. Engines shall be shut off before refueling. A 10-B:C fire extinguisher shall be available when refueling. Smoking shall not be permitted near fueling areas. Gasoline shall be stored in safety cans with flash arrestors and spring-loaded vents.	09.E.01 09.A.06 09.B.08
	Noise.	Equipment operators and ground personnel working with or near equipment shall wear hearing protection to reduce exposures to below the limits required by EM 385-1-1.	05.C

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 9.0 – Munitions and Explosives of Concern Avoidance		Competent Person:	
Date Prepared (mm-dd-yyyy):	10-13-2009		Risk Assessment Code (RAC):	M
Project:	RVAAP IRP	Job:	133616	
Prepared By:	D. Crispo/J. Joice	Reviewed By:	Bill Bacon	

	E= Extremely High Risk	Probability					
Recommended Protective Clothing & Equipment:	H = High Risk						
Modified Level D PPE (safety glasses, non-steel toed boots, non-static electricity generating inner or outer garments, hard hat if overhead obstructions exist) Equipment: Schonstedt metal detector, fire extinguishers, first aid kit	M = Moderate Risk	Frequent	Likely	Occasional	Seldom	Unlikely	
	L = Low Risk						
	Severity	Catastrophic					
	Severity	Critical				X	
	Severity	Marginal					
Severity	Negligible						

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
MEC Avoidance	Failure to properly plan daily activities. Chemical contamination. Munitions and Explosives of Concern (MEC) / Unexploded Ordnance (UXO).	A Job Safety Analysis (JSA), as required by Shaw HS 045 using information provided in this Activity Hazard Analysis and the Safety, Health, and Emergency Response Plan (SHERP) shall be prepared by the crew prior to commencing daily activities. The JSA may be used as a component of the morning Tailgate Safety Meeting. The JSA shall be revised at any time throughout the workday when new tasks are initiated, unforeseen circumstances arise, or if working conditions change. Use Hazard Assessment Resolution Program frequently – for each task to be completed. Set up work zones and personnel washing facilities. PPE shall be worn as required. Personnel shall wash hands and face before eating, drinking, smoking, or chewing. Field personnel will attend MEC/UXO Awareness training. A UXO Technician III or higher shall provide the training and be present during all site related activities.	01.A.13 02.F 06.B.02 01.B.05 01.B.06

Activity Hazard Analysis (AHA)

Definable Feature of Work	AHA 8.0 – Munitions and Explosives of Concern Support		Competent Person:	
Date Prepared (mm-dd-yyyy):	09-05-2006		Risk Assessment Code (RAC):	M
Project:	RVAAP Load Lines 1	Job:	122788	
Prepared By:	T. Mathison / J. Joice	Reviewed By:		

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS	EM 385-1-1 (PARA REF)
MEC Avoidance (continued).	Noise.	Equipment operators and ground personnel working near heavy equipment or loud equipment/machinery shall wear hearing protection to reduce exposures to below the 8-hour Time-Weighted Average (TWA) of 85dB(A).	05.C
	Heat, cold, severe weather.	Follow procedures outlined in the SHERP.	06.I
	Slips, trips, and falls.	Travel paths and work areas for all activities shall be evaluated for MEC or suspect MEC by the UXO Technician. Watch for and avoid trip hazards. Work areas shall be kept organized during work activities. Housekeeping shall be maintained. Personnel shall not jump from equipment or elevated surfaces.	14.C.01 14.C.02 14.C.04
	Punctures to feet.	Personnel working in designated work areas where demolition debris may be present shall wear puncture-proof foot protection.	05.E.06
	MEC Munitions Encountered	All MEC or suspect MEC encountered will be treated as extremely dangerous. Shaw personnel will follow the three Rs (Recognize, Retreat and Report). No MEC or suspect MEC will be probed, handled or touched.	33.A.01

APPENDIX D

FORMS

Site Forms Index

Accident Review Board	Job Safety Analysis Checklist Form
Air Monitoring Data Record	Job Safety Analysis Worksheet Form
Air Sampling Data Record	Lift Plan Worksheet – Hydraulic Equipment
Allergy/Sensitivity Questionnaire	Lockout Log
Ambient Air Temperature Log	Lockout/Tagout for Compressed Air and Gases
Authorization for Release of Protected Medical Information	Lockout/Tagout for Electrical Equipment
Authorization for Treatment for Occupational Injury/Illness	Lockout/Tagout for Hydraulic Equipment
Daily Equipment Inspection	Lockout/Tagout for Steam, Water, and Fluid Lines
Daily Safety Inspection Report	Lockout/Tagout Procedure for Specific Equipment
Direct Push Rig Inspection Checklist	Noise Dosimeter Field Data Log
EHS Mission Vision Poster	Noise Survey Field Data Log
Emergency Eyewash Station/Fire Extinguisher Inspection Checklist	Safety and Occupational Health Deficiency Tracking Log
Employee Notification of Industrial Hygiene Monitoring Results	Project Safety Inspection Report
Employee Physiological Monitoring Record for Heat Stress	Rescue Service Evaluation
Employee Request for Material Safety Data Sheet (MSDS)	Return-to-Work Examination Form
Employee Training Record (Ladder Training)	Rigging Inspection Checklist
Employee Witness Statement	Safety Meeting Training Log
Entry Permit for Permit-Required Confined Space (PRCS)	Safety Observation Reporting Log
Equipment, Property Damage and General Liability Loss Report	Site Entry Log
Exclusion Zone Entry Log	Sound Level Meter/Noise Dosimeter Calibration Log
First Aid Kit Inspection Log	Supervisor's Employee Injury/Illness Report Form
Hazard Communication and Right-to-Know Standards Employee Training Record	Training Acknowledgement Form
Hepatitis B and Tetanus Vaccination Declination	U.S. Army Corps of Engineers ENG Form 3394
Hot Work Permit	U.S. Army Corps of Engineers Safety Inspection Checklist for Construction Equipment
Incident Investigation Report	Underground Utility Hits Tip Sheet for Incident Investigations
Injured Employee Statement	Utility Mark-out Documentation
Intrusive Activities Permit	Vehicle Accident Report
	Vehicle Inspection
	Workplace Evaluation
	Zero Accident Pledge



ATTACHMENT 7

ACCIDENT REVIEW BOARD

DATE: _____		LOCATION: _____	
BOARD MEMBERS:			
ACCIDENT DATE:		EMPLOYEE(S) INVOLVED IN INCIDENT:	
INVESTIGATION COMPLETE: YES <input type="checkbox"/>		ACCIDENT CLASSIFICATION:	
NO <input type="checkbox"/>			
THE FOLLOWING INFORMATION <u>MUST</u> BE PROVIDED BY THE REVIEW BOARD FOR THIS INCIDENT (PRINT):			
SUPERVISOR: _____		PROJECT/LOCATION MGR.: _____	
POTENTIAL CAUSE OF ACCIDENT:			
ACTION BY BOARD*:			
* ALL ACTIONS BY THE ACCIDENT REVIEW BOARD ARE SUBJECT TO FINAL REVIEW BY THE HUMAN RESOURCES AND LEGAL DEPARTMENTS.			
ACCEPTED:			
_____		_____	
(Employee Signature)		(Supervisor Signature)	
APPROVED:		REJECTED FOR:	
_____		_____	
(Project/Location Manager)			
APPROVED:		REJECTED FOR:	
_____		_____	
(Business Line Health and Safety Manager or Designee)			
APPROVED:		REJECTED FOR:	
_____		_____	
(Business Line Vice President)			

AIR MONITORING DATA RECORD

Location: _____ Project No.: _____

Instrument: Mfg/Model/Serial No.: _____ Calibrated by: _____
 Date: _____

COMBUSTIBLE GAS/OXYGEN/CARBON MONOXIDE METER CALIBRATION

Time	Battery Charged (Y/N)	Zero Checked (Y/N)				Calibration Standard	Calibration Standard				Actual Meter Reading				Ambient Air Re-Zero Check				
		H ₂ S (0%)	LEL (0%)	O ₂ (20.8%)	CO (0 ppm)		% H ₂ S	% LEL	% O ₂	ppm CO	% H ₂ S	% LEL	% O ₂	ppm CO	H ₂ S (0%)	LEL (0%)	O ₂ (20.8%)	CO (0 ppm)	

PHOTOIONIZATION DETECTOR/FLAME IONIZATION DETECTOR CALIBRATION

Time	Battery Charged (Y/N)	Calibration Standard	Calibration Standard Concentration (ppm)	Expected Meter Reading (ppm)	Actual Meter Reading (ppm)	Comments

REAL TIME AIR MONITORING RESULTS

Date	Instrument Operator	Time	Monitoring Results		Action Level Exceeded (Y or N)	Location/Activity	Corrective Actions
			Compound	Concentration			

Comments: _____

Calibration Q.C.: Calibrations are to be within 5% for validity.

Abbreviations: CO = carbon monoxide, %LEL = percent of the lower explosive limit, O₂ = oxygen



AIR SAMPLING DATA RECORD

SAMPLING INFORMATION

Date of Sampling		Project Name	
Type of Sample Personal/Area		Project Number	
Employee Sampled		Operation/Task Monitored	
Employee Number			
Employee Social Security Number		Location of Air Sampling	
Employee Job Title		Person Performing Sampling/Employee #	

SAMPLING & PUMP CALIBRATION DATA

PROJECT SPECIFIC SAMPLE IDENTIFICATION NUMBER:

Air Pump Manufacturer/ Model/Number:		Ambient Air Temperature:								
Pre-sampling Calibration Flow Rate (mL/min)			Post-sampling Calibration Flow Rate (mL/min)				Final Sample Flow Rate (mL/min)			
1 st flow rate	2 nd flow rate	3 rd flow rate	Pre- average flow rate	1 st flow rate	2 nd flow rate	3 rd flow rate	Post- average flow rate	Pre- average flow rate	Post- average flow rate	Final average flow rate
Pump start time:	Pump stop time:	Total pump run-time (minutes):			Final average flow rate (mL/min):		Total sample volume (liters):			
Analytes sampled for:	Analyte #1: _____ NIOSH Method # _____	Analyte #2: _____ NIOSH Method # _____			Analyte #3: _____ NIOSH Method # _____					
Date Sample Shipped to Laboratory:	Remarks:									

HAZARD CONTROL MEASURES (check all that apply):

Respirator	<input type="checkbox"/> None	<input type="checkbox"/> Half-face APR	<input type="checkbox"/> Full-face APR	<input type="checkbox"/> PAPR	<input type="checkbox"/> Supplied-air (specify):	
Coveralls	<input type="checkbox"/> None	<input type="checkbox"/> Cotton	<input type="checkbox"/> Nomex	<input type="checkbox"/> Tyvek®	<input type="checkbox"/> Poly-coated Tyvek®	<input type="checkbox"/> Saranex
Gloves	<input type="checkbox"/> None	<input type="checkbox"/> Cotton	<input type="checkbox"/> Leather	<input type="checkbox"/> Sample	<input type="checkbox"/> Nitrile	<input type="checkbox"/> Other:
Boots	<input type="checkbox"/> Work	<input type="checkbox"/> Tyvek®	<input type="checkbox"/> Latex	<input type="checkbox"/> PVC	<input type="checkbox"/> Neoprene	<input type="checkbox"/> Other:
Engineering	<input type="checkbox"/> None	<input type="checkbox"/> Negative Air	<input type="checkbox"/> Ventilation		<input type="checkbox"/> Other:	

LABORATORY INFORMATION:

Laboratory Used (Name/Address/Telephone/Contact):

ANALYTICAL RESULTS:

Analyte #1	Analyte #2	Analyte #3



**VOLUNTARY
ALLERGY/SENSITIVITY QUESTIONNAIRE**

This information is requested so that you may be assigned work duties which minimize your exposure to elements which may cause you to have a threatening medical reaction and will be used only in case of an emergency. Submitting this form is strictly **VOLUNTARY**. However, your cooperation is appreciated so that we can maintain a safe working environment.

Name: _____

Employee Number: _____ Date: _____

<u>Are you allergic or sensitive to:</u>	<u>Yes</u>	<u>No</u>	<u>Don't know</u>
Bee stings			
Insect bites			
Animal or reptile bites			
Pollens			
Plant material			
Dust			
Smoke, smog or ozone			

<u>Are you allergic or sensitive to:</u>	<u>Yes</u>	<u>No</u>	<u>Don't know</u>
Any cloths or fibers			
Latex			
Powders			
Medications			
Metals			
Foods (i.e., peanuts, etc.)			
Chemical/ petroleum products			

Have you ever had an asthmatic attack?			
Have you ever experienced exercise induced asthma?			

Do you have an allergy or medical condition for which you wear a medic alert bracelet or necklace?			
--	--	--	--

If you answered "yes" to any of the above, please list specific allergy information:

Are there any special instructions that should be provided to a physician in case of an emergency?



Project Location: _____
Client: _____
Project Number: _____

AMBIENT AIR TEMPERATURE LOG

Thermometer Location: _____

Date: _____

<u>Time (hours)</u>	<u>Temp. (°F)</u>	<u>Time (hours)</u>	<u>Temp. (°F)</u>
0000 (Midnight)	_____	1200 (Noon)	_____
0100	_____	1300	_____
0200	_____	1400	_____
0300	_____	1500	_____
0400	_____	1600	_____
0500	_____	1700	_____
0600	_____	1800	_____
0700	_____	1900	_____
0800	_____	2000	_____
0900	_____	2100	_____
1000	_____	2200	_____
1100	_____	2300	_____

Comments: _____



ATTACHMENT 9B
MEDICAL FORMS
AUTHORIZATION FOR RELEASE OF PROTECTED MEDICAL INFORMATION

Printed Name: _____ Date of Birth: _____

Address: _____

Social Security #: _____ Home Telephone: _____

Authority to Release Protected Health Information

I hereby authorize the release of medical information, identified in this authorization form, and provide such information to:

HEALTH RESOURCES 600 West Cummings Park, Suite 3400 Woburn, Massachusetts 01801 Phone: (800) 350-4511 Fax: (800) 853-2641	AND	The Shaw Group Inc. 4171 Essen Lane Baton Rouge, Louisiana 70809 Phone: 225-932-2500 Fax: 225-932-2636
--	------------	---

The Information To Be Released includes the following:

Complete health record	Discharge summary	Progress notes
History and physical exam	Consultation reports	X-ray films / images
Laboratory test results	X-ray & Image reports	Itemized bill
Diagnosis & treatment codes	Complete billing record	

Other, (specify) _____

Purpose of the Requested Disclosure of Protected Health Information

I am authorizing the release of my Protected Health Information.

Drug and/or Alcohol Abuse, and/or Psychiatric, and/or HIV/AIDS Records Release

I understand if my medical or billing record contains information in reference to, psychiatric care, sexually transmitted disease, hepatitis B or C testing, previous drug and/or alcohol abuse and/or other sensitive information, I agree to its release. *Check One:* **Yes** **No**

I understand if my medical or billing record contains information in reference to HIV/AIDS (Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome) testing and/or treatment I agree to its release. *Check One:* **Yes** **No**

Right to Revoke Authorization

Except to the extent that action has already been taken in reliance on this authorization, the authorization may be revoked at any time by submitting a written notice to **The Corporate Claims Dept. at The Shaw Group Inc., 4171 Essen Lane, Baton Rouge, Louisiana 70809.** Unless revoked, this authorization will expire at which time completion of treatment for the injury or illness has been accomplished.

Re-disclosure

I understand the information disclosed by this authorization may be subject to re-disclosure by the recipient and no longer be protected by the Health Insurance Portability and Accountability Act of 1996.

Signature of Patient or Personal Representative Who May Request Disclosure

I understand that I do not have to sign this authorization. However, if health care services are being provided to me for the purpose of providing information to a third-party (e.g. fitness-for-work test), I understand that services may be denied if I do not authorize the release of information related to such health care services to the third-party. I can inspect or copy the protected health information to be used or disclosed. **I hereby release and discharge The Shaw Group Inc of any liability and the undersigned will hold The Shaw Group Inc harmless for complying with this Authorization.**

Signature: _____ **Date:** _____

Description of relationship if not patient: _____



Procedure No. HS020
 Revision No. 5
 Date of Revision 07/16/03
 Last Review Date 07/16/03
 Page 21 of 24

**ATTACHMENT 9B
 MEDICAL FORMS**

AUTHORIZATION FOR TREATMENT OF OCCUPATIONAL INJURY/ILLNESS

Employee Name: _____
 Social Security #: _____
 Job Title: _____
 Project/Location _____
 Telephone #: _____
 H&S Representative: _____
 Body Part(s) Injured: _____
 Describe in detail how incident occurred: _____

Injury: Illness:
 Incident Date: _____
 Location of Accident/Exposure: _____

TO TREATING PHYSICIAN:

In the case of occupational injury/illness, please examine the employee and render necessary conservative treatment directly related to the occupational injury/illness.

Light Duty Work:

It is the policy of our company to provide work assignments, whenever possible, for employees with physical activity restrictions resulting from an occupational injury/illness. If the employee will be subject to a restriction, please contact **Health Resources** before releasing the employee, so that a light duty assignment may be arranged.

Medically Unfit to Return to Work:

It is the policy of our company to assist employees unable to return to work, due to an injury/illness, in obtaining needed medical care and other available benefits. Medical findings are also used to help evaluate unsafe conditions that may have led to the incident. Please help us assist our employees by contacting **Health Resources** with your findings as soon as possible, preferably before the employee leaves your office, but not later than the close of business on the day of initial treatment.

Health Resources: Telephone: 1-800-350-4511 Fax: (800) 853-2641

Please Send Reports To **Health Resources** *AND* **The Shaw Group, Inc. Corporate Claims Department**
Both of the Following: 600 West Cummings Park, Suite 3400 4171 Essen Lane
 Woburn, Massachusetts 01801 Baton Rouge, LA 70809

Please Send Bills To: **The Shaw Group, Inc. Corporate Claims Department**
 4171 Essen Lane
 Baton Rouge, LA 70809

DOCTOR, Please provide:

Medical Diagnosis: _____
 Treatment Provided: _____

Recommended Work Limitation/Restriction: _____
 Return Visit Needed: No Yes Date if Yes _____ First Aid Only
 Physician Name: _____ Physician Telephone: _____
 Physician Signature: _____ Date: _____

**YOU MUST CALL HEALTH RESOURCES FOR ALL OCCUPATIONAL INJURIES/ILLNESSES
 REQUIRING OUTSIDE MEDICAL TREATMENT: 1-800-350-4511.
 FAX COMPLETED FORM TO HEALTH RESOURCES (800) 853-2641.**

Send Bills to Shaw Corporate Claims Department

Equipment No: _____

Date: _____

Equipment Type: _____

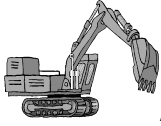


Location: _____

Shaw Environmental & Infrastructure, Inc.

Equipment Hrs: _____

Supervisor: _____



DAILY EQUIPMENT INSPECTION

List Quantities And Kinds of Fluids Added In Space At Bottom Of Sheet

ITEM		OK	Add	N/A	Comments
1	Check Engine Oil Level And Engine Compartment For Trash, Debris, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Check Hydraulic Oil Level, Cap And Vent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Check Radiator Coolant Level And Radiator Fins For Dirt, Leaves, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Check Transmission Oil Level (Dozers) or Swing Case (Excavators).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Check Oil Level in Frame Joint Bearing, Consult Manual. (Volvo A-40 only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Check For Oil or Coolant Leaks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Check Wheels / Tires / Tracks For Damage, Cuts And Proper Inflation PSI. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Check Ground Engaging Implements, Cutting Edges, Teeth, Blade, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Inspect Visible Hydraulic Hoses / Lines For Scuffs, Wear, Leaks, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Inspect ROPS, FOPS, For Any Obvious Signs Of Loose Mounts, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Check All Guages, Lights, Controls, Backup Alarms, Horn, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Inspect Operators Compartment For Debris And Fire Extinguisher Charge. Check Floor For Build-up Of Dirt Around Pedals. Inspect Seat Belts, Lap Bar, Etc. Clean The Windows And Note Any Cracks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Do a Walk Around Inspection Looking For Obvious Signs Of Future Problem Areas. Check Grab Handles and Step Treads, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Check Operation Of All Systems, Boom, Bucket, Dump Bed, Grapple, Shears. Look for Leaks, Damage, Warning Signs, Excess Slack, Obvious Wear, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Check Under The Machine For Any Loose Or Hanging Objects, Leaks, Or Anything Out Of The Ordinary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Check Fuel Level And Cap Condition, Fill Tank Prior To Beginning Daily Operation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Lube All Moving Parts , Such As Blade, Bucket, Stick, Connecting Links Equalizer bar, Cylinder Pins And Any Point That Is Subject To Grease Being Pushed Or Worn Out Due To Daily Use. Consult Manual For Grease Points.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Check Breathing Air Sustum (If Used). Make Sure Bottle Is Full And Mask / Hose Assembly Is Clean And In Good Working Condition Before Each Use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Verify The Presence Of The Operations / Maintenance Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Report All Damage To Supervisor Immediately

COMMENTS:

USE LINE NUMBER, BE SPECIFIC, NOTIFY REGIONAL MAINTENANCE COORDINATOR IF IMMEDIATE ATTENTION IS NEEDED.

EMPLOYEE NAME: _____

EMPLOYEE NUMBER: _____

THESE SHEETS ARE TO BE RETAINED ON THE PROJECT FOR REVIEW BY ESG PERSONNEL.



Project Location: _____
Client: _____
Project Number: _____

DAILY SAFETY INSPECTION REPORT

Inspector name: _____

Date: _____

Supervisor: _____

SSHO: _____

General Project Activities Description: _____

Safety conditions and/or deficiencies:

Corrective actions to be completed:

Note: The status of corrective actions is to be tracked through closure on the Safety and Occupational Health Deficiency Tracking Log.

Signature: _____
(Supervisor)

Signature: _____
(Safety Representative)



Direct-Push Rig Inspection Checklist

Project Name/Number: _____
 Make/Model Number: _____
 Equipment Number: _____
 Hours/Mileage: _____

Rig clean and free of soils, oils, and other debris.		Tracks in good condition.	
All hydraulic fittings and hoses free of damage, tightened, and not leaking.		Tires fully inflated and in good condition.	
Rig controls clearly labeled and in working condition.		Back-up alarm working.	
Rig Kill Switch in working order.		First Aid Kit accessible and stocked.	
All of the Rig's connections tightened and leak-free.		Fire Extinguisher accessible and fully charged.	
Parking brake functions properly.		Eye Wash full and accessible.	
Steering controls in working order and clear of obstacles.		Hearing protection available and is being used during hammering.	
Copy of the manual for all drilling equipment available.		All overhead and underground hazards identified.	

√ = OK
 N/A = Not Applicable
 X = Defective

These items are to be checked each shift before operating this piece of equipment.
 Report all items requiring repair to supervisor.

Notes:	
Operator/Inspector:	Date:

The Foundation of Our Targeting Zero Environment Mission



Shaw's E&I Group will achieve its goal of "Targeting Zero" accidents and injuries while working as a team to provide a workplace that is free from recognized hazards.

Vision

We will be recognized and respected as the leading company in our industry and as the standard by which our competitors are benchmarked by providing the leadership, guidance and operations excellence necessary to identify and control all recognized hazards in the workplace.

Values

Leadership – provide the necessary tools to identify and control all hazards in the workplace.

Commitment – we will never be satisfied that we have done enough.

Pride – all employees will own the safety process.

Dedication – to strive for continual improvement.

Appreciation – to embrace the safety of our employees.

Operating Principles

- Safety is a core value.
- We plan work to ensure it is done safely.
- We are a safety team.
- We follow good safety practices in all work that we do.
- We will actively demonstrate our commitment to safety.
- All accidents are preventable.
- We will not perform any job that cannot be performed safely.
- We will not compromise safety in the interest of time or comfort.
- We will constantly review our performance to ensure continuous improvement.
- We will encourage employees to commit to safety as a lifestyle and carry the culture of "Targeting Zero" home with them.



EMERGENCY EYEWASH STATION/FIRE EXTINGUISHER INSPECTION CHECKLIST

Location: _____

Project Number: _____

Client: _____

Inspected by: _____

EMERGENCY EYEWASH STATIONS

Inspection Points	Date:	Unit #1	Unit #2
Is unit in assigned location?			
Is unit full of water?			
Is unit location well marked?			
Is access to unit unobstructed?			
Is unit in sanitary condition?			
Has water been changed with disinfectant added within the last six months?			
Has inspection tag on unit been signed and dated?			

PORTABLE FIRE EXTINGUISHERS

Inspection Points	Unit #	Unit #	Unit #	Unit #	Unit #
Fire extinguisher is in assigned location?					
Access to fire extinguisher is not obstructed?					
Fire extinguisher is fully charged?					
Lock-pin in place?					
Service tag attached and serviced within past year?					
Has inspection tag on unit been signed and dated?					

√ = OK N/A = Not Applicable X = Defective

Comments: _____



ATTACHMENT 2

Employee Notification of Industrial Hygiene Monitoring Results

Employee Name _____ SS# _____

Project Name _____ Project No. _____

Project Manager _____

Substance Monitored _____ Date Monitored _____ Sample Number _____

Results: _____ mg/m³ _____ ppm Other _____

Exposure Standard: _____ mg/m³ _____ ppm Other _____

Protective Equipment Used

For instances where exposures were found to be in excess of an exposure limit, the following corrective action steps (engineering, administrative, job techniques, etc.) Are being taken to reduce potential future exposures:

H&S Representative: _____
Name Printed Signature Date

Employee monitored: _____
Name Printed Signature Date

Distribution: Employee
Employee's H&S Representative
Vice President of Health and Safety

Employee Physiological Monitoring Record for Heat Stress

Employee Name _____ Employee # _____
 PPE used during performance of work: _____ Date _____ Shift Start Time _____ Location _____
 Shift Stop Time _____ Job Number _____
 Site Safety & Health Officer _____

Temperatures

Heart Rate Supervisor

A. Initial Reading
 1. Ambient Air Temp. °F _____
 2. Baseline Body Temp. °F _____
 3. Time Temp. Taken _____

B. After First Work Period
 1. Ambient Air Temp. °F _____
 2. Body Temp. °F _____
 3. Length of work period _____

C. After Second Work Period
 1. Ambient Air Temp. °F _____
 2. Body Temp. °F _____
 3. Length of work period _____

D. After Third Work Period
 1. Ambient Air Temp. °F _____
 2. Body Temp. °F _____
 3. Length of work period _____

E. After Fourth Work Period
 1. Ambient Air Temp. °F _____
 2. Body Temp. °F _____
 3. Length of work period _____

A. Initial Reading
 1. Baseline Heart Rate _____ Beats per minute

B. After First Work Period
 1. Heart Rate _____ Beats per minute

C. After Second Work Period
 1. Heart Rate _____ Beats per minute

D. After Third Work Period
 1. Heart Rate _____ Beats per minute

E. After Fourth Work Period
 1. Heart Rate _____ Beats per minute

- Baseline Body Temperature and Heart Rate to be taken at project site location at beginning of shift before engaging in physical activity.
- Heart Rate – Each individual will count his/her radial (wrist) pulse as early as possible during each rest period. If the heart rate of any individual exceeds 75 percent of their calculated maximum heart rate (MHR = 200 – age) at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. An individual is not permitted to return to work until his/her sustained heart rate is below 75 percent of their calculated MHR.
- Temperature – Each individual will measure his/her temperature with a thermometer for one minute as early as possible in the first rest period. If the temperature exceeds 99.6°F at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same. An individual is not permitted to return to work if her/her temperature exceeds 100.4 °F. Note: due to the lack of accuracy in measuring body temperatures, heart rate is probably a better measurement of heat stress and should be weighted accordingly.
- This completed form should be retained in project file.



EMPLOYEE REQUEST FOR MATERIAL SAFETY DATA SHEET (MSDS)

Project Name: _____ Project Number: _____

Employee Name: (Please Print) _____

Employee Number: _____

Job Title/Location: _____

Department/Work Area: _____

I am requesting a copy of the MSDS(s) for the following chemical(s):

(Chemical name, Common name, Trade name)

1. _____
2. _____
3. _____

Signature

Date

I have received a copy of the above MSDS(s) I requested.

Signature

Date

cc: Local Health and Safety Representative



**EMPLOYEE TRAINING RECORD
(LADDER TRAINING)***

NAME _____ LOCATION _____

CLIENT: _____ PROJECT NUMBER: _____

EMPLOYEE NUMBER _____ SUPERVISOR _____

1. I have reviewed, understand, and agree to abide by the ladder procedures described in HS302.
2. I acknowledge that it is my responsibility to inspect ladders prior to their use and after any event that could result in ladder damage.

SIGNATURE _____ DATE _____

1. I have observed a demonstration of the ladder usage skills for the above associate and feel that they understand how to correctly use a ladder, are familiar with safety rules and regulatory requirements, and have demonstrated satisfactory ladder skills.

INSTRUCTOR SIGNATURE _____

DATE _____

*** Place original completed form in the project H&S file and forward a copy to the employee's home H&S Office.**



ATTACHMENT 6b
Employee Witness Statement
MUST BE COMPLETED WITHIN 24 HOURS OF THE INCIDENT

This form should be completed by every employee working in the crew of the injured employee and by every other employee with knowledge of events or circumstances involved in the incident. This information is being solicited from you so that the company can accurately assess the reported incident to avoid similar occurrences in the future. Describe only the facts for which you have personal knowledge. If you have no knowledge of the incident, write "no knowledge".

Company: _____

exact Location of Incident/Accident: _____

Name of Injured Employee: _____

Date of Incident/Accident _____

Date of this Statement _____

Time your shift begins: _____

Witness Information: _____

 Name: _____

 Home Phone No.: _____

 Home Address: _____

 County: _____ State/Zip: _____

Witness Supervisor's Name: _____

If not employed by Shaw E&I, enter the name of your company: _____

Company Phone Number: _____

Did you see the Incident/Accident? _____

How Far From You (approx., in feet) Did the Incident/Accident Occur? _____

Stating Only Factual Information, Describe in Detail What happened and Include any Applicable Events Leading to the Incident/Accident.

I certify that, to the best of my knowledge, all of the above information is complete, accurate and factual. I acknowledge that the intentional falsification or altering of facts or making misleading statements may be grounds for disciplinary action.

(Witness Signature/Date)

(Print Name)



ENTRY PERMIT FOR PERMIT-REQUIRED CONFINED SPACE (PRCS)

Project/Location _____ Project No. _____

Location of PRCS _____ Identity of PRCS _____

Describe Hazards of PRCS (Chemical and Physical) _____

Purpose This Permit Authorized _____

CHECKLIST	YES	DOES NOT APPLY	<i>PERSONAL PROTECTIVE EQUIPMENT</i> (Circle)
			<u>EYE/FACE</u> Chemical Goggles Face Shield Safety Glasses
All lines leading to and from the space have been blinded or disconnected.			<u>EXTREMITIES</u> Hard Hat Hoods Boot Covers
Electrical service disconnected or locked out.			Gloves (Material _____)
All grounding and bonding cables in place.			Boots (Material _____)
All lighting, fittings, power equipment, and extension cords are rated for anticipated atmosphere.			<u>RESPIRATORY</u> SCBA Supplied Air Egress System
Ground Fault Circuit Interrupter (GFCI) checked and functioning.			Air Purifying (Cartridge _____)
All ignition sources have been isolated.			Powered Air Purifying (Cartridge _____)
All respiratory equipment and alarms checked and functional			<u>OTHER</u> Hearing Protection Harness & Lifeline Chest or Parachute
All safety harnesses and lifelines checked.			<u>RESCUE EQUIPMENT</u> Mechanical Extraction Device First Aid Kit SCBA Other (Specify) _____
All required PPE checked and in use.			
Have all entrants, attendants, and entry supervisors received appropriate training?			
Attendant(s) trained in non-entry rescue procedures.			
Rescue service has been identified and will be available for entry rescue.			
Has rescue service passed evaluation?			
Appropriate rescue equipment available and checked.			<u>COMMUNICATION METHOD</u> Lifeline "Tug" Signals Air-powered Horn Signals Other _____
Mechanical ventilation system in use and effective.			
All tests have been completed and indicate that entrance requirements have been met.			
Appropriate warning signs have been posted and unauthorized personnel have been excluded from the PRCS.			
IF ANSWER TO ANY OF THE ABOVE QUESTIONS IS NO, ENTRY IS NOT PERMITTED.			
OTHER PERMITS ISSUED FOR WORK IN PRCS: _____			
OTHER HAZARD CONTROL PROCEDURES OR INSTRUCTIONS: _____			
RESCUE PROCEDURES: _____			



ATTACHMENT 4

EQUIPMENT, PROPERTY DAMAGE AND GENERAL LIABILITY LOSS REPORT

This report is to be completed for all losses or damage to company property in excess of 1,000.00 and all third party damage, regardless of value, resulting from company activities.

PROJECT/LOCATION: _____ PROJECT # _____ DATE: _____
 ADDRESS: _____
 HOW DID DAMAGE OR LOSS OCCUR: _____

DESCRIPTION AND VALUE (\$) OF DAMAGED/LOST/STOLEN PROPERTY: _____

LOCATION OF DAMAGED/LOST/STOLEN PROPERTY (Before Loss) _____

DATE AND TIME OF DAMAGE, LOSS, OR THEFT: DATE: _____ TIME: _____ AM PM

OWNER OF DAMAGED/LOST/STOLEN PROPERTY:
 Name: _____ Phone # _____
 Address: _____ City/State _____
 Employer and Address: _____

INJURED PARTIES (Also complete a Supervisor's Employee Injury Report if a Company Employee):
 Name: _____ Phone # _____
 Address: _____ City/State _____
 Employer and Address: _____
 Description of Injury: _____

Witnesses:
 1. Name: _____ Home Phone # _____
 Home Address: _____ City/State _____
 Employer and Address: _____
 2. Name: _____ Home Phone # _____
 Home Address: _____ City/State _____
 Employer and Address: _____

WERE PICTURES TAKEN? YES NO
 WERE POLICE NOTIFIED? YES NO DEPT. _____ REPORT NO. _____

COMPLETED BY: _____
 (Print) (Signature) (Date)

SUPERVISOR: _____
 (Print) (Signature) (Date)



FIRST AID KIT INSPECTION LOG (Inventory Kit)

Location: _____

Project Name: _____

Project Number: _____

Client: _____

Date: _____

Inspected by: _____

SSHO Approval Signature: _____

Contents	Fixed Location Kit		Vehicular Kit*			
	Minimum Required Quantity	Actual Quantity	Required Quantity	Actual Quantity		
				Vehicle 1 ID	Vehicle 2 ID	Vehicle 3 ID
Telfa Bandage Compress, 4"x4"	4	_____	2	_____	_____	_____
Adhesive Bandages, 1"x3-3/8"	25	_____	25	_____	_____	_____
Ammonia Inhalants	2	_____	1	_____	_____	_____
Triangular Bandage 40" x 40" x 56"	1	_____	-	_____	_____	_____
Eye Covering with Means of Attachment	1	_____	-	_____	_____	_____
Eye Flush, 1oz.	2	_____	2	_____	_____	_____
Absorbent Compress 24 sq. in.	1	_____	1	_____	_____	_____
Antiseptic Wipes 1" x 1"	10	_____	5	_____	_____	_____
Antiseptic Swabs 0.14 fl. oz.	10	_____	5	_____	_____	_____
Antiseptic Towelettes 24 sq. in.	10	_____	-	_____	_____	_____
Sterile Pad 3" x 3"	4	_____	2	_____	_____	_____
Burn Treatment 0.14 fl. Oz.	6	_____	1	_____	_____	_____
Roller Bandage 4" x 6 yd.	1	_____	-	_____	_____	_____
Roller Bandage 2" x 6 yd.	2	_____	-	_____	_____	_____
Kwik-Kold Ice Pak	2	_____	-	_____	_____	_____
Adhesive Tape, 1" x 5 yd.	2	_____	1	_____	_____	_____
Scissors and Forceps Kit	1	_____	-	_____	_____	_____
Tick Removal Kit	1	_____	-	_____	_____	_____
Emergency Blanket	1	_____	-	_____	_____	_____
Disposable Gloves	4 pair	_____	2 pair	_____	_____	_____
Flashlight	1	_____	-	_____	_____	_____
Cotton-tip Applicators	10	_____	-	_____	_____	_____
Disposable mouth-to-mouth Resuscitators	2	_____	1	_____	_____	_____
Multi-Trauma Dressings 8"x10"	2	_____	-	_____	_____	_____
2" Bandage Compress 2" x 36"	4	_____	-	_____	_____	_____
3" Bandage Compress 3" x 60"	2	_____	-	_____	_____	_____
4" Bandage Compress 4" x 72"	1	_____	-	_____	_____	_____
Supervisor's Employee Injury Report	1	_____	1	_____	_____	_____
Inventory Kit	1	_____	-	_____	_____	_____

* Readily available "vehicle-size" first aid kits may be purchased at the local department store to fulfill vehicle kit stocking requirements. The kit contents do not need to be inspected as long as the shrink-wrap sanitary covering is intact.



**HAZARD COMMUNICATION AND RIGHT-TO-KNOW STANDARDS
EMPLOYEE TRAINING RECORD**

Project Name: _____

Project Number: _____

INITIAL:

- | | |
|---|----------------------|
| 1. I have been informed about the Hazard Communication Program, Material Safety Data Sheets (MSDS), their use and location, and the procedures to obtain copies. | <input type="text"/> |
| 2. I have been informed that some of my work may involve exposure to toxic substances, the hazards of which will be reviewed with me in tailgate safety meetings or site-specific training. | <input type="text"/> |
| 3. I have been informed about the right of employees to have access to relevant exposure and medical records, and the procedures for requesting access. | <input type="text"/> |
| 4. I understand that the company must act upon a request in a reasonable amount of time so as to avoid interruption of normal work operations. | <input type="text"/> |
| 5. I have been provided access to the applicable regulations governing hazard communication, and access to employee exposure and medical records. | <input type="text"/> |

PRINT NAME: _____

SIGNATURE: _____

EMPLOYEE NUMBER: _____

DATE: _____



HEPATITIS B AND TETANUS VACCINATION DECLINATION

Due to the potential for you to have occupational exposure to potentially infectious materials in your work, the company will provide, and encourages you to accept, vaccinations for Hepatitis B and Tetanus. Information to assist you in this decision is provided below.

Tetanus

- Bacterial disease causing muscle spasms, seizures, and “lockjaw”
- Single injection vaccination has few side effects
- Minimal loss in protection if the vaccination is given at the time of an exposure/injury rather than in advance

Hepatitis B

- Viral infection of the liver
- About 9,500 occupational cases occur annually, mostly in health care workers, with about 200 deaths
- Three-injection vaccination has few side effects
- Vaccination is 90 percent effective for at least 7 years when given prior to exposure
- Vaccination is 70 to 88 percent effective when given within 1 week of exposure
- Can survive in the environment for 24 to 48 hours after drying
- Risk of infection from one cut or puncture wound from a contaminated object:
 - Hepatitis B virus 6 to 30 percent
 - Human Immunodeficiency Virus (AIDS) 0.5 percent

If you wish to talk to a company doctor before making your decision, please ask the Health and Safety Manager to make arrangements for you. *If you choose to decline vaccination at this time, you must print and sign your name, and date the bottom of this form.*

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring Hepatitis B Virus (HBV) infection.

I have been given the opportunity to receive the Hepatitis B vaccine, at no charge to myself. However, I decline Hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease.

If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with the Hepatitis B vaccine, I can receive this vaccination series at no charge to me.

Name (print) _____

Signature _____

Date _____



HOT WORK PERMIT

Project Name _____ Project # _____

Good for This Date Only ____ / ____ / ____ Time From _____ To _____

Hot Work Area _____

Specific Work to be Done _____

Personal Protective Equipment Required: _____

Emergency Equipment Required: _____

CHECKLIST	INITIAL	
	YES	DOES NOT APPLY
Area personnel have been informed of work to be performed.		
All tanks, lines, valves are disconnected, blinded, or blocked out.		
Electrical service has been locked out and tagged.		
Equipment and all attached piping has been cleaned and purged with: (check blank) Water ____ Steam ____ Inert gas ____ Air		
All grounding/bonding wire in place.		
Surrounding equipment and operations are safe for hot work.		
No open vessels, lines or combustible items within 35 feet of hot work area.		
Fully charged and appropriate fire extinguisher easily accessible.		
Fire watch has been provided.		
No flammable gases greater than 10% LEL in hot work area.		
Compressed gas cylinders kept upright and secured.		
Air monitoring required.		

AIR MONITORING (If Required)						
STATE EXACT LOCATION OF TEST	TIME	% LOWER EXPLOSION LIMIT	% OXYGEN	OTHER TEST _____	OTHER TEST _____	INITIAL

Special Instructions: _____

Completed by: _____
Printed Name
Signature
Date



ATTACHMENT 5

INCIDENT INVESTIGATION REPORT

Must Be Completed Within 72 Hours & Relevant Support Documentation Must Be Attached/Submitted

Investigation Date: _____ Date of Incident: _____

Employee Name: _____

Supervisor Name: _____

Project No./Name: 842115 Ft. Benning _____

Location of Incident: _____

Incident Classification:

- | | | |
|---|---|---|
| <u>Injury:</u> <input type="checkbox"/> First Aid | <u>Vehicle:</u> <input type="checkbox"/> Chargeable | <u>DOT</u> <input type="checkbox"/> DOT Vehicle |
| <input type="checkbox"/> OSHA Recordable | <input type="checkbox"/> Non-Chargeable | <input type="checkbox"/> DOT Reportable |
| <input type="checkbox"/> Lost Workday | | |
| <input type="checkbox"/> Restricted Workday | <u>Near Miss:</u> <input type="checkbox"/> | <u>General Liability</u> <input type="checkbox"/> |

Description (Provide facts, describe how incident occurred, provide diagram [on back] or photos)

Analysis (What unsafe acts or conditons contributed to the incident?)

Corrective Action(s) (List corrective action items, responsible person, scheduled completion date)

Witness Names (Complete Attachment 6 - Employee Witness Statement)

Investigated By	_____	_____	_____
	Print Name	Signature	Date

Supervisor:	_____	_____	_____
	Print Name	Signature	Date



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Revision No.
Date of Revision
Last Review Date
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ATTACHMENT 6a
Injured Employee Statement
MUST BE COMPLETED WITHIN 23 HOURS OF THE INCIDENT

This form should be completed by the injured employee involved in the incident. Describe only the facts for which you have personal knowledge. If you have no knowledge of a particular question, write "no knowledge".

Company: Shaw Infrastructure, Inc.

Exact Location of Incident/Accident: _____

Name of Injured Employee: _____

Date of Incident/Accident: _____ Time: _____ a.m. p.m.

Date of this Statement: _____ Time: _____ a.m. p.m.

Time your shift begins: Beginning Time: _____ a.m. p.m. Ends: _____ a.m. p.m.

Name(s) of Known Witnesses:
Name: _____
Name: _____
Name: _____
Name: _____

Your Immediate Supervisor's Name: _____

If not employed by Shaw E&I, enter the name of your company and phone number: _____

Have You had a prior injury similar to this injury? _____

Was it while you were at work? _____

What date did the prior injury occur? _____

Stating Only Factual information, Describe in Detail What Happened and Include Any Applicable Events Leading to the Incident/Accident.

I certify that, to the best of my knowledge, all of the above information is complete, accurate and factual. I acknowledge that the intentional falsification or altering of facts or making misleading statements may be grounds for disciplinary action.

(Signature/Date)

(Print Name)



INTRUSIVE ACTIVITIES PERMIT	Permit Number
------------------------------------	----------------------

Project Name: _____ Project Number: _____

Clearance is permitted for intrusive activity at: _____

The attached map indicates the limits of the permitted intrusive activity. The area ___has ___has not been staked or clearly marked.

Utilities Locate Service Reference Number: _____

Limits of Work Permitted		
Description of permitted work:		
Specific location of permitted work:		
Precautions or comments:		
Date Clearance Permitted:		Date Clearance Terminated:
Request Initiated By:	Phone No.	Organization

Permission to proceed with intrusive activity granted:

Field Supervisor/Project Manager

Date

Permission to proceed with intrusive activity granted:

Site Safety and Health Officer

Date

I agree to perform work within the limits of this permit:

Supervisor/Foreman/Contractor

Date



JOB SAFETY ANALYSIS CHECKLIST FORM

DATE:
JOB#:
PERMIT#:
ISSUED BY:
SUPERVISOR:

Job Analyzed: _____

Project Name: _____

Consider the following and check the items which apply to the job, then review with the work crew.

PERMITS

- _____ Excavation
- _____ Cold Work
- _____ Hot Work
- _____ Confined Space Entry Permit
- _____ All Conditions Met
- _____ Signed-off When Complete
- _____ Other: _____

PPE

- _____ Chemical Protective Gloves
- _____ Leather Gloves
- _____ Special Purpose Gloves (e.g. Whizards)
- _____ Chemical Protective Coveralls
- _____ Acid Suit
- _____ Chemical protective Boots
- _____ Chemical Splash Goggles
- _____ Face Shield
- _____ Respirator
- _____ Fresh Air Ventilation
- _____ Hearing Protection
- _____ Safety Harness
- _____ Burning Goggles/Welder's Helmet
- _____ Other: _____

TOOLS

- _____ Current Inspection
- _____ Proper Tools for the Job
- _____ Good Tool Condition
- _____ Qualifications, e.g. explosive actuated tool
- _____ Other: _____

EMERGENCY EQUIPMENT

- _____ Fire Extinguishers
- _____ Safety Shower/Eyewash
- _____ Evacuation Route Mapped
- _____ Other: _____

ACCESS

- _____ Scaffold (properly inspected _____)
- _____ Scaffold Training
- _____ Ladder (HS 302 followed)
- _____ Man-lift
- _____ Personnel Basket (inspected/approved)
- _____ Operator Training
- _____ Special Provisions
- _____ Other: _____

WELDING

- _____ Flash-burns
- _____ Combustibles
- _____ Spark Containment
- _____ Shields
- _____ Grounding
- _____ Water Hose
- _____ Fire Extinguisher
- _____ Fire Blanket
- _____ Fire Watch
- _____ Sewer Covers
- _____ Other: _____

OVERHEAD WORK

- _____ Barricades
- _____ Signs
- _____ Hole Cover
- _____ Handrail
- _____ Other: _____

ELECTRICAL

- _____ Locked & Tagged out
- _____ Try Start/Stop Switch
- _____ GFCI Test
- _____ Assured Grounding
- _____ Extension Cord Inspection
- _____ Other: _____

LIFTING

- _____ Forklift
- _____ Boom Truck
- _____ Load Chart
- _____ Angle
- _____ Crane
- _____ Chain-fall
- _____ Proper Rigging Practices
- _____ Manual Lifting
- _____ Condition of Equipment
- _____ Operator Certification

DRILLING / DIRECT PUSH

- _____ Underground Utilities
- _____ Overhead Hazards
- _____ Rig Inspected
- _____ Air Monitoring
- _____ Emergency Procedures
- _____ Other: _____

HAZARDS (ENVIRONMENTAL)

- _____ Cold Stress
- _____ Heat Stress
- _____ Heavy Objects
- _____ Hot/Cold Surfaces or Materials
- _____ Inadequate Lighting
- _____ Irritating Plants
- _____ Noise
- _____ Heavy Weather
- _____ Insects/Animals
- _____ Other: _____

HAZARDS (CHEMICALS)

- _____ Chemical Burn Skin/Eyes
- _____ Flammable
- _____ Ingestion
- _____ Inhalation
- _____ Skin Contact

HAZARDS (BODY)

- _____ Fall Potential
- _____ Pinch Points
- _____ Slip-Trip Potential
- _____ Other: _____

OTHER WORK IN AREA

- _____ Others Working Overhead
- _____ Type Work Others Doing
- _____ PPE Due to Other Work
- _____ Other: _____

CONFINED SPACE ENTRY

- _____ Permit Required
- _____ Permit Completed
- _____ Personnel Trained
- _____ Rescue Services Available

EXCAVATION

- _____ Permit Completed
- _____ Competent Person Supervising
- _____ Underground Utilities
- _____ Overhead Hazards
- _____ Soils Tested
- _____ Heavy Equipment Inspected
- _____ Perimeter Protection
- _____ Daily Inspections
- _____ Protective Systems
- _____ Air Monitoring

SUPERVISOR/FOREMAN RECOMMENDATIONS:



JOB SAFETY ANALYSIS WORKSHEET FORM

DATE:
JOB#:
PERMIT#:
ISSUED BY:
SUPERVISOR:

Location of Job (Unit/Location on Project):		Job Task Analyzed		
Required PPE:	Safety Access/ Location		Supervisor of Work:	
	Safe Haven:		JSA Prepared By:	
<p style="text-align: center;"><u>Pre-Job Preparation</u></p> <ol style="list-style-type: none"> 1. Fill out JSA 2. Review JSA (EVERYONE) 3. Sign JSA (EVERYONE) 	Wind Direction:		Are other crews in area?	
	Evacuation Route:			
	Assembly Point::		New:	
		Revised:		
Job Task (What you are doing)			Audit the Job: <u>Audit Time:</u>	
Potential Hazards			Supervisor's Comments:	
Recommended Action or Procedure			Supervisor's Initials:	
Crew Name Signatures:				

LIFT PLAN WORKSHEET(Hydraulic Equipment)

For hoisting and transportation of loads using hydraulic excavators, loaders, and backhoes (with rigging).

Date: _____	Project No: _____
Location: _____	Equipment Used for Lift: _____
Item to be lifted: _____	Item weight: _____ (pounds) Actual or Calculated

Lift Weight Total

Item Weight: _____ (pounds) + Accessories / Other: _____ (pounds) = Lift Total _____ (pounds)
--

Equipment Configuration / Lift Capacity

Anticipated Maximum Boom, Bucket, Mast Extension: _____ feet
Anticipated Minimum Boom, Bucket, Mast Angle: _____ degrees
Anticipated Load Radius: _____ feet
Lift Height: _____ feet
Forward Reach: _____ feet
Reach Over Side: _____ feet
Based on the above configuration, this equipment can safely lift _____ (pounds)

Sling Load / Sling Capacity

_____	X	_____	=	_____
Item weight		Sling angle factor		Implied Sling Load
Implied Sling Load: _____				Sling Capacity _____

Rigging Inspection

			Yes	No	N/A	
Choker / Sling / Shackle	Size / Inches	Ratings (pounds)	Cuts	Tears	Frays	Appearance

Lift Approvals

Lift Supervisor: _____	_____
Print Name	Signature
Operator: _____	_____
Print Name	Signature
Rigger: _____	_____
Print Name	Signature
Tag-line: _____	_____
Print Name	Signature

Operational Test Verification

Operational test of selected hydraulic equipment, rigging, and test load was observed.	
GDA: _____	_____ (<input type="checkbox"/> GDA Unavailable)
Print Name	Signature
If repairs, major maintenance, or re-configuration is required to be performed on the hydraulic equipment or attachments, another operational test shall be performed.	

OVER

LIFT PLAN WORKSHEET (page 2 of 2)

Hoisting and Transportation of Loads using Hydraulic Excavators, Loaders, and Backhoes (with rigging)

Pre-Lift Checklist	Yes	No	N/A
1. Written proof of qualifications of equipment operators, rigger, and others involved in the transporting and hoisting operations are available.			
2. Operational test described in EM 385-1-1, 16.N.01 (b) performed, documented, and available.			
3. Proper operating procedures are available and are being used in accordance with equipment manufacturers operating manual.			
4. Manufacturer's load rating capacities and charts are properly used and available on-site.			
5. Rigging inspected by a competent person.			
6. Defective rigging tagged and taken out of service.			
7. Proper use of rigging, including positive latching devices to secure the load and rigging.			
8. Rigging equipment, when not in use, properly stored and maintained in a safe condition.			
9. Rigging and rigging operations comply with Section 15 rigging. Hooks, eyes, slings, chains, or other rigging shall not be attached to or hung from teeth of a bucket during the transportation or hoisting of load.			
10. Tag lines used to control the load.			
11. Communications (hand signals and/or radio) established and reviewed by lifting crew.			
12. Overhead hazards checked in area. Adequate clearances maintained from electrical sources.			
13. Sufficient swing radius established (equipment, rigging, and load).			
14. Stability of surfaces beneath lifting equipment checked and are suitable.			
15. Operational test with selected hydraulic equipment performed in presence of Government Designated Authority (GDA). Test consisted of demonstration that test load and selected rigging can be safely lifted, maneuvered, controlled, stopped, and landed.			
16. If repairs, major maintenance, or re-configuration is required to be performed on hydraulic equipment or attachments, another operation test shall be performed.			
17. Loads shall be lifted minimum height necessary to clear the ground or obstacles and carried as low as possible when equipment is traveling.			
18. Loads shall not be lifted over personnel.			
19. Hydraulic excavating equipment shall not be used to hoist personnel. The riding of personnel on loads, hooks, hammers, buckets, or other hydraulic equipment is prohibited.			
20. An AHA for Hoisting and Transportation has been completed and all employees involved in lift operation have been trained on the AHA requirements.			
21. A pre-lift meeting was held and a Job Safety Analysis was completed.			



LOCKOUT/TAGOUT FOR COMPRESSED AIR AND GASES

Project Name: _____ Project Number: _____

Job: _____

Device: _____

Location: _____

Authorized Person: _____

Site Supervisors: _____

PREPARATION FOR SHUTDOWN

1. Determine types and shutoff location.
2. Determine if there is more than one energy source.
3. Determine magnitude of compressed air, gas, steam, water, or fluids.
4. Notify affected employees in the area that equipment will be locked out for maintenance.
5. Shutoff main supply to machine.

LOCKOUT/TAGOUT

6. Lock and tag main supply in the OFF position.
7. Bleed line and verify that no air or gases remain in the equipment.
8. Repair equipment.

RETURN TO SERVICE

9. Be sure all connections are made and any unused tools and equipment are removed.
10. Remove lock if necessary to verify proper operations.
11. Remove tag.
12. Notify employees in the area that the equipment is available.

Signature:

Authorized Person: _____

Site Supervisor: _____



LOCKOUT/TAGOUT FOR ELECTRICAL EQUIPMENT

Project Name: _____ Project Number: _____

Job: _____

Device: _____

Location: _____

Authorized Person: _____

Site Supervisors: _____

PREPARATION FOR SHUTDOWN

1. Determine power type and shutoff location.
2. Determine if there is more than one energy source.
3. Determine magnitude of power (voltage).
4. Notify affected employees in the area that equipment will be locked out for maintenance.
5. Shutoff power sources to machine.

LOCKOUT/TAGOUT

6. Lock and tag main switches in the OFF position, remove fuses.
7. Verify that no power is available to the equipment using a voltmeter, if necessary.
8. Drain devices such as capacitor banks.
9. Verify that these devices have no stored energy by use of the voltmeter.
10. Repair equipment.

RETURN TO SERVICE

11. Be sure all connections are made and any unused tools and equipment are removed.
12. Remove lock if necessary to verify machine is repaired. The maintenance employee, while verifying the machine is repaired cannot leave the immediate area.
13. Remove tag from machine.
14. Notify employees in the area that the equipment is available.

Signature: _____

Authorized Person: _____

Site Supervisor: _____



LOCKOUT/TAGOUT FOR HYDRAULIC EQUIPMENT

Project Name: _____ Project Number: _____

Job: _____

Device: _____

Location: _____

Authorized Person: _____

Site Supervisors: _____

PREPARATION FOR SHUTDOWN

1. Determine power type and shutoff location.
2. Determine if there is more than one energy source.
3. Determine magnitude of energy (pressure).
4. Notify affected employees in the area that equipment will be locked out for maintenance.
5. Shutoff main hydraulic to equipment.

LOCKOUT/TAGOUT

6. Lock and tag main supply in the OFF position.
7. Drain fluids from shutoff valves to equipment.
8. Verify that the hydraulic fluid is disconnected.
9. Block ram or items controlled by the hydraulic system using the appropriate blocking.
10. Repair equipment.

RETURN TO SERVICE

11. Be sure all connections are made and any unused tools and equipment are removed.
12. Remove lock if necessary to verify machine is repaired. Maintenance employee cannot leave the immediate area, while verifying the machine is repaired.
13. Remove tag from machine.
14. Notify employees in the area that the equipment is available.

Signature:

Authorized Person: _____

Site Supervisor: _____



LOCKOUT/TAGOUT FOR STEAM, WATER, AND FLUID LINES

Project Name: _____ Project Number: _____

Job: _____

Device: _____

Location: _____

Authorized Person: _____

Site Supervisors: _____

PREPARATION FOR SHUTDOWN

1. Determine types and shutoff location.
2. Determine if there is more than one energy source.
3. Determine magnitude of compressed air or gas.
4. Notify affected employees in the area that equipment will be locked out for maintenance.
5. Disconnect/shutoff main steam, water, or fluid lines to equipment.

LOCKOUT/TAGOUT

6. Lock and tag main supply (i.e. chaining through valve handle with lock) in the OFF position with a bleeder open on the load side.
7. Drain fluids from shutoff valves to equipment.
8. Repair equipment.

RETURN TO SERVICE

9. Be sure all connections are made and any unused tools and equipment are removed.
10. Remove lock if necessary to verify machine is repaired. The maintenance employee cannot leave the immediate area, while verifying the machine is repaired.
11. Remove tag from machine.
12. Notify employees in the area that the equipment is available.

Signature: _____

Authorized Person: _____

Site Supervisor: _____



LOCKOUT/TAGOUT PROCEDURE FOR SPECIFIC EQUIPMENT

Project Name: _____

Project Number: _____

Equipment:

Cat. No. and Location:

Serial Number (if available):

Electrical:

Voltage:

Location:

Describe:

Air (Type):

Location:

Describe:

Gases (Type):

Location:

Describe:

Steam (Type):

Location:

Describe:

Water:

Location:

Describe:

Fluids:

Location:

Describe:

Hydraulic:

Location:

Describe:

Stored Energy – Capacitors, Springs, Etc.:

Describe:

LOG DATA AND RETURN TO SITE-SUPERVISOR



Noise Dosimeter Field Data Log

Project Name _____

Date _____ Project# _____ Calibrated by _____

Survey Location _____

Dosimeter Serial No.	Employee Name	Job Description	Calibration dBA (pre)	Dose	Lavg	Lmax	Time	Calibration dBA (post)	Comments

Comments _____



Noise Survey Field Data Log

Project Name _____

Date _____ Project# _____ Calibrated by _____

Survey Location _____

Sound Level Meter Serial No.	Employee Name/ Equipment Name	Job Description/ Equipment Location	Time	Calibration dBA (pre-survey)	dBA/ Distance from Source	dBA/ Distance from Source	dBA/ Distance from Source	Calibration dBA (post-survey)	Comments

Comments _____



PROJECT SAFETY INSPECTION REPORT

DATE _____

BUSINESS LINE: _____
PROJECT NAME/NUMBER: _____
PROGRAM MANAGER: _____ PROJECT MANAGER: _____
GENERAL PROJECT DESCRIPTION: _____
SITE ACTIVITIES AT TIME OF INSPECTION: _____

INTERVIEWED EMPLOYEE: _____
SAFETY ISSUE: _____
CORRECTIVE ACTION: _____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____
CORRECTION VERIFIED BY: _____ DATE: _____

INTERVIEWED EMPLOYEE: _____
SAFETY ISSUE: _____
CORRECTIVE ACTION: _____

ASSIGNED TO: _____ FOLLOW-UP DATE: _____
CORRECTION VERIFIED BY: _____ DATE: _____

INSPECTION COMPLETED BY: _____ DATE: _____
--

HEALTH AND SAFETY REVIEW BY: _____ DATE: _____
--

PROJECT SAFETY INSPECTION REPORT

PROJECT _____

DATE _____

	YES	NO	N/A
FIRST AID			
1. Are first aid kit locations identified and accessible?			
2. Are emergency eye wash/safety showers available and inspected monthly?			
3. Are first aid kits inspected weekly?			
4. Is a qualified first aid/CPR provider on-site?			
PERSONAL PROTECTIVE EQUIPMENT			
1. Have levels of personnel protection been established?			
2. Are respirators decontaminated, inspected, and stored according to standard procedures?			
3. Have employees been fit-tested?			
4. Is defective personal protective equipment tagged and taken out of service?			
5. Does compressed breathing air meet CGA Grade "D" minimum?			
6. Are there sufficient sizes and quantities of protective equipment?			
7. At a minimum, are employees utilizing safety glasses, hard hats, and steel toe boots?			
FIRE PREVENTION			
1. Are employees smoking only in designated outdoor areas?			
2. Are fire lanes established and maintained?			
3. Are flammable liquid dispensing systems bonded?			
4. Are approved safety cans available for storage of flammable liquids?			
5. Has the local fire department been contacted?			
6. Are fire extinguishers available and inspected monthly?			
7. Are flammables and combustibles properly stored?			
8. Are flammable storage cabinets available and used when needed?			
AIR MONITORING			
1. Is required air monitoring being conducted?			
2. Are air monitoring instruments calibrated daily?			
3. Are air monitoring logs up to date?			
4. Are instrument user manuals available?			
5. Are instruments being maintained?			
6. Are employees notified of personal sampling results within 5 days of receipt?			
WELDING AND CUTTING			
1. Are fire extinguishers present at welding and cutting operations?			
2. Are confined spaces evaluated prior to and during cutting and welding operations?			
3. Have Hot Work Permits been completed?			
4. Are proper helmets, goggles, aprons, and gloves available for welding and cutting operations?			
5. Are welding machines properly grounded?			
6. Are oxygen and fuel gas cylinders stored a minimum of 20 feet apart?			
7. Are only trained personnel permitted to operate welding and cutting equipment?			
8. Are gas cylinders transported in a secured vertical position with caps in place?			
HAND AND POWER TOOLS			
1. Are defective hand and power tools tagged and taken out of service?			
2. Is eye protection available and used when operating power tools?			
3. Are guards and safety devices in place on power tools?			
4. Are power tools inspected before each use?			
5. Are nonsparking tools available when necessary?			

PROJECT SAFETY INSPECTION REPORT

PROJECT _____

DATE _____

	YES	NO	N/A
HAND AND POWER TOOLS (continued)			
6. Is the correct tool being used for the job?			
MOTOR VEHICLES			
1. Are vehicles regularly inspected?			
2. Are personnel licensed for the vehicles they operate?			
3. Are unsafe vehicles tagged and reported to supervision?			
4. Is vehicle's safety equipment operating properly?			
5. Are loads secure?			
6. Are vehicle occupants using safety belts?			
7. Are current insurance cards and blank accident report forms located in vehicles?			
EMERGENCY PLANS			
1. Are emergency telephone numbers posted?			
2. Have emergency escape routes been designated?			
3. Are employees familiar with the emergency signal?			
4. Has the emergency route to the hospital been established and posted?			
5. Is a vehicle on site that can transport injured employees to the hospital?			
MATERIALS HANDLING			
1. Are materials stacked and stored to prevent sliding or collapsing?			
2. Are tripping hazards identified?			
3. Are semi-trailers chocked?			
4. Are fixed jacks used under semi-trailers?			
5. Are riders prohibited on materials handling equipment?			
6. Are approved manlifts provided for the lifting of personnel?			
7. Are personnel in manlifts wearing approved fall protection devices?			
FIRE PROTECTION			
1. Has a fire alarm system been established?			
2. Do employees know the location and use of all fire extinguishers?			
3. Are fire extinguisher locations posted?			
4. Are combustible materials segregated from open flames?			
5. Have fire extinguishers been professionally inspected during the last year?			
6. Are fire extinguishers visually inspected monthly?			
ELECTRICAL			
1. Is electrical equipment and wiring properly guarded and maintained in good condition?			
2. Are extension cords kept out of wet areas?			
3. Is damaged electrical equipment tagged and taken out of service?			
4. Have underground electrical lines been identified by proper authorities?			
5. Has a lockout/tagout system been established?			
6. Are GFCIs being used on all temporary electrical systems and as needed?			
7. Are extension cords being inspected daily (i.e., group pin in place, no unapproved splices)?			
8. Are warning signs exhibited on high voltage equipment (250V or greater)?			
9. Is adequate distance maintained from overhead electrical lines?			
10. Are switches, circuit breakers, and switchboards installed in wet locations enclosed in weatherproof enclosures?			

PROJECT SAFETY INSPECTION REPORT

PROJECT _____

DATE _____

	YES	NO	N/A
CRANES AND RIGGING			
1. Are cranes inspected daily prior to use?			
2. Are crane swing areas barricaded or demarked?			
3. Is all rigging equipment tagged with an identification number and rated capacity?			
4. Is rigging equipment inspection documented?			
5. Are slings, chains, and rigging inspected before each use?			
6. Are damaged slings, chains, and rigging tagged and taken out of service?			
7. Are slings padded or protected from sharp corners?			
8. Do employees keep clear of suspended loads?			
9. Are rated load capacities and special hazard warnings posted on crane?			
10. Are the records of annual crane inspection available?			
11. Has accessible areas within the swing radius of the rear of the crane been barricaded?			
12. Do crane operators have required training/certification?			
COMPRESSED GAS CYLINDERS			
1. Are breathing air cylinders charged only to prescribed pressures?			
2. Are like cylinders segregated and stored in well-ventilated areas?			
3. Is smoking prohibited in cylinder storage areas?			
4. Are cylinders stored secure and upright?			
5. Are cylinders protected from snow, rain, etc.?			
6. Are cylinder caps in place before cylinders are moved?			
7. Are fuel gas and oxygen cylinders stored a minimum of 20 feet apart?			
8. Are propane cylinders stored and used only outside of buildings?			
SCAFFOLDING			
1. Is scaffolding placed on a flat, firm surface?			
2. Are scaffold planks free of mud, ice, grease, etc.?			
3. Is scaffolding inspected before each use?			
4. Are defective scaffold parts taken out of service?			
5. Have employees completed scaffold user training?			
6. On scaffolds where platforms are overlapped, is planking overlapped a minimum of 12 inches?			
7. Does scaffold planking extend over end supports between 6 to 18 inches (dependent upon platform length)?			
8. Are employees restricted from working on scaffolds during storms and high winds?			
9. Are all pins in place and wheels locked?			
10. Is required perimeter guarding (top rail, mid rail, and toe board) present?			
11. Has a competent person been designated to oversee scaffold construction?			
12. Are employees prohibited from moving mobile scaffold horizontally while employees are on them?			
13. Are all scaffold components manufactured by the same company?			
WALKING AND WORKING SURFACES			
1. Are ladders regularly inspected?			
2. Are accessways, stairways, ramps, and ladders clean of ice, mud, snow, or debris?			
3. Are ladders being used in a safe manner?			
4. Are ladders kept out of passageways, doors, or driveways?			
5. Are broken or damaged ladders tagged and taken out of service?			
6. Are metal ladders prohibited in electrical service?			

PROJECT SAFETY INSPECTION REPORT

PROJECT _____

DATE _____

	YES	NO	N/A
WALKING AND WORKING SURFACES (continued)			
7. Are stairways and floor openings guarded?			
8. Are safety feet installed on straight and extension ladders?			
9. Is general housekeeping being maintained?			
10. Are ladders tied off?			
11. Are handrails and side rails installed along the unprotected sides of stairways having 4 or more risers or rising more than 30 inches?			
SITE SAFETY PLAN			
1. Is a site safety plan available on site or accessible to all employees?			
2. Does the safety plan accurately reflect site conditions and tasks?			
3. Have potential hazards been described to employees on site?			
4. Is there a designated safety official on site?			
5. Have all employees signed the safety plan acknowledgment form?			
SITE POSTERS			
1. Are the following posters displayed in a prominent and accessible area?			
A. Minimum Wage			
B. OSHA Job Protection			
C. Equal Employment Opportunity			
2. Are all required state-specific posters displayed?			
SITE CONTROL			
1. Are work zones clearly marked?			
2. Are support trailers located to minimize exposure from a potential release?			
3. Are support trailers accessible for approach by emergency vehicles?			
4. Is the site properly secured during and after work hours?			
5. Is an exclusion zone sign-in/sign-out log maintained?			
6. Are only employees with current training and physicals permitted in exclusion zone?			
HEAVY EQUIPMENT			
1. Is heavy equipment inspected as prescribed by the manufacturer?			
2. Is defective heavy equipment tagged and taken out of service?			
3. Are project roads and structures inspected for load capacities and proper clearances?			
4. Is heavy equipment shut down for fueling and maintenance?			
5. Are backup alarms installed and working on mobile equipment?			
6. Have qualified equipment operators been designated?			
7. Are riders prohibited on heavy equipment?			
8. Are guards and safety appliances in place and used?			
9. Are operators using the "three point" system when mounting/dismounting equipment?			
EXCAVATION			
1. Has a "competent person" been designated to oversee excavation activities?			
2. Prior to opening excavations, are utilities located and marked?			
3. Has a professional engineer evaluated all excavations greater than 20 feet deep?			
4. Is there rescue equipment on site and accessible to the excavation area?			
5. Is excavated material placed a minimum of 24 inches from the excavation?			
6. Are the sides of excavations sloped or shored to prevent cave ins?			

PROJECT SAFETY INSPECTION REPORT

PROJECT _____

DATE _____

	YES	NO	N/A
EXCAVATION (continued)			
7. Have excavations greater than 4 feet deep been monitored for hazardous atmospheres (i.e., LEL/O ₂ deficiency)?			
8. Are ladders or ramps used in excavations over 4 feet deep?			
9. Are means of egress available so as to require no more than 25 feet of lateral travel?			
10. Are barriers, i.e., guardrails or fences, placed around excavations near pedestrian or vehicle thoroughfares?			
11. Is excavation inspected <u>daily</u> by competent persons and documented?			
CONFINED SPACES			
1. Have employees been trained in the hazards of confined spaces?			
2. Are confined space permits posted at entrance to confined space?			
3. Is a copy of the confined space entry procedure available?			
4. Has a rescue plan been established?			
5. Is an entry supervisor present at each permit-required entry?			
6. Are required extraction/fall protection devices being used?			
DECONTAMINATION			
1. Are decontamination stations set up on site?			
2. Is decontamination water properly contained and disposed of?			
3. Are all pieces of equipment inspected for proper decontamination before leaving the site?			
4. Are shin/metatarsal guards being used during power washing activities?			
HAZARD COMMUNICATION			
1. Is there a copy of the HAZCOM procedure on site?			
2. Are their MSDSs for required materials/chemicals present on site?			
3. Are all containers properly labeled, as to content, hazard?			
4. Have employees been trained in accordance with the HAZCOM procedure?			
5. Do employees (including subcontractors) know and understand the effects of exposure from the chemicals on site?			
6. Have all personnel signed the HAZCOM acknowledgment form?			
7. Is there an updated list of chemicals maintained on site?			
TRAINING			
1. Are tailgate safety meetings being conducted daily?			
2. Are current training/medical records maintained on site?			
DOCUMENTATION			
1. Is an OSHA 300 Log maintained on site and posted during the months of February, March, and April?			
2. Are accident report forms available?			
3. Is a copy of health and safety policy and procedures available on site?			

PROJECT SAFETY INSPECTION REPORT

PROJECT _____ DATE _____

ALL NEGATIVE RESPONSES	CORRECTIVE ACTION	ASSIGNED TO	DATE ASSIGNED	DATE COMPLETED	VERIFIED BY

DESCRIBE POSITIVE SAFETY OBSERVATIONS



RESCUE SERVICE EVALUATION

INITIAL EVALUATION

Project/Location _____	Project No. _____
Identity of PRCS _____	
Name of Rescue Service _____	
Address _____	
Contact Person/Phone Number _____	
Required Response Time _____	Estimated Response Time _____
Availability of Rescue Service _____	

PERFORMANCE EVALUATION (Observe Test Rescue and Answer Following Questions)

	YES	NO
Have all members of the service been trained in the potential hazards of the permit space(s), or of a representative permit space(s) from which rescue may be needed?	<input type="checkbox"/>	<input type="checkbox"/>
Can team members recognize the signs, symptoms, and consequences of exposure to any hazardous atmospheres that may be present in the permit space(s)?	<input type="checkbox"/>	<input type="checkbox"/>
Is every team member provided with, and properly trained in, the use and need for PPE which may be required to perform permit space rescues?	<input type="checkbox"/>	<input type="checkbox"/>
Is every team member properly trained to perform his/her functions and make rescues, and to use any rescue equipment, such as ropes and backboards, that may be needed in a rescue attempt?	<input type="checkbox"/>	<input type="checkbox"/>
Are team members trained in the first aid and medical skills needed to treat victims overcome or injured by the types of hazards that may be encountered in the permit space(s)?	<input type="checkbox"/>	<input type="checkbox"/>
Do all team members perform their functions safely and efficiently?	<input type="checkbox"/>	<input type="checkbox"/>
Do rescue service personnel focus on their own safety before considering the safety of the victim?	<input type="checkbox"/>	<input type="checkbox"/>
Can the rescue service properly test the atmosphere of the identified PRCS?	<input type="checkbox"/>	<input type="checkbox"/>
Can the rescue personnel identify information pertinent to the rescue from entry permits, hot work permits, and MSDSs?	<input type="checkbox"/>	<input type="checkbox"/>
Has the rescue service been informed of any hazards to personnel that may arise from outside the space, such as those that may be caused by future work near the space?	<input type="checkbox"/>	<input type="checkbox"/>
Can the rescue service safely perform rescue(s) from the identified PRCS?	<input type="checkbox"/>	<input type="checkbox"/>
Does the rescue service have a plan for rescue from the identified PRCS?	<input type="checkbox"/>	<input type="checkbox"/>
Is the plan adequate for all types of rescue operations that may be needed?	<input type="checkbox"/>	<input type="checkbox"/>

I certify that the evaluated rescue service is equipped and capable of providing rescue services during entry activities for the identified PRCS.

Evaluator:

 Name Signature Date

I acknowledge our responsibility to provide rescue services during entry activities for the identified PRCS.

Rescue Service Representative:

 Name Signature Date



**ATTACHMENT 9C
 MEDICAL FORMS**

RETURN-TO-WORK EXAMINATION FORM

Exam Date: ____ / ____ / ____ **Employee Name:** _____
Birth Date: ____ / ____ / ____ **Social Security #:** ____ - ____ - ____
Job Title: _____ **Sex:** Male Female

Examining Provider: Please complete this form and fax to Health Resources at (800) 853-2641. Please contact Health Resources at (800) 350-4511 to report status of employee post-treatment.

DIAGNOSIS: _____
TREATMENT PLAN: _____
MEDICATIONS: _____
PHYSICAL THERAPY: _____
OTHER: _____

- May return to full duty work effective ____/____/____
- May return to limited duty from ____/____/____ to ____/____/____
- Unable to return to work from ____/____/____ to ____/____/____

WORK LIMITATIONS:

- Restricted lifting/pushing/pulling: maximum weight in lbs: _____ (company limits all lifting to ≤ 60 lbs).
- Work only with right/left hand. Restricted repetitive motion right/left hand.
- Sitting job only. Restricted operation of moving equipment.
- Other: _____

FOLLOW-UP PLAN:

- Release from care.
- Schedule for follow-up appointment on ____/____/____.
Time _____ AM/PM
- Referral to _____
Appointment date ____/____/____ Time _____ AM/PM

Comments: _____

 Examiner's Name (*print*)

 Examiner's Signature

 Date



RIGGING INSPECTION CHECKLIST

Location _____

INVENTORY

Rigging Identification	Serial Number	Size/Type	Capacity
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Inspection Points

Nylon slings

- Abnormal wear.
- Torn stitching.
- Broken or cut fibers.
- Discoloration or deterioration.

Wire-rope slings

- Kinking, crushing, bird-caging, or other distortions.
- Evidence of heat damage.
- Cracks, deformation, or worn end attachments.
- Six randomly broken wires in a single rope lay.
- Three broken wires in one strand of rope.
- Hooks opened more than 15% at the throat.
- Hooks twisted sideways more than 10deg. from the plane of the unbent hook.

Alloy steel chain slings

- Cracked, bent, or elongated links or components.
- Cracked hooks.

Shackles, eye bolts, turnbuckles, or other components that are damaged or deformed.

INSPECTIONS COMPLETED

<u>Month</u>	<u>Initials</u>	<u>Month</u>	<u>Initials</u>
January	_____	July	_____
February	_____	August	_____
March	_____	September	_____
April	_____	October	_____
May	_____	November	_____
June	_____	December	_____



SAFETY MEETING / TRAINING LOG

- Tailgate (daily)
- Activity Hazard Analysis (prior to new task or operation)
- Job Safety Analysis (prior to new task or operation)
- Site Safety Orientation (new personnel)
- Supervisor's (monthly)
- Supervisor's (weekly)
- UXO Awareness
- Asbestos Awareness
- Health and Safety Plan Addendum: _____
- Other: _____

Date/Time: _____

Client: _____

Location: _____

Job No.: _____

Meeting/training conducted by: _____

Work Activities: _____

Safety / Training Topics Presented

Chemical Hazards: _____

Physical Hazards: _____

Specific Safety Topic(s): _____

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:

Signature:

OBSERVATION CARD

- Check if safe Check if at-risk
 Check if not applicable/not discussed

INITIAL ACTIONS

- Eyes on Task
 Not Rushing
 Balance, Traction, Grip

LINE-OF-FIRE

- Body Position (falling, struck by, striking against, pinch points)
 PPE (required, adequate, good condition, worn properly)
 Screens, Guards, Rails
 Isolation

BODY MECHANICS (ERGONOMICS)

- Lifting, Bending, Twisting
 Repetitive Motions
 Reaching, Pulling, Pushing (excessive force)
 Standing, Sitting, Kneeling (long periods)
 Comfortable (vs. awkward position)

PROCEDURES & STANDARDS

- Up-to-date, Understood
 Followed
 Orderliness

TOOLS & EQUIPMENT

- Safe Condition (pre-use inspection)
 Correct for Task
 Safe Use



SIGNIFICANT ASPECTS OF OBSERVATION & DISCUSSION

Including what task was observed, employees' comfort level, ideas for improving task and job, overall reception, follow-up items, etc.

Follow-up Required

- Potential Risk Severity (if applicable)**
 Serious (lost time)
 Minor (med. aid)
 Minimal (1st aid)
 Ergonomic (long term)

Area/Dept. _____ Shift _____

Observer's Name(s) _____

Date _____

Initials





Sound Level Meter/Noise Dosimeter Calibration Log

Project Name _____

Date _____ Calibrated by _____
Project# _____

Instrument: Manufacturer/Model Number _____

Time	Battery Charged (Y/N)	Sound Level Meter/Dosimeter Serial No.	Calibration Standard dBA	Span Setting (if applicable)	Meter Scale Setting (if applicable)	Zeroed (Y/N)	Expected Meter Reading	Actual Meter Reading	Comments

Comments _____



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Attachment 2

REPORT ALL WORKER'S COMPENSATION INJURIES TO SHAW CLAIMS DEPARTMENT
FAX REPORT WITHIN 25 HOURS OF INCIDENT TO 225-932-2636
Phone all injuries/illnesses to Shaw Notification
Hotline/Helpdesk
1-866-299-3445

Supervisor's Employee Injury/Illness Report Form

Employee Information		
Employee's Social Security Number:	Claim Number:	
Employee's Name	Home Phone Number:	
Home Address:	Business Line Code:	
Male or Female:	Date of Birth:	Hire Date:
Dependents:	Dependents Under 18:	Marital Status:
Occupation:	Department Name:	
State Hired:	Hourly Wage:	
Days Worked Per Week:	Hours Per Week:	Hours Worked Per Day:
Employment Status:	Employee Report No.:	Employee ID No.: N/A
Salaried continued:	Paid for Date of Injury:	Education No. Of Yrs.:
Ever Injured on the Job:	Supervisor Name & Phone No.:	

Employer Information	
Employer Name: The Shaw Group Inc.	
Work Location:	
Contact Name: John Mollere	Telephone Number: (800) 747-3322 Ext.2572
Employer SIC:	Employer Location Code:
Employer FED ID:	Employer Code: N/A
Nature of Business:	
Policy Number:	

Accident Information	
Date and Time of Injury:	
Did the Accident Occur at the Work Location?	Yes No
Accident Address:	
Nature of Incident:	
Give A Full Description of the Accident: (Be as Factually Complete As Possible)	

Are Other WC Claims Involved? No	Date and Time Reported to Employer:
Person Reported To:	



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Witness Information

Were there any witnesses?

If yes, List Names and How to Contact Them:

Injury Information

Which Part of the Body was Injured? (e.g. Head, Neck, Arm, Leg)

What was the Nature of the Injury? (e.g. Fracture, Sprain, Laceration)

Part of body Location: (e.g. Left, Right, Upper, Lower)

Injury Description:

Source of Injury:

Is Employee Hospitalized?

Lost Time: Yes No

If Yes, What Was First Full Day Out?

Date Last Day Worked:

Date Disability Began: N/A

Date Returned To Work:

Estimated Return Date: N/A

Medical Information

ER Treated & Released:

Hospitalized:

Phy./Clinic:

Hospital - Name, Address, Phone Number

Was Employee Transported Via Ambulance?

Yes

No

N/A

Clinic - Name, Address, Phone Number:

Additional Comments and Information

Reported Prepared By

Name:

Title:

Signature:

Phone:



Project: _____

Project Number: _____

TRAINING ACKNOWLEDGMENT FORM

By signing this certificate, you are acknowledging that you have completed the following formal training courses that meet OSHA's requirements:

Training	Date Completed
24-Hour HAZWOPER	_____
40-Hour HAZWOPER	_____
8-Hour Refresher	_____
8-Hour Supervisor	_____

Site-specific Training: I have been provided and have completed the site-specific training. The Site Safety and Health Officer conducted the training.

Employee/Visitor Initials

Respiratory Protection: I have been trained in accordance with the criteria in Shaw Environmental, Inc.'s/my Employer's Respiratory Protection Program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will potentially wear. I have been trained in and will abide by the facial hair policy.

Employee/Visitor Initials

Respirator Fit-test Training: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will potentially wear. I have been fit-tested in accordance with the criteria in Shaw Environmental, Inc.'s/my Employer's Respiratory Protection Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.

Employee/Visitor Initials

Medical Examination: I have had a medical examination within the last twelve months, which was paid for by my employer. The examination included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray. A physician made a determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. The Site Safety and Health Officer evaluated the medical certification provided by the physician and signed the appropriate blank below. The physician determined that there:

Were no limitations to performing the required work tasks:

Employee/Visitor Initials

Were identified physical limitations to performing the required work tasks:

Employee/Visitor Initials

[Employee's] [Visitor's] Signature _____

Date _____

Printed Name _____

Site Safety and Health Officer Signature _____

Date _____

REPORT NO.		EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT			REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)	
<i>(For Safety Staff only)</i>			<i>(For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)</i>				
1. ACCIDENT CLASSIFICATION							
PERSONNEL CLASSIFICATION		INJURY/ILLNESS/FATAL	PROPERTY DAMAGE		MOTOR VEHICLE INVOLVED	DIVING	
GOVERNMENT <input type="checkbox"/> CIVILIAN <input type="checkbox"/> MILITARY		<input type="checkbox"/>	<input type="checkbox"/> FIRE INVOLVED <input type="checkbox"/> OTHER		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> CONTRACTOR		<input type="checkbox"/>	<input type="checkbox"/> FIRE INVOLVED <input type="checkbox"/> OTHER		<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> PUBLIC		<input type="checkbox"/> FATAL <input type="checkbox"/> OTHER			<input type="checkbox"/>		
2. PERSONAL DATA							
a. NAME (Last, First, MI)		b. AGE	c. SEX <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE		d. SOCIAL SECURITY NUMBER	e. GRADE	
f. JOB SERIES/TITLE		g. DUTY STATUS <input type="checkbox"/> ON DUTY <input type="checkbox"/> TDY <input type="checkbox"/> OFF DUTY		h. EMPLOYMENT STATUS AT TIME OF ACCIDENT <input type="checkbox"/> ARMY ACTIVE <input type="checkbox"/> ARMY RESERVE <input type="checkbox"/> VOLUNTEER <input type="checkbox"/> PERMANENT <input type="checkbox"/> FOREIGN NATIONAL <input type="checkbox"/> SEASONAL <input type="checkbox"/> TEMPORARY <input type="checkbox"/> STUDENT <input type="checkbox"/> OTHER (Specify)			
3. GENERAL INFORMATION							
a. DATE OF ACCIDENT <i>(month/day/year)</i>	b. TIME OF ACCIDENT <i>(military time)</i> hrs	c. EXACT LOCATION OF ACCIDENT			d. CONTRACTOR'S NAME		
e. CONTRACT NUMBER <input type="checkbox"/> CIVIL WORKS <input type="checkbox"/> MILITARY <input type="checkbox"/> OTHER (SPECIFY)		f. TYPE OF CONTRACT <input type="checkbox"/> CONSTRUCTION <input type="checkbox"/> SERVICE <input type="checkbox"/> A/E <input type="checkbox"/> DREDGE <input type="checkbox"/> OTHER (SPECIFY)		g. HAZARDOUS/TOXIC WASTE <input type="checkbox"/> SUPERFUND <input type="checkbox"/> DERP <input type="checkbox"/> IRP <input type="checkbox"/> OTHER (SPECIFY)		(1) PRIME: (2) SUBCONTRACTOR	
4. CONSTRUCTION ACTIVITIES (Fill in line and corresponding code number in box from list - see instructions)							
a. CONSTRUCTION ACTIVITY (CODE) #			b. TYPE OF CONSTRUCTION EQUIPMENT (CODE) #				
5. INJURY/ILLNESS INFORMATION (Include name on line and corresponding code number in box for items e, f & g - see instructions)							
a. SEVERITY OF ILLNESS/INJURY (CODE) #		b. ESTIMATED DAYS LOST		c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS REST. DUTY		
e. BODY PART AFFECTED (CODE) #		g. TYPE AND SOURCE OF INJURY/ILLNESS				(CODE) #	
PRIMARY (CODE) #		TYPE				(CODE) #	
SECONDARY (CODE) #		SOURCE				(CODE) #	
f. NATURE OF ILLNESS/INJURY (CODE) #							
6. PUBLIC FATALITY (Fill in line and correspondence code number in box - see instructions)							
a. ACTIVITY AT TIME OF ACCIDENT (CODE) #			b. PERSONAL FLOATATION DEVICE USED? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A				
7. MOTOR VEHICLE ACCIDENT							
a. TYPE OF VEHICLE <input type="checkbox"/> PICKUP/VAN <input type="checkbox"/> AUTOMOBILE <input type="checkbox"/> TRUCK <input type="checkbox"/> OTHER (Specify)		b. TYPE OF COLLISION <input type="checkbox"/> SIDE SWIPE <input type="checkbox"/> HEAD ON <input type="checkbox"/> REAR END <input type="checkbox"/> BROADSIDE <input type="checkbox"/> ROLL OVER <input type="checkbox"/> BACKING <input type="checkbox"/> OTHER (Specify)		c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
				(1) FRONT SEAT			
				(2) REAR SEAT			
8. PROPERTY/MATERIAL INVOLVED							
a. NAME OF ITEM		b. OWNERSHIP			c. \$ AMOUNT OF DAMAGE		
(1)							
(2)							
(3)							
9. VESSEL/FLOATING PLANT ACCIDENT (Fill in line and correspondence code number in box from list - see instructions)							
a. TYPE OF VESSEL/FLOATING PLANT (CODE) #			b. TYPE OF COLLISION/MISHAP (CODE) #				
10. ACCIDENT DESCRIPTION (Use Additional paper, if necessary)							

11. CASUAL FACTORS (Read Instructions Before Completing)

a. (Explain YES answers in item 13 DESIGN: Was design of facility, workplace or equipment a factor? <input type="checkbox"/> YES <input type="checkbox"/> NO INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor? <input type="checkbox"/> YES <input type="checkbox"/> NO PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor? <input type="checkbox"/> YES <input type="checkbox"/> NO OPERATING PROCEDURES: Were operating procedures a factor? <input type="checkbox"/> YES <input type="checkbox"/> NO JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred? <input type="checkbox"/> YES <input type="checkbox"/> NO HUMAN FACTORS: Did any human factors such as size or strength of person, etc., contribute to accident? <input type="checkbox"/> YES <input type="checkbox"/> NO ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc. contribute to the accident? <input type="checkbox"/> YES <input type="checkbox"/> NO			a. (CONTINUED) CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors, or physical agents such as noise, radiation, etc. contribute to accident? <input type="checkbox"/> YES <input type="checkbox"/> NO OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc. contribute to the accident? <input type="checkbox"/> YES <input type="checkbox"/> NO SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task? <input type="checkbox"/> YES <input type="checkbox"/> NO PERSONAL PROTECTIVE EQPT: Did the improper selection, use or maintenance of personal protective eqpt contribute to the accident? <input type="checkbox"/> YES <input type="checkbox"/> NO DRUGS/ALCOHOL: In your opinion, was deugs or alcohol factor to the accident? <input type="checkbox"/> YES <input type="checkbox"/> NO b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT? <input type="checkbox"/> YES (If yes, attach a copy) <input type="checkbox"/> NO
---	--	--	--

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? <input type="checkbox"/> YES <input type="checkbox"/> NO	b. TYPE OF TRAINING <input type="checkbox"/> CLASSROOM <input type="checkbox"/> ON JOB	c. DATE OF MOST RECENT FORMAL TRAINING Month/Day/Year
---	---	--

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT: INCLUDE DIRECT AND INDIRECT CAUSES (See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)

a. DIRECT CAUSE

b. INDIRECT CAUSE(S)

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S)

DESCRIBE FULLY:

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR CORPS CONTRACTOR	d. DATE (Month/Day/Year)	e. ORGANIZATION IDENTIFIER (Div,Br,Sect)	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW (1st)

a. <input type="checkbox"/> CONCUR	b. <input type="checkbox"/> NON CONCUR	c. COMMENTS
SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW (2nd - Chief Operations, Construction, Engineering, etc.)

a. <input type="checkbox"/> CONCUR	b. <input type="checkbox"/> NON CONCUR	c. COMMENTS
SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. <input type="checkbox"/> CONCUR	b. <input type="checkbox"/> NON CONCUR	c. ADDITIONAL ACTIONS/COMMENTS
SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE

DATE

10. ACCIDENT DESCRIPTION (Continuation)

13a. DIRECT CAUSE (Continuation)

13b. INDIRECT CAUSES (Continuation)

14. ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) (Continuation)



U.S. ARMY CORPS OF ENGINEERS
Safety Inspection Checklist for Construction Equipment
(Including Cranes, Derricks, and Hoisting Equipment)

Project Name:	Project Number:	Client:
Project	Contractor	Contract No.
Type and Make of Equipment	Model	Serial No.

Before any machinery or mechanized equipment is placed in use it shall be inspected and tested by a competent mechanic and certified to be in good operating condition. Records of tests and inspections shall be maintained as part of the active contract File at Project or Resident Office. Checklist set forth herein requires the application of EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual, September 1996. The appropriate EM paragraph to be applied is listed at the end of each testing requirement.

CHECKLIST	Yes	No	N/A
1. Are adequate and serviceable fire extinguishers provided? (09.E.01 through 09.E.03)			
2. Are all wire rope cables in good condition? (15.B.01 and 15.B.02)			
3. Are wire rope, sockets, splices, thimbles, and clips adequate and properly applied? (15.B.03 through 15.B.08)			
4. Are hooks, safety nooks, shackles, rings, etc., in good condition?			
5. Are necessary platforms, foot-walks, etc., provided? (22.A.01 and 22.A.02)			
6. Are access steps, platforms, etc., provided with non-slip surfaces? (21.A.13)			
7. Is operator protected against the elements, falling or flying objects, swinging loads, and similar hazards? (16.B.10, 16.B.11, and 21.A.11)			
8. Are all glasses in operator's compartment safety glass and in good repair? (16.B.10 and 18.A.07)			
9. Is suitable access provided at lubrication points? (16.B.13)			
10. Do all modifications, extensions, replacement parts, and/or repairs to equipment maintain the same factor of safety as original designed equipment? (16.A.18)			
11. Are drums for load lines equipped with at least one positive holding device, applied directly to the motor shaft or some part of the train gear?			
12. Is there sufficient cable to allow three full wraps of cable on drums at all working positions? (16.C.10)			
13. Are adequate headlights, taillights, and turn signals provided and are they in proper operating condition (16.A.07 and 18.A.02 through 18.A.04)			
14. Are all approved brakes on wheeled equipment and in good operating condition? (16.A.07, 18.A.02, and 18.A.05)			
15. Do windshields have wipers in proper operating condition? (16.A.07, 18.A.02, and 18.A.06)			

CHECKLIST	Yes	No	N/A
16. Are rear view mirrors provided? (18.A.02 and 18.A.06)			
17. Are operating levers equipped with latch and other devices to prevent accidental starting? (18.A.10)			
18. Is engine equipped with power-operated starting device in operative condition? (18.A.06)			
19. Do all pressure vessels have valid inspection certificates? (20.A.03)			
20. Are reverse signal alarms on equipment? (16.B.01)			
21. Are belts, gears, shafts, electrical contacts, etc., adequately guarded? (16.B.03)			
22. Are all hot pipes and surfaces suitably guarded? (16.B.03)			
23. Are fuel tanks located so that spills or overflows will not come in contact with engine or exhaust? (16.B.04)			
24. Are exhausts and discharges so directed as not to endanger workmen or obstruct view of operator? (16.B.05)			
25. Are guards in place on equipment with drop type skip pans? (16.B.03)			
26. Are adequate seats provided for all riders? (16.A.07 and 18.C.01)			
27. Are tires in serviceable condition? Are testing/inspections documented? (18.A.02)			
28. Are steering linkage and tie rod in good operating condition? Are testing/inspections documented? (18.A.02)			
29. Are dump bodies provided with holding device or other suitable device for locking body in raised position? (18.A.10)			
30. Are tailgate dumping devices so arranged that operator will be in the clear while dumping loads? (18.A.10)			
31. Are trip handles provided on tailgates to facilitate handling? (18.A.10)			
32. Is the air hose free from leaks or defects? (20.B.03)			
33. Are safety lashings for quick make-up type connections provided? (20.A.16)			
34. Is an acceptable spark arrestor installed and working?			
35. Do heating devices comply with references?			
36. Does welding equipment comply with code requirements? (10.A.10 and 10.E.01)			
37. Is equipment adequately grounded? (10.E.04 and 10.E.07)			
38. Do electrical components comply with code? (10.E.01)			
39. Are required pressure, temperature, or relief gages and valves installed and operable? (20.A.10 through 20.A.13 and 20.B.02)			
40. Are approved seat belts and rollover protection provided? (16.B.08, 16.B.12, and 18.B.02)			
41. Is recommended preventive maintenance being followed? (16.A.08 and 18.A.02)			
42. Do helicopter cranes meet construction requirements (16.J.01)			
43. Does hydraulic equipment meet special safety conditions (11.H.08, 11.H.09, and 13.A.09)			
44. Is concrete equipment fitted with adequate safety devices? (27.A.04)			

CHECKLIST	Yes	No	N/A
45. Are elevating and rotating work platforms in conformance with ANSI A92.2? (22.K.01)			
46. Do conveyors, cableways, and related equipment conform to ANSI 320.01?			
47. Are pile drivers equipped with all appropriate safety devices? (16.L)			
48. Do material hoists conform to ANSI A10.5? (16.K.01)			
49. Do passenger elevators conform to ANSI A10.4? Do temporary hoists conform to ANSI A10.22: (21.H)			
50. Do hand and power tools comply with applicable ANSI standards (13.A through 13.G)			
51. Is high voltage sign posted?			
52. Is equipment fitted with positive stops for rotation when near power lines? (11.E and 16.D.06)			
53. Is there any visible evidence of damage to boom? (16.C.12 and Appendix H)			
54. Is the boom position indicator operating and visible to operator? (16.D.01 and 16.D.04)			
55. Have all operators had a current physical examination? (1.C and 16.C.04)			
56. Is braking equipment capable of effectively braking, lowering, and safely holding a load of at least the full rated load as required?			
Remarks:			
<p>Certification: I hereby certify that this item of equipment is in good operating condition and that it meets all above requirements except as noted in the remarks.</p>			
<p>_____ Signature of Competent Mechanic</p>		<p>_____ Date</p>	
<p>_____ Signature of Superintendent/Quality Control Engineer</p>		<p>_____ Date</p>	



UNDERGROUND UTILITY HITS TIP SHEET FOR INCIDENT INVESTIGATIONS

1. Location of the incident.
2. The time of day the incident occurred.
3. What type of utility was hit?
4. How deep was the line hit (in feet)?
5. Who called Designated Locator Service?
6. Note the "One Call" number on the Incident Investigation Follow-up report.
7. Attach the "One Call" record keeping documentation.
8. Were mark-outs completed by the utilities? If so, please identify.
9. Were mark-outs legible at the site?
10. Was the mark-out of the line that was hit accurate?
11. Was the mark-out misinterpreted?
12. Is there a utility damage sheet attached to the Incident Investigation Follow-up Report?
13. Have there been any faults or oversights by any 3rd party? If so, is it documented on the Incident Investigation Follow-up Report?
14. Did the FTL interview the property owner/manager prior to the incident?
15. Was pre-screened by hand digging 5 feet?
16. Were any supplemental utility locator devices used? If so, did we obtain them? If so, were they used on site?
17. Were there blueprints/as built plans available? If so, did we obtain them? If so, were they used on site?
18. Who is paying for the repairs?
19. Please define the total hours and cost estimate/impact to address the utility damage incident:

_____	Site time in hours (not billed to the job)
_____	PM time hours (not billed to the job)
_____	H&S time in hours (not billed to the job)
_____	BLM Time in hours (not billed to the job)
_____	Rework/non-billable time (estimate)
_____	Subcontractor rework/non-billable costs (estimate)
_____	Repair costs to company (estimate)
_____	Repair cost to customer (estimate)

20. Has the FTL completed Shaw's in-house CPDO training?
21. Has the FTL completed trenching/excavation training?
22. Is he/she current with the OSHA 40 hour and 8 hour refresher? If so, what are the dates of the training?
23. Who was the Site Safety Officer on the job site?
24. Does he/she have OSHA 8 hour supervisor training? If so, what are the dates of the training?
25. What was the name of the drilling subcontractor that was on site?
26. Have we researched the training background for this vendor?
27. Was a JSA performed at least once during the day that covered utility contacts and associated hazards?
28. Does this vendor have approved status?
29. Was there a tailgate safety meeting that took place?
30. Were utility mark-outs addressed at the tailgate safety meeting?
31. Were there any markings nearby the "hit" area?



UTILITY MARK-OUT DOCUMENTATION

Project Name: _____ Location: _____
 FTL Name: _____ Date: _____
 Utility Called: _____ Confirmation #: _____
 Subcontractor: _____ Task/Activity: _____
 County of work: _____ Municipality of work: _____

Before work is done on any site, contact the appropriate local utility locating service (One Call, Miss Dig, Uloco, etc.) or a local utility contractor to have sub grade utilities marked. NOTE: Boring locations to be placed not in the public right of way are typically not marked out by the public utility mark out, and a private utility locate service must be engaged. Indicate to the utility locator the nearest intersecting street for the site: _____

Confirmation No: _____

List utility firms (public and private) and the utility they will mark.

Utility Marker Emergency Telephone Numbers Major Utilities Marked by Color Code			
Name of Utility Company	Utility	Color Code	Emergency Telephone Number
	Water	Blue	
	Gas	Yellow	
	Electric	Red	
	Telephone/Cable/ Communication	Orange	
	Sewer	Green	
<p>"ALL UNDERGROUND UTILITIES MAY NOT BE LOCATED BY THE LOCAL UTILITY SERVICE." Accordingly, you must list other known utilities in the area that the "One Call" service will not contact:</p>			

Attach photos of the area prior to placing boreholes.
 Take photos of the area indicating minimum 5 feet hand dig, post hole dig, probe, GPR, or other.
 NOTE: For any borehole, should 5 feet minimum clearance not be obtained, you must contact Business Line VP or equivalent (Operations Director or other on the Federal Business Line) and obtain a variance.

Completed by: _____

 Name Signature Date



ATTACHMENT 3a
Vehicle Accident Report
Page 1 of 2

This report is to be initiated by the employee involved in the accident or his/her direct supervisor. Please answer all questions completely. This report must be forwarded to the appropriate health and safety representative within 24 HOURS of the accident. Attach police report

ACCIDENT DESCRIPTION

ACCIDENT DATE: _____ TIME: _____ a.m. p.m.
LOCATION OF ACCIDENT (CITY, STATE): _____
ACCIDENT DESCRIPTION: _____

WITNESS: _____ PHONE NUMBER: _____
ADDRESS: _____ CITY: _____ STATE & ZIP: _____
POLICE OFFICER'S NAME AND BADGE #: _____ DEPARTMENT: _____

COMPANY VEHICLE

DRIVER: _____ D.L. # _____ STATE: _____
ADDRESS: _____ CITY: _____ STATE & ZIP: _____
WORK PHONE NO.: _____ S.S. # _____ PROJECT # _____
VEHICLE NO.: _____ YR: _____ MAKE: _____ MODEL: _____ LIC. PLATE # _____
STATE: _____ VEHICLE OWNER: COMPANY LEASE/RENTED PRIVATE VEHICLE
VEHICLE TYPE: COMMERCIAL MOTOR VEHICLE NON-COMMERCIAL
IF NOT COMPANY-OWNED: OWNER _____ PHONE NO. _____
ADDRESS: _____ CITY: _____ STATE & ZIP: _____
VEHICLE DAMAGE: _____
NO. OF VEHICLES TOWED FROM SCENE: _____ NUMBER OF INJURIES: _____ NUMBER OF FATALITIES: _____
WERE HAZARDOUS MATERIALS RELEASED? YES NO IF YES, DESCRIBE MATERIALS _____

OTHER VEHICLE

DRIVER: _____ D.L. # _____ STATE: _____
ADDRESS: _____ CITY: _____ STATE & ZIP: _____
WORK PHONE NO.: _____ S.S. # _____
OWNERS NAME (CHECK IF SAME AS DRIVER) _____
ADDRESS: _____ CITY: _____ STATE & ZIP: _____
INSURANCE COMPANY: _____ POLICY # _____
AGENT'S NAME: _____ PHONE NO. _____
ADDRESS: _____ CITY: _____ STATE & ZIP: _____
VEHICLE YR: _____ MAKE: _____ MODEL: _____ LIC. PLATE # _____ LIC. PLATE # _____
VEHICLE I.D. NO. _____
VEHICLE DAMAGE: _____
PASSENGERS: YES NO INJURIES: YES NO (If Yes, list names and telephone numbers) _____



Procedure No. HS020
 Revision No. 5
 Date of Revision 7/16/2003
 Last Review Date 6/9/2003
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**ATTACHMENT 3b
 VEHICLE ACCIDENT REPORT**

Page 2 of 2

WHEATHER: Clear Cloudy Fog Rain Sleet Snow OTHER: _____

PAVEMENT: Asphalt STEEL Concrete Wood Gravel/Dirt
 Brick/Stone OTHER: _____

CONDITION: Dry Wet Icy Pot Holes Other _____

TRAFFIC CONTROL: Traffic Light Stop Sign Railroad No Intersection No Control

ROADWAY: Number of Lanes Each Direction: _____ Divided Highway Divided Hwy Undivided Hwy

Draw and name roadways showing each vehicle, direction of travel, and point of impact. Indicate travel before the accident with a solid line, and post-accident movement with a broken line.

(You can copy and paste symbols and draw accordingly)

SYMBOLS:

- Your Vehicle: ①
- Other Vehicle(s): ② ③
- Pedestrian:
- Stop Sign:
- Yield:
- Railroad:

ADDITIONAL INFORMATION: _____

Employee: _____ (Print) _____ (Signature) _____ (Date)

Supervisor: _____ (Print) _____ (Signature) _____ (Date)

Safety Rep.: _____ (Print) _____ (Signature) _____ (Date)

ATTACH POLICE REPORT TO VEHICLE ACCIDENT REPORT

REPORT MUST BE FAXED TO:
 CORPORATE CLAIMS DEPARTMENT (FAX: 225-932-2636)
 WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY

**REPORT ALL CHARGEABLE VEHICLE ACCIDENTS TO SHAW NOTIFICATION HOTLINE/HELPDESK
 (PHONE: 1-866-299-3445)**



VEHICLE INSPECTION

UNIT NO: _____	DATE: _____
MILEAGE: _____	CURRENT PROJECT NO: _____
VEHICLE TYPE: _____	LICENSE NUMBER: _____
INSPECTED BY: _____	FUEL FRONT: _____
EMPLOYEE NUMBER: _____	FUEL REAR: _____

For Authorized Repairs On Donlen Vehicles, Call 1-800-323-1483

RETAIN THIS INSPECTION DOCUMENT IN PROJECT FILES

PRE-TRIP _____	Yes / No _____	DAILY (USACE Project) _____	Yes / No _____
N / A = NOT APPLICABLE	C = COMMENTS	O = OKAY	N = NEEDS ATTENTION

- | | |
|--|--|
| _____ Exterior / Interior Clean | _____ Engine Oil, Oil Pressure |
| _____ Lights: Head-Tail-Turn-Stop-Emergency-Backup | _____ Transmission Oil & Drive Line |
| _____ Operating Controls / Gauges | _____ Radiator / Cooling System |
| _____ Battery / Starter / Horn | _____ Exhaust / Muffler |
| _____ Air Conditioner / Heater / Defroster | _____ Front Axle / Steering / Suspension System |
| _____ Back-up Alarm (Trucks) | _____ Donlen Coupon Book |
| _____ Windshield, Other Glass, Wipers / Washers | _____ First Aid Kit |
| _____ Mirrors: Inside-Outside (Convex - trucks) | _____ Fire Extinguisher (mounted/accessible/charged) |
| _____ Insurance Card & Accident Report Kit | _____ Emergency Flares or Reflective Markers |
| _____ Emergency Phone Number List | _____ Tires / Wheels / Rims |
| _____ Map to Urgent Care Facility & Hospital | _____ Spare Tire, Jack, Lug Wrench |
| _____ Current Registration, Plates | _____ Frame / Bumpers |
| _____ Service Brakes, Emergency/Parking Brakes | _____ Seat Belts (One for Each Passenger) |
| _____ Trailer Aux Brake Controller/Electrical Connection | _____ Visible Damage to Body |
| _____ Coupling Devices/Safety Chain Anchor Point | _____ Driver Safety Notification Sticker |
| _____ Wheel Chocks (When Equipped With Trailer) | _____ Other, Please Enter Comments Below |

Was Unit Serviced? Y / N	DATE	MILES
---------------------------------	-------------	--------------

COMMENTS: _____

I am authorized to operate this vehicle. _____ I am licensed to operate this vehicle. _____
Initials Initials

INSPECTORS SIGNATURE: _____ DATE: _____

REPORT ALL DEFICIENCIES TO YOUR SUPERVISOR

APPENDIX E
HAZARDOUS CHEMICAL INVENTORY LIST AND
MATERIAL SAFETY DATA SHEETS

Project Location: RVAAP

Client: USACE

Project Number: 133616

Hazardous Chemical Inventory List

Available on Site	Chemical	Exact Name from Container Label
	Acetone	
	Acetylene	
	Activated Carbon	
	Alum (Aluminum Sulfate)	
	Anti-fog	
	Brake Fluid	
	Calcium Hydroxide (Hydrated Lime)	
	Calibration Check Gas	
	Carbon	
	Caustic Soda (Sodium Hydroxide)	
	Citrikleen	
	Compressed Air	
	Diatomaceous Earth	
	Diesel Fuel	
	Dry Ice (Solid Carbon Dioxide)	
	Ethylene Glycol	
	Freon	
	Gasoline	
	Gear Grease	
	Helium	
	Hexane	
	Hydraulic Fluid	
	Hydrochloric Acid	
	Hydrogen	
	Isobutylene	
	Methanol	
	Nitrogen	
	Oxygen	
	Pentane	
	PVC Solvent Cleaner	
	PVC Cement	
	Starting Fluid	
	Sulfuric Acid	
	Motor Oil	
	Tube Grease	
	Thread Sealing Compound	
	2-Cycle Oil	

APPENDIX F
NFPA 70 E – ELECTRICAL SAFETY TABLES

NFPA 70 (E) Table 130.7 (C) (9) (a) Hazard/Risk Category Classifications

Task (Assumes Equipment Is Energized, and Work Is Done Within the Flash Protection boundary)	Hazard/Risk Category	V-rated Gloves	V-rated Tools
Panel boards Rated 240 V and Below --- Notes 1 and 3			
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
CB or fused switch operation with covers off	0	N	N
Work on energized parts, including voltage testing	1	Y	Y
Remove/install CBs or fused switches	1	Y	Y
Removal of bolted covers (to expose bare, energized parts)	1	N	N
Opening hinged covers (to expose bare, energized parts)	0	N	N
Panel boards or Switchboards Rated >240 V and up to 600 V (with molded case or insulated case circuit breakers) --- Notes 1 and 3			
CB or fused switch operation with covers on	0	N	N
CB or fused switch operation with covers off	1	N	N
Work on energized parts, including voltage testing	2*	Y	Y
600 V Class Motor control Centers (MCCs) --- Notes 2 (except as indicated) and 3			
CB or fused switch or starter operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch or starter operation with enclosure doors open	1	N	N
Work on energized parts, including voltage testing	2*	Y	Y
Work on control circuits with energized parts 120 V or below, exposed	0	Y	Y
Work on control circuits with energized parts > 120 V exposed	2*	Y	Y
Insertion or removal of individual starter "buckets" from MCC - Note 4	3	Y	N
Application of safety grounds, after voltage test	2*	Y	N
Removal of bolted covers (to expose bare, energized parts)	2*	N	N
Opening hinged covers (to expose bare, energized parts)	1	N	N
600 V Class Switchgear (with power circuit breakers or fused switches)-- Notes 5 and 6			
CB or fused switch operation with enclosure door closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch operation with enclosure door open	1	N	N
Work on energized parts, including voltage testing	2*	Y	Y
Work on control circuits with energized parts 120 V or below, exposed	0	Y	Y
Work on control circuits with energized parts > 120 V, exposed	2*	Y	Y
Insertion or removal (racking) of CBs from cubicles, doors open	3	N	N
Insertion or removal (racking) of CBs from cubicles, doors closed	2	N	N
Application of safety grounds, after voltage test	2*	Y	N
Removal of bolted covers (to expose bare, energized parts)	3	N	N
Opening hinged covers (to expose bare, energized parts)	2	N	N

NFPA 70 (E) Table 130.7 (C) (9) (a) Hazard/Risk Category Classifications (Continued)

Task (Assumes Equipment Is Energized, and Work Is Done Within the Flash Protection Boundary)	Hazard/Risk Category	V-rated Gloves	V-rated Tools
Other 600 V Class (277 V through 600 V, nominal) Equipment -- Note 3			
Lighting or small power transformers (600 V, maximum)	--	--	--
Removal of bolted covers (to expose bare, energized parts)	2*	N	N
Opening hinged covers (to expose bare energized parts)	1	N	N
Work on energized parts, including voltage testing	2*	Y	Y
Application of safety grounds, after voltage test	2*	Y	N
Revenue meters (kW-hour, at primary voltage and current)	--	--	--
Insertion or removal	2*	Y	N
Cable trough or tray cover removal or installation	1	N	N
Miscellaneous equipment cover removal or installation	1	N	N
Work on energized parts, including voltage testing	2*	Y	Y
Application of safety grounds, after voltage test	2*	Y	N
NEMA E2 (fused contactor) Motor Starters, 2.3 kV Through 7.2 kV			
Contactors operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
Contactors operation with enclosure doors open	2*	N	N
Work on energized parts, including voltage testing	3	Y	Y
Work on control circuits with energized parts 120 V or below, exposed	0	Y	Y
Work on control circuits with energized parts > 120 V, exposed	3	Y	Y
Insertion or removal (racking) of starters from cubicles, doors open	3	N	N
Insertion or removal (racking) of starters from cubicles, doors closed	2	N	N
Application of safety grounds, after voltage test	3	Y	N
Removal of bolted covers (to expose bare, energized parts)	4	N	N
Opening hinged covers (to exposed bare, energized parts)	3	N	N
Metal Clad Switchgear, 1 kV and Above			
CB or fused switch operation with enclosure doors closed	2	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch operation with enclosure doors open	4	N	N
Work on energized parts, including voltage testing	4	Y	Y
Work on control circuits with energized parts 120 V or below, exposed	2	Y	Y
Work on control circuits with energized parts > 120 V, exposed	4	Y	Y
Insertion or removal (racking) of CBs from cubicles, doors open	4	N	N
Insertion or removal (racking) of CBs from cubicles, doors closed	2	N	N
Application of safety grounds, after voltage test	4	Y	N
Removal of bolted covers (to expose bare, energized parts)	4	N	N
Opening hinged covers (to expose bare, energized parts)	3	N	N
Opening voltage transformer or control power transformer compartments	4	N	N

NFPA 70 (E) Table 130.7 (C) (9) (a) Hazard/Risk Category Classifications (Continued)

Task (Assumes Equipment Is Energized, and Work Is Done Within the Flash Protection Boundary)	Hazard/Risk Category	V-rated Gloves	V-rated Tools
Other Equipment 1 kV and Above			
Metal clad load interrupter switches, fused or unfused	--	--	--
Switch operation, doors closed	2	N	N
Work on energized parts, including voltage testing	4	Y	Y
Removal of bolted covers (to expose bare, energized parts)	4	N	N
Opening hinged covers (to expose bare, energized parts)	3	N	N
Outdoor disconnect switch operation (hook stick operated)	3	Y	Y
Outdoor disconnect switch operation (gang-operated, from grade)	2	N	N
Insulated cable examination, in manhole or other confined space	4	Y	N
Insulated cable examination, in open area	2	Y	N

Note:

V-rated Gloves are gloves rated and tested for the maximum line-to-line voltage upon which work will be done.

V-rated Tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done.

2* means that a double-layer switching hood and hearing protection are required for this task in addition to the other Hazard/Risk Category 2 requirements of Table 130.7 (C) (10).

Y = yes (required)

N = no (not required)

Notes:

1. 25 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.
2. 65 kA short circuit current available, 0.03 second (2 cycle) fault clearing time.
3. For < 10 kA short circuit current available, the hazard/risk category required may be reduced by one number
4. 65 kA short circuit current available, 0.33 second (20 cycle) fault clearing time.
5. 65k A short circuit current available, up to 1.0 second (60 cycle) fault clearing time.
6. for < 25 kA short circuit current available, the hazard/risk category required may be reduced by one number

NFPA 70 (E) Table 130.7 (C) (10) Protective Clothing and Personal Protective Equipment (PPE) Matrix

Protective Clothing and Equipment	Protective Systems for Hazard/Risk Category					
Hazard/Risk Category Number Non-melting (according to ASTM F 1506-00) or Untreated Natural Fiber	-1 (Note 3)	0	1	2	3	4
a. T-shirt (short-sleeve)	X			X	X	X
b. Shirt (long-sleeve)		X				
c. Pants (long)	X	X	X (Note 4)	X (Note 6)	X	X
FR Clothing (Note 1)						
a. Long-sleeve shirt			X	X	X (Note 9)	X
b. Pants			X (Note 4)	X (Note 6)	X (Note 9)	X
c. overall			X (Note 5)	X (Note 7)	X (Note 9)	X (Note 5)
d. Jacket, parka, or rainwear			AN	AN	AN	AN
FR Protective Equipment						
a. Flash suit jacket (multilayer)						X
b. Flash suit pants (multilayer)						X
c. Head protection						
1. Hard hat			X	X	X	X
2. FR hard hat liner					AR	AR
d. Eye protection		--	--	--	--	--
1. Safety glasses	X	X	X	AL	AL	AL
2. Safety goggles				AL	AL	AL
e. Face and head area protection		--	--	--	--	--
1. Arc-rated face shield, or flash suit hood				X (Note 8)		
2. Flash suit hood					X	X
3. Hearing protection (ear canal inserts)				X (Note 8)	X	X
f. Hand protection			--	--	--	--
Leather gloves (Note 2)			AN	X	X	X
g. Foot protection						
Leather work shoes			AN	X	X	X

AN = As needed

AL = Select one in group

AR = As required

FR = Flame Resistant

X = Minimum required

Notes:

1. See Table 130.7(C) (11). Arc rating for a garment is expressed in cal/cm².
2. If voltage-rated gloves are required, the leather protectors worn external to the rubber gloves satisfy this requirement.
3. Hazard/Risk Category Number "-1" is only defined if determined by Notes 3 or 6 of Table 130.7(C) (9) (a).
4. Regular weight (minimum 12 oz/yd² fabric weight), untreated, denim cotton blue jeans are acceptable in lieu of FR pants. The FR pants used for Hazard/Risk Category 1 shall have a minimum arc rating of 4.
5. Alternate is to use FR coveralls (minimum arc rating of 4) instead of FR shirt and FR pants.
6. If the FR pants have a minimum arc rating of 8, long pants of non-melting or untreated natural fiber pants and t-shirt.
7. Alternate is to use FR coveralls (minimum arc rating of 4) over non-melting or untreated natural fiber pants and T-shirt.
8. A face shield with a minimum arc rating of 8, with wrap-around guarding to protect not only the face, but also the forehead, ears, and neck (or, alternatively, a flash suit hood), is required.
9. Alternate is to use two sets of FR coveralls (the inner with a minimum arc rating of 4 and outer coverall with a minimum arc rating of 5) over non-melting or untreated natural fiber clothing, instead of FR coveralls over FR shirt and FR pants over non-melting or untreated natural fiber clothing.

NFPA 70 (E) Table 130.7 (C) (11) Protective Clothing Characteristics

Hazard/Risk Category	Clothing Description (Typical number of clothing layers is given in parentheses)	Required Minimum Arc Rating of PPE [J/cm ² (cal/cm ²)]
0	Non-melting, flammable materials (i.e., untreated cotton, wool rayon, or silk, or blends of these materials) with a fabric weight at least 4.5 oz/yd ² (1)	N/A
1	Flame Resistant (FR) shirt and FR pants or FR coverall (1)	16.74 (4)
2	Cotton underwear -- conventional short sleeve and brief/shorts plus FR shirt and FR pants (1 and 2)	33.47 (8)
3	Cotton underwear plus FR shirt and FR pants plus FR coverall, or cotton underwear plus two FR coveralls (2 or 3)	104.6 (25)
4	Cotton underwear plus FR shirt and FR pants plus multilayer flash suit (3 or more)	167.36 (40)

Note: Arc rating is defined in Article 100 and can be either ATPV or E_{BT}. ATPV is defined in ASTM F 1959-99 as the incident energy on a fabric or material that results in sufficient heat transfer through the fabric or material to cause the onset of a second-degree burn based on the Stoll curve. E_{BT} is defined in ASTM F 1959-99 as the average of the five highest incident energy exposure values below the Stoll curve where the specimens do not exhibit break-open. E_{BT} is reported when ATPV cannot be measured due to FR fabric break-open.

Approach Boundaries

NFPA 70E Table 130.2(C) Approach Boundaries to Live Parts for Shock Protection (All dimensions are distance from live part to employee.)					
(1)	(2) Limited Approach Boundary ¹		(3)	(4)	(5)
Nominal System Voltage Range, Phase to Phase	Exposed Moveable Conductor	Exposed Fixed Circuit Part	Restricted Approach Boundary ¹ , Includes Inadvertent Movement Adder	Prohibited Approach Boundary ¹	
Less than 50	Not specific	Not specific	Not specific	Not specific	
50 to 300	3.05 m (10 ft 0 in.)	1.07 m (3 ft 6 in.)	Avoid contact	Avoid contact	
301 to 750	3.05 m (10 ft 0 in.)	1.07 m 3 ft 6 in.)	304.8 mm (1 ft 0 in.)	25.4 mm (0 ft 1 in.)	
751 to 15 kV	3.05 m (10 ft 0 in.)	1.53 m (5 ft 0 in.)	660.4 mm (2 ft 2 in.)	177.8 mm (0 ft 7 in.)	
15.1 kV to 36 kV	3.05 m (10 ft 0 in.)	1.83 m (6 ft 0 in.)	787.4 mm (2 ft 7 in.)	254 mm (0 ft 10 in.)	
36.1 kV to 46 kV	3.05 m (10 ft 0 in.)	2.44 m (8 ft 0 in.)	838.2 mm (2 ft 9 in.)	431.8 mm (1 ft 5 in.)	
46.1 kV to 72.5 kV	3.05 m (10 ft 0 in.)	2.44 m (8 ft 0 in.)	965.2 mm (3 ft 2 in.)	635 mm (2 ft 1 in.)	
72.6 kV to 121 kV	3.25 m (10 ft 8 in.)	2.44 m (8 ft 0 in.)	991 mm (3 ft 3 in.)	812.8 mm (2 ft 8 in.)	
138 kV to 145 kV	3.36 m (11 ft 0 in.)	3.05 m (10 ft 0 in.)	1.093 m (3 ft 7 in.)	939.8 mm (3 ft 1 in.)	
161 kV to 169 kV	3.56 m (11 ft 8 in.)	3.56 m (11 ft 8 in.)	1.22 m (4 ft 0 in.)	1.07 m (3 ft 6 in.)	
230 kV to 242 kV	3.97 m (13 ft 0 in.)	3.97 m (13 ft 0 in.)	1.6 m (5 ft 3 in.)	1.45 m (4 ft 9 in.)	
345 kV to 362 kV	4.68 m (15 ft 4 in.)	4.68 m (15 ft 4 in.)	2.59 m (8 ft 6 in.)	2.44 m (8 ft 0 in.)	
500 kV to 550 kV	5.8 m (19 ft 0 in.)	5.8 m (19 ft 0 in.)	3.43 m (11 ft 3 in.)	3.28 m (10 ft 9 in.)	
765 kV to 800 kV	7.24 m (23 ft 9 in.)	7.24 m (23 ft 9 in.)	4.55 m (14 ft 11 in.)	4.4 m (14 ft 5 in.)	

Note: For Flash Protection Boundary, see NFPA 70E 130.3(A)

1: See definitions in Article 100 and text in NFPA 70E 130.2(D)(2) and Annex C for elaboration

APPENDIX G
INCIDENT NOTIFICATION, REPORTING, AND MANAGEMENT
PROCEDURE

Incident Notification, Reporting, and Management Procedure – RVAAP

Directions, Notes, and Reminders

- Follow this procedure step-by-step for all incidents.
- This procedure has limited application to subcontractors. Assist subcontractors with medical emergencies (as applicable) and then immediately notify the Program H&S Manager for guidance.
- Periodically review this procedure in order to be familiar with the steps - prior to an incident occurring.
- For injuries and vehicle accidents, secure the scene to prevent additional injury/incident, administer on-site first aid, and arrange for emergency assistance prior to making any other notifications. Do not disturb serious accident scenes and then obtain photographs prior to completing investigation.
- The Site Supervisor or SSHO is responsible for making notifications to:
 - 911 as necessary
 - CORE Medical Services (must be notified before or while employee is en route to medical care facility): 877-347-7429
 - Program Health and Safety Manager
 - Help Desk / Hot Line: 866-299-3445
 - Marcia Musgrave: 419-425-6160.
- The Project Manager is responsible for making notifications to:
 - The Program Manager (Bob Culbertson) by telephone no later than two hours after the incident for all incidents requiring Help Desk notification and all first aid cases with potential for aggravation.
- The Site Supervisor or his delegate (SSHO or Alternate SSHO) shall accompany all injured personnel to the Health Resources clinic or to the hospital emergency room.
- All incident reports shall be completed by typing (when feasible and applicable).
- All incident reports shall be submitted (email or fax) to the Program H&S Manager or Alternate H&S Manager for review and distribution.
- Complete all the blanks on the INCIDENT NOTIFICATION AND COMMUNICATION CONTACT LIST (page 6) and post near all site telephones.

Incident Notification, Reporting, and Management Procedure – RVAAP

Action	Who / When	Under what circumstances	How	Notes
1. Notify Site Supervisor or SSHO for all incidents (no matter how minor)	Injured person, first person recognizing incident, driver/passenger, or employee causing damage <i>Immediately</i>	All incidents no matter how minor (including minor cuts, scratches, minor strains/sprains, and insect bites)	In person or by telephone	Site Supervisor to make note of very minor incidents (such as band-aid over scratch) in field log and in weekly reporting
2. For life-threatening injuries / illnesses - make scene safe, contact local emergency personnel	Site Supervisor or SSHO <i>Immediately (concurrently with next step if injury or illness)</i>	In case of serious injury or illness requiring off-site medical care	Via ambulance	Site Safety Officer or his delegate must immediately go to emergency care facility. Follow HS101 post accident alcohol and drug testing procedure.
For non life-threatening injuries / illnesses - make scene safe, transport injured person to doctor at an occupational medical facility	Site Supervisor or SSHO <i>Immediately (concurrently with next step if injury or illness)</i>		Via vehicle	Site Supervisor or SSHO must transport and stay with injured person until released from care.
For vehicle accidents – make scene safe, notify police, aid injured parties	Driver/passenger <i>Immediately</i>			Make medical personnel aware of Shaw's "restricted work will be provided" and "no prescriptions if possible" policies.
For equipment / property damage - make scene safe, prevent further damage or injuries	Employee causing damage <i>Immediately</i>			Health Resources clinics are the preferred urgent care facilities when possible, unless injury is severe and victim is transported by ambulance.
3. Notify Health Resources (for injuries / illnesses to Shaw employees only)	Site Supervisor or SSHO <i>Immediately, prior to transporting the injured employee, unless injuries are life threatening</i>	<ul style="list-style-type: none"> • Serious injury requiring off-site medical care • If employee states that he/she has been exposed to any chemical or biological substance • If illness is work related 	Health Resources 800-350-4511 Note: Outside Continental US call: 781-935-8581	Not required for temporary agency and subcontractor labor Provide name of injured employee, name and phone # of treating medical facility, description of the incident Health Resources will help with medical facility coordination and follow-up care
4. Notify Program H&S Manager Notify Alternate H&S Manager if Program H&S Manager cannot be contacted.	Site Supervisor or SSHO <i>Immediately (concurrently with providing transportation to occupational medical facility or EMS transport to hospital)</i>	All incidents except on-site first aid cases	See Incident Notification and Communication Contact List (attached)	Program H&S Manager will notify H&S Manager Federal ER&C, as appropriate

Incident Notification, Reporting, and Management Procedure – RVAAP

Action	Who / When	Under what circumstances	How	Notes
5. Notify Shaw Notification Hotline / Help Desk	Site Supervisor/SSHO <i>As soon as practical, but not longer than one hour after occurrence.</i> <i>Prior to sending an individual for medical treatment</i>	<ul style="list-style-type: none"> • Illness and/or injury (doctors cases and above) • Any utility damage • Property damage (damage > \$2,500.00) • Vehicle accidents (All) • Criminal activity (i.e. bomb threat, theft) • Natural disaster (all) • Explosion and/or fires (damage > \$2,500.00 or result in injury) • Environmental spills/releases (incidents that requires regulatory notification or have an offsite impact) • Regulatory agency visit • Fatalities 	<p>Shaw Notification Hotline / Help Desk Phone Number: 866-299-3445</p> <p>Note - Outside the Continental US call: 225-215-5056</p>	<p>Request name of Hotline / Help Desk operator for future reference and note date/time of notification</p> <p>Project Manager will verbally report incident (including first aid cases with potential for future aggravation) to Program Manager <i>As soon as reasonably possible, but not longer than two hours after occurrence</i></p>
6. Complete forms: <i>Injuries and illnesses:</i> <ul style="list-style-type: none"> • Authorization for Release of Protected Medical Information • Authorization for Treatment of Occupational Injury/Illness • Return-To-Work Examination Form <p><u>and</u> fax to Health Resources <u>and</u> email or fax to Program H&S Manager</p>	<p>Injured employee and medical facility personnel (Project Manager or Site Supervisor is responsible for verifying forms are completed)</p> <p><i>Prior to leaving medical facility</i></p>	<ul style="list-style-type: none"> • Serious injury requiring off-site medical care • If employee states that he/she has been exposed to any chemical or biological substance 	<p>Fax to Health Resources: 800-853-2641</p> <p>Email or fax to Program H&S Manager</p>	<p>Site Supervisor or SSHO must take these forms with him/her to occupational medical facility or hospital (Contained in HS 020)</p> <p>Contact Program H&S Manager for blank electronic forms or obtain forms from: http://shawnet3.shawgrp.com/sites/eih/federal/Lists/Announcements/DispForm.aspx?ID=8</p>
7. Notify Marcia Musgrave	Site Supervisor	All incidents involving personnel (injuries, illnesses, vehicle accidents)	419-425-6160	

Incident Notification, Reporting, and Management Procedure – RVAAP

Action	Who / When	Under what circumstances	How	Notes
8. Call back Program H&S Manager to report on status of <i>injured / ill employee</i>	Site Supervisor or SSHO <i>Prior to employee leaving medical facility</i>	All injuries and illnesses requiring off-site medical care	See Incident Notification and Communication Contact List (att.)	
9. Complete forms (typed electronically): OSHA Recordable Cases <ul style="list-style-type: none"> • Supervisor's Employee Injury/Illness Report Form • Injured Employee Statement • Witness Statement Form(s) • USACE ENG 3394 form First Aid Cases (Doctor's) <ul style="list-style-type: none"> • Supervisor's Employee Injury/Illness Report • Injured Employee Statement • Witness Statement Form(s) Email or Fax completed forms to Program H&S Manager and Health Resources	<ul style="list-style-type: none"> • Site Supervisor • Witnesses <i>As soon as possible – no later than 24 hours</i>	All injuries, illnesses, and first aide cases	Email or fax to Program H&S Manager See Incident Notification and Communication Contact List (attached) Fax to Health Resources 800-853-2641	Site Supervisor or SSHO should have these forms with him/her at all times (Contained in HS 020) Contact Program H&S Manager for blank electronic forms or obtain forms from: http://shawnet3.shawgrp.com/sites/eih/federal/Lists/Announcements/DispForm.aspx?ID=8
10. Complete forms (typed electronically): Chargeable Vehicle Accidents <ul style="list-style-type: none"> • Vehicle Accident Report • Witness Statement Form(s) • Driving Record Certification (Procedure HS800) • USACE ENG 3394 form Non-Chargeable Vehicle Accidents <ul style="list-style-type: none"> • Vehicle Accident Report • Witness Statement Form(s) • USACE ENG 3394 form Equipment, Property Damage and General Liability Incidents <ul style="list-style-type: none"> • Equipment, Property Damage and General Liability Loss Report • Witness Statement Form(s) • USACE ENG 3394 form Email or Fax completed forms to Program H&S Manager; USACE ENG 3394 provided to USACE Resident Engineer.	<ul style="list-style-type: none"> • Site Supervisor • Witnesses <i>As soon as possible – no later than 24 hours</i>	All vehicle accidents and /or all property damage	Email or fax to Program H&S Manager Health See Incident Notification and Communication Contact List (attached)	Site Supervisor or SSHO should have these forms with him/her at all times (Contained in HS 020) Contact Program H&S Manager for blank electronic forms or obtain forms from: http://shawnet3.shawgrp.com/sites/eih/federal/Lists/Announcements/DispForm.aspx?ID=8

Incident Notification, Reporting, and Management Procedure – RVAAP

Action	Who / When	Under what circumstances	How	Notes
<p>11. Complete these additional forms (typed electronically):</p> <p>OSHA Recordable Cases</p> <ul style="list-style-type: none"> Incident Investigation Report <p>First Aid Cases (Doctor's)</p> <ul style="list-style-type: none"> Incident Investigation Report <p>Chargeable Vehicle Accidents</p> <ul style="list-style-type: none"> Incident Investigation Report <p>Non-Chargeable Vehicle Accidents</p> <ul style="list-style-type: none"> Incident Investigation Report <p>Equipment, Property Damage and General Liability Incidents</p> <ul style="list-style-type: none"> Incident Investigation Report <p>Near Miss</p> <ul style="list-style-type: none"> Incident Investigation Report SharePoint electronic Near Miss Report <p>Email or Fax completed forms to Program H&S Manager</p>	<p>Site Supervisor</p> <p><i>As soon as possible – no later than 72 hours of incident</i></p> <p><i>As soon as possible – no later than 96 hours of incident</i></p>	<p>Near Misses as defined by HS020</p> <p>All other Near Misses</p>	<p>Email or fax to Program H&S Manager</p> <p>See Incident Notification and Communication Contact List (attached)</p> <p>Contact Program H&S Manager</p>	<p>Site Supervisor or SSHO should have these forms with him/her at all times (Contained in HS 020)</p> <p>Contact Program H&S Manager for blank electronic forms or obtain forms from: http://shawnet3.shawgrp.com/sites/eih/s/federal/Lists/Announcements/DispForm.aspx?ID=8</p> <p>Do not include any employee or project identification information – <i>these reports are anonymous</i></p>
<p>12. Perform "Accident Review Board" (ARB) as required by HS020 - Coordinate through Program H&S Manager</p> <p>Perform "Incident Review Board" (IRB) to extract lessons learned - Coordinate through Program H&S Manager</p>	<p>Program H&S Manager</p> <p><i>Within 10 days of incident</i></p>	<p>OSHA Recordable Cases</p> <p>Chargeable Vehicle Accidents</p> <p>Doctor's First Aid Cases</p> <p>Utility damage or significant property damage</p>		<p>An IRB is outside of the HS020 requirements for an ARB.</p>

Incident Notification and Communication Contact List

Project Number: 133616

Project Name / Location: RVAAP

Name	Phone Number(s)	Fax Number	E-mail
Shaw Notification Hotline/Helpdesk	866-299-3445 225-215-5056 (Outside Continental US)	N/A	N/A
Core Medical Services (Must be notified prior to or during transport to medical treatment center)	877-347-7429	225-295-4846	
Marcia Musgrave	419-425-6160 (office) 419-957-7142 (cell)	419-425-6039	marcia.musgrave@shawgrp.com
Program H&S Manager James Joice	419-424-4960 (office) 419-306-3637 (cell)	419-425-6039	james.joice@shawgrp.com
Alternate H&S Manager Doug Russell	865-692-3584 (office) 865-414-9545 (cell)	865-690-3626	winston.russell@shawgrp.com
Site Supervisor	(office) (cell)		
Site Safety and Health Officer (SSHO)	(office) (cell)		
Alternate SSHO	(office) (cell)		
Project Manager Dave Cobb	617-589-5561 (office) 508-667-3608 (cell)	513-782-4663	dave.cobb@shawgrp.com
Environmental EHS Director – Dave Mummert	419-425-6129 (office) 419-348-1544 (cell)	419-425-6039	david.mummert@shawgrp.com
Federal EHS Director – Mike Zustra	614-834-4819 (office) 740-215-3431 (cell)	614-834-4819	mike.zustra@shawgrp.com

Note: Incident reports shall be faxed or emailed only to the Program H&S Manager (or Alternate H&S Manager) for review and proper distribution.

Revised August 27, 2009