ACCIDENT PREVENTION PLAN
FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

MILITARY MUNITIONS RESPONSE PROGRAM
MUNITIONS RESPONSE SERVICES
MOUNT GRETNA TRAINING CAMP ARTILLERY RANGE - WEST
MOUNT GRETNA, PA

Contract No.: W912DR-09-D-0006
Delivery Order No.: 0010
DCN: MAMMS10-030316-AAIU

Prepared For:

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March 2016

Work Order No. 03886.551.301

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LIST OF ACRONYMS

µg/L	micrograms per liter
ACGIH	American Conference of Governmental Industrial Hygienists
AHA	activity hazard analysis
APP	Accident Prevention Plan
ARNG	Army National Guard Directorate
BBP	bloodborne pathogens
BBS	Behavior-Based Safety
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHST	Certified Construction Health and Safety Technician
CIH	Certified Industrial Hygienist
COR	Contracting Officer's Representative
CPR	cardiopulmonary resuscitation
DDESB	Department of Defense Explosive Safety Board
DMM	discarded military munitions
EHS	Environmental Health and Safety
EM	Engineering Manual
EMR	Experience Modification Rate
EMS	emergency medical services
EMT	emergency medical technician
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ESP	Explosives Site Plan
EZ	exclusion zone
FS	Feasibility Study
HAZWOPER	Hazardous Waste Operations and Emergency Response
KO	Contracting Officer
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
MMRP	Military Munitions Response Program
MPPEH	material potentially presenting an explosive hazard
MRS	munitions response site
NFPA	National Fire Protection Association

LIST OF ACRONYMS (Continued)

NIOSH	National Institute for Occupational Safety and Health
NOI	Notice of Incident
OESS	Ordnance and Explosives Safety Specialist
OHP	Occupational Health Program
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PAARNG	Pennsylvania Army National Guard
PADEP	Pennsylvania Department of Environmental Protection
PAN	Preliminary Accident Notification
PM	Project Manager
PMP	Project Management Professional
POC	point of contact
PPE	personal protective equipment
RAC	Risk Assessment Code
RI	remedial investigation
SI	site inspection
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SUXOS	Senior UXO Supervisor
TCAR	Training Camp Artillery Range
TP	Technical Paper
USACE	U.S. Army Corps of Engineers
UTV	Utility Terrain Vehicle
UXO	unexploded ordnance
UXOSO	Unexploded Ordnance Safety Officer
WESTON®	Weston Solutions, Inc.

ACCIDENT PREVENTION PLAN

MILITARY MUNITIONS RESPONSE PROGRAM
MUNITIONS RESPONSE SERVICES
MOUNT GRETNA TRAINING CAMP ARTILLERY RANGE - WEST
MOUNT GRETNA, PA

Contract No.: W912DR-09-D-0006
Delivery Order No.: 0010

1. SIGNATURE SHEET

Plan Prepared by:

Louise Kritzberger, CHST — 3/3/2016

Louise Kritzberger — Date
Certified Construction Health and Safety Technician (CHST)
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Plan Approved by:

Herold S Hannah Jr., CIH, CSP — 3/3/2016

Herold Hannah, Certified Industrial Hygienist (CIH) — Date
Corporate Environmental Health and Safety (EHS) Director
(610) 701-3024

Plan Review and Concurrence by:

3/3/2016

Chris Kane, Project Management Professional® (PMP®) — Date
Project Manager
(603) 656-5428

3/3/2016

David Holland — Date
Senior Unexploded Ordnance Supervisor (SUXOS)
(603) 656-5428

Lawrence J West III — 3/3/2016

Larry Werts — Date
Environmental Health and Safety Leader
(610) 701-3912

ACCIDENT PREVENTION PLAN CONCURRENCE/SIGNOFF

Site Name: Military Munitions Response Program
Munitions Response Services
Mount Gretna Training Camp Artillery Range - West MRS

Work Location Address: Mount Gretna, PA

I have read and understood, and I agree to abide by the information set forth in this Accident Prevention Plan (APP) and discussed in the Personnel Health and Safety briefing.

Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
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Name	Signature	Date

2. BACKGROUND INFORMATION

Contractor Name:	Weston Solutions, Inc. (WESTON®)
Contract Number:	W912DR-09-D-0006
Delivery Order Number:	0010
Project Name:	Military Munitions Response Program (MMRP) Munitions Response Services Mount Gretna Training Camp Artillery Range - West Mount Gretna, PA

2.1 INTRODUCTION

This Accident Prevention Plan (APP) presents the minimum requirements for safety and health that must be met by site personnel. The APP does not in any way relieve site personnel, contractors, or subcontractors from responsibility for the safety and health of their personnel. Contractors shall be required to review the site conditions and the work to be performed to determine specific safety and health requirements for their personnel. Site personnel will document in their logbook any on-site visitors. Any visitors to the site shall be required to read, understand, and comply with the approved APP.

The APP is the interface with WESTON's Corporate Environmental Health and Safety (EHS) manual and is prepared to be consistent with applicable Army, federal, state, and local health and safety requirements, which include the following:

- 29 Code of Federal Regulations (CFR) 1904, 1910, and 1926 [Occupational Safety and Health Administration (OSHA) General Industry and Construction Standards].
- Engineering Manual (EM) 385-1-1, U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual, 15 September 2008.
- EM 385-1-97, USACE Safety Explosives Safety and Health Requirements Manual, 12 April 2013.
- Technical Manual 60A 1-1-31, EOD Procedures/General Information on EOD Disposal Procedures. May 1994.
- Department of Defense Manual 6055.9-M, DoD Ammunition and Explosives Safety Standards: General Explosives Safety Information and Requirements. February 2008. Reissued August 2010. Incorporating Change 1, March 2012.

- Federal Acquisition Regulations.
- Unified Facilities Guide Specifications, 01 35 26, Safety and Occupational Health requirements.
- WESTON Corporate Environmental Compliance, EHS Program.

2.2 SITE LOCATION AND DESCRIPTION

The Mount Gretna Training Camp Artillery Range (TCAR) - West Munitions Response Site (MRS) (PAHQ-008-R-01) is located mainly within State Game Land 145, in Mount Gretna, Pennsylvania. The Mount Gretna TCAR - West MRS is within Lebanon County and is approximately 24 miles east of Harrisburg, Pennsylvania, and 72 miles northwest of Philadelphia, Pennsylvania (see **Figure 2-1**). The Mount Gretna TCAR - West MRS was used for artillery and rifle training from 1885 through 1941 (estimated).

The Mount Gretna TCAR - West MRS (PAHQ-008-R-01) boundary encompasses 181 acres as demarcated on **Figure 2-2**. The MRS consists of a former north-south artillery range and portions of a former east-west rifle range. In the north-south artillery range, berm features and 3-inch Stokes mortars were observed, and lead in surface soil exceeded the Pennsylvania Department of Environmental Protection (PADEP) evaluation criterion during the Site Inspection (SI). The 181 acres of land area within the Mount Gretna TCAR - West MRS is owned primarily by one entity, the Commonwealth of Pennsylvania, but also includes multiple residential parcels and one industrial property (sewage treatment) located along the western MRS boundary.

The Mount Gretna TCAR - West MRS is located in a partially wooded area with no distinct boundaries and with Conewago Hill to the north. The northern portion of the MRS is bisected by Route 117. The Conewago Creek flows through the MRS north of Route 117 (see **Figure 2-2**).

2.3 PROJECT AND WORK DESCRIPTION

Several investigation phases of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process have already been completed at the Mount Gretna TCAR - West MRS under the MMRP, including an Inventory Report and SI. As a result of the SI findings, it was recommended that a Remedial Investigation (RI)/Feasibility Study (FS) be performed for

munitions and explosives of concern (MEC) and munitions constituents (MC) at the Mount Gretna TCAR - West MRS.

2.3.1 Previous Investigations

In August 2011, the SI field investigation was performed at the MRS, including a magnetometer-assisted visual survey, which encompassed 12.62 miles. The northeast corner of the MRS, east of Pinch Road, was not investigated during the SI because deer fencing prohibited access to field personnel (Parsons, 2012).

Surface soil samples were collected from a total of 12 biased locations within the MRS and 3 ambient locations outside of the MRS during the SI. Additionally, two co-located surface water/sediment samples were collected within the MRS, and one ambient surface water/sediment location was assessed from outside of the MRS boundary. The samples were analyzed for MC metals (antimony, copper, lead, mercury, and zinc) and explosives. Explosive compounds were not detected in surface soil, surface water, or sediment samples. Antimony, copper, lead, mercury, and zinc were detected above MRS-specific SI maximum ambient background concentrations in soils; however, only lead exceeded the specified PADEP evaluation criteria of 500 milligrams per kilogram (mg/kg) with a maximum concentration of 520 mg/kg. Copper was detected in sediment above the MRS-specific SI maximum ambient background concentration of 35 mg/kg with a maximum detection of 42 mg/kg, but did not exceed PADEP human health screening criterion of 8,100 mg/kg. Zinc was reported in surface water results with a maximum concentration of 10 micrograms per liter (µg/L), which is higher than the ambient background concentration of 4 µg/L but did not exceed the U.S. Environmental Protection Agency (EPA) screening criterion of 7,400 µg/L (Parsons, 2012). No groundwater samples were collected during the SI (Parsons, 2012).

Pursuant to CERCLA and the National Oil and Hazardous Substances Contingency Plan, the purposes of the RI at the Mount Gretna TCAR - West MRS are to collect and analyze the data necessary to conduct site characterization and to develop a baseline risk assessment (EPA, 1988). The RI data will be used to assist in determining what remediation alternatives, if any, are necessary at the MRS consistent with the current and anticipated future land use. In the FS, remedial alternatives for the MRS will be developed, screened, and analyzed to identify the most

appropriate response action for the Mount Gretna TCAR - West MRS based on the results of the RI.

The RI will include the activities presented in **Table 2-1**.

Table 2-1

Anticipated Phases of Work

Work Phase	Work Description
Task 1 – Mobilization/Demobilization	Manpower mobilization, setup of site support areas (equipment laydown, conex box for storage), and demobilization.
Task 2 – Land Survey and Mapping	Arrange for a licensed surveyor to locate and establish site survey control.
Task 3 – Vegetation Clearance	Small diameter brush removal will occur. Set up of exclusion areas. Surface sweep before clearance is performed.
Task 4 – Geophysical Surveying Activities	Perform analog mag and dig transect and full coverage surveys to detect geophysical anomalies and potential munitions and explosives of concern (MEC) within the designated MRS. Dig Safe notification is required before seeding. A surface sweep will be conducted before surveying is performed.
Task 5 –Intrusive Investigations	Qualified Unexploded Ordnance (UXO) Technicians will conduct mag and dig transects and perform surface and subsurface removal activities at anomaly locations. MEC [UXO and discarded military munitions (DMM)], material potentially presenting an explosive hazard (MPPEH), munitions debris (MD), and/or other non-munitions related metal debris will be recovered to evaluate the nature and extent of potential explosives hazards. Surface and subsurface removal activities will include the excavation of detected anomalies using hand tools, demolition activities of recovered MEC and MPPEH, and MD and non-MD inspection and transport to a certified recycling program.
Task 6 – MC Sampling	Collection of MC samples in areas impacted by small arms and with lead concentrations exceeding the PADEP evaluation criterion during the SI, and in areas impacted by a MEC release, or DMM disposal pit sampling. Samples will be collected using hand tools following anomaly avoidance surveys performed by a UXO Technician II or higher.
Task 7 – Utility Terrain Vehicle (UTV)	A UTV will be utilized to aid in transporting equipment and personnel at the site.

Specific activity hazard analyses (AHAs) for the above activities are presented in Section 12 of the APP.

2.4 CONTRACTOR ACCIDENT EXPERIENCE MODIFICATION RATE (EMR)

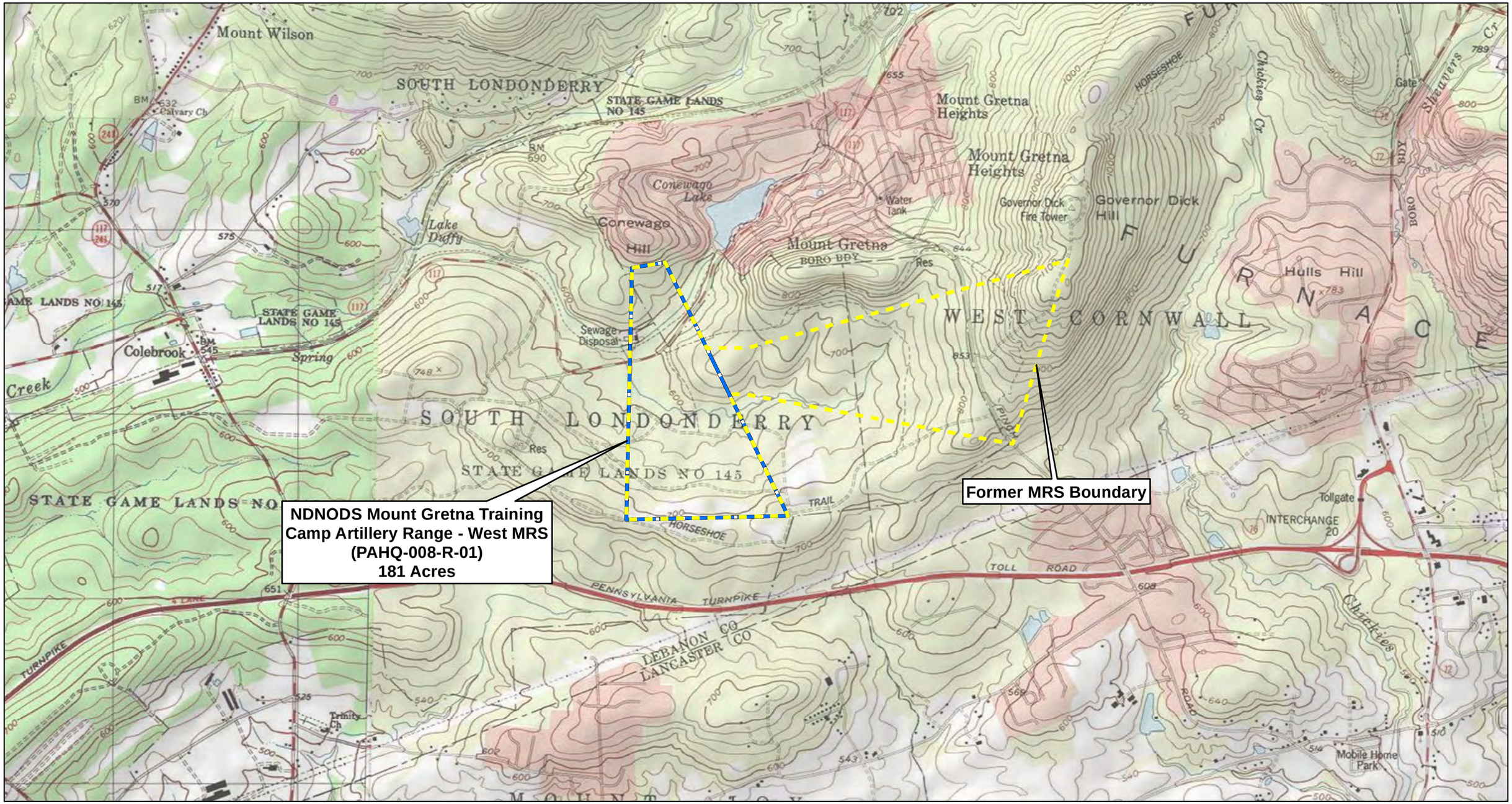
Table 2-2

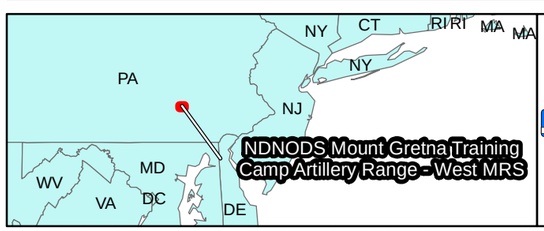
WESTON's Intrastate EMR Since 2011*

Year	EMR
2015	.54
2014	.51
2013	.48
2012	.51
2011	.54

Note:

* Calculated by measuring the difference between a company's actual past workers' compensation claims compared to the average expected claims experience for companies performing the same type of work. An EMR is calculated using a rolling 3-year period.





Legend

- Former MRS Boundary
- NDNODS Mount Gretna Training Camp Artillery Range - West MRS (PAHQ-008-R-01)

U.S Army Corps Of Engineers

Mount Gretna Training Camp Artillery Range - West Lebanon County, PA

N

0 1,000 2,000 3,000 Feet

0 375 750 1,125 Meters

NOTES:
Data Source: Bing Topographic Mapping Service.
Quad: Manheim, PA. 1975

FIGURE 2-1
Regional Location Map
NDNODS Mount Gretna Training Camp Artillery Range - West MRS
Lebanon County, Pennsylvania

Coordinate System: UTM, Z18N, WGS84, Meter

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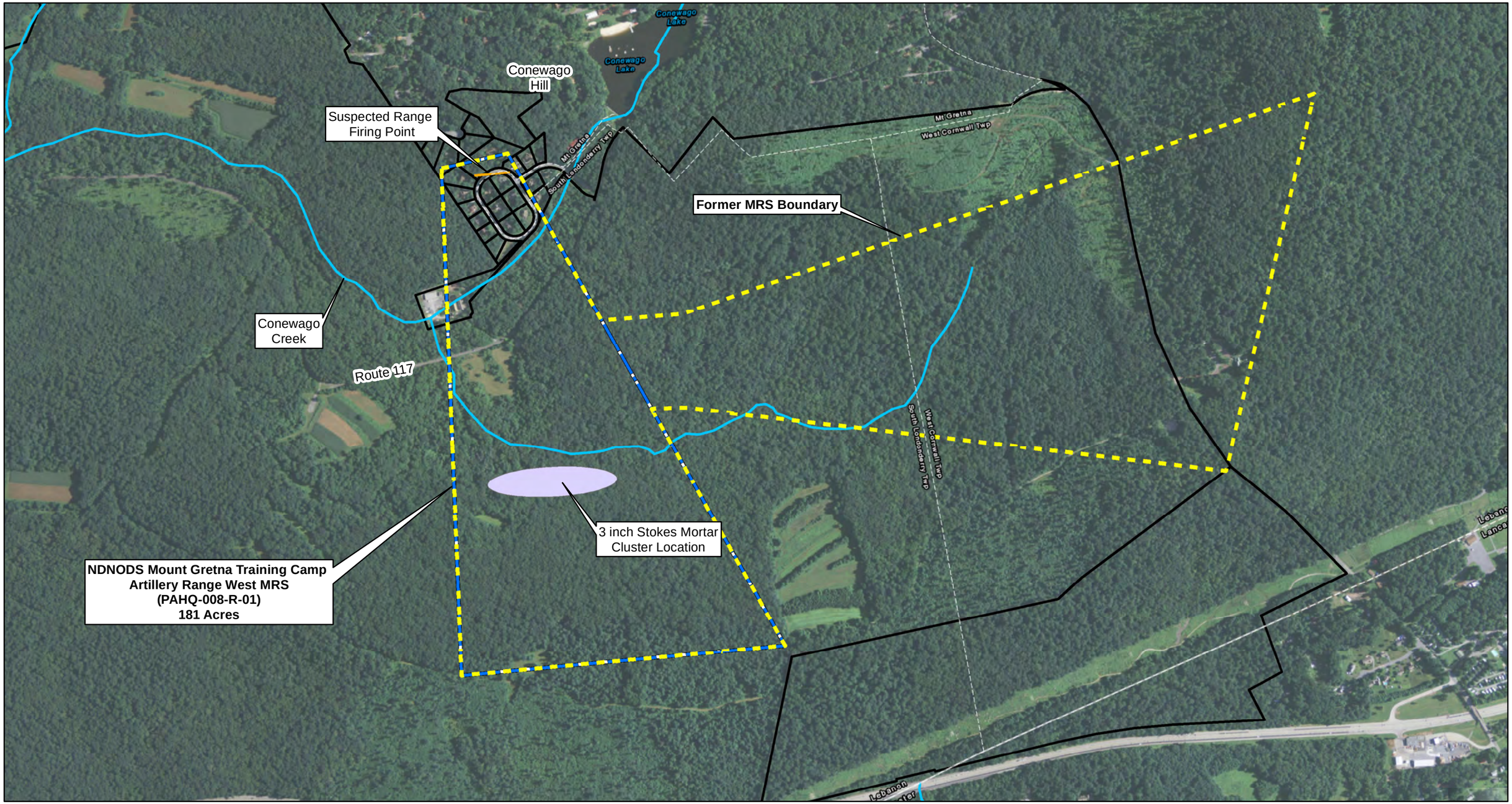

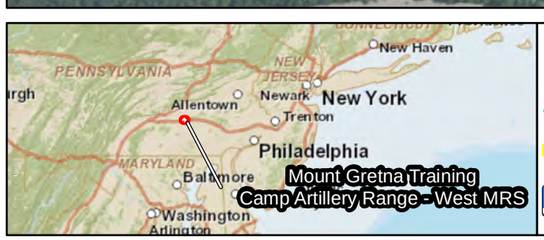

Legend

- Firing Line
- Water Features
- Former MRS Boundary
- NDNODS Mount Gretna Training Camp Artillery Range - West MRS (PAHQ-008-R-01)
- Mortar Cluster Location
- Parcel Boundary

US Army Corps Of Engineers

Mount Gretna Training Camp Artillery Range
Lebanon County, PA

N

0 500 1,000 1,500 Feet

0 180 360 540 Meters

NOTES:
Aerial Data Source: ESRI Imagery Mapping Service, 2011

FIGURE 2-2
MRS Location Map
NDNODS Mount Gretna Training Camp Artillery Range - West
Lebanon County, Pennsylvania

Coordinate System: UTM, Z18N ,WGS84, Meter

9/23/2015
Revision: 0

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3. HEALTH AND SAFETY POLICY

3.1 HEALTH AND SAFETY POLICY

WESTON personnel operate in a culture where safety, health, and protection of personnel and the environment take precedence over expediency. A fundamental premise of our Behavior-Based Safety (BBS) culture is that accidents are preventable through choosing safe, proactive behaviors. WESTON's policy on Health and Safety emphasizes several important points:

- WESTON has established a goal of working safely 100% of the time (employees and contractors) with the expected outcome being zero incidents that result in injuries, illnesses, property damage, or environmental damage or contamination.
- Managers and workers accept the responsibility of a concerted and sustained effort to achieve a goal of Safety Every Minute of Every Day.
- Managers and workers assume a safety leadership role.
- Managers and workers take action for safety, coach peers in safe practices, and share experiences, successes, and failures.
- Workers are involved in the identification and the control of workplace hazards during work planning, work execution, and feedback activities.
- Management is committed to a work environment that allows free and open expression of safety concerns and where workers fear no reprisals or retaliation.
- Workers are the most important asset to WESTON and are critical in the process of establishing, implementing, and observing safe work practices.

3.1.1 100% Safe-Work and Stop-Work Policy Statement

For each activity and contract under which WESTON performs work, a policy is implemented clearly stating that WESTON employees have the responsibility and the right to stop or curtail any work they perceive to be unsafe (a threat to public health, the safety and health of workers, or the environment). Employees must be free to voice concerns about safety and health without fear of reprisal, retaliation, or harassment. This policy is implemented by a clear, straightforward, contract-specific procedure as part of the WESTON Integrated Safety Management System.

To support the WESTON goal of all employees and subcontractors working safely 100% of the time, managers will use every available resource to maintain safe, hazard-controlled work environments characterized by a vigorous emphasis on accident prevention. Standards, requirements, and best practices will be implemented to avoid accidents. Managers will ensure that employees are familiar with the standards, requirements, and best practices that pertain to their safety.

WESTON managers and supervisors are held directly accountable for the health and safety of their employees, subcontractors, and other resources employed to maintain employee health and safety, and the continual communication of hazards and hazard controls to the workforce.

3.2 PROGRAM GOALS

WESTON has implemented a BBS program in which employees assume a safety leadership role and are responsible for the safety of coworkers, team members, and stakeholders. Employees focus on behaviors and intervention techniques to improve behavioral processes. As part of WESTON's BBS program, employees create high-quality connections with one another, team members, and stakeholders to foster an active, caring culture. Commitment is high, and employees help each other be Safe Every Minute of Every Day to achieve the corporate goal of *Zero Accidents* involving personnel and the environment. WESTON uses the EMR as a metric to determine the effectiveness of the BBS program.

3.3 PROGRAM OBJECTIVES

The WESTON EHS Program has the following objectives:

1. EHS staff, resources, and procedures are provided as necessary and used in an efficient and cost-effective manner to establish a safe work environment for WESTON employees, subcontractors, clients, and the general public.

2. Compliance with environmental, health, and safety regulations is assured, and risk is managed and minimized for employees, as well as the corporation.

3. Management involvement is established and maintained within the EHS Program.

4. Clear lines of reporting, authorities, responsibilities, and performance expectations are established.

5. World-class EHS culture is attained at our places of employment, in our homes, and in our communities through the elimination of at-risk behavior.

3.4 ACCIDENT EXPERIENCE GOAL

The accident experience goal for this project, as well as for every WESTON project, is zero. Work shall not be performed in a manner that conflicts with the safety, health, or environmental precautions outlined in the APP or in the Site Safety and Health Plan (SSHP) (**Appendix A**). Site personnel, including any WESTON subcontractors, who have the potential for exposure to site hazards, are subject to the requirements of the APP and SSHP. Personnel violating safety procedures are subject to dismissal/removal from the project site.

WESTON gathers information on incidents in an electronic database that allows assessment of trends and causes of incidents. By learning from past experience, WESTON staff avoids the recurrence of incidents. This information is available to every WESTON employee and is used in training as well as in the development of APPs, SSHPs, and AHAs. The availability of this information assists in achieving WESTON's goal of working safely 100% of the time.

4. RESPONSIBILITIES AND LINES OF AUTHORITIES

4.1 STATEMENT OF EMPLOYER'S RESPONSIBILITY

WESTON is ultimately responsible for the implementation of the EHS Program through enforcing the safety and occupational health for this project as stated in the APP and SSHP. WESTON's senior management is committed to operating projects in a manner consistent with controlling EHS, legislative, regulatory, and client requirements, and other applicable requirements administered by federal agencies.

4.2 IDENTIFICATION OF PERSONNEL RESPONSIBLE FOR SAFETY

Table 4-1 presents the key project personnel responsible for Safety Program implementation on the Mount Gretna TCAR - West MRS project. Resumes for key WESTON safety personnel are presented in **Appendix B**. Key responsibilities of each position are provided in **Table 4-2**.

Table 4-1

Project Safety Team

Name	Title	Phone No. *
Chris Kane, PMP	Project Manager (PM)	(603) 656-5428 – office (603) 566-4658 – cell
Herold Hannah, Certified Industrial Hygienist (CIH)	Corporate EHS Director	(610) 701-3024 – office (267) 516-0274 – cell
Larry Werts	EHS Leader - East	(610) 701-3912 – office (215) 815-6237 – cell
Doug Gates	UXO Safety Officer/Site Safety and Health Officer (UXOSO/SSHO)	(502) 664-7926 – cell
David Holland	Senior UXO Supervisor (SUXOS)	(727) 772-3087 – cell

Note:
*Phone numbers will be confirmed/revised prior to field mobilization and revised during the project, as necessary.

235 **Table 4-2**
236
237 **Position Descriptions**

Position	Description of Key Responsibilities
Project Manager (PM) Chris Kane, PMP	▪ Overall responsibility for the management and completion of the project. ▪ Responsible and accountable for project safety. ▪ Ensure that project personnel (including subcontractor personnel) comply with EHS regulations, program requirements, and procedures. ▪ Ensure development and implementation of project SSHPs and indicate concurrence with final plans after required EHS reviews. ▪ Ensure project personnel meet applicable safety certification requirements. ▪ Ensure project support is acquired from appropriately qualified safety personnel such as the EHS Leader and UXOSO/SSHO. ▪ Ensure project personnel comply with applicable EHS requirements and corporate or client procedures. ▪ Halt any project work activities that represent an imminent hazard. ▪ Ensure appropriate safety equipment and materials are provided to the project. ▪ Ensure timely and accurate reporting and investigation of incidents, accidents, or injuries involving project personnel, with support from the risk management department. Ensure corrective actions are implemented completely. ▪ Ensure proper response and internal notification regarding inspections by regulatory agencies. ▪ Ensure all project personnel have met the site-specific experience and training requirements.
EHS Director Herold Hannah, CIH	▪ Approve and ensure the implementation of the WESTON Corporate EHS Program, the APP, SSHP, and any amendments. ▪ Evaluate and authorize changes to the APP and SSHP based on field and occupational exposure, as necessary. ▪ Function as a quality control staff member.

Table 4-2

Position Descriptions (Continued)

Position	Description of Key Responsibilities
EHS Leader Larry Werts	▪ Oversee and maintain the WESTON Corporate EHS Program, the APP, and SSHP. ▪ Conduct site visits, as necessary, to audit the effectiveness of the APP and SSHP. ▪ Serve as a technical safety advisor and provide technical assistance and support. ▪ Develop the APP and SSHP. ▪ Develop modifications to the APP and SSHP as necessary.
UXOSO/SSHO Doug Gates	▪ Ensure that all project personnel follow the requirements of the APP and SSHP. ▪ Be present during operations. ▪ Directly communicate with the PM and EHS Leader. ▪ Conduct daily safety meetings for site personnel to discuss the day's activities and associated hazards. ▪ Review site personnel training and experience documentation to ensure compliance with the APP and SSHP. ▪ Coordinate changes/modifications to the APP with the appropriate site personnel. ▪ Conduct or coordinate project-specific training. ▪ Report any incidents that occur on-site to the PM and the EHS Leader. ▪ Implement safety corrective actions through training and reinforced awareness. ▪ Maintain exposure data. ▪ Has stop-work authority for all safety issues.

Table 4-2

Position Descriptions (Continued)

Position	Description of Key Responsibilities
SUXOS David Holland	▪ Accountable and responsible for the implementation and enforcement of the APP and SSHP at the site. ▪ Responsible for on-site management of tasks and associated employees. ▪ Halt any project work activities that represent an imminent hazard. ▪ Ensure appropriate safety equipment and materials are in place prior to initiating work. ▪ Ensure timely and accurate reporting and investigation of incidents, accidents or injuries. ▪ Ensure corrective actions are implemented completely.

4.3 COMPETENT PERSON

At a minimum, in accordance with OSHA Regulation 29 CFR 1910.120(e), site personnel will include a Competent Person (i.e., a person who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees and who has the authorization to take prompt corrective measures to eliminate these hazards). **No work will be performed without a Competent Person on-site**. **Table 4-3** presents the competent person requirement and regulatory reference.

Mr. Gates is a competent person as defined in OSHA 29 CFR 1926.32. As required by EM 385-1-1, Mr. Gates has at least 5 years of applicable safety experience and have successfully completed the OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training with 8-hour annual refresher courses and the 30-hour construction safety course. Mr. Gates has performed work on a site(s) of similar hazard, risk, and complexity to the task assignment and is certified in first aid and cardiopulmonary resuscitation (CPR). Mr. Gates also has 5 years of experience implementing safety and occupational health procedures and experience conducting exposure monitoring to select and to adjust personal protective equipment

(PPE); however, it is unlikely that such adjustments will be needed. **Appendix B** includes Mr. Gates's resume and copies of his certifications.

The qualifications of site personnel will be maintained at the project site in the on-site vehicle or work area provided at the Mount Gretna TCAR - West MRS. The certifications and overall qualifications of WESTON personnel are maintained in a database supported by WESTON.

Table 4-3

Competent Person Requirements

Competent Person Requirement	Regulatory Reference	Person Designated
SSHO Identification	EM 385-1-1 Sec. 01.A.17	Doug Gates
General Inspections of Construction Sites	EM 385-1-1.01.A.13 29 CFR 1926.20	Doug Gates
Unsanitary Conditions	EM 385-1-1.02 29 CFR 1926.27	Doug Gates
Hearing Protection	EM 385-1-1.05.C 29 CFR 1926.101	Doug Gates

Note: EM 385-1-1 is the USACE Health and Safety Requirements Manual.

4.4 QUALIFIED PERSON

Site personnel will also include a Qualified Person. WESTON will permit only those employees qualified by training or experience to operate equipment and machinery in compliance with OSHA 29 CFR 1926.20(b)(4). According to OSHA 29 CFR 1926.32, "qualified" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project. **Table 4-4** presents a Qualified Person's requirements list.

Table 4-4

Qualified Person Requirement

Qualified Person	Project Applicability	Training Requirement
UXO Technicians (II and III)	X	Meet Department of Defense Explosive Safety Board (DDESB) Technical Paper 18 requirements
Brief Visitors on Site Hazards and PPE	X	Doug Gates
Licensed Blaster for the State of PA	X	David Holland

The qualifications of site personnel will be maintained in the on-site project vehicle. The certifications and overall qualifications of WESTON personnel are maintained in a database supported by WESTON. Records will be maintained and reviewed by the UXOSO/SSHO.

4.5 PRE-TASK HEALTH AND SAFETY ANALYSIS

Prior to each phase of work, the applicable AHAs will be reviewed with the supervisors responsible for the activity. Based on this pre-task safety and health analysis, the AHAs will be updated as necessary. WESTON has extensive experience performing similar site work.

During the walk-through survey, the UXOSO/SSHO and other project staff determined the level of PPE required for the work areas and specific activities. Based on the potential physical hazards associated with the work areas and specific work activities (e.g., walking/working surfaces, electrical installations/lines, and noise exposure), PPE is selected to mitigate identified hazards. Consideration will be given to biological, climatic, and time of year conditions, and PPE will be selected to accommodate the conditions (e.g., insulated clothing and footwear, snake chaps).

4.6 LINES OF AUTHORITY

Lines of authority are provided in **Figure 4-1**, which is presented at the end of this section.

4.7 NONCOMPLIANCE, DISCIPLINARY ACTIONS, AND COMPANY SAFETY INCENTIVE PROGRAMS

4.7.1 Noncompliance

Although noncompliance is not expected, safety and health program violations can, and will, result in disciplinary action up to, and including, dismissal. Employees understand that safety is of the utmost importance at WESTON. Personnel understand the importance of compliance with applicable regulations and project requirements.

4.7.2 Disciplinary Actions

Personnel violating safety procedures are subject to dismissal/removal from the project site.

4.7.3 Incentive Programs

Project-specific financial and other incentive plans are developed and integrated with safety and health goals as an overriding component.

4.7.3.1 Safety Solutions Program

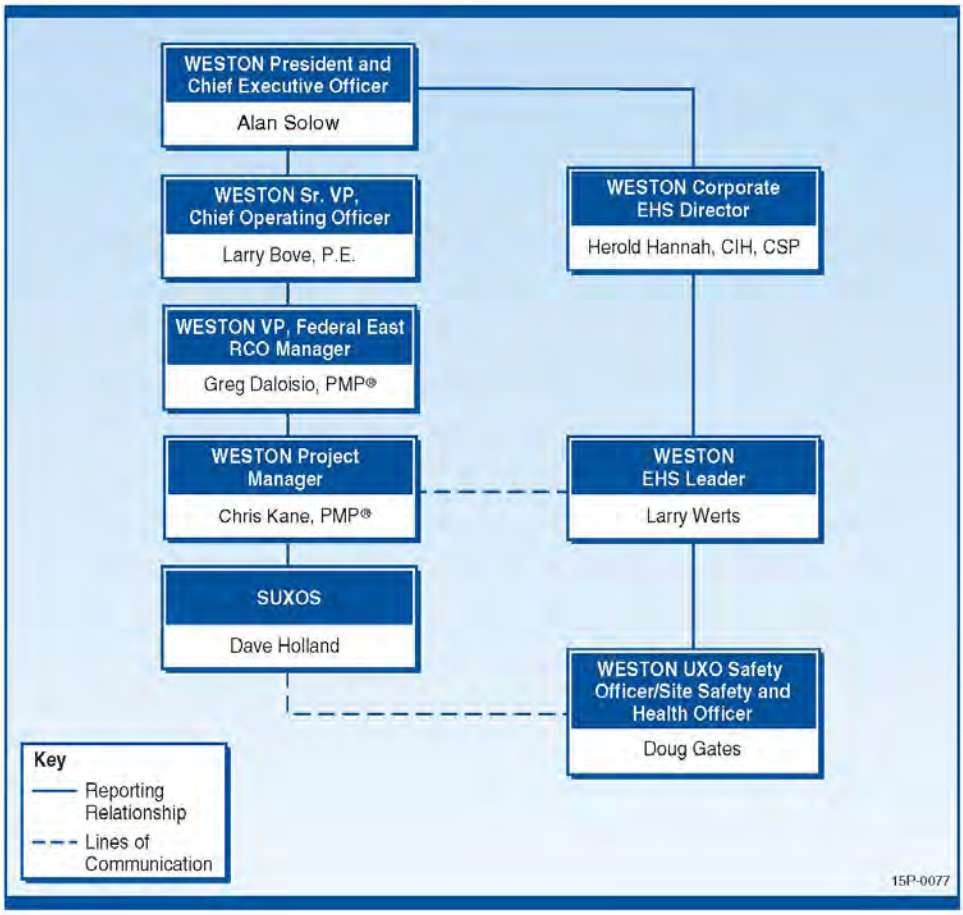
The Safety Solutions Program provides WESTON employees with opportunities to become engaged in the Safety and Health Program. Employees are encouraged to use the Safety Solutions Program to report near incidents or to identify workplace hazards and their proposed solutions. The submitted Safety Solutions are evaluated, and the authors of the most highly regarded solutions are eligible for a financial bonus and other rewards.

4.8 MANAGEMENT ACCOUNTABILITY FOR SAFETY

WESTON managers and supervisors are held directly accountable for the health and safety of their employees, for subcontractor activities, and for the continual communication of hazards and hazard controls to the workforce. The UXOSO/SSHO and the EHS Leader assess the health and safety performance of employees.

The accountability of supervisors and managers for the implementation of the health and safety program is ensured through monthly project life cycle reviews with senior management and through annual employee performance reviews.

315 **Figure 4-1**
316
317 **Health and Safety Organization Chart and Lines of Authority**



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5. SUBCONTRACTORS AND SUPPLIERS

5.1 IDENTIFICATION OF SUBCONTRACTORS AND SUPPLIERS

For health and safety issues, subcontractors (see **Table 5-1**) will be under the ultimate direction of the UXOSO/SSHO and are required to adhere to all aspects of the APP.

Table 5-1

Subcontractor Responsibilities

Subcontractor	Activity
TBD	Professional Land Surveyor*

* On-site subcontractor.

5.2 CONTROL AND COORDINATION OF SUBCONTRACTORS AND SUPPLIERS

The subcontractor will assign a Site Safety Representative who will be responsible for coordinating projects and safety responsibilities for subcontractor personnel as designated and directed by the WESTON UXOSO/SSHO. WESTON is ultimately responsible for ensuring subcontractor compliance with the APP and SSHP for the Mount Gretna TCAR - West MRS. Non-compliance with this plan will result in a stop-work order, as determined by the UXOSO/SSHO.

5.3 SAFETY RESPONSIBILITIES OF SUBCONTRACTORS AND SUPPLIERS

The Site Safety Representative will interact with the UXOSO/SSHO to ensure compliance with this APP and SSHP. Subcontractor employees are expected to comply with this APP and SSHP, USACE EM 385-1-1, and other applicable regulations governing safety while on the project. In the event of a conflict, the more stringent requirements will apply.

The Site Safety Representative will have the following responsibilities:

- Attend health and safety briefings.
- Address worker issues and immediately stop work if unsafe acts/conditions exist or if uncertainty associated with how a task is to be performed exists.
- Coordinate corrective action with the UXOSO/SSHO prior to resuming operations.
- Participate in any incident investigations.

- Inspect operations and work areas daily in conjunction with the SSHO.
- Ensure subcontractor workers have the proper PPE.
- Control hazardous material brought on-site.

5.4 SUBCONTRACTOR SAFETY PLANS

Subcontractors are required to review this APP and SSHP with their employees and supervisors. Each individual is expected to sign the signature sheet, certifying that they have read, understand, and will comply with the requirements of this plan. Subcontractors will provide Company Specific Programs and AHAs to WESTON for inclusion in the APP. Subcontractor personnel are expected to participate in daily health and safety briefings and attend all Safety Meetings.

Subcontractors are expected to work in a responsible and safe manner. Subcontractors for this project will be required to adhere to applicable requirements set forth in the USACE Safety and Health Requirements Manual, EM 385-1-1, in their work and safety plans.

WESTON will obtain and verify the subcontractor personnel training records prior to work beginning.

6. TRAINING

6.1 GENERAL

Personnel assigned to the Mount Gretna TCAR - West MRS project have received the required training. Records of the required training are maintained in the WESTON Corporate EHS database, and records of required training also will be available on-site at all times.

6.2 SAFETY INDOCTRINATION

When hired, WESTON staff members are required to complete EHS training appropriate to their role and responsibility level. New hires that have previously completed such training are required to provide documentation of training. All training, including refresher training, is documented in WESTON's corporate recordkeeping software, EHSTrack.

New employees also participate in WESTON's orientation training program. Personnel receive training on WESTON's EHS policies, including environmental aspects, emergency action plans, security plans, ergonomics, and incident reporting procedures software, BBS, and site-/job-specific training. Site-specific topics will include the following:

- Accident prevention.
- Accident reporting (how and to whom).
- Location of medical facilities for emergency treatment and/or assistance.
- Reporting and correcting unsafe conditions.
- Job hazards/hazard control.
- Site-specific biological, physical, chemical, and/or ionizing/nonionizing radiation hazards as listed in the AHAs.
- Company safety policies.
- Site briefings conducted prior to being granted site access.
- Site layout.
- Hazard control.
- Emergency response and notification.

- Hearing conservation.
- PPE.
- Buddy system.
- Spills.
- Fires.
- Hazard communication.
- Visitor access.
- Public communication guidelines.
- Specific training required by regulations.

6.3 MANDATORY TRAINING AND CERTIFICATIONS

Personnel assigned to or regularly entering a project site will have received the required training. A record of this training is maintained in the WESTON Corporate EHS database. As required by EM 385-1-1, applicable required training for all site workers will be in accordance with 29 CFR 1910.120, elements of CFR 1926, and other OSHA regulations. Training certificates for key WESTON safety personnel are included in **Appendix B** of the APP. If training is not current, employees will not be allowed to work or supervise at the site until they have successfully completed training requirements. A daily discussion will be conducted to review activities associated with daily tasks. All field personnel will participate in these documented discussions.

WESTON will provide staff with the following training and certifications to meet the requirements:

- OSHA 40-hour HAZWOPER Training – All WESTON personnel at the site will have this training.
- OSHA 8-hour HAZWOPER Refresher – All WESTON personnel at the site will have this training when applicable.
- OSHA 30-hour Construction Safety Training – At a minimum, the UXOSO/SSHO will have this training.

- First Aid/CPR/Bloodborne Pathogens (BBP) – A minimum of two people will have this training.

A copy of applicable training records for project personnel will be available on-site and maintained by the UXOSO/SSHO. **Table 10-1**, in Subsection 10.7, lists current key site personnel training and certifications.

6.3.1 OSHA Training

General site workers are required to have had 3 days of field experience under the direct supervision of a trained experienced supervisor. On-site management personnel will have had an additional 8 hours of specialized supervisory training. All training, including project-specific training, is documented, and training records are maintained at the site by the UXOSO/SSHO.

6.3.1.1 OSHA 40-Hour HAZWOPER Training

All general site workers are required to have completed the initial OSHA 40-hour HAZWOPER training course and will have had 3 days of field experience under the direct supervision of a trained, experienced supervisor. On-site management personnel (SUXOS and/or UXOSO/SSHO) will have had an additional 8 hours of specialized supervisory training. Where applicable, workers will have also received the mandatory 8-hour refresher training within the past 12 months. All training, including project specific training, is documented and will be maintained by the UXOSO/SSHO.

6.3.1.2 OSHA 30-Hour Construction Safety

In compliance with USACE Health and Safety Requirements Manual (EM 385-1-1), September 15, 2008, all SSHOs/UXOSOs, at a minimum, the UXOSO/SSHO will have completed the 30-hour OSHA construction safety class or equivalent training, and will complete a minimum of 24 hours of formal safety coursework every 4 years. Training for the OSHA 30-Hour Construction Safety course or equivalent course will include the areas listed below:

- Occupational Safety and Health Act/General Duties Clauses.
- 29 CFR 1904, Recordkeeping.
- Subpart C: General Safety and Health Provisions, Competent Person.

- Subpart D: Occupational Health and Environmental Controls.
- Subpart E: PPE, types and requirements for use.
- Subpart F: Understanding fire protection in the workplace.
- Subpart K: Electrical.
- Subpart M: Fall Protection.
- Rigging, welding, and cutting, scaffolding, excavations, concrete and masonry, demolition, health hazards in construction, materials handling, storage and disposal, hand and power tools, motor vehicles, mechanized equipment, marine operations, steel erection, stairways and ladders, confined spaces, or any other safety procedures applicable to the work being performed.

6.4 PERIODIC SAFETY AND HEALTH TRAINING

The UXOSO/SSHO will present daily site safety briefings (i.e., tailgate meetings) to on-site personnel prior to the start of the work shift. The purpose of the briefings is to assist personnel in safely conducting the scheduled work activities. The UXOSO/SSHO briefings will include the following:

- Tasks to be performed and work method and general description of job scope.
- Work location.
- Equipment usage.
- Control of hazards.
- Weather conditions.
- Emergency response review.

The briefings will provide an opportunity for individuals to share observed safety deficiencies and recognitions. Attendance at these daily safety briefings will be documented by the UXOSO/SSHO.

In addition to the daily site safety briefings, a formal safety meeting will be conducted at least monthly for UXOSO/SSHOs within their respective divisions. A safety manager or designee will be invited to attend this monthly meeting.

6.5 REQUIREMENTS FOR EMERGENCY RESPONSE TRAINING

WESTON provides training by the American Red Cross or an equivalent organization in Standard First Aid, Adult CPR, and BBP for the field staff. At least two personnel with such training and also trained in the use of fire extinguishers will be on-site to provide emergency response.

Qualified First Aid and CPR personnel are identified in **Table 9-4**. In the event specialized/elevated care is necessary, either WESTON or the on-call emergency medical technician (EMT)/ambulance service will transport the injured person to the appropriate medical facility.

Outside assistance will be requested as detailed in the Emergency Response procedures included in Section 15 of the SSHP.

WESTON personnel involved with responding to an on-site emergency will be briefed in their roles and responsibilities as part of the initial indoctrination training discussed above. During this training, personnel will be briefed on the Hazard Communication Program, emergency equipment, and first-aid procedures, as described in the SSHP. Personnel will also be briefed on the emergency response and contingency procedures, which include the following:

- Procedures and tests.
- Spill prevention.
- Firefighting.
- Posting of emergency telephone numbers.
- Medical support.

This training will be documented and will also involve a drill of the emergency response procedures prior to the start of site activities. During this training, the route to and the location of the evacuation point and the location of medical support will be discussed with each staff member.

7. SAFETY AND HEALTH INSPECTIONS

7.1 SPECIFIC ASSIGNMENTS OF RESPONSIBILITIES

The UXOSO/SSHO will conduct and document daily safety and health observations on the project log. Weekly inspections will be conducted by the UXOSO/SSHO using the Environmental Health and Safety Inspection Checklist presented in **Appendix C**. The qualifications and certifications of the inspectors are provided in **Appendix B** of this APP.

7.2 INSPECTIONS/AUDIT FREQUENCIES

Inspected by	Daily	Weekly	Monthly
UXOSO/SSHO	X	X	
EHS Leader			X

7.3 DEFICIENCY TRACKING

A deficiency tracking form, presented in **Appendix D,** will be used to document unacceptable work practices. The deficiency tracking form lists and monitors the status of safety and health deficiencies in chronological order. The form displays the type and description of the deficiency, the risk rating, code reference, the corrective action taken and the projected resolution date, the date resolved, and the person responsible for the corrective action. The deficiency tracking form will be posted on the safety bulletin board and will be updated daily. In most cases, discrepancies of greater severity are corrected immediately or within 24 hours if they are of lower severity.

When a deficiency is identified, the UXOSO/SSHO will follow up by updating the deficiency tracking form to indicate the specific corrective action, the person(s) responsible for the corrections, and the date by which the action needs to be accomplished. The UXOSO/SSHO will also follow up by ensuring that the corrective action is accomplished in the timeframe indicated. During health and safety audits, the deficiency log is reviewed to ensure that the corrective action process has been implemented. The information from the deficiency tracking form is presented in daily safety meetings and monthly supervisor meetings so that lessons learned are disseminated.

7.4 EXTERNAL INSPECTIONS/CERTIFICATIONS

Although no external inspection is expected, regulatory agencies do conduct inspections from time to time. An inspector should be treated professionally and with courtesy. The regulatory agency inspector should introduce himself/herself to the manager in charge of the operation and present credentials to verify that he/she is representing a recognized regulatory agency, such as OSHA or the U.S. Department of Transportation. Personnel who cannot demonstrate their affiliation with a recognized regulatory agency should not be allowed access to the project site or office.

Any pre-inspection conference will be attended by the UXOSO/SSHO, at a minimum. At that time, the scope of the inspection should clearly be described by the inspector. If the inspector has not described the scope of the inspection during the pre-inspection conference, the inspector should be asked to provide such a description.

Coordination of any regulatory agency inspection is the responsibility of the Army National Guard Directorate (ARNG), PAARNG, and/or USACE, who must accompany the inspection agency representative and the UXOSO/SSHO at all times. Prior to taking the inspector on-site or into the office, the UXOSO/SSHO must contact the WESTON PM, and either the EHS Leader or EHS Director. The inspector will perform the inspection, which may include a walk-through inspection of the work site or a targeted file/records review. The site or office inspection typically will end with a closeout conference during which the inspector may provide tentative findings. In some cases, the inspector may forego the close-out conference and issue a written citation after leaving the Mount Gretna TCAR - West MRS. On occasion, inspections may require more than 1 day.

Regulatory agency inspectors seldom issue citations during the inspection. However, if an OSHA or PADEP inspector observes an imminent hazard, he/she can order a work stoppage.

It is WESTON's practice to cooperate with investigations. Information that is requested should be provided; however, requests for copies of documents, safety and health plans, and training records should not be provided without first obtaining approval from WESTON's Law Department. Under no circumstances should any attempt be made to mislead the inspector.

Coordination of any regulatory agency inspection is the responsibility of the UXOSO/SSHO, who will accompany the inspector during all stages of the inspection.

8. ACCIDENT REPORTING

8.1 EXPOSURE DATA (MAN-HOURS WORKED)

The UXOSO/SSHO and PM will track exposure hours. The hours will be presented as a spreadsheet compilation of WESTON and subcontractor hours worked, any reportable accidents that occurred during the month, and accidents that have occurred since the start of the project. WESTON's Risk Management Administrators compile weekly corporate totals that are distributed to the Safety Officers for posting.

8.1.1 Accident Investigations, Reports, and Logs

All incidents, near incidents, spills, thefts, or other site issues will be reported to the WESTON EHS Leader within 1 hour of the occurrence, or as soon as physically possible. Accidents occurring at Mount Gretna TCAR - West MRS must be reported to ARNG, PAARNG, and the USACE PM. The Preliminary Accident Notification (PAN) Report (see **Appendix E**) and the WESTON electronic incident reporting and notification process [Notice of Incident (NOI) Track] must be submitted to the EHS Director and EHS Leader within 24 hours of the incident. Incidents will be reported to the Contracting Officer (KO)/Contracting Officer's Representative (COR) within 24 hours, with written follow-up using USACE ENG Form 3394 within 5 days after the incident.

WESTON's NOITrack is used to document incidents, corrective action plans, and investigations involving WESTON-managed work. Incidents meeting the OSHA definitions of recordable incidents are documented on the WESTON 300 logs and the UXOSO/SSHO also records these incidents on the site OSHA 300 log.

WESTON investigates incidents, including near incidents or "near misses." Corrective actions will be implemented as soon as reasonably possible. The EHS Leader or the EHS Director will ensure corrective actions are implemented in a timely manner.

8.2 IMMEDIATE ACCIDENT NOTIFICATION

The following incidents require immediate notification, no later than 1 hour, to the KO/COR, or designee:

- Fatalities
- Permanent total disability
- Permanent partial disability
- Hospitalization of three or more people resulting from a single occurrence
- Property damage of $500,000 or more

The written follow-up will use the USACE ENG Form 3394 Accident Investigation Report (see **Appendix E)**.

WESTON will notify OSHA:

- Within 8 hours of any work-related fatality.
- All work-related inpatient hospitalizations, all amputations and all losses of an eye within 24 hours.

8.3 NOITRACK PROCEDURE

WESTON maintains an NOI reporting system, NOITrack, which can be accessed on the EHS homepage on the WESTON Portal. The NOITrack information must be completed within 24 hours of the incident, accident, or near incident. Anyone involved in the incident can complete an NOI.

The NOI must be used to report ALL incidents and near-incidents. Incidents include the following: employee accidents, injuries, auto accidents, property damage/loss, utility damage, information/data breaches, security concerns/breaches, break-ins, subcontractor injuries, accidents or events or any other liability situation or circumstance that could give rise to a claim. For example, spills/discharges resulting from the installation of equipment or systems by WESTON or WESTON subcontractors should be reported using the NOITrack system. An NOI must be submitted if something happens on a project that was not intended and could result in liability for WESTON.

8.4 ACCIDENT REVIEW

Any accident that occurs while an employee is driving on Company business, or operating a WESTON-owned, leased, rental, or allowance vehicle at any time will be reviewed and investigated. Drug and/or alcohol testing will be conducted in a timely manner in accordance with WESTON Drug and Alcohol Operating Practice (05-01-010). The accident review is intended to determine whether the accident was "preventable" as defined by the National Safety Council. The investigation will also include consideration of citations issued, if any, and the specifics of the accident to determine appropriate consequences, if any. Investigation may result in outcomes such as recommendation for driver training programs, changes or modifications to vehicle/equipment, suspension of driving privileges, or employee termination. Typically, auto accident investigations will be coordinated on a divisional level, similar to protocols established by Corporate EHS and divisions for other root-cause investigations. The Risk Management Department will provide input and guidance and will serve as a liaison with insurance carriers, as needed.

9. MEDICAL SUPPORT

9.1 ON-SITE MEDICAL SUPPORT

In the event specialized/elevated care is necessary, either WESTON or the on-call EMT/ambulance service will transport the injured person to the Good Samaritan Hospital. Local fire and emergency services can be notified of emergency situations by using the telephone numbers listed in **Table 9-1**. Other emergency contact numbers are listed in **Table 9-2** and **Table 9-3**. Confirmation and evaluation forms for emergency medical services (EMS), fire/rescue, and the hospital capabilities are provided in **Appendix F.**

A first-aid kit will be provided on-site and will be in compliance with the criteria contained in American National Standards Institute Z308.1-2009 and EM 385-1-1 03.B. Bloodborne pathogen kits containing PPE barriers and appropriate decontamination solutions will be maintained on-site.

In case of injury, the following procedures apply:

- For minor injuries, routine first-aid procedures will be used.
- For major injuries, an ambulance will be called immediately, and the appropriate first aid will be administered until the ambulance arrives.
- Trained personnel will use approved measures for treatment based on the training they have received.

9.2 OFF-SITE MEDICAL SUPPORT

Emergency contact numbers are provided in **Tables 9-1** through **9-3.**

Table 9-1

Emergency Contact Numbers

Organization/Point of Contact	Telephone Number
Department of Emergency Services (Ambulance, Fire, Police)	911
Mount Gretna Police Department (non-emergency)	(717) 272-2054
Mount Gretna Fire Department (non-emergency)	(717) 964-3511
Emergency Hospital: Good Samaritan Hospital 4th & Walnut Streets Lebanon, PA 17042	(717) 270-7612

Table 9-2

WESTON Emergency Contact Numbers

Organization/Point of Contact	Telephone Number
WESTON PM: Chris Kane, PMP	(603) 656-5428 (office) (603) 566-4658
WESTON EHS Leader: Larry Werts	(610) 701-3912 (office) (215) 815-6237 (cell)
WESTON Corporate EHS Director: Herold Hannah, CIH	(610) 701-3024 (office) (267) 516-0274 (cell)
WESTON Medical Programs Manager: Herold Hannah, CIH	(610) 701-3024 (office) (267) 516-0274 (cell)
WESTON SUXOS: Dave Holland	(727) 772-3087 (cell)
WESTON UXOSO/SSHO Doug Gates	(814) 229-0959 (cell)

631 **Table 9-3**

632

633 **Other Emergency Contact Numbers**

Organization/Point of Contact	Telephone Number
Poison Control Center	(800) 962-1253
Spill Response – ChemTel (Acct. MIS0003701)	(800) 255-3924
Spill Response - CHEMTREC	(800) 424-9300
National Response Center	(800) 424-8802
WorkCare Intervention	(888) 449-7787
WorkCare WESTON Medical Director: Dr. Peter Greaney WorkCare WESTON Program Administrator Heather Lind	06:00 to 16:30 Pacific Time, call (800) 455-6155, dial 0 or extension 175, Heather Lind to request the on-call clinician.
WorkCare After-Business Hours Contact (Emergency Only)	16:31 to 05:59 Pacific Time and weekends and holidays, call (800) 455-6155 and dial 3 to reach the after-hours answering service. Request that the service connect you with the on-call clinician or the on-call clinician will return your call within 30 minutes.

634

635 9.3 DIRECTIONS AND MAP TO NEAREST HOSPITAL

636 The appropriate emergency vehicle will travel to the appropriate medical facility as shown on
637 **Figure 9-1**. **Figure 9-1** shows the route to the emergency hospital, Good Samaritan Hospital (the
638 driving distance is approximately 9 miles and the driving time is approximately 19 minutes).

639 9.4 FIRST AID AND CPR TRAINING

640 **Table 9-4** presents first aid and CPR training for key personnel.

Table 9-4

First Aid and CPR Training for Key Personnel

Name	First Aid (Expiration Date)	CPR (Expiration Date)	BBP (Expiration Date)
Doug Gates	1/26/2017	1/26/2017	4/21/2016
David Holland	8/13/2017	8/13/2017	8/13/2016

Note: PM will ensure all field personnel are current with their certifications prior to the start of field work.

9.5 BLOODBORNE PATHOGENS

WESTON personnel will follow the guidance established in the BBP Exposure Control Plan presented in **Appendix G**.

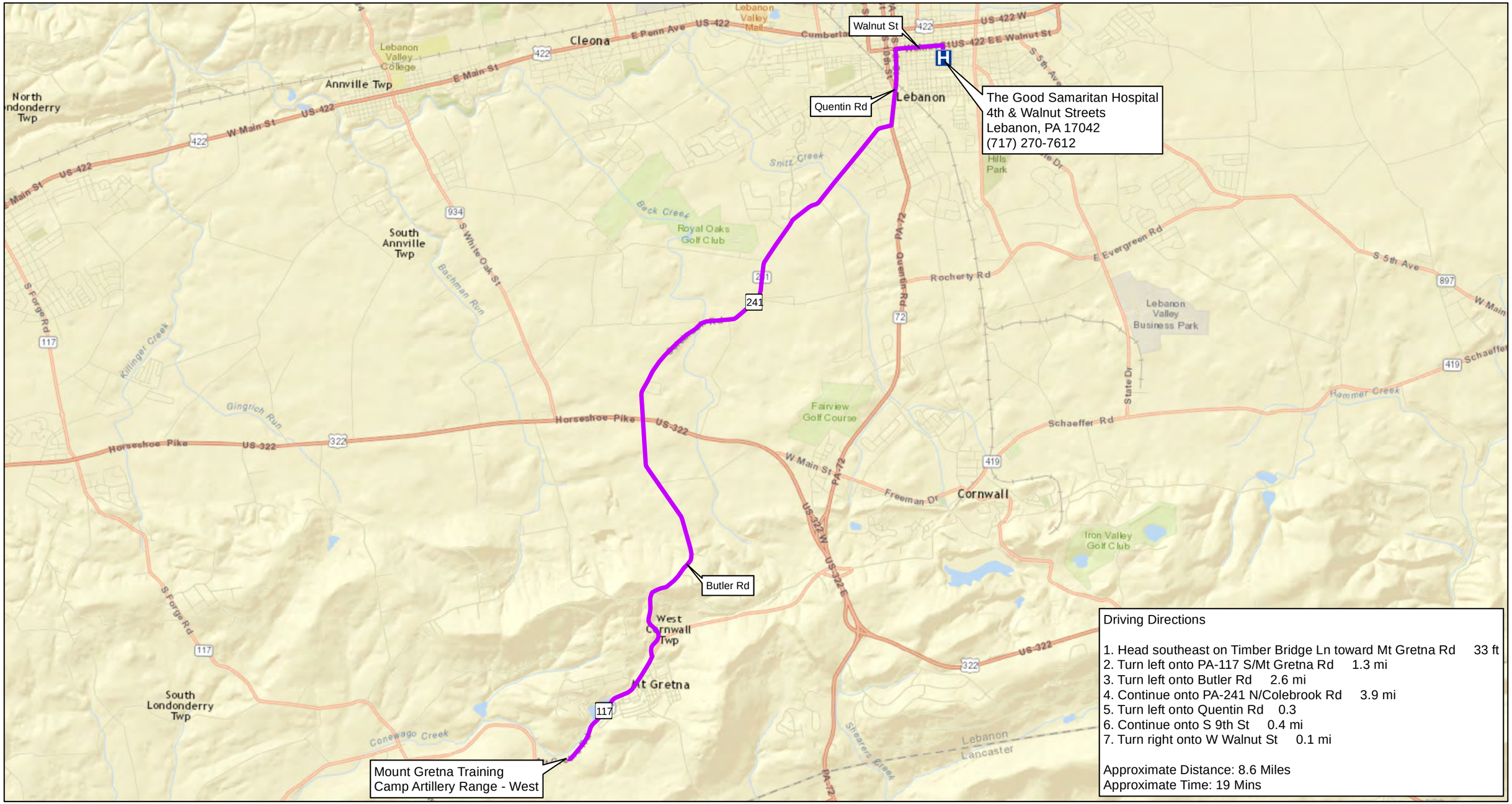
9.6 MEDICAL SURVEILLANCE

Since 1980, WESTON has used a comprehensive Occupational Health Program (OHP) that complies with OSHA and USACE requirements. Site personnel and subcontractors who enter the site during operations must comply with a comparable OHP. Personnel will be required to provide their certifications to the UXOSO/SSHO for review and approval prior to being granted authorization to work. Certifications will be maintained at the project site.

9.6.1 Occupational Health Program

To comply with OSHA requirements, WESTON has designated Dr. Peter Greaney of WorkCare® to oversee the site-specific medical surveillance and OHP. Dr. Greaney is a board-certified physician in internal and occupational medicine. **Dr. Greaney can be reached during regular business hours at (800) 455-6155.**

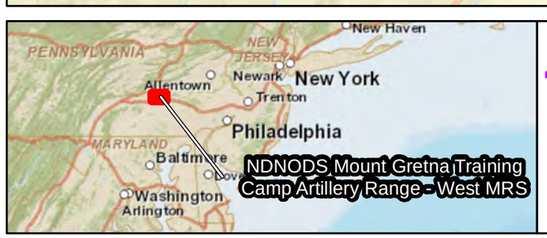
The purpose of the OHP is to ensure suitable job placement of employees, to monitor the health effects of hazards encountered in the workplace, and to maintain and promote good health through preventive measures. Medical examination criteria are established by WorkCare in compliance with 29 CFR 1910.120.



Driving Directions

1. Head southeast on Timber Bridge Ln toward Mt Gretna Rd 33 ft
2. Turn left onto PA-117 S/Mt Gretna Rd 1.3 mi
3. Turn left onto Butler Rd 2.6 mi
4. Continue onto PA-241 N/Colebrook Rd 3.9 mi
5. Turn left onto Quentin Rd 0.3
6. Continue onto S 9th St 0.4 mi
7. Turn right onto W Walnut St 0.1 mi

Approximate Distance: 8.6 Miles
Approximate Time: 19 Mins



Hospital
Hospital Route

U.S Army Corps Of Engineers

Mount Gretna Training Camp Artillery Range - West
Lebanon County, PA

N

0 2,800 5,600 8,400 Feet
0 1,000 2,000 3,000 Meters

NOTES:
Data Source: Bing Topographic Mapping Service.
Quad: Manheim, PA. 1975

Figure 9-1
Route to Emergency Hospital
Good Samaritan Hospital
Lebanon County, Pennsylvania

Coordinate System:
UTM, Z18N, WGS84, Meter

2/25/2016
Revision: 0

File: Y:\NDNODS\Mount Gretna\MXD\SI\MountGretna_HospitalRouteMap.mxd, 2/25/2016 12:13:05 PM, johna

10. PERSONAL PROTECTIVE EQUIPMENT

10.1 HAZARD ASSESSMENTS

For the Mount Gretna TCAR - West MRS project, the EHS Leader and the UXOSO/SSHO are responsible for overseeing the development and implementation of the PPE Program. Once on-site, the UXOSO/SSHO is responsible for ensuring that the level of protection is correct for the activities. If field conditions change, an amendment will be made to the APP and SSHP to reflect the necessary PPE.

10.2 IDENTIFYING WHEN HAZARD ASSESSMENTS WILL BE CONDUCTED

Hazard assessments are conducted during the site walk and document review. During the initial review of the available information, the minimum levels of protection were established for site personnel. This process is then approved by the EHS Leader. Additional hazard assessments will be conducted periodically, and when field activities or site conditions change, amendments will be prepared based on this information.

10.3 IDENTIFYING HOW HAZARD ASSESSMENTS WILL BE CONDUCTED

The selection of the most appropriate level of protection depends on the following:

- Hazards, known or potential:
  - Physical hazards
  - Biological hazards
  - Chemical hazards
- Properties such as toxicity, radioactivity, route of exposure, and matrix (i.e., air, soil, water) in which the contaminants are known or suspected.
- Type and measured concentrations of contaminants.
- Potential for exposure based upon task.
- Route of exposure.

Based upon the initial AHAs, the APP preparer, in consultation with the appropriate safety professionals, identified PPE for the specific tasks. The UXOSO/SSHO will evaluate the AHAs and the identified PPE to determine its suitability based on the site activities and conditions. New

or additional PPE will be selected as conditions change to ensure that employees are protected from hazards. Care will be taken to recognize the possibility of multiple and simultaneous exposures to a variety of hazards.

The levels of personal protection and the procedures specified in this plan are based on the best information available from reference documents and current site data; therefore, these recommendations represent the minimum safety and health requirements to be observed by personnel engaged in this project. Unforeseeable site conditions or changes may warrant a reassessment of protection levels and controls stated. Adjustments to the APP must have prior approval by the EHS Leader and USACE, Baltimore District.

Work at Mount Gretna TCAR - West MRS will be completed in a minimum of Level D. If higher levels of protection are required, an addendum to the APP and SSHP will be prepared and approved.

10.4 PERSONAL PROTECTIVE EQUIPMENT TRAINING

In accordance with OSHA 29 CFR 1910, Subpart I (Personal Protective Equipment), PPE will be provided, used, and maintained in a sanitary and a reliable condition. The construction, design, and material of PPE will provide employees with protection against known or anticipated hazards. PPE that properly and appropriately fits the employee will be selected. Any concerns regarding the use of appropriate PPE will be brought to the attention of the UXOSO/SSHO, who will contact the EHS Leader for assistance.

In accordance with OSHA, any worker required to wear PPE shall receive training in the proper use and care of PPE. Periodic retraining shall be offered by the EHS Leader or designees to both the employees and the supervisors. The training shall include, but not necessarily be limited to, the following subjects:

- Proper selection of PPE.
- When PPE is anticipated for use.
- Proper uses and limitations of equipment during temperature extremes, heat/cold stress, and in relation to employee medical conditions.

- Proper donning and doffing, and adjusting of PPE.
- Maintenance, cleaning, and storage of PPE.
- Inspection procedures for PPE.

Training is typically delivered through formal programs such as HAZWOPER training, refresher training, or specific hazard training. Additional training is offered through routine site training and site-specific training. After the training, the employees will demonstrate that they understand the components of the PPE Program and how to use PPE properly, or they will be retrained.

10.5 PERSONAL PROTECTIVE EQUIPMENT RETRAINING

Retraining is typically delivered through formal programs such as HAZWOPER annual refresher training or specific hazard training. Additional retraining is offered through routine site training and site-specific training.

The UXOSO/SSHO will identify personnel that have received PPE training but do not have the understanding and skill required to use the PPE. Those personnel will be re-trained to acquire the appropriate skills. The re-training will be documented in WESTON's EHS Track and available for review on site.

10.6 MONITORING EQUIPMENT TRAINING

Personnel are initially trained on instrument use and calibration during their 40-hour OSHA training. Instrument use and calibration is reviewed annually during the 8-hour refresher training. Site personnel will review the manufacturer's instructions accompanying the instrument prior to use. Personnel will receive a site-specific briefing covering the hazards, testing, and monitoring procedures prior to start of monitoring for site-specific chemicals of concern.

10.7 WRITTEN CERTIFICATION OF EMPLOYEE PPE TRAINING

Project personnel will have appropriate training as determined by the EHS Leader. Required training and certifications are reviewed internally as part of the APP and SSHP development prior to project commencement. WESTON has an on-line system, EHSTrack, to allow rapid access to personnel training records. WESTON can track the current certification status of WESTON

personnel assigned to each project. Information documented in EHSTrack includes the name of individual, date of training or certification, name and description of training course or certificate, and training or certificate provider. The UXOSO/SSHO will use EHSTrack to update contact information, view EHS personnel training certifications, and view medical clearances. The UXOSO/SSHO will verify each person's training certification and medical clearance status prior to the start of work and will periodically perform reviews for updates. Copies of all training and certifications will be available on site. Key site personnel training/certifications are provided in **Table 10-1**.

Table 10-1

Current Key Site Personnel Training/Certifications

Personnel Name	Position	Medical Clearance (expires)	40-Hour HAZWOPER	8-Hour HAZWOPER Refresher (expires)	First Aid (expires)	CPR (expires)	30-Hour Construction Safety	Supervisors Health and Safety	Bloodborne Pathogens Refresher (expires)
Doug Gates	UXOSO/ SSHO	6/19/2016	12/3/2004	4/21/2016	1/26/2017	1/26/2017	3/11/2011	11/10/2011	4/21/2016
David Holland	SUXOS	3/31/2016	5/14/1999	4/12/2016	8/13/2017	8/13/2017	3/18/2010	3/26/2007	8/13/2016

Notes:

HAZWOPER= Hazardous Waste Operations and Emergency Response.

PM will ensure all field personnel are current with their certifications prior to the start of field work.

11. PLANS REQUIRED BY EM 385-1-1

Plans, programs, and procedures required by EM 385-1-1 and their presentation in the APP or SSHP are shown in **Table 11-1**.

Table 11-1

Plans Required by EM 385-1-1

Plan, Program or Procedure	Document Location
a. Layout plans (04.A.01)	Subsection 11.1 of this APP.
b. Emergency Response Plans	
(1) Procedures and tests (01.E.01)	SSHP Subsection 15.1
(2) Spill plans (01.E.01, 06.A.02)	No spills are anticipated for this project. No hazardous substances will be taken on-site.
(3) Fire-fighting Plan (01.E.01, 19.A.04)	SSHP Subsection 15.5
(4) Posting of emergency telephone numbers (01.E.05)	APP Section 9 and SSHP Subsections 15.3.4 and 15.7: Tables 15-1, 15-2, and 15-3
(5) Man overboard/abandon ship (19.A.04)	This plan is not required because no marine activities are anticipated.
(6) Medical support (Sections 03.A.02; 03.D)	APP Section 9
c. Plan for prevention of alcohol and drug abuse (01.C.02)	SSHP Subsection 10.6
d. Site Sanitation Plan (Section 02)	SSHP Subsection 10.11
e. Access and Haul Road Plan (4.B)	This plan is not required because no haul road activities are anticipated.
f. Respiratory Protection Plan (05.G)	This plan is not required because no activities requiring respiratory protection are anticipated.
g. Health Hazard Control Program (06.A)	Health Hazard Control is addressed in the AHAs in Section 12 of APP and Section 3 of SSHP.
h. Hazard Communication Program (01.B.01) Provide the location of the Safety Data Sheet, records of contractor employee training, and inventory of hazardous materials (including approximate quantities and a site map) that will be brought onto government project by the contractor and subcontractor.	Will be maintained at the site by the UXOSO/SSHO (see SSHP Attachment 1). The Global Harmonization System for classification will be used.
i. Process Safety Management Plan (06.B.04)	This plan is not required because no highly hazardous chemicals are associated with the work plan.
j. Lead Abatement Plan (06.B.05 and specifications)	This plan is not required because no lead abatement activities are anticipated.

Table 11-1

Plans Required by EM 385-1-1 (Continued)

Plan, Program or Procedure	Document Location
k. Asbestos Abatement Plan (06.B.05 and specifications)	This plan is not required because no asbestos abatement activities are anticipated.
l. Radiation Safety Program (06.E.03)	This plan is not required because no radiation safety activities are anticipated.
m. Abrasive blasting (06.H.01)	This plan is not required because no abrasive-blasting activities are anticipated.
n. Heat/Cold Stress Monitoring Plan (06.I.02)	SSHP Section 9
o. Crystalline Silica Monitoring Plan (Assessment) (06.M)	This plan is not required because no work is anticipated to result in exposure to silica.
p. Night Operations Lighting Plan (07.A.08)	This plan is not required because no night operations will occur.
q. Fire Prevention Plan (09.A)	SSHP Subsection 15.5
r. Wild Land Fire Management Plan (09.K.01)	SSHP Subsection 15.6
s. Hazardous Energy Control Plan (12.A.01)	This plan is not required because no stored hazardous energy activities are anticipated.
t. Critical lift procedures (16.H)	This plan is not required because no critical lift is required.
u. Contingency plan for severe weather (19.A.03)	SSHP Subsection 9.3
v. Float Plan (19.F.04)	This plan is not required because no water work will be required.
w. Fall Protection Plan (Subsection 21.C)	This plan is not required because no work at elevation requiring a fall protection plan is anticipated.
x. Demolition Plan (engineering surveys) (23.A.01)	This plan is not required because no demolition activities are anticipated.
y. Excavation/Trenching Plan (25.A.01)	This plan is not required because no excavating or trenching activities are anticipated below 3 feet.
z. Emergency rescue (tunneling) (26.A)	This plan is not required because no tunneling activities are anticipated.
aa. Underground Construction Fire Prevention and Protection Plan (26.D.01)	This plan is not required because no underground construction work will be done.
bb. Compressed Air Plan (26.I.01)	This plan is not required because no work under compressed air is anticipated.
cc. Formwork and Shoring Erection and Removal Plans (27.C)	This plan is not required because no shoring activities are anticipated.

Table 11-1

Plans Required by EM 385-1-1 (Continued)

Plan, Program or Procedure	Document Location
dd. Pre-Cast Concrete Plan (27.D)	This plan is not required because no pre-cast concrete work is anticipated.
ee. Lift Slab Plans (27.E)	This plan is not required because no lift slab activities are anticipated.
ff. Steel Erection Plan (27.F.01)	This plan is not required because no steel erection activities are anticipated.
gg. SSHP (28.B)	**Appendix A** of the APP.
hh. Blasting Plan (29.A.01)	Appendix F of the Mount Gretna RI/FS Work Plan
ii. Diving Plan (30.A.13)	This plan is not required because no diving activities are anticipated.
jj. Confined space (34.A)	This plan is not required because no confined space work will be conducted.

11.1 LAYOUT PLANS

As defined in EM 385-1-1 04.A.01, no temporary construction buildings, facilities, or access routes for temporary structures will be required for this project. However, a conex box will be used for equipment storage, and the area may be fenced with temporary aboveground fencing to secure equipment and materials. The conex box will be placed at a location determined by the point of contact. A vendor will be used for delivery and installation of the box along with delivery and setup of any temporary fencing.

12. RISK MANAGEMENT PROCESSES

The AHAs presented in this section define the activities to be performed at Mount Gretna TCAR-West MRS and identify the sequence of work, the specific hazards anticipated, the site-specific conditions, the equipment and materials, and the control measures to be implemented to eliminate or to reduce each hazard to an acceptable level of risk. Reviews of the project-associated hazards will occur periodically and when field activities change.

AHAs are presented for the following activities:

- Activity 1: Mobilization/Demobilization
- Activity 2: Land Survey and Mapping
- Activity 3: Vegetation Clearance
- Activity 4: Geophysical Surveying Activities
- Activity 5: Intrusive Investigations
- Activity 6: MC Sampling
- Activity 7: Utility Terrain Vehicle (UTV)

Table 12-1 Activity Hazard Analysis

Date Prepared: March 2016

Prepared By: L. Kritzberger, CHST

Reviewed By: L. Werts

Activity 1: **Mobilization/Demobilization**

***Overall Risk Assessment Code (RAC): M**

RAC Matrix

Hazard Severity	Accident Probability A	B	C	D	E
I	E	E	H	H	M
II	E	H	H	M	L
III	H	M	M	L	L
IV	M	L	L	L	L

Task	Hazards	Hazard Control	RAC*
Mobilization and demobilization of manpower and equipment	**Chemical Hazards:** Exposure to petroleum fuels and lubricants	Vehicles will not be overfilled. Caution will be used when refueling. Refueling will not be conducted within 100 feet of an open flame or ignition source.	L
	Biological Hazards: Possibility of stinging and biting insects. Encountering local wildlife, reptiles, and plants.	Use appropriate insect repellents. Employees will be trained to recognize poisonous plants and avoid contact. A poster indicating various types of hazardous plants and reptiles to avoid will be made available. Site training will be conducted on the avoidance of biological hazards.	L
	Radiation Hazards: Sun	Use sunblock as appropriate. Avoid extended periods of direct exposure to sun.	L
	Physical Hazards: Driving/Traffic	All drivers will be licensed. All traffic rules, regulations, and control signs will be obeyed. Work areas will be clearly barricaded, and appropriate signs will be displayed. Persons working near roadways or directing traffic will remain aware of their position in relation to traffic and will wear high-visibility vests. Vehicles will have a fire extinguisher and first-aid kit.	L
	Slips, trips, falls; tools, terrain, or vegetation; uneven walking surfaces; weather hazards, and poor visibility.	Slip, trip, and fall hazards will be either removed or marked and barricaded. Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized. Work will be completed in adequate natural light or sufficient artificial illumination will be maintained. Site personnel will conduct an initial walkthrough, and the "buddy system" will be implemented.	M

Activity 1: Mobilization/Demobilization (Continued)

Task	Hazards	Hazard Control	RAC*
	Inclement weather	Personnel will be dressed according to weather conditions. Local weather will be monitored on a daily basis or more frequently if storms threaten. The UXOSO/SSHO will determine through visual observations and weather updates (gathered through the radio or cell phone) when it is necessary to halt work and when to re-start field activities. The UXOSO/SSHO will monitor for tornado, lightning, and high wind conditions. In the event of severe weather conditions, the UXOSO/SSHO will advise on appropriate shelter locations.	L
	Heat and cold stress	Workers will be briefed and be cognizant of heat and cold stress symptoms. Electrolyte/fluids replacement will be available to workers as needed. Work/rest periods will be established according to American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH) guidelines. Personnel will be monitored.	L
	Manual lifting	Use proper lifting techniques—keep back straight, lift with legs, avoid twisting back, use mechanical equipment, or get help from others whenever possible. Split heavy loads into smaller loads and/or seek assistance. Do not lift a load greater than 25 pounds without mechanical assistance. Verify the path of travel is clear prior to the lift.	M
	Hands or fingers caught between objects; abrasions and lacerations	Personnel will be made aware of the hazard and will carefully coordinate the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges and appropriate precautions will be taken to avoid contact with rough or sharp edges. Personnel will wear leather gloves and avoid placing hands between objects.	L
	Fire	Fire prevention will be a priority through awareness. In the event of a fire, the area will be vacated. Any small fire may be extinguished using a properly rated extinguisher. Storage, handling, and use of flammables and combustible liquids will be in accordance with National Fire Protection Association (NFPA) 30, 30A. Only labeled/listed containers will be used to store flammables and/or combustibles. Properly rated fire extinguishers will be strategically placed in the work area.	L

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Activity 1: Mobilization/Demobilization (Continued)

Equipment	PPE	Inspection	Training
Hand tools Vehicles	Safety boots High-visibility safety vest Gloves Safety glasses	Equipment will be properly stored, inspected, and/or maintained on a daily basis, or according to manufacturer's recommendations. Records of inspection will be maintained on-site. Fire extinguishers and First-Aid kits will be inspected by the UXOSO/SSHO.	First Aid/CPR, HAZWOPER, and vehicle training.

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Date Prepared: March 2016

Prepared By: L. Kritzberger, CHST

Reviewed By: Larry Werts

Activity 2: **Land Survey and Mapping**

***Overall Risk Assessment Code (RAC): M**

RAC Matrix

Hazard Severity	Accident Probability A	B	C	D	E
I	E	E	H	H	M
II	E	H	H	M	L
III	H	M	M	L	L
IV	M	L	L	L	L

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Task	Hazards	Hazard Control	RAC*
Land survey and mapping	**UXO Avoidance:**	A UXO Technician II or higher will escort the survey crew and conduct a magnetometer-assisted visual survey to screen for metal debris.	L
	Biological Hazards: Possibility of stinging and biting insects. Encountering local wildlife, reptiles, and plants.	Use appropriate insect repellents. Employees will be trained to recognize poisonous plants and avoid contact. A poster indicating various types of hazardous plants and reptiles to avoid will be made available. Site training will be conducted on the avoidance of biological hazards.	L
	Radiation Hazards: Sun	Use sunblock as appropriate. Avoid extended periods of direct exposure to sun.	L
	Physical Hazards:		
	Slips, trips, falls; tools, terrain, or vegetation; uneven walking surfaces; weather hazards; and poor visibility.	Slip, trip, and fall hazards will be either removed or marked and barricaded. Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized. Work will be completed in adequate natural light or sufficient artificial illumination will be maintained. Site personnel will conduct an initial walkthrough, and the "buddy system" will be implemented.	M

Activity 2: Land Survey and Mapping (Continued)

Task	Hazards	Hazard Control	RAC*
	Inclement weather	Personnel will be dressed according to weather conditions. Local weather will be monitored on a daily basis or more frequently if storms threaten. The SSHO will determine through visual observations and weather updates (gathered through the radio or cell phone) when it is necessary to halt work and when to re-start field activities. The SSHO will monitor for tornado, lightning, and high wind conditions. In the event of severe weather conditions, the SSHO will advise on appropriate shelter locations.	L
	Heat and cold stress	Workers will be briefed and be cognizant of heat and cold stress symptoms. Electrolyte/fluids replacement will be available to workers as needed. Work/rest periods will be established according to American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH) guidelines. Personnel will be monitored.	L
	Manual lifting	Use proper lifting techniques—keep back straight, lift with legs, avoid twisting back, use mechanical equipment, or get help from others whenever possible. Split heavy loads into smaller loads and/or seek assistance. Do not lift a load greater than 25 pounds without mechanical assistance. Verify the path of travel is clear prior to the lift.	M
	Fire	Fire prevention will be a priority through awareness. In the event of a fire, the area will be vacated. Any small fire may be extinguished using a properly rated extinguisher. Storage, handling, and use of flammables and combustible liquids will be in accordance with National Fire Protection Association (NFPA) 30, 30A. Only labeled/listed containers will be used to store flammables and/or combustibles. Properly rated fire extinguishers will be strategically placed in the work area.	L

Activity 2: Land Survey and Mapping (Continued)

Equipment	PPE	Inspection	Training
Surveying tools Vehicles Fire Extinguisher First Aid Kit	Safety boots High-visibility safety vest Safety glasses	Equipment will be properly stored, inspected, and/or maintained on a daily basis, or according to manufacturer's recommendations. PPE will be inspected prior to use. Records of inspection will be maintained on-site. Fire extinguishers and First Aid kits will be inspected by the SSHO.	First Aid/CPR, and vehicle training. 30-Hr Construction Safety (SSHO) UXO Tech Training HAZWOPER

Date Prepared: March 2016

Prepared By: L. Kritzberger, CHST

Reviewed By: L. Werts

Activity 3: **Vegetation Clearance**

***Overall Risk Assessment Code (RAC): M**

RAC Matrix

Hazard Severity	Accident Probability A	B	C	D	E
I	E	E	H	H	M
II	E	H	H	M	L
III	H	M	M	L	L
IV	M	L	L	L	L

Task	Hazards	Hazard Control	RAC*
Brush clearing with lopping shears and deck mower	**Chemical Hazards:** Fuel	Flammable liquids will be stored in safety containers and in appropriate storage area. Properly rated fire extinguishers will be placed within 50 ft of the fuel storage area and strategically in the construction area.	L
	UXO Avoidance:	A UXO Technician II [in accordance with Department of Defense Explosive Safety Board (DDESB) Technical Paper (TP) 18] or higher will escort non-essential personnel through the MRS. Anomaly avoidance activities will be supported by the use of a magnetometer-assisted visual survey. Where intrusive work will be performed by non-essential personnel (e.g., rutting with vehicles, survey staking), the UXO Technician will sweep the area to confirm that no subsurface anomalies are present. Where anomalies are detected, the area will be avoided and no intrusive work will be performed. If MEC is observed on the ground surface, the location will be marked and guarded until a response can be performed.	M
	Biological Hazards: Possibility of stinging and biting insects. Encountering local wildlife, reptiles, and plants.	Use appropriate insect repellents. Employees will be trained to recognize poisonous plants and to avoid contact. A poster indicating various types of hazardous plants and reptiles to avoid will be made available. Site training will be conducted on the avoidance and PPE requirement for biological hazards.	L
	Radiation Hazards: Sun	Use sunblock as appropriate. Avoid extended periods of direct exposure to sun.	L

Activity 3: Vegetation Clearance (Continued)

Task	Hazards	Hazard Control	RAC*
	Physical Hazards: Slips, trips, falls; tools, terrain, or vegetation; uneven walking surfaces; weather hazards and poor visibility.	Slip, trip, and fall hazards will be either removed or marked and barricaded. Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized; ice, snow, and mud will be cleared to reduce slip hazards. Work will be completed in adequate natural light or sufficient artificial illumination will be maintained. Site personnel will conduct an initial walkthrough, and the "buddy system" will be implemented.	M
	Inclement weather	Personnel will be dressed according to weather conditions. Local weather will be monitored on a daily basis or more frequently if storms threaten. The UXOSO/SSHO will determine through visual observations and weather updates (gathered through the radio or cell phone) when it is necessary to halt work and when to re-start field activities. The UXOSO/SSHO will monitor for tornado, lightning, and high wind conditions. In the event of severe weather conditions, the UXOSO/SSHO will advise on appropriate shelter locations.	L
	Heat and cold stress	Workers will be briefed and be cognizant of heat and cold stress symptoms. Electrolyte/fluids replacement will be available to workers as needed. Work/rest periods will be established according to ACGIH and NIOSH guidelines. Personnel will be monitored.	L
	Hands or fingers caught between objects; abrasions and lacerations	Personnel will be made aware of the hazard and will carefully coordinate the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges and appropriate precautions will be taken to avoid contact with rough or sharp edges. Personnel will wear leather gloves and avoid placing hands between objects.	L
	Hand tools, manual	Tools shall be inspected prior to use. Damaged tools will be tagged out of service until repair can be performed by a qualified person. Tools will be used properly and for their intended purpose. All power circuits used for hand tools will be protected by a ground fault circuit interrupter. All personnel will be trained on the proper use of all power tools.	M

Activity 3: Vegetation Clearance (Continued)

Task	Hazards	Hazard Control	RAC*
	Fire	Fire prevention will be a priority through awareness. In the event of a fire, the area will be vacated. Any small fire may be extinguished using a properly rated extinguisher. Storage, handling, and use of flammables and combustible liquids will be in accordance with NFPA 30, 30A. Only labeled/listed containers will be used to store flammables and/or combustibles. Properly rated fire extinguishers will be strategically placed in the work area.	L
	Grubbing and vegetation removal.	Land clearing equipment will be operated by qualified persons. Equipment will be inspected before use, operators will be provided refresher training by the vendor, and guards will be put in place. Persons will be appropriately trained and experienced.	M
	Mowers	In accordance with 1910.243.e, a shutoff device will be provided to stop operation of the motor or engine. This device shall require manual and intentional reactivation to restart the motor or engine. Operating controls will be clearly identified. The mower blade shall be enclosed except on the bottom, and the enclosure shall extend to or below the lowest cutting point of the blade in the lowest blade position. Warning instructions stating that the mower shall not be used without either the catcher assembly or the guard in place shall be affixed to the mower near the opening. The instruction manual shall state that the mower shall not be used without either the catcher assembly or the guard in place. The word "Caution" or stronger wording shall be placed on the mower at or near each discharge opening. Blade(s) shall stop rotating from the manufacturer's specified maximum speed within 15 seconds after declutching or shutting off power.	L
	Noise exposure	High noise activities will be identified. Hearing protection will be provided as appropriate. The latest ACGIH threshold limit values will be used. Personnel operating chainsaws or other brush clearing equipment will be required to wear the appropriate hearing protection. Hearing conservation program will be implemented, which consists of audiometric examination; training; and use of hearing protection.	L

Activity 3: Vegetation Clearance (Continued)

Equipment	PPE	Inspection	Training
Hand tools Lopping shears Deck mower Utility vehicles Fire extinguisher Weed wacker	Safety boots Safety glasses Hearing protection Work gloves – with padding to reduce vibration Face shields High-visibility safety vest	Equipment will be properly stored, inspected, and/or maintained on a daily basis, or according to manufacturer's recommendations. All PPE will be inspected prior to use. Records of inspection will be maintained on-site. Fire extinguishers and First-Aid kits will be inspected by the UXOSO/SSHO.	First Aid/CPR; and vehicle training. A minimum of a UXO Technician II will provide anomaly avoidance during brush clearing activities and UXO awareness training to non-UXO personnel. 30-Hr Construction Safety (UXOSO/SSHO) HAZWOPER Use of mower and weed wacker

Date Prepared: March 2016

Prepared By: L. Kritzberger, CHST

Reviewed By: L. Werts

Activity 4: **Geophysical Surveying Activities**

***Overall Risk Assessment Code (RAC): M**

RAC Matrix

Hazard Severity	Accident Probability A	B	C	D	E
I	E	E	H	H	M
II	E	H	H	M	L
III	H	M	M	L	L
IV	M	L	L	L	L

Task	Hazards	Hazard Control	RAC*
Geophysical surveying will be conducted using a Schonstedt; UXO avoidance will be accomplished by a UXO Tech II or higher.	**UXO Avoidance:**	A UXO Technician II (in accordance with DDESB TP18) or higher will escort non-essential personnel through the MRS. Anomaly avoidance activities will be supported by the use of a magnetometer-assisted visual survey. Where intrusive work will be performed by non-essential personnel (e.g., rutting with vehicles, survey staking), the UXO Technician will sweep the area to confirm that no subsurface anomalies are present. Where anomalies are detected, the area will be avoided and no intrusive work will be performed. If MEC is observed on the ground surface, the location will be marked and guarded until a response can be performed.	M
	Chemical Hazards: Lead	Minimum of Level D PPE will be used to prevent direct contact exposure to lead in the soils. Calculated risk levels show that no respiratory protection is necessary. Samples will be collected in a manner to minimize dust.	L
	Biological Hazards: Possibility of stinging and biting insects. Encountering local wildlife, reptiles, and plants.	Use appropriate insect repellents. Employees will be trained to recognize poisonous plants and avoid contact. A poster indicating various types of hazardous plants and reptiles to avoid will be made available. Site training will be conducted on the avoidance of biological hazards.	L
	Radiation Hazards: Sun	Use sunblock as appropriate. Avoid extended periods of direct exposure to sun.	L

Activity 4: Geophysical Surveying Activities (Continued)

Task	Hazards	Hazard Control	RAC*
	MEC Hazards:	The UXO technician will conduct a preliminary surface and subsurface survey for anomalies prior to commencing any type of activities, including foot and vehicular traffic, and all survey activities. The UXO Technician II must meet the requirements specified in EP 75-1-2 and Department of Defense Explosive Safety Board (DDESB) Technical Paper (TP) 18.	L
	Physical Hazards: Driving/Traffic	All drivers will be licensed. All traffic rules, regulations, and control signs will be obeyed. Work areas will be clearly barricaded and appropriate signs will be displayed. Persons working near roadways or directing traffic will remain aware of their position in relation to traffic and will wear high-visibility vests. Vehicles will have a fire extinguisher and first-aid kit.	L
	Slips, trips, falls, tools, terrain, or vegetation; uneven walking surfaces; and poor visibility.	Slip, trip, and fall hazards will be either removed or marked and barricaded. Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized. Work will be completed in adequate natural light, or sufficient artificial illumination will be maintained. Site personnel will conduct an initial walkthrough, and the "buddy system" will be implemented.	M
	Inclement weather	Personnel will be dressed according to weather conditions. Local weather will be monitored on a daily basis or more frequently if storms threaten. The UXOSO/SSHO will determine through visual observations and weather updates (gathered through the radio or cell phone) when it is necessary to halt work and when to re-start field activities. The UXOSO/SSHO will monitor for tornado, lightning, and high wind conditions. In the event of severe weather conditions, the UXOSO/SSHO will advise on appropriate shelter locations.	L
	Heat and cold stress	Workers will be briefed and be cognizant of heat and cold stress symptoms. Electrolyte/fluids replacement will be available to workers as needed. Work/rest periods will be established according to American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH) guidelines. Personnel will be monitored.	L

Activity 4: Geophysical Surveying Activities (Continued)

Task	Hazards	Hazard Control	RAC*
	Manual lifting	Use proper lifting techniques—keep back straight, lift with legs, avoid twisting back, use mechanical equipment, or get help from others whenever possible. Split heavy loads into smaller loads and/or seek assistance. Do not lift a load greater than 25 pounds without mechanical assistance. Verify the path of travel is clear prior to the lift.	M
	Hand tools, manual	Tools shall be inspected prior to use. Damaged tools will be tagged out of service until repair can be performed by a qualified person. Tools will be used properly and for their intended purpose. All power circuits used for hand tools will be protected by a ground fault circuit interrupter. All personnel will be trained on the proper use of all power tools.	L
	Fire	Fire prevention will be a priority through awareness. In the event of a fire, the area will be vacated. Any small fire may be extinguished using a properly rated extinguisher. Storage, handling, and use of flammables and combustible liquids will be in accordance with NFPA 30, 30A. Only labeled/listed containers will be used to store flammables and/or combustibles. Properly rated fire extinguishers will be strategically placed in the work area.	L

Equipment	PPE	Inspection	Training
Hand tools Vehicles Schonstedt	Safety boots High-visibility safety vest Gloves Safety glasses	Equipment and meters will be properly stored, inspected, and/or maintained on a daily basis, or according to manufacturer's recommendations. PPE will be inspected prior to use. Records of inspection will be maintained on-site. Fire extinguishers and first-aid kits will be inspected by the UXOSO/SSHO.	First Aid/CPR, HAZWOPER, and vehicle training 30-Hr Construction Safety (UXOSO/SSHO) Unexploded Ordnance/ Explosive Ordnance Disposal (UXO/EOD) certification, qualified in accordance with DDESB TP 18 HAZWOPER

Date Prepared: March 2016

Prepared By: L. Kritzberger, CHST

Reviewed By: L. Werts

Activity 5: **Intrusive Investigations**

***Overall Risk Assessment Code (RAC): H**

RAC Matrix

Hazard Severity	Accident Probability A	B	C	D	E
I	E	E	H	H	M
II	E	H	H	M	L
III	H	M	M	L	L
IV	M	L	L	L	L

Task	Hazards	Hazard Control	RAC*
Mag and dig operations	**Explosives Hazards:** Unintentional detonation of MEC.	Establish exclusion zones (EZ) around intrusive work for nonessential personnel based on minimum separation distances identified in the approved Explosives Site Plan (ESP). Maintain EZs during all intrusive activities. Munitions will be positively identified prior to movement. Positively identify any fuzing associated with the munitions. If found fuzed, do not handle. If unfuzed, it may be moved to central location with approval of UXOSO and concurrence from the USACE Ordnance and Explosives Safety Specialist (OESS). The UXO operations will be conducted during daylight hours only. If unknown munitions or suspected chemical warfare material is found that cannot be positively identified, the USACE OESS will be notified, the detonation will be reassessed, and the course of action verified before proceeding. Approved ESP and EM 385-1-97 will be adhered to at all times. The type of munitions with the greatest fragmentation distance is the Stokes mortar.	H
	Explosives Hazards from Demolition Operations: Intentional detonation	Before any demolition operations commence, UXO technicians assigned to or working with demolition teams will attend a site-specific orientation and training. The purpose of the orientation will be to review UXO demolition and emergency response procedures. The topics to be covered during the orientation will include, but are not limited to: review of the ESP, APP, and SSHP (as applicable), sandbag mitigation requirements, review of demolition firing systems and components, review of disposal charge placement, review of explosives, transportation, site munitions brief, type and condition of	H

Activity 5: Intrusive Investigations (Continued)

Task	Hazards	Hazard Control	RAC*
		UXO, EZ requirements and control, emergency response equipment, emergency procedures, two-person rule, and team assignments. Engineering controls will be used as prescribed in the approved ESP. Demolition notifications will be made in accordance with the Work Plan. Demolition Supervisor will have current Pennsylvania Blasters License. Approved ESP and EM 385-1-97 will be adhered to at all times.	
	Biological Hazards: Possibility of stinging and biting insects. Encountering local wildlife, reptiles, and plants.	Use appropriate insect repellents. Employees will be trained to recognize poisonous plants and avoid contact. A poster indicating various types of hazardous plants and reptiles to avoid will be made available. Site training will be conducted on the avoidance of biological hazards.	L
	Radiation Hazards:	Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time.	L
	Physical Hazards: Slips, trips, falls, tools, terrain, or vegetation; uneven walking surfaces; weather hazards; and poor visibility.	Slip, trip, and fall hazards will be either removed or marked and barricaded. Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized; ice, snow, and mud will be cleared to reduce slip hazards. Work will be completed in adequate natural light or sufficient artificial illumination will be maintained. Site personnel will conduct an initial walkthrough, and the "buddy system" will be implemented.	L
	Inclement weather	Personnel will be dressed according to weather conditions. Local weather will be monitored on a daily basis or more frequently if storms threaten. The UXOSO/SSHO will determine through visual observations and weather updates (gathered through the radio or cell phone) when it is necessary to halt work and when to re-start field activities. The UXOSO/SSHO will monitor for tornado, lightning, and high wind conditions. In the event of severe weather conditions, the UXOSO/SSHO will advise on appropriate shelter locations.	L
	Heat and cold stress	Workers will be briefed and be cognizant of heat and cold stress symptoms. Electrolyte/fluids replacement will be available to workers as needed. Work/rest periods will be established according to ACGIH and NIOSH guidelines. Personnel will be monitored.	L

Activity 5: Intrusive Investigations (Continued)

Task	Hazards	Hazard Control	RAC*
	Manual lifting	Use proper lifting techniques—keep back straight, lift with legs, avoid twisting back, use mechanical equipment, or get help from others whenever possible. Split heavy loads into smaller loads and/or seek assistance. Do not lift a load greater than 25 pounds without mechanical assistance. Verify the path of travel is clear prior to the lift.	M
	Hands or fingers caught between objects; abrasions and lacerations	Personnel will be made aware of the hazard and will carefully coordinate the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions will be taken to avoid contact with rough or sharp edges. Personnel will wear leather gloves and avoid placing hands between objects.	L
	Hand tools, manual and power	Tools will be inspected prior to use. Damaged tools will be tagged out of service until they can be repaired. Tools will be used properly and for their intended purpose. Personnel will be trained on the proper use of power tools.	L
	Utilities	A local "one-call" utility will be conducted. Dig Safe will be consulted for utility clearances as well as any available utility maps. An outside, independent utility company may also be contracted to confirm utility clearances.	L
	Fire	Fire prevention will be a priority through awareness. In the event of a fire, the area will be vacated. Any small fire may be extinguished using a properly rated extinguisher. Storage, handling, and use of flammables and combustible liquids will be in accordance with NFPA 30, 30A. Only labeled/listed containers will be used to store flammables and/or combustibles. Properly rated fire extinguishers will be strategically placed in the work area.	L

Activity 5: Intrusive Investigations (Continued)

Equipment	PPE	Inspection	Training
Hand tools Vehicles 15-minute eye wash station Magnetometer All-metals detector	Safety boots Gloves Safety glasses High-visibility safety vests	Equipment and meters will be properly stored, inspected, and/or maintained on a daily basis, or according to manufacturer's recommendations. All PPE will be inspected prior to use. Records of inspection will be maintained on-site. Fire extinguishers and first-aid kits will be inspected by the UXOSO/SSHO.	First Aid/CPR, HAZWOPER, and vehicle training. 30-Hr Construction Safety (UXOSO/SSHO) HAZWOPER UXO/Explosive Ordnance Disposal (EOD) certification, qualified in accordance with DDESB TP 18

Date Prepared: March 2016

Prepared By: L. Kritzberger, CHST

Reviewed By: L. Werts

Activity 6: **MC Sampling**

***Overall Risk Assessment Code (RAC): M**

RAC Matrix

Hazard Severity	Accident Probability A	B	C	D	E
I	E	E	H	H	M
II	E	H	H	M	L
III	H	M	M	L	L
IV	M	L	L	L	L

Task	Hazards	Hazard Control	RAC*
MC Sampling	**Chemical Hazards:** **Lead**	A UXO Technician II or higher will escort the sample crew during the collection of soil samples to ensure MEC avoidance. Nitrile gloves will be used to prevent direct contact exposure to lead in soils. Calculated risk levels show that no respiratory protection is necessary. Samples will be collected in a manner to minimize dust.	L
	Biological Hazards: Possibility of stinging and biting insects. Encountering local wildlife, reptiles, and plants.	Use appropriate insect repellents. Employees will be trained to recognize poisonous plants and avoid contact. A poster indicating various types of hazardous plants and reptiles to avoid will be made available. Site training will be conducted on the avoidance of biological hazards.	L
	Radiation Hazards: Sun	Use sunblock as appropriate. Avoid extended periods of direct exposure to sun.	L
	Physical Hazards: Driving/Traffic	All drivers will be licensed. All traffic rules, regulations, and control signs will be obeyed. Work areas will be clearly barricaded, and appropriate signs will be displayed. Persons working near roadways or directing traffic will remain aware of their position in relation to traffic and will wear high-visibility vests. Vehicles will have a fire extinguisher and first-aid kit.	L
	Slips, trips, falls, tools, terrain, or vegetation; uneven walking surfaces; weather hazards; and poor visibility.	Slip, trip, and fall hazards will be either removed or marked and barricaded. Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized. Work will be completed in adequate natural light or sufficient artificial illumination will be maintained. Site personnel will conduct an initial walkthrough, and the "buddy system" will be implemented.	M

Activity 6: MC Sampling (Continued)

Task	Hazards	Hazard Control	RAC*
	Inclement weather	Personnel will be dressed according to weather conditions. Local weather will be monitored on a daily basis or more frequently if storms threaten. The UXOSO/SSHO will determine through visual observations and weather updates (gathered through the radio or cell phone) when it is necessary to halt work and when to re-start field activities. The UXOSO/SSHO will monitor for tornado, lightning, and high wind conditions. In the event of severe weather conditions, the UXOSO/SSHO will advise on appropriate shelter locations.	L
	Heat and cold stress	Workers will be briefed and be cognizant of heat and cold stress symptoms. Electrolyte/fluids replacement will be available to workers as needed. Work/rest periods will be established according to ACGIH and NIOSH guidelines. Personnel will be monitored.	L
	Manual lifting	Use proper lifting techniques—keep back straight, lift with legs, avoid twisting back, use mechanical equipment, or get help from others whenever possible. Split heavy loads into smaller loads and/or seek assistance. Do not lift a load greater than 25 pounds without mechanical assistance. Verify the path of travel is clear prior to the lift.	**M**
	Mechanical Equipment	Only trained, qualified operators will operate equipment. Equipment will be inspected daily and documented in accordance to manufacturer's requirements. Personnel shall be made aware of hazards and will coordinate carefully during equipment operations. Personnel access will be restricted in the area of operation. Back up alarms will be functional. Stay out of the swing area of all equipment and from under loads. No personnel will ride on the equipment unless seats are provided. Guards will be kept in place during operation. Maintain safe distance from moving mechanical parts. Ground personnel near operating heavy equipment will wear hard hats and high-visibility (reflective) vests. Always use appropriate PPE.	M

Activity 6: MC Sampling (Continued)

Task	Hazards	Hazard Control	RAC*
	Utilities	A local "one-call" utility will be conducted. Dig Safe will be consulted for utility clearances as well as any available utility maps. An outside, independent utility company may also be contracted to confirm utility clearances.	L
	Hands or fingers caught between objects; abrasions and lacerations	Personnel will be made aware of the hazard and will carefully coordinate the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges and appropriate precautions will be taken to avoid contact with rough or sharp edges. Personnel will wear leather gloves and avoid placing hands between objects.	**L**
	Fire	Fire prevention will be a priority through awareness. In the event of a fire, the area will be vacated. Any small fire may be extinguished using a properly rated extinguisher. Storage, handling, and use of flammables and combustible liquids will be in accordance with NFPA 30, 30A. Only labeled/listed containers will be used to store flammables and/or combustibles. Properly rated fire extinguishers will be strategically placed in the work area.	**L**

Activity 6: MC Sampling (Continued)

Equipment	PPE	Inspection	Training
Hand tools - shovels Vehicles Hand augers Bowls Scoops Backhoe/mini excavator	Safety boots High-visibility safety vest Nitrile gloves Safety glasses Hard hat	Equipment will be properly stored, inspected, and/or maintained on a daily basis, or according to manufacturer's recommendations. PPE will be inspected prior to use. Records of inspection will be maintained on-site. Fire extinguishers and First-aid kits will be inspected by the UXOSO/SSHO.	First Aid/CPR, HAZWOPER, and vehicle training 30-Hr Construction Safety (UXOSO/SSHO) HAZWOPER Qualified equipment operator UXO/EOD certification, qualified in accordance with DDESB TP 18

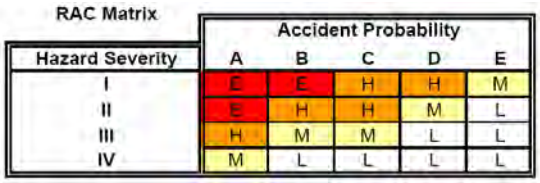
Date Prepared: March 2016

Prepared By: L. Kritzberger, CHST

Reviewed By: L. Werts

Activity 7: **Utility Terrain Vehicle (UTV)**

***Overall Risk Assessment Code (RAC): L**



Task	Hazards	Hazard Control	RAC*
Utilize UTV for getting to locations and hauling equipment	**Physical Hazards:** Driving	All drivers will be trained and familiar with the use of controls. A copy of the operator's manual will be kept with the vehicle at all times. Operators must review all training materials provided by the manufacturer for that specific vehicle. Training will be in accordance with the manufacturer's recommendations. Passenger carry is limited to the number of seatbelts. The UTV must have an operational audible warning device (horn) and brake lights. UTVs must be equipped with windshields and roll-over protection systems. No passengers will be permitted to ride in the cargo area. All passengers must wear seatbelts. All loads must be securely strapped down and the weight evenly distributed. Reduced speed and extreme caution will be used on slopes or rough terrain. Do not stop or start suddenly when going up or down a hill. Use caution when changing direction on a slope.	L

Equipment	PPE	Inspection	Training
Utility Vehicles	Safety boots High-visibility vests	Equipment and meters will be properly stored, inspected, and/or maintained on a daily basis, or according to manufacturer's recommendations. Records of inspection will be maintained on-site. Fire extinguishers and first-aid kits will be inspected by the UXOSO/SSHO.	First Aid/CPR/BBP and Vehicle Training. 30-Hr Construction Safety (UXOSO/SSHO) 40-Hr HAZWOPER and Current 8-Hr Refresher UTV safety training

13. REFERENCES

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APPENDIX A

SITE SAFETY AND HEALTH PLAN

APPENDIX A
SITE SAFETY AND HEALTH PLAN
FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MILITARY MUNITIONS RESPONSE PROGRAM
MUNITIONS RESPONSE SERVICES
MOUNT GRETNA TRAINING CAMP ARTILLERY RANGE - WEST
MOUNT GRETNA, PA

Contract No.: W912DR-09-D-0006
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Prepared For:

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March 2016

Work Order No. 03886.551.301

SITE SAFETY AND HEALTH PLAN CONCURRENCE/SIGNOFF

Site Name:	Military Munitions Response Program Munitions Response Services Mount Gretna Training Camp Artillery Range - West MRS
Work Location Address:	Mount Gretna, Pennsylvania

WORKER'S STATEMENT

I have read, understood, and agree to abide by the information set forth in the Accident Prevention Plan (APP), Site Safety and Health Plan (SSHP), and any discussions presented in the personnel health and safety briefing. I have received adequate training to perform the procedures addressed in these plans. If I identify a hazard not addressed in the APP or SSHP, or encounter an operation I cannot perform in accordance with the APP or SSHP, I will stop the process and notify my immediate supervisor.

Name	**Signature**	**Date**
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date

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LIST OF ACRONYMS

°F	degrees Fahrenheit
AHA	activity hazard analysis
ANSI	American National Standards Institute
APP	Accident Prevention Plan
BBP	bloodborne pathogens
CENAB	U.S. Army Corps of Engineers, Baltimore District
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CPR	cardiopulmonary resuscitation
DDESB	Department of Defense Explosive Safety Board
DMM	discarded military munitions
EC	Emergency Coordinator
EHS	Environmental Health and Safety
EM	Engineering Manual
EMS	Emergency Medical Services
EOD	Explosives Ordnance Disposal
FAR	Federal Acquisition Regulation
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDLH	immediately dangerous to life or health
IDW	investigation-derived waste
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
MPPEH	material potentially presenting an explosives hazard
MRS	munitions response site
NOI	Notice of Incident
OHP	Occupational Health Program
OSHA	Occupational Safety and Health Administration
PADEP	Pennsylvania Department of Environmental Protection
PM	Project Manager
PMP	Project Management Professional
PPE	personal protective equipment
RI	remedial investigation
SDS	Safety Data Sheet

LIST OF ACRONYMS (CONTINUED)

SI	site inspection
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SUXOS	Senior UXO Supervisor
TCAR	Training Camp Artillery Range
U.S.	United States
USACE	U.S. Army Corps of Engineers
UTV	Utility Terrain Vehicle
UXO	unexploded ordnance
UXOSO	Unexploded Ordnance Safety Officer
WESTON®	Weston Solutions, Inc.

1. INTRODUCTION

The Site Safety and Health Plan (SSHP) provides detailed project-specific health and safety information for conducting the remedial investigation (RI) at the Mount Gretna Training Camp Artillery Range (TCAR) - West Munitions Response Site (MRS). The RI is being conducted to determine the nature and extent of munitions and explosives of concern (MEC), material potentially presenting an explosives hazard (MPPEH), munitions debris (MD) and munitions constituents (MC) that may remain from activities conducted at the Mount Gretna TCAR - West MRS that may pose a threat to human health and/or the environment. The SSHP is written in accordance with applicable United States (U.S.) Army Corps of Engineers (USACE), federal, state, and local health and safety requirements and presents the minimum requirements for safety and health that must be met by personnel engaged in site operations. The SSHP does not in any way relieve Weston Solutions, Inc. (WESTON®) site personnel or subcontractors from responsibility for the safety and health of their personnel. Visitors to the Mount Gretna TCAR - West MRS will receive a safety briefing by the Unexploded Ordnance Safety Officer (UXOSO)/Site Safety and Health Officer (SSHO) prior to gaining entry to the work area. The UXOSO/SSHO will provide visitors with appropriate personal protective equipment (PPE) and an escort while on-site and will maintain an on-site visitor log.

Changes and modifications to the SSHP are permitted and will be made in writing with the knowledge and concurrence of the Environmental Health and Safety (EHS) Leader and accepted by the USACE, Baltimore District (CENAB) Project Manager (PM).

2. SITE DESCRIPTION AND CONTAMINANT CHARACTERIZATION

2.1 SITE DESCRIPTION

The Mount Gretna Training Camp Artillery Range (TCAR) - West Munitions Response Site (MRS) (PAHQ-008-R-01) is located mainly within State Game Land 145, in Mount Gretna, Pennsylvania. The Mount Gretna TCAR - West MRS is within Lebanon County and is approximately 24 miles east of Harrisburg, Pennsylvania, and 72 miles northwest of Philadelphia, Pennsylvania (see **Figure 2-1**). The Mount Gretna TCAR - West MRS was used for artillery and rifle training from 1885 through 1941 (estimated).

The Mount Gretna TCAR - West MRS (PAHQ-008-R-01) boundary encompasses 181 acres as demarcated on **Figure 2-2**. The MRS consists of a former north-south artillery range and portions of a former east-west rifle range. In the north-south artillery range, berm features and 3-inch Stokes mortars were observed, and lead in surface soil exceeded the Pennsylvania Department of Environmental Protection (PADEP) evaluation criterion during the Site Inspection (SI). The 181 acres of land area within the Mount Gretna TCAR - West MRS is owned primarily by one entity, the Commonwealth of Pennsylvania, but also includes multiple residential parcels and one industrial property (sewage treatment) located along the western MRS boundary.

The Mount Gretna TCAR - West MRS is located in a partially wooded area with no distinct boundaries and with Conewago Hill to the north. The northern portion of the MRS is bisected by Route 117. The Conewago Creek flows through the MRS north of Route 117 (see **Figure 2-2**).

2.2 PROJECT DESCRIPTION

The project description is summarized in Subsection 2.3 of the APP.

The project will include activities at the Mount Gretna TCAR - West MRS (see **Figure 2-2**), as presented in **Table 2-1**.

Table 2-1

Anticipated Phases of Work

Work Phase	Work Description
Task 1 – Mobilization/Demobilization	Manpower mobilization, setup of site support areas (equipment laydown, conex box for storage), and demobilization.
Task 2 – Land Survey and Mapping	Arrange for a licensed surveyor to locate and establish site survey control.
Task 3 – Vegetation Clearance	Small diameter brush removal will occur. Set up of exclusion areas. Surface sweep before clearance is performed.
Task 4 – Geophysical Surveying Activities	Perform analog mag and dig transect and full coverage surveys to detect geophysical anomalies and potential MEC within the designated MRS. Dig Safe notification is required before seeding. A surface sweep will be conducted before surveying is performed.
Task 5 –Intrusive Activities	Qualified Unexploded Ordnance (UXO) Technicians will conduct mag and dig transects and perform surface and subsurface removal activities at anomaly locations. MEC [UXO and discarded military munitions (DMM)], MPPEH, MD, and/or other non-munitions-related metal debris will be recovered to evaluate the nature and extent of potential explosives hazards. Surface and subsurface removal activities will include the excavation of detected anomalies using hand tools, demolition activities of recovered MEC and MPPEH, and MD and non-MD inspection and transport to a certified recycling program.
Task 6 – MC Sampling	Collection of MC samples in areas impacted by small arms and with lead concentrations exceeding the PADEP evaluation criterion during the SI, and in areas impacted by a MEC release, or DMM pit sampling. Samples will be collected by hand, using hand tools. Mechanized equipment may be used to remove overburden. Samples will be collected using hand tools following anomaly avoidance surveys performed by a UXO Technician II or higher.
Task 6 – Utility Terrain Vehicle (UTV)	A UTV will be utilized to aid in transporting equipment and personnel at the site.

Under each phase of work, inherently hazardous activities have been analyzed to identify the controls that will protect the safety and health of personnel working at and entering the Mount Gretna TCAR - West MRS [see the Activity Hazard Analyses (AHAs) in Section 12 of the Accident Prevention Plan (APP)].

2.3 CONTAMINATION AND EXPOSURE POTENTIAL

WESTON will ensure compliance with the requirements of EM 385-1-1, Occupational Safety and Health Administration (OSHA) [29 Code of Federal Regulations (CFR) 1910 and 1926], and WESTON policy requirements through formal and site-specific training programs, as well as routine inspections with follow-up compliance. Specific information pertaining to suspected physical, chemical, biological, and radiological hazards associated with the work areas, tasks, and operations is presented in the following subsections. As new data become available, this APP/SSHP may need to be modified.

2.3.1 Chemical Hazards

Typically, elevated levels of lead have been identified at comparable MRSs. Although no sampling has been conducted to show positive lead levels at the Mount Gretna TCAR - West MRS, information for lead is provided as a precaution (see **Table 2-2**). Based on the hazard/risk assessment of the Mount Gretna TCAR - West MRS, the nature of the work, and previous experience performing UXO operations, it is not expected that any airborne contaminants or nuisance dust level exposure limits will be exceeded. The use of chemicals on-site during field operations creates a potential exposure of chemical hazards to personnel through inhalation, ingestion, or absorption. Clearing of vegetation and related work may require the use of concentrated chemicals for proper equipment operation.

Site personnel will comply with the storage, handling, and use requirements stated on the Safety Data Sheets (SDSs) for each chemical brought on-site by WESTON or its subcontractors. All chemicals brought on-site will be properly labeled. An inventory of all chemicals brought on-site and an SDS for each will be maintained on-site. Project subcontractors shall inform WESTON of any chemical materials brought on-site and the location of their SDSs. In the case of conflicts between American Conference of Governmental Industrial Hygienists and other standards on the SDS, the more stringent standard will prevail. A site-specific Hazard Communication Plan is presented in **Attachment 1**. The SDSs for chemicals brought to the Mount Gretna TCAR - West MRS will be added by the UXOSO/SSHO to **Attachment 2.**

2.3.2 Physical Hazards

Exposure to physical hazards may include manual lifting; slips, trips, falls; heat/cold stress; hand tools (manual and power); terrain or vegetation; uneven walking surfaces; and weather hazards. Additional common physical hazards include hands or fingers caught between objects; electric hazards; being caught in between/against or struck by an object; and traffic.

2.3.3 MEC Hazards

The MEC avoidance activities will be accomplished by a UXO Technician II (minimum). Only UXO-qualified personnel in accordance with Department of Defense Explosive Safety Board (DDESB) Technical Paper 18 will conduct MEC avoidance activities using a magnetometer, and activities will be conducted during daylight hours. Any identified anomalies will be reported to the USACE representative immediately. Under no circumstances will any MEC be moved in an attempt to make a definitive identification.

All WESTON and subcontractor personnel engaged in field operations will be thoroughly trained and capable of recognizing the specific hazards associated with MEC items. All field personnel will be under the direct supervision of a UXO Technician II.

This SSHP is the interface with WESTON's Corporate EHS manual and is prepared to be consistent with applicable Army, federal, state, and local health and safety requirements, which include Technical Manual 60A 1-1-31, EOD Procedures/General Information on EOD Disposal Procedures; EM 385-1-1, Health and Safety Requirements Manual; and Department of Defense Manual 6055.9-M, DoD Ammunition and Explosives Safety Standards: General Explosives Safety Information and Requirements. Based on the applicable UXO safety regulations, some general UXO safety guidelines are listed below:

- Consider projectiles containing base-detonating fuses to be armed if the round is fired.
- Do not attempt to remove or dismantle any components of UXO items.
- UXO personnel are not authorized to render inert any UXO items found on-site.
- UXO items will not be taken from the Mount Gretna TCAR - West MRS.

- Consider UXO items, which may have been exposed to fire and detonation, as extremely hazardous.
- Do not rely on the color-coding of UXO items for definitive identification.
- Assume that a practice UXO item contains a live charge until investigation proves otherwise.
- Do not approach a smoking munition. MEC hazards and precautions are addressed in the Explosives Site Plan/Explosives Management Plan.

2.3.4 Biological Hazards

Biological hazards include wild animals (raccoons, foxes, snakes, rats, and mice); insect bites and stings (ticks, bees, mosquitoes); and poisonous plants. A poster indicating the various types of hazardous plants and reptiles to avoid will be displayed at the site trailer. Site personnel will be instructed to be alert for and to avoid wild animals, to wear long pants and shirts while working in brush, and to use insect repellent as well as poison-ivy block and cleanser. Any site worker who is known to be allergic to insect bites will be required to inform the UXOSO/SSHO and to carry an allergy response kit. First-aid providers will also be trained in the proper first-aid procedures for bites. Personnel will receive instruction in recognition of biological hazards and in using appropriate PPE and/or procedures to follow in the event that biological hazards create a concern and first-aid treatment is required.

2.3.4.1 Nonionizing Radiation

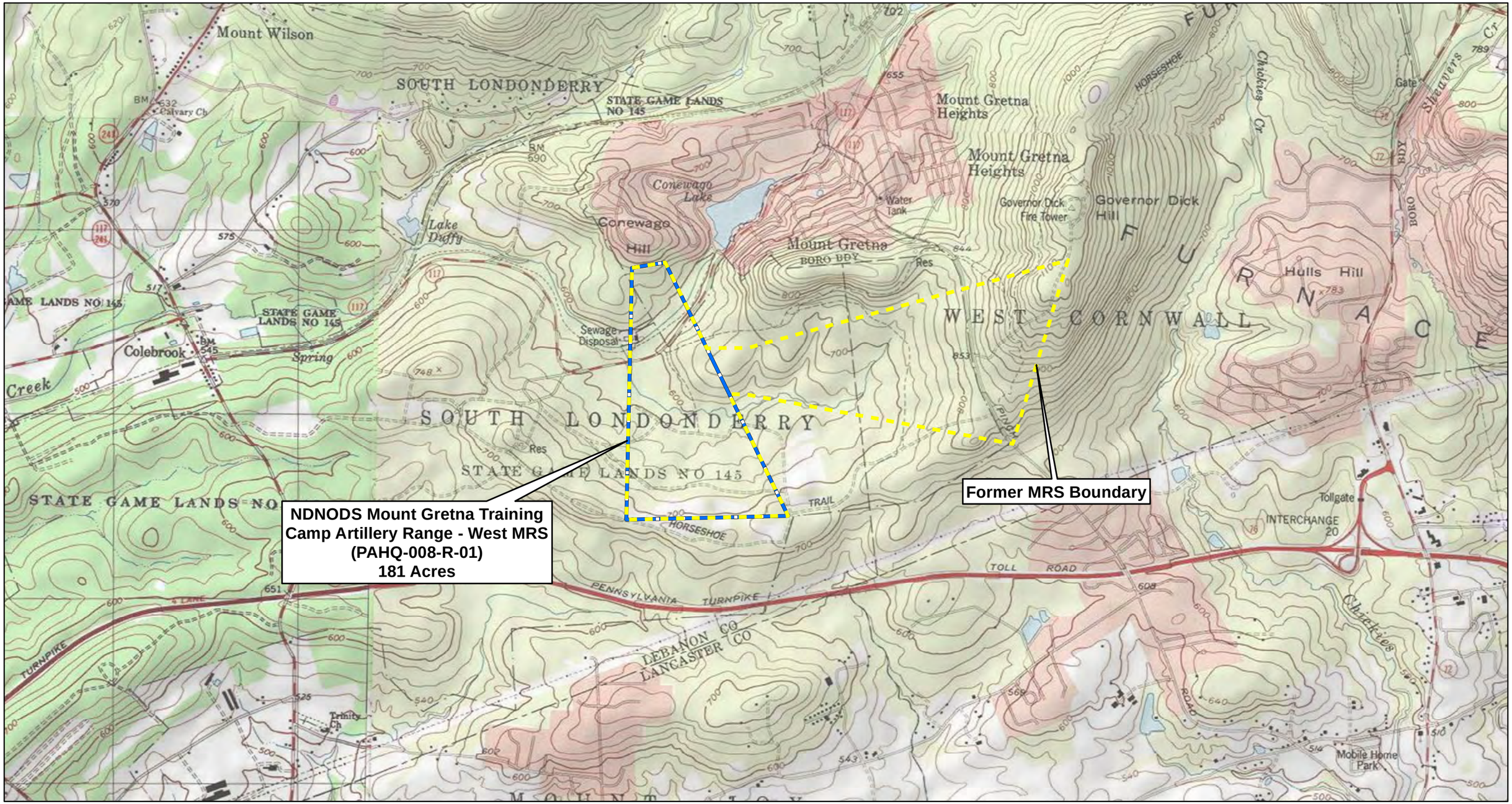
The most likely exposure to nonionizing radiation is the sun. Personnel will receive instruction in using appropriate PPE and/or procedures to follow in the event that nonionizing radiation creates a concern and the use of sunscreen and hats is required.

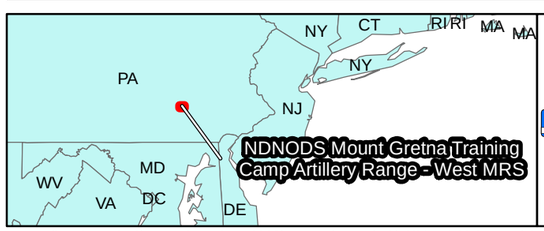
Table 2-2

Chemicals of Concern

Analytes of Concern and Methods	CAS Number	Exposure Limits	Characteristics	Routes of Exposure	Symptoms and Effects of Exposure
Lead	7439-92-1	REL: TWA 0.05 mg/m^3 IDLH: 100 mg/m^3 PEL: TWA 0.05 mg/m^3	Heavy, ductile, soft, gray solid. MW: 207.2 VP: 0 mmHg FL P: NA BP: 3164 °F IP: NA Sp Gr: 11.34	INH ING CON	Lassitude, insomnia; facial pallor; anorexia, low-weight, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation of the eyes; hypotension

INH = Inhalation
ING = Ingestion
CON = Skin and/or eye contact
IP = ionization potential
CAS = Chemical Abstracts Service
NA = not available
MW = molecular weight
mg/m^3 = milligrams per cubic meter
BP = boiling point
°F = degrees Fahrenheit
Sp Gr =specific gravity
VP = vapor pressure
mmHg = millimeter of mercury
REL = Recommended Exposure Limit for a 10-hour, TWA.
IDLH = Immediately dangerous to life and health.
TWA = time-weighted average
PEL = Permissible Exposure Limit for an 8-hour TWA.





Legend

- Former MRS Boundary
- NDNODS Mount Gretna Training Camp Artillery Range - West MRS (PAHQ-008-R-01)

U.S Army Corps Of Engineers

Mount Gretna Training Camp Artillery Range - West Lebanon County, PA

N

0 1,000 2,000 3,000 Feet

0 375 750 1,125 Meters

NOTES:
Data Source: Bing Topographic Mapping Service.
Quad: Manheim, PA. 1975

FIGURE 2-1
Regional Location Map
NDNODS Mount Gretna Training Camp Artillery Range - West MRS
Lebanon County, Pennsylvania

Coordinate System: UTM, Z18N, WGS84, Meter

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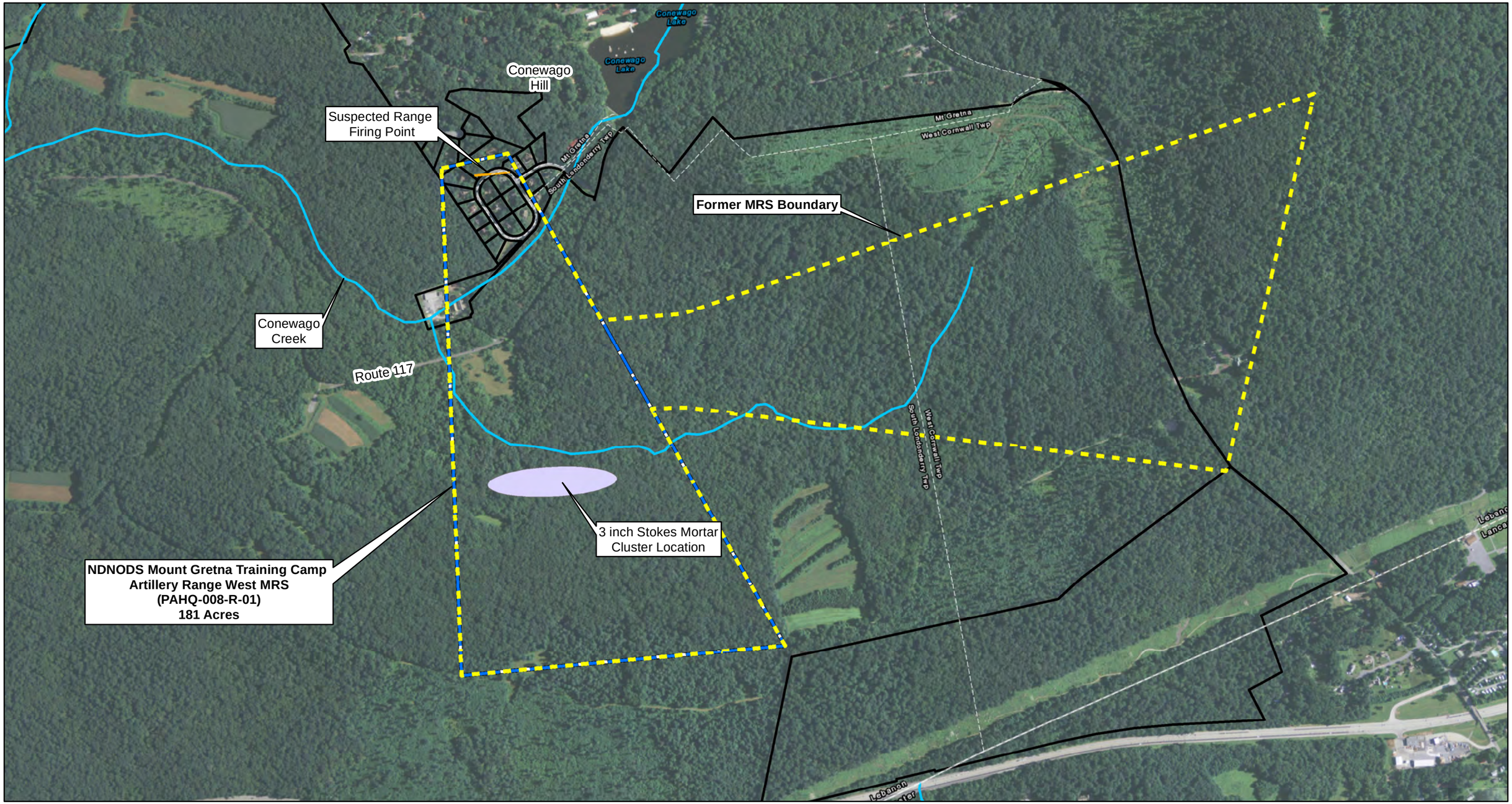

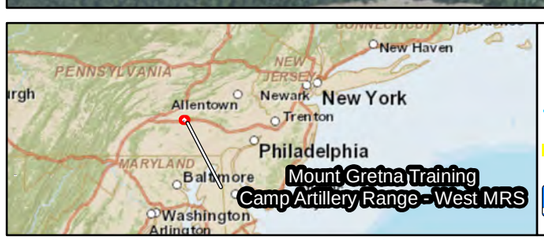

Legend

- Firing Line
- Water Features
- Former MRS Boundary
- NDNODS Mount Gretna Training Camp Artillery Range - West MRS (PAHQ-008-R-01)
- Mortar Cluster Location
- Parcel Boundary

US Army Corps Of Engineers

Mount Gretna Training Camp Artillery Range
Lebanon County, PA

N

0 500 1,000 1,500 Feet

0 180 360 540 Meters

NOTES:
Aerial Data Source: ESRI Imagery Mapping Service, 2011

FIGURE 2-2
MRS Location Map
NDNODS Mount Gretna Training Camp Artillery Range - West
Lebanon County, Pennsylvania

Coordinate System: UTM, Z18N ,WGS84, Meter

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Revision: 0

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3. ACTIVITY HAZARD ANALYSIS

The AHA tables provide a task-specific evaluation of the known or potential hazards associated with performing project activities. Each analysis also includes task-specific information related to hazard control and mitigation, such as the use of specific engineering control measures, specific standard operating procedures to be implemented, and PPE to be used as required. The AHA tables are presented in Section 12 of the APP for each project activity. Health and safety equipment such as PPE is described in Section 6 of the SSHP.

If site conditions or tasks change, the UXOSO/SSHO will evaluate the new conditions or task and will contact the EHS Leader for assistance in developing amendments to the SSHP. Amendments made to the SSHP will be submitted to CENAB for approval, and all field personnel will be made aware of any changes.

4. STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

WESTON is ultimately responsible for the implementation of the health and safety program, APP, and SSHP. Personnel having the potential for exposure to site hazards are subject to the requirements of the SSHP. Work will not be performed in a manner that conflicts with the health, safety, or environmental precautions outlined in the APP or the SSHP. Personnel violating safety procedures are subject to dismissal from the Mount Gretna TCAR - West MRS.

Table 4-1 presents the key project personnel responsible for the EHS Program implementation. Roles and responsibilities for key project safety personnel are presented in **Table 4-2.**

Table 4-1

Project Safety Team

Name	Title	Phone No. *
Chris Kane, Project Management Professional® (PMP®)	PM	(603) 656-5428 – office (603) 566-4658 – cell
Herold Hannah, Certified Industrial Hygienist (CIH)	Corporate EHS Director	(610) 701-3024 – office (267) 516-0274 – cell
Larry Werts	EHS Leader	(610) 701-3912 – office (215) 815-6237 – cell
Doug Gates	Unexploded Ordnance Safety Officer/Site Safety and Health Officer (UXOSO/SSHO)	(502) 664-7926 - cell
David Holland	Senior UXO Supervisor (SUXOS)	(727) 772-3087 - cell

Note:
*Phone numbers will be confirmed/revised prior to field mobilization and revised during the project, as necessary.

167 **Table 4-2**
168
169 **Position Descriptions**

Position	Description of Key Responsibilities
Project Manager (PM) Chris Kane, PMP	▪ Overall responsibility for the management and completion of the project. ▪ Responsible and accountable for project safety. ▪ Ensure that project personnel (including subcontractor personnel) comply with EHS regulations, program requirements, and procedures. ▪ Ensure development and implementation of project SSHPs and indicate concurrence with final plans after required EHS reviews. ▪ Ensure project personnel meet applicable safety certification requirements. ▪ Ensure project support is acquired from appropriately qualified safety personnel such as the EHS Leader and UXOSO/SSHO. ▪ Ensure project personnel comply with applicable EHS requirements and corporate or client procedures. ▪ Halt any project work activities that represent an imminent hazard. ▪ Ensure appropriate safety equipment and materials are provided to the project. ▪ Ensure timely and accurate reporting and investigation of incidents, accidents, or injuries involving project personnel, with support from the risk management department. Ensure corrective actions are implemented completely. ▪ Ensure proper response and internal notification regarding inspections by regulatory agencies. ▪ Ensure all project personnel have met the site-specific experience and training requirements.
EHS Director Herold Hannah, CIH	▪ Approve and ensure the implementation of the WESTON Corporate EHS Program, the APP, SSHP, and any amendments. ▪ Evaluate and authorize changes to the APP and SSHP based on field and occupational exposure, as necessary. ▪ Function as a quality control staff member.

Table 4-2

Position Descriptions (Continued)

Position	Description of Key Responsibilities
EHS Leader Larry Werts	▪ Oversee and maintain the WESTON Corporate EHS Program, the APP, and SSHP. ▪ Conduct site visits, as necessary, to audit the effectiveness of the APP and SSHP. ▪ Serve as a technical safety advisor and provide technical assistance and support. ▪ Develop the APP and SSHP. ▪ Develop modifications to the APP and SSHP as necessary.
UXOSO/SSHO Doug Gates	▪ Ensure that all project personnel follow the requirements of the APP and SSHP. ▪ Be present during operations. ▪ Directly communicate with the PM and EHS Leader. ▪ Conduct daily safety meetings for site personnel to discuss the day's activities and associated hazards. ▪ Review site personnel training and experience documentation to ensure compliance with the APP and SSHP. ▪ Coordinate changes/modifications to the APP with the appropriate site personnel. ▪ Conduct or coordinate project-specific training. ▪ Report any incidents that occur on-site to the PM and the EHS Leader. ▪ Implement safety corrective actions through training and reinforced awareness. ▪ Maintain exposure data. ▪ Has stop-work authority for all safety issues.

Table 4-2

Position Descriptions (Continued)

Position	Description of Key Responsibilities
SUXOS David Holland	▪ Accountable and responsible for the implementation and enforcement of the APP and SSHP at the site. ▪ Responsible for on-site management of tasks and associated employees. ▪ Halt any project work activities that represent an imminent hazard. ▪ Ensure appropriate safety equipment and materials are in place prior to initiating work. ▪ Ensure timely and accurate reporting and investigation of incidents, accidents or injuries. ▪ Ensure corrective actions are implemented completely.

Accountability for health and safety at all levels at WESTON flows from the WESTON Chief Executive Officer through a matrix system, as indicated on the organizational chart (**Figure 4-1**), which is presented at the end of this section.

4.1 COMPETENT PERSON

OSHA Regulation 29 CFR 1926.32 defines a Competent Person. Specific OSHA and USACE regulations identify the need for involvement of competent persons. **Table 4-3** presents the competent person requirement and regulatory reference. Mr. Gates meets the competent person requirements applicable to this scope of work and has been approved by WESTON's EHS Leader. **No work will be performed without a Competent Person on-site.**

Table 4-3

Competent Person Requirements

Competent Person Requirement	Regulatory Reference	Person Designated
SSHO Identification	EM 385-1-1 Sec. 01.A.17	Doug Gates
General Inspections of Construction Sites	EM 385-1-1.01.A.12 29 CFR 1926.20	Doug Gates
Unsanitary Conditions	EM 385-1-1.02 29 CFR 1926.27	Doug Gates
Hearing Protection	EM 385-1-1.05.C 29 CFR 1926.101	Doug Gates

Note: Engineering Manual (EM) 385-1-1 is the USACE Health and Safety Requirements Manual.

As required by EM 385-1-1, Mr. Gates has at least 5 years of applicable safety experience and has successfully completed the OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training with 8-hour annual refresher courses and the OSHA 30-hour construction safety course (or equivalent course). Mr. Gates has performed work on a site(s) of similar hazard, risk, and complexity to the task assignment, and is certified in first aid and cardiopulmonary resuscitation (CPR). Mr. Gates also has the training and the experience to conduct exposure monitoring/air sampling and select/adjust protective equipment use; however, it is unlikely that such adjustments will be needed on the RI. The qualifications of all site-specific personnel will be maintained by the UXOSO/SSHO on-site. The certifications and overall qualifications of WESTON personnel are maintained in a database supported by WESTON.

4.2 QUALIFIED PERSON

Site personnel will also include a Qualified Person. According to OSHA 29 CFR 1926.32, "qualified" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project. **Table 4-4** presents a Qualified Person's requirements list.

Table 4-4

Qualified Person Requirement

Qualified Person	Project Applicability	Training Requirement
UXO Technicians (II and III)	X	DDESB Technical Paper 18
Brief Visitors on Site Hazards and PPE	X	Doug Gates
Licensed Blaster for the State of PA	X	David Holland

The qualifications of site personnel will be maintained in the on-site project vehicle. The certifications and overall qualifications of WESTON personnel are maintained in a database supported by WESTON. Records will be maintained and reviewed by the UXOSO/SSHO.

4.3 WESTON SUBCONTRACTORS

Subcontractors and suppliers to WESTON will be selected only after their safety and health program is thoroughly evaluated. They must complete an EHS questionnaire and must meet specific safety and occupational health selection criteria. Subcontractors will be under the ultimate direction of the senior on-site WESTON representative and will adhere to all aspects of the SSHP.

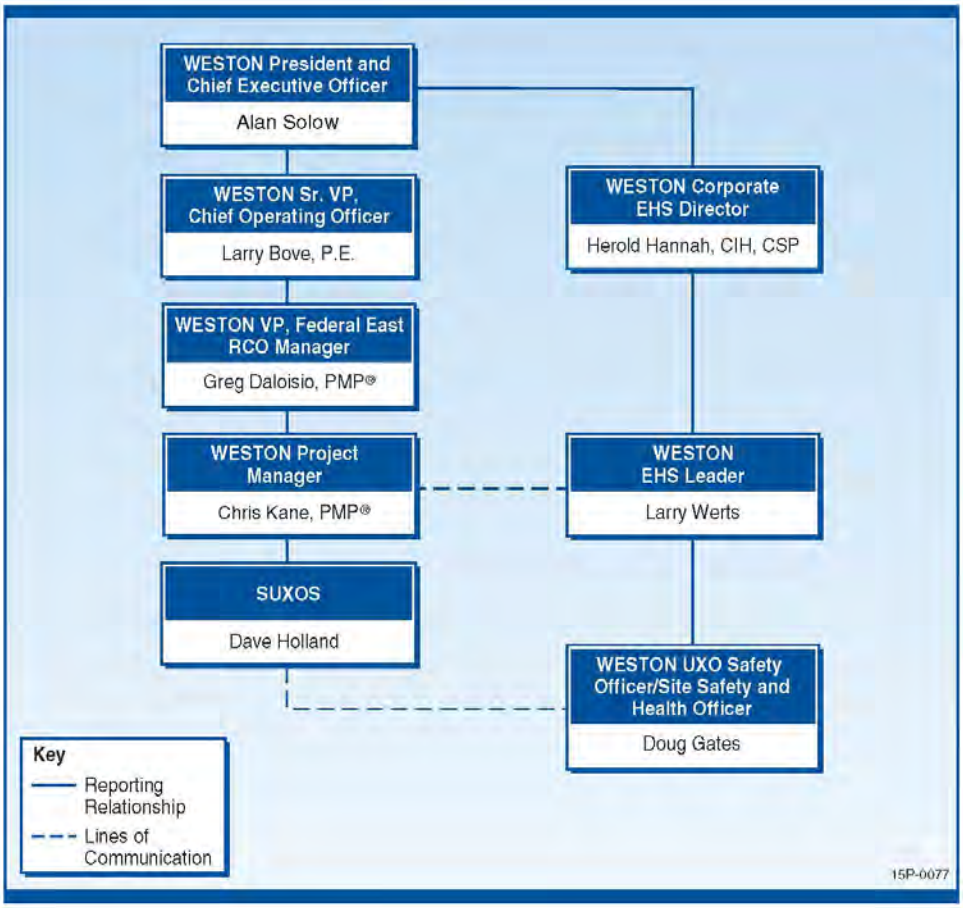
4.4 PERSONNEL ASSIGNED TO THE PROJECT

All WESTON personnel who will be involved in on-site activities are responsible for the following:

- Taking all reasonable precautions to prevent injury to themselves and to their fellow employees and being alert to potentially harmful situations.
- Performing only those tasks that they believe they can do safely and have been trained to do.
- Notifying the UXOSO/SSHO of any special medical conditions (i.e., allergies, contact lenses, diabetes).
- Notifying the UXOSO/SSHO of any prescription and/or nonprescription medication that they may be taking that might cause drowsiness, anxiety, or other unfavorable side effects.

- Preventing spillage and splashing of materials to the greatest extent possible.
- Practicing good housekeeping by keeping the work area neat, clean, and orderly.
- Reporting immediately all injuries to the UXOSO/SSHO.
- Complying with the SSHP, all safety and health recommendations and precautions, and properly using PPE as determined by the SSHP and/or the UXOSO/SSHO.

Figure 4-1 WESTON Health and Safety Organization Chart and Lines of Authority



5. TRAINING

Personnel assigned to or regularly entering a project site will have received the required training. A record of this training is maintained in the WESTON Corporate EHS database. As required by EM 385-1-1, applicable required training for all site workers will be in accordance with 29 CFR 1910.120, elements of CFR 1926, and other OSHA regulations. Training certificates for key WESTON safety personnel are included in Appendix B of the APP. If training is not current, employees will not be allowed to work or supervise at the site until they have successfully completed training requirements. A daily discussion will be conducted to review activities associated with daily tasks. All field personnel will participate in these documented discussions.

WESTON will provide staff with the following training and certifications to meet the requirements:

- OSHA 40-hour HAZWOPER Training – All WESTON personnel at the site will have this training.
- OSHA 8-hour HAZWOPER Refresher – All WESTON personnel at the site will have this training when applicable.
- OSHA 30-hour Construction Safety Training – At a minimum, the UXOSO/SSHO will have this training.
- First Aid/CPR/Bloodborne Pathogens (BBP) – A minimum of two people will have this training.

A copy of applicable training records for project personnel will be available on-site and will be maintained by the UXOSO/SSHO. **Table 5-1** presents personnel training and certifications for key field personnel. Copies of the certifications are provided in Appendix B of the Mount Gretna TCAR - West MRS RI APP.

5.1 OSHA 40-HOUR HAZWOPER TRAINING

The UXOSO/SSHO will have taken the 40-hour HAZWOPER training course and will have at least 5 years of relevant field experience. The UXOSO/SSHO will also have an additional 8 hours of specialized supervisory training. Workers must have completed the initial OSHA 40-hour HAZWOPER training. Where applicable, workers will have also completed the mandatory

8-hour refresher training within the past 12 months. All training, including project-specific training, is documented, and the training records are maintained by the UXOSO/SSHO.

5.2 OSHA 30-HOUR CONSTRUCTION TRAINING

In compliance with USACE Health and Safety Requirements Manual (EM 385-1-1), 15 September 2008, all UXOSO/SSHOs, at a minimum, will have completed the 30-hour OSHA construction safety class or equivalent training, and will complete a minimum of 24 hours of formal safety coursework every 4 years.

Training for the OSHA 30-Hour Construction Safety course or equivalent course includes the areas listed below:

- Occupational Safety and Health Act/General Duties Clauses.
- 29 CFR 1904, Recordkeeping.
- Subpart C: General Safety and Health Provisions, Competent Person.
- Subpart D: Occupational Health and Environmental Controls.
- Subpart E: PPE, types and requirements for use.
- Subpart F: Understanding fire protection in the workplace.
- Subpart K: Electrical.
- Subpart M: Fall Protection.
- Rigging, welding and cutting, scaffolding, excavations, concrete and masonry, demolition, health hazards in construction, materials handling, storage and disposal, hand and power tools, motor vehicles, mechanized equipment, marine operations, steel erection, stairways and ladders, confined spaces, or any other safety procedures that are applicable to the work being performed.

Table 5-1

Personnel Training and Certifications

Personnel Name	Position	Medical Clearance (expires)	40-Hour HAZWOPER	8-Hour HAZWOPER Refresher (expires)	First Aid (expires)	CPR (expires)	30-Hour Construction Safety	Supervisors Health and Safety	Bloodborne Pathogens Refresher (expires)
Doug Gates	UXOSO/ SSHO	6/19/2016	12/3/2004	4/21/2016	1/26/2017	1/26/2017	3/11/2011	11/10/2011	4/21/2016
David Holland	SUXOS	3/31/2016	5/14/1999	4/12/2016	8/13/2017	8/13/2017	3/18/2010	3/26/2007	8/13/2016

Notes:

HAZWOPER= Hazardous Waste Operations and Emergency Response.

PM will ensure all field personnel are current with their certifications prior to the start of field work..

6. PERSONAL PROTECTIVE EQUIPMENT

The PPE to be used for this work is described below. Personnel performing operations on-site will be required to use the appropriate level of protection. The minimum level of protection required to begin each activity of this project is shown in **Table 6-1**.

Table 6-1

Minimum Level of Protection Requirements

Activity	Level of Protection
Task 1 – Mobilization/Demobilization	Level D
Task 2 - Land Survey and Mapping	Level D
Task 3 – Vegetation Clearance	Level D
Task 4 – Geophysical Surveying	Level D
Task 5 – MEC Intrusive Activities	Level D
Task 6 – MC Sampling	Level D
Task 7 - UTV	Level D

The effectiveness of the PPE program will be evaluated by the UXOSO/SSHO. If additional hazards are identified requiring a higher level of protection and changes to the program are necessary, the UXOSO/SSHO will inform the EHS Leader and amend the PPE requirements.

In accordance with OSHA 29 CFR 1910, Subpart I - Personal Protective Equipment, PPE will be provided, used, and maintained in a sanitary and reliable condition. The construction, design, and material of the PPE will provide employees with protection against known or anticipated hazards. The PPE that properly and appropriately fits the employee will be selected. WESTON employees have received OSHA-compliant training. Any concerns regarding the use of appropriate PPE will be brought to the attention of the UXOSO/SSHO, who will contact the EHS Leader for assistance in the evaluation of PPE, as necessary.

Work at Mount Gretna TCAR - West MRS will be completed in a minimum of Level D PPE. If higher levels of protection are required based on actual site conditions, an addendum to the APP and SSHP will be prepared and approved.

The UXOSO/SSHO will review the following criteria with employees:

- Proper selection of PPE.
- When PPE is anticipated for use.
- Proper uses and limitations of equipment during temperature extremes, heat/cold stress, and in relation to employee medical conditions.
- Proper donning and doffing, and adjusting of PPE.
- Maintenance, cleaning, and storage of PPE.
- Inspection procedures for PPE.

6.1 LEVEL D PERSONAL PROTECTIVE EQUIPMENT

Level D PPE consists of the following:

- Work clothes such as coveralls, long pants, and shirts with sleeves.
- American National Standards Institute (ANSI)-compliant safety boots.
- ANSI Class 2 high-visibility reflective vest.
- Safety glasses (ANSI/American Society of Safety Engineers Z87.1).
- Nitrile gloves for field work that involves potential exposure to chemicals of concern.
- Leather gloves (hand tool operations).

7. MEDICAL SURVEILLANCE

7.1 MEDICAL SUPPORT FUNCTIONS

Since 1980, WESTON has used a comprehensive Occupational Health Program (OHP) that complies with OSHA and USACE requirements. All personnel who enter the Mount Gretna TCAR - West MRS when operations are being conducted must comply with a comparable OHP. All medical records are maintained in accordance with 29 CFR 1910.1020. If an unforeseen hazard becomes evident during the performance of work, the UXOSO/SSHO will bring such hazard information to the attention of the EHS Leader and USACE, both verbally and in writing for resolution as soon as possible. In the interim, the necessary action will be taken to reestablish and maintain safe working conditions. Medical certifications for site personnel are summarized in **Table 5-1**. Personnel certifications will be available on-site for review.

7.2 OCCUPATIONAL HEALTH PROGRAM

To comply with OSHA requirements, WESTON has designated Dr. Peter Greaney of WorkCare® to oversee the site-specific medical surveillance and OHP. Dr. Greaney is a board-certified physician in internal and occupational medicine. **Dr. Greaney can be reached during regular business hours at (800) 455-6155.**

The purpose of the OHP is to ensure suitable job placement of employees, to monitor the health effects of hazards encountered in the workplace, and to maintain and to promote good health through preventive measures. Medical examination criteria are established by WorkCare in compliance with 29 CFR 1910.120.

8. EXPOSURE MONITORING/AIR SAMPLING PROGRAM

Based on the hazard/risk assessment of the Mount Gretna TCAR - West MRS, the nature of the work, and previous experience performing UXO operations, it is not expected that any airborne contaminants or nuisance dust level exposure limits will be exceeded. As a result, no air monitoring or air sampling will be performed. If conditions change, the AHAs and SSHP will be amended. Subsequently, WESTON would perform required monitoring to evaluate the effectiveness of prescribed PPE and to evaluate potential work exposure. Any amendment to the plan will be reviewed and approved by the EHS Leader and accepted by USACE.

In the event that well installation is necessary, air monitoring for volatile organic compounds, explosive atmospheres, and oxygen would be conducted using a flame ionization detector/photoionization detector to ensure that no exposures occur during drilling activities.

9. HEAT AND COLD STRESS/WEATHER

Personnel will be provided information about heat and cold stress symptoms. Weather conditions will be discussed during morning safety briefings.

9.1 HEAT STRESS

One of the most common types of stress that can affect field personnel is heat stress. Heat stress can be a serious hazard to workers at project sites because of the PPE required. The UXOSO/SSHO is responsible for evaluating the conditions, work tasks, and requirements for PPE, and for implementing the emergency response procedures. The following subsections describe the signs and symptoms, monitoring requirements, and prevention and treatment procedures for heat rash, heat cramps, heat exhaustion, and heat stroke. These requirements and procedures will be followed at all times.

During hot conditions, cool drinking water will be provided for employees. Employees will be encouraged to drink at least one cup every 20 minutes and take breaks in a cooler, shady location. Personnel not acclimated to the climate or taking medications that might make them sensitive to heat should be allowed additional breaks. When possible, work should be scheduled during cooler periods of the day. Personnel working outside should use sun screen with a high SPF.

9.1.1 Heat Stress Symptoms and Treatment

9.1.1.1 Heat Rash

Heat rash, also known as prickly heat, may occur in hot and humid environments where sweat is not easily removed from the surface of the skin by evaporation, and skin is aggravated by chafing clothes. When extensive or complicated by infection, heat rash can be so uncomfortable that it inhibits sleep and impairs a worker's performance.

- **Symptoms** — Mild red rash, especially on areas of the body that come into contact with protective gear.
- **Treatment** — Decrease amount of time spent working in protective gear and provide body powder to help absorb moisture and decrease chafing. Heat rash can be prevented by showering, resting in a cool place, and allowing the skin to dry.

9.1.1.2 Heat Cramps

Heat cramps are caused by inadequate electrolyte intake. The individual may be receiving adequate water; however, if not combined with an adequate supply of electrolytes, the blood can thin to the point where it seeps into the active muscle tissue, causing cramping.

- **Symptoms** — Acute painful spasms of voluntary muscles, most notably of the abdomen and extremities.

- **Treatment** — Move the victim to a cool area and loosen clothing. Have the victim drink 1 to 2 cups of cool potable water or diluted commercial electrolyte solution (e.g., Gatorade®, Quench®) immediately, and then every 20 minutes thereafter until symptoms subside. Electrolyte supplements can enhance recovery; however, it is best to double the amount of water required by the dry mix package directions or to add supplemental water to the liquid form.

9.1.1.3 Heat Exhaustion

Heat exhaustion is a state of weakness or exhaustion caused by the loss of fluids from the body. Heat exhaustion is not as dangerous as heat stroke, but if not properly managed in the field, it may lead to heat stroke.

- **Symptoms** — Pale, clammy, and moist skin, profuse perspiring, and extreme weakness. Body temperature is normal, pulse is weak and rapid, and breathing is shallow. The person may have a headache, may vomit, may feel dizzy, and may be irritable or confused.

- **Treatment** — Move the victim to a cool, air-conditioned or temperature-controlled area, loosen clothing, place in a position with the head lower than the feet (shock prevention), and allow the victim to rest. Consult a physician. Ensure that the victim is not nauseated or vomiting. If not nauseated or vomiting, give the victim small sips of cool water or diluted electrolyte replenishment solution (1 to 1 dilution with water, or if mixing from powder, double the water added). If this is tolerated, have the victim drink 1 to 2 cups of fluid immediately, and every 20 minutes thereafter until symptoms subside. Seek medical attention at the advice of the consulting physician.

9.1.1.4 Heat Stroke

Heat stroke is an acute and dangerous reaction to heat stress caused by a failure of the body's heat regulating mechanisms, i.e., the individual's temperature control system (sweating) stops working correctly. Body temperature rises so high that brain damage and death may result if the person is not cooled quickly.

- **Symptoms** — Red, hot, dry skin (although the person may have been sweating earlier); nausea, dizziness, confusion, extremely high body temperature [i.e., 104 degrees Fahrenheit (°F) or greater as measured with a tympanic thermometer], rapid respiratory and pulse rate, seizures or convulsions, unconsciousness or coma.

- **Treatment** — Immediately call for emergency medical assistance. Remove the victim from the source of heat and cool the victim quickly. If the body temperature is not brought down quickly, permanent brain damage or death may result. Remove all PPE and as much personal clothing as decency permits. Fan the person while sponging or spraying with cool or tepid water. Apply ice packs (if available) to the back of the neck, armpits, groin area, or behind the knees. Place the victim flat on his or her back or with head and shoulders slightly elevated. If conscious, and not nauseated or vomiting, the victim may be provided sips of cool water. Do not give the victim coffee, tea, or alcoholic beverages. Emergency medical personnel will take over treatment upon arrival.

9.1.2 Heat Stress Prevention

The following measures should be followed to prevent heat stress:

- The most important measure is to prevent heat-related illness through adequate fluid intake.

- Ensure workers drink 1/2 to 1 quart of liquid per hour in high heat conditions. Most of this liquid should be water.

- Provide a shaded area for rest breaks.

- Ensure that adequate shelter is available to protect personnel against heat and direct sunlight. When possible, shade the work area.

- Discourage the intake of caffeinated drinks during working hours.

- Monitor for signs of heat stress.

- Encourage workers to maintain a good diet during these periods. In most cases, a balanced diet and lightly salted foods should help maintain the body's electrolyte balance. Bananas are especially good for maintaining the body's potassium level.

- If using commercial electrolyte mixes, double the amount of water called for in the package directions. Indications are that "full-strength" preparations taken under high heat stress conditions may actually decrease the body's electrolytes.
- Acclimate workers to site work conditions by slowly increasing workloads (i.e., do not begin work activities with extremely demanding tasks).
- Encourage workers to wear lightweight, light-colored, loose-fitting clothing.
- In extremely hot weather, conduct field activities in the early morning and evening.
- Maintain good hygienic standards through frequent showering and changes of clothing.
- Allow clothing to dry during rest periods.

9.1.3 Heat Stress Monitoring and Work Cycle Management

When strenuous field activities are part of ongoing site work conducted in hot weather, the following guidelines should be used to monitor the body's physiological response to heat, and to manage the work cycle, even if workers are not wearing impervious clothing. These procedures should be instituted when the temperature exceeds 70 ^{O}F and the tasks and risk analysis indicate an increased risk of heat stress problems. Consult the safety professional (e.g., EHS Leader or CIH) if questions arise as to the need for specific heat stress monitoring. In all cases, the site personnel must be aware of the signs and symptoms of heat stress and be provided adequate rest breaks and proper aid as necessary. The UXOSO/SSHO will conduct heat stress monitoring. The UXOSO/SSHO will use a thermometer for body temperature and a standard thermometer for ambient temperature.

NOTE: For purposes of this operating practice, a break is defined as a 15-minute period.

A physiological monitoring schedule is determined by following the steps below:

- Measure the air temperature with a standard thermometer.
- Estimate the fraction of sunshine by judging the percentage of time the sun is out (refer to **Table 9-1**).
- Calculate the adjusted temperature based on the following formula:

- *Adjusted Temperature = Actual Temperature + 13 X (where X = sunshine fraction from **Table 9-1**).*

- Using **Table 9-2**, determine the physiological monitoring schedule for fit and acclimated workers for the calculated adjusted temperature.

The length of the work period is governed by the frequency of physiological monitoring (**Table 9-2**). The length of the work period is governed by physiological parameters (heart rate and body temperature). As noted above, the rest period will be set at 15 minutes in duration. To check the heart rate, count the radial pulse for 30 seconds at the beginning of the rest period. If the heart rate exceeds 110 beats per minute, shorten the next work period by one third and maintain the same rest period. Body temperature can be checked with a tympanic thermometer after work but before the employee drinks water. If the body temperature taken exceeds 99.7°F, shorten the next work cycle by one third. These adjustments of the work period based on heart rate and body temperature were recommended in OSHA Technical Manual TED 01-00-015, January 1999, Section III: Chapter 4, Heat Stress.

Table 9-1

Percent Sunshine Factors—Heat Stress Prevention and Monitoring

Percent Sunshine (%)	Cloud Cover	Sunshine Fraction
100	No cloud cover	1.0
50	50% cloud cover	0.5
0	Full cloud cover	0.0

Table 9-2

Physiological Monitoring Schedule—Heat Stress Prevention and Monitoring

Adjusted Temperature	Level D (Permeable clothing)
90°F (32.2°C) or above	After each 45 minutes of work
87.5°F (30.8°C - 32.2°C)	After each 60 minutes of work
82.5°F - 87.5°F (28.1°C - 32.2°C)	After each 90 minutes of work
77.5°F - 82.5°F (25.3°C - 28.1°C)	After each 120 minutes of work
72.5°F - 77.5°F (22.5°C - 25.3°C)	After each 150 minutes of work

9.2 COLD STRESS

In the planning stages of a project, the potential for cold-related hazards are considered during risk assessment. The UXOSO/SSHO must make decisions on the proper safety procedures. The UXOSO/SSHO will be responsible for implementing the program as well as attaining data on cold stress monitoring using a kestrel or other similar device, which measures wind speed, humidity, and ambient temperature. Each worker must evaluate the risk associated with his or her work and be actively alert to these hazards. Any site worker may stop work if safety procedures are not followed or if the risk is too great.

Personnel working outdoors are subject to cold stress at temperatures below 40°F. Exposure to extreme cold can cause skin injury or death if the core body temperature is unchecked and permitted to drop. Chemical-protective clothing does not provide protection against cold stress and may increase susceptibility. The following subsections describe the signs and symptoms, monitoring requirements, prevention, and treatment procedures for cold stress. These requirements and procedures will be followed at all times.

During cold conditions, employees will be encouraged to take rewarming breaks. Any employee whose clothes become wet will immediately be wrapped in a blanket and will change into dry clothes as soon as possible. Thermally protective gloves should be worn and extremities covered by appropriate clothing. Clothing should allow sufficient ventilation or wick moisture away from the skin. Metal hand-held equipment should have a barrier between the equipment and skin.

9.2.1 Cold Stress Symptoms and Treatment

9.2.1.1 Frostbite

Frostbite is the freezing of tissue and most commonly affects the toes, ears, fingers, and face. Frostbite occurs when an extremity loses heat faster than it can be replaced by the circulating blood. Frostbite may result from direct exposure to extreme cold or to cool, high wind. Damp socks or shoes may contribute to frostbite of the toes.

- **Symptoms** — Cold, tingling, aching, or stinging feeling followed by numbness; skin color is red, purple, white, or very pale and is cold to the touch; blisters may be present (in severe cases).

- **Treatment** — Call for emergency medical assistance. Move the victim indoors and/or away from additional exposure to cold, wet, and wind. Wrap the affected area in a soft, clean cloth (sterile, if available). Give a warm drink (water or juices, not coffee, tea or alcohol). Do not allow the victim to smoke. Do not rub the frostbitten part (this may cause gangrene). Do not use ice, snow, gasoline, or anything cold on the frostbitten area. Do not use heat lamps or hot water bottles to rewarm the frostbitten area. Do not place the frostbitten area near a hot stove. Do not break blisters. After rewarming, elevate the area and protect it from further injury.

9.2.1.2 Hypothermia

Hypothermia means "low heat" and is a potentially serious condition. Systemic hypothermia occurs when body heat loss exceeds body heat gain and the body core temperature falls below the normal 98.6ºF. Although some hypothermia cases are caused by extremely cold temperatures, most cases develop in air temperatures between 30°F and 50°F, especially when compounded with water immersion and/or windy conditions. The victim of hypothermia may not know, or may refuse to admit, that he or she is experiencing hypothermia. All personnel must be observant for these signs for themselves and for other team members.

- **Symptoms** — Cool bluish skin; uncontrollable shivering; vague, slow, slurred speech; irritable, irrational, or confused behavior; memory lapses; clumsy movements, fumbling hands; fatigue or drowsiness. Below the critical body core temperature of 95 ºF, the body cannot produce enough heat by itself to recover. At this point, emergency measures must be taken to reverse the drop in core temperature. The victim may slip into unconsciousness and can die in less than 2 hours after the first signs of hypothermia are detected. Treatment and medical assistance are critical.

- **Treatment** — Call for emergency medical assistance. Do not leave the victim alone. Prevent further heat loss by moving the person to a warmer location out of wind, wet, and cold. Remove cold, wet clothing, and replace with warm, dry clothing or wrap the victim in blankets. If the victim is conscious, provide warm liquids, candy, or sweetened foods. Carbohydrates are the food most quickly transformed into heat and energy. Do not give the victim alcohol or caffeine. Have the person move his or her arms and legs to create muscle heat. If he or she is unable to move, place warm bottles or hot packs on the arm pits, groin, neck, and head. Do not rub the arms and legs or place the person in warm water.

9.2.2 Prevention and Protection

The following general guidelines are recommended for preventing or minimizing cold stress:

- Wear loose, layered clothing, masks, woolen scarves, and hats. Wear liners under hard hats.
- Protect hands with gloves or mittens.
- Never touch cold metal with bare hands.
- Wear waterproof, slip-resistant, insulated boots.
- Use chemical foot and hand warmers (commercially available) inside boots and gloves.
- In extreme cold, cover the mouth and nose with wool or fur to "pre-warm" the air you breathe.
- If wearing a face protector, remove it periodically to check for frostbite.
- Ensure that clothing remains secure around the body, especially at the neck and waist.
- If required to wear chemical protective clothing, remember that it generally does not afford protection against cold stress. In many instances, chemical protective clothing increases susceptibility. Dress carefully if both chemical protection and thermal insulation are required.
- Remove outer layers to avoid overheating, and remove clothing soaked with perspiration; replace layers to avoid becoming chilled.
- Keep clothes dry by wearing water-resistant and wind-resistant clothing and outerwear.
- Wear clothing that will "breathe" or allow water vapor to escape.
- Eat well-balanced meals, ensure adequate intake of liquids and avoid alcoholic beverages. Drink warm, sweet beverages and soups. Limit the intake of caffeinated drinks due to the diuretic and circulatory effects.
- Use available warm shelters and implement work-rest schedules.
- If warm shelters are not available, use cars/vehicles as shelters from the cold. (Ensure that tailpipes are not covered by heavy snowfall).
- Use radiant heaters to provide warmth (if using propane heaters ensure adequate ventilation to avoid carbon monoxide poisoning).

- Monitor yourself and others for changes in physical and mental condition.
- Use the buddy system or supervision to ensure constant protective observation.
- If heavy work must be done, resulting in sweating/wet clothing, take rest periods in heated shelters and change into dry clothing as necessary.
- New employees should not work full-time in the cold during the first days of employment until they become accustomed to the working conditions and the use of required protective clothing.
- Include the weight and bulkiness of clothing in estimating the required work performance and weights to be lifted by the worker.
- Arrange the work in such a way that sitting or standing still for long periods is minimized.
- Perform work protected from drafts to the greatest extent possible. If possible, shield the work area from wind.

Table 9-3 and **Table 9-4** should be consulted to adjust working schedules for wind chill conditions based on equivalent chill temperature. These tables are guidelines only; ambient temperatures and wind conditions should be monitored frequently, and work schedules adjusted as required. If workers show signs or symptoms of cold stress, the work schedule must be adjusted, as required.

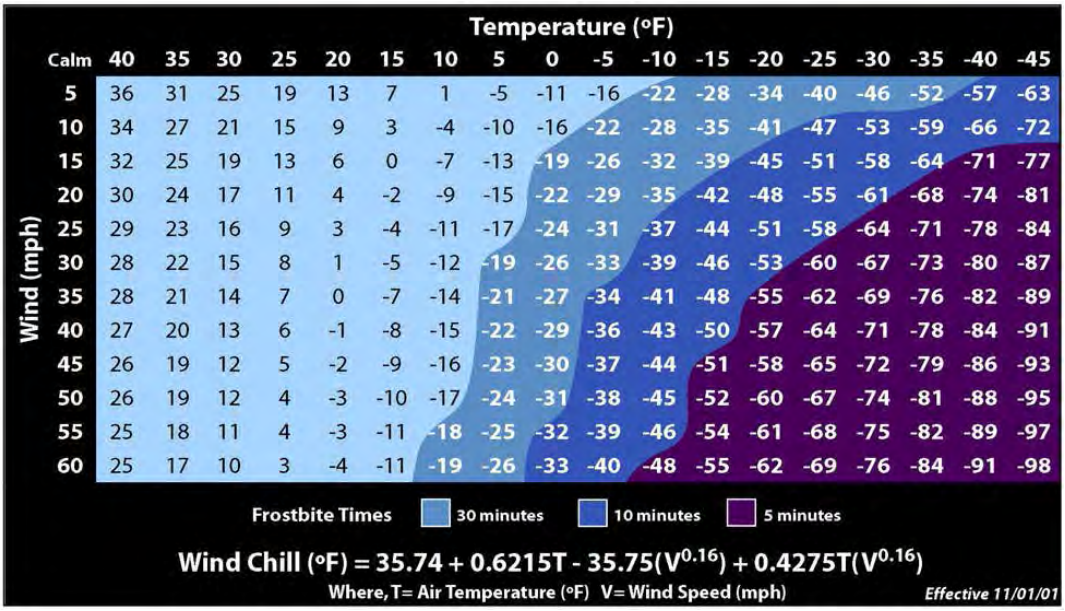
9.2.3 Work/Warming Regimen

Work should be performed during the warmest part of the day. If work is performed continuously in cold or winter conditions or where rain or cool winds are expected, provide heated warming shelters, tents, cabins, or break rooms nearby. Encourage workers to use the shelter at regular intervals, depending on the severity of the cold exposure. **Table 9-4**, Cold Work/Warm-up Schedule for 4-Hour Shifts, provides guidance for working in severe cold weather. The onset of heavy shivering and/or the feeling of excessive fatigue, drowsiness, irritability, or euphoria indicate the need to immediately return to the shelter. Pain, numbness, or tingling in the extremities is indication of the need to immediately return to the shelter. When entering the heated shelter, the outer layer of clothing should be removed and the remainder of the clothing loosened to permit sweat evaporation, or the worker should change into dry clothing. Never return to work in wet clothing.

611 **Table 9-3**

612

613 **Wind Chill Chart**



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615 **Table 9-4**

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617 **Cold Work/Warm-up Schedule for 4-Hour Shifts**

Equivalent Chill Temperature	Maximum Work Period	Number of Breaks
≥–24°F	Normal	1
-25°F to –29°F	75 minutes	2
-30°F to –34°F	55 minutes	3
-35°F to –39°F	40 minutes	4
-40°F to -44°F	30 minutes	5
≤–45°F	Stop work	Stop work

618 ## 9.3 WEATHER HAZARDS

619 It is possible that severe weather will occur during this project. In the event that a storm threatens
620 the area through observation of a storm system (lightning observation and thunder), all field
621 work will be halted and weather service bulletins and civil defense messages will be monitored
622 on local radio or through cell phone applications. The UXOSO/SSHO will determine through
623 visual observations and weather updates (gathered through the radio or cell phone) when it is

necessary to halt work and when to re-start field activities, which include observing the "30-30" rule that states:

- If you see lightning and thunder is heard within 30 seconds (approximately 6 miles), seek shelter.
- If you hear thunder, but did not see the lightning, assume that lightning is within 6 miles and seek shelter.
- Remain in the shelter for 30 minutes following the last lightning strike.

When a tornado warning goes into effect, the following actions will be taken:

- If in your vehicle: Leave your vehicle and seek shelter in a sturdy building. As a last resort, seek shelter in a ditch or culvert.
- In buildings: Take shelter in an interior hallway on a lower floor. A closet, bathroom, or other small room with short, stout walls will give some protection from collapse and flying debris. Otherwise, get under heavy furniture and stay away from the windows.
- Out in open country: Seek inside shelter immediately. If a tornado approaches, lie flat in the nearest depression, such as a ditch or culvert, and cover your head with your arms.

Additionally, when wind speed exceeds 40 miles per hour, the following actions will be taken:

- Follow manufacturer instructions in assessing the limitations associated with field equipment.
- Shut down outdoor activities involving work at elevation.
- Move mobile items stored outside to indoor locations.
- Secure any items that cannot be moved inside.
- Be careful opening exterior doors.
- Stay away from power lines.
- Be cautious about downed power lines, tree limbs, and debris on roads.

If weather remains unstable for more than 1 hour, the UXOSO/SSHO will monitor weather bulletins to further assess changing conditions.

10. STANDARD OPERATING SAFETY PROCEDURES, ENGINEERING CONTROLS, AND WORK PRACTICES

Using common sense, operating under the "buddy system" (or two-person rule), and following safe practices can reduce the hazards of normal project activities.

The general site safety procedures contained in the WESTON Corporate EHS Program field operating procedures guide (which will be on-site) will be followed, and no running or horseplay will be allowed at the Mount Gretna TCAR - West MRS.

10.1 SITE RULES/PROHIBITIONS

10.1.1 Buddy System

All work at Mount Gretna TCAR - West MRS will be performed using the buddy system. Team members will keep in contact with each other at all times. Team members will be made aware of any slip, trip, and lifting hazards along with any potential exposure to chemical substances, heat or cold stress, and general hazards within their work area.

10.1.2 Designated Eating/Break Areas

Eating and break areas will be located away from the active work area. No food or beverages will be allowed in any work environments.

10.1.3 Designated Smoking Areas

All regulations governing approved areas for smoking and spark generation will be strictly followed. Smoking is prohibited except in designated smoking areas. The UXOSO/SSHO will identify designated smoking areas. Discarding tobacco materials other than into designated tobacco receptacles is considered littering and is subject to fines.

10.2 WORK PERMITS

No facility work permits are associated with this project.

10.3 MATERIAL HANDLING PROCEDURES

Work areas and means of access will be maintained in a safe and orderly condition. Tools, materials, extension cords, hoses, or debris will not cause tripping or other hazards. Storage and construction sites will be kept free from the accumulation of combustible materials. There are no radioactive materials present on-site. Drum, container, and/or tank handling is not anticipated during this project. Spill contingencies are listed in Section 15.

10.4 SPILLS

Employees will be handling small quantities of fuel during brush clearing operations. Spill prevention measures and response procedures for small spills are provided in Section 15.

10.5 DRUM/CONTAINER TANK HANDLING

No drums or container handling will be part of this project.

10.6 DRUG AWARENESS AND DRUG-FREE WORKPLACE

WESTON fully supports all aspects of the Drug-Free Workplace Act of 1988. WESTON has implemented a Drug and Alcohol Testing Procedure No. 08.04. This procedure is in accordance with Federal Acquisition Regulation (FAR) Subpart 23.500. Strict disciplinary actions are enforced for any violation of WESTON's Drug-Free Workplace policy. All WESTON employees, as a condition of employment, have documented understanding and receipt of this policy.

While on duty, employees will not use or be under the influence of alcohol, narcotics, intoxicants, or similar mind-altering substances. Employees found to be under the influence of or consuming such substances will be immediately removed from the job site. Contractors will also adhere to WESTON's drug-free workplace requirements.

Any employee under a physician's treatment and taking prescribed narcotics or any medication, including over-the-counter medication, that may prevent a person from being ready, willing, and able to safely perform his/her duties will provide a medical clearance statement to his/her supervisor from the attending physician.

WESTON's Operating Practice emphasizes supervisor training, a provision for self-referral to treatment, and maximum respect for individual confidentiality as well as a provision for identifying and dealing with illegal drug users, including testing. WESTON's practice also provides for education, counseling, rehabilitation, and coordination with available community resources.

10.7 EMPLOYEE DUTY SCHEDULE/BASIC FATIGUE MANAGEMENT PLAN

10.7.1 Employee Duty Schedule

Personnel will follow WESTON's Employee Schedule. If extended periods of working long hours are required, the UXOSO/SSHO will monitor employees for outward signs of fatigue. Employee rotations may need to be adjusted to allow for individual differences in how fatigue-related stress is handled and for employee-specific roles on the project.

When employees are working extended hours, employee travel time to and from work will be minimized to allow for sufficient rest and travel time should be taken into account in determining limits on hours per day and per week. Group transportation to and from the work location and lodging will be used to address this situation. Consideration should be given to "awake" time and not just the hours logged on a timesheet.

10.7.2 Fatigue Symptoms

Intrinsic Symptoms

- **Physical** — Frequent, unexplainable headaches, muscle aches and pains, breathing difficulties, blurred/double vision, and/or burning urination.
- **Mental** — Difficulty focusing attention, distracted easily, depression, impaired judgment, and/or poor visual perception.

Extrinsic Symptoms

- **Physical** — Degraded motor skills, tenseness and tremors, intolerant/irritable, increased reaction time, and/or social withdrawal.
- **Mental** — Absentmindedness, poor short-term memory, lack of interest and drive, confusion and fearfulness, slow startle response, worry, and/or anxiety.

10.7.3 Fatigue Management

WESTON employees and subcontractors should not work in excess of 84 hours per week (12 hours/day – 7 days/week) unless approved by the PM. The Division Manager and the local Operations/Resource Manager are available to support the PM's decision process.

10.8 SECURITY PLAN

10.8.1 Site Access

Visitors to the project are required to sign in with the UXOSO/SSHO, and the UXOSO/SSHO will document the presence of visitors in the logbook. Visitors will be escorted by site personnel.

10.8.2 Site Control

The Mount Gretna TCAR - West MRS is located within a non-secured area because the MRS lies within both commercial and residential zoned properties. Sign-in procedures for all project staff will be required for access to the site, and coordination with the property owners will be conducted daily during site activities to ensure that all stakeholders are kept informed.

10.8.3 Theft

On-site theft of equipment is not expected. No equipment or valuable items will be kept inside vehicles. If it is necessary that equipment remain inside a vehicle, it will be kept out of obvious sight, and the vehicle will be locked and all windows closed. Personnel will secure vehicles, even if parking for only brief periods, and will carry vehicle keys with them at all times. Vehicles will be parked in well-lit areas.

In the event a theft does occur, local authorities will be promptly notified and appropriate WESTON personnel will be notified. Notice of Incident (NOI) Track information will be completed within 24 hours.

10.8.4 Confrontation

Personnel will be observant of their surroundings. They should ensure their own safety, the safety of their co-workers, and the safety of the public by not confronting or challenging

aggressive perpetrators. ARNG, Pennsylvania Army National Guard, USACE, and the appropriate authorities should be contacted if site personnel observe any unusual circumstances.

10.9 MOTOR VEHICLE SAFETY

Safety is of utmost importance at WESTON. Employees must act responsibly every day to ensure the safety of themselves and others. This safety commitment also applies when driving vehicles. All employee drivers are required to operate vehicles safely, obeying federal, state, and local laws, and company policies. Driving is a privilege, not a right.

10.10 TRAFFIC

Posted speed limits will be obeyed at all times, and seat belts will be worn when driving. All drivers will be licensed. All geophysical, UXO, and sampling activities will be coordinated to minimize impacts to nearby traffic and roads, and safety distances shall be adhered to for all site activities.

10.10.1 Employee Requirements/Responsibilities

Compliance with all federal, state, and local laws is expected.

Drivers of WESTON vehicles must possess a current, valid driver's license of the appropriate class required for their driving needs, e.g., Class C, Commercial Driver's License.

All driving duties and functions are to be performed in a safe, legal, and professional manner.

Employee drivers are to attend periodic defensive driving training and other driver safety meetings as scheduled through their local Safety Officers.

Driving requires a high level of skill and alertness. When fatigue, illness, or medication impact alertness, reflexes, and decision-making capabilities, an employee driver should cease driving until the situation improves or is corrected and contact his/her manager to discuss the situation.

Unsafe vehicles and related equipment will be reported and repaired. Unsafe vehicles are not to be driven for WESTON business.

NOITrack will be used to report any vehicle accident while on the job or any accident occurring at any time if a company-owned or insured "allowance" vehicle is involved.

A driver orientation program and/or driving evaluation tests may be required of drivers to assess overall driving skills.

10.10.2 Compliance Issues/Driving Practices

10.10.2.1 Speed Limits

Drivers are required to obey posted speed limits and other traffic laws. Fines for any traffic violations are the employee's responsibility.

10.10.2.2 Seat Belts

WESTON drivers and their passengers are required to wear seat belts at all times while the vehicle is in operation.

10.10.2.3 Distracted Driving

It is recognized that distracted driving can contribute to accidents; accordingly, WESTON employees are to exercise caution and good judgment when driving. Reading maps, eating, placing or receiving a call on a cell phone, and other activities may contribute to an accident. Cell phone use while driving, including the use of hands-free devices, creates a distraction and driver inattention. The following basic guidelines should always be observed:

- Make outgoing calls after you have pulled over to a safe area.
- Let incoming calls go to voice mail, or if answering the phone is necessary, make sure the caller knows you are driving and keep the call short. Be aware of local or state laws governing the use of cell phones while driving.
- At all times, drivers are to operate vehicles in a safe, legal, and professional manner.

10.10.2.4 Transporting Weapons

Transporting weapons (such as firearms, large knives) or dangerous property (significant or placardable quantities of regulated hazardous materials or substances) is prohibited unless specifically authorized.

10.10.3 Other Issues

Additional safety procedures may be established at a particular job site or within a Division. WESTON employees are responsible for compliance with any additional safety procedures and safety solutions that apply or that may be identified.

10.11 SANITATION

Employers will establish and maintain hygienic sanitation provisions for all employees in all places of employment. General housekeeping activities will occur daily.

10.11.1 Drinking Water

An adequate supply of potable water will be provided in all places of employment, for both drinking and personal cleansing. Cool drinking water (bottled water) will be provided.

10.11.2 Toilets

Toilets are required in all places of employment. Toilet facilities will be made available at Mount Gretna TCAR - West MRS near the site activities. Hand soap or similar cleansing agents will be made available.

10.11.3 Procedures for Vermin Control

The work areas will be kept clean and organized. Organics, such as foods, will be wrapped and then properly discarded to avoid attracting pests.

10.11.4 Waste Disposal

A dumpster or other disposal container for garbage will be made available.

11. SITE CONTROL

The UXOSO/SSHO coordinates access control and security on-site. Because of the nature of the activities, only authorized personnel are allowed in the work zone. Authorized personnel are those who have completed the required training and who meet medical requirements. Unauthorized personnel will not be allowed in the work zone. The potential of cross-contamination is not applicable to this project based on the project characterization.

During on-site operations, the UXOSO/SSHO will order operations to cease if nonauthorized personnel are observed within the operating area. To ensure safety, site controls include the following:

- Eating, drinking, and smoking are prohibited except in designated areas.
- Operations will cease if nonauthorized personnel are present.
- The UXOSO/SSHO or his designee will escort authorized site visitors.
- All personnel entering the site, including visitors, will wear the proper PPE and sign in and out on the Site Control Log.
- The UXOSO/SSHO will maintain the Site Control Log to ensure accurate accountability of personnel on-site.
- The UXOSO/SSHO will provide an SSHP safety briefing to all personnel entering the Mount Gretna TCAR - West MRS to inform them of potential site hazards. Personnel must acknowledge this briefing by signing the SSHP Review Form.
- In case of an emergency, personnel will exit the Mount Gretna TCAR - West MRS and move to a designated safe area. The UXOSO/SSHO will determine the designated safe area that is located upwind of the MRS. The UXOSO/SSHO will notify the PM and the EHS Leader if an emergency warrants site evacuation.

11.1 ON-SITE COMMUNICATIONS

In an emergency, important messages will be conveyed quickly and accurately. Verbal communication will be the primary form of communication at the Mount Gretna TCAR - West MRS. The anticipated distance between the site workers will be no more than 1,000 yards. Verbal communication can be impeded by on-site background noise and the use of PPE. A vehicle horn or air horn will be available with each team for emergency alerting purposes.

Outside support sources will be reached, assistance obtained, and measures for public notification ensured, if necessary. Separate internal emergency signals will be developed and rehearsed daily at safety meetings. External communications will be obtained through cellular phones or radios located at the facility, and procedures will be posted in a location accessible to site workers.

The emergency telephone numbers, which are listed in **Tables 15-1** through **15-3**, will be prominently posted in WESTON's field vehicles. The emergency telephone numbers, along with the APP and SSHP, OSHA 300 Log, safety and health promotional posters, date of last work day injury, and OSHA Safety and Health poster, will be kept unobstructed and readily available to the workers.

12. PERSONAL HYGIENE AND DECONTAMINATION

12.1 CONTAMINATION PREVENTION

Based on field tasks and appropriate PPE usage, no contact with contamination is expected.

12.2 PERSONAL HYGIENE

Employees will practice sound hygiene practices, including washing hands, face, and arms at the hygiene station after operations have concluded. Appropriate hand-washing facilities with soap will be available at the facility. In addition, hand sanitizer will be available. Following Centers for Disease Control and Prevention guidelines, personnel should wet their hands with clean running water and apply soap. Use warm water if it is available. Rub hands together to form lather and scrub all surfaces. Continue rubbing hands for 20 seconds. Rinse hands well under running water, then dry hands using paper towels. If possible, use that same paper towel to turn off the faucet. Good personal hygiene should be in effect at all times.

13. EQUIPMENT DECONTAMINATION

All equipment and tools will be cleaned prior to site entry to remove grease, oil, dirt, or any other off-site materials. The UXOSO/SSHO will inspect the equipment prior to approving the items for use on-site. The UXOSO/SSHO is responsible for inspecting equipment for adequate decontamination prior to removal off-site.

Sampling equipment will undergo a dry gross decontamination. Dedicated sampling equipment will be used to the extent practicable.

13.1 DISPOSITION OF DECONTAMINATION WASTE

Any excess sample soil will be returned to the sample hole after completing sampling, and PPE and other disposable sampling equipment will be double-bagged and disposed of as solid waste unless elevated concentrations are detected for metals or explosives during MC sampling.

No other investigation-derived waste (IDW) is anticipated during this sampling. If site information necessitates sampling additional matrices and using alternative sampling approaches, a change to this document will be completed detailing the IDW anticipated and the procedures and protocols required for disposal.

14. EMERGENCY EQUIPMENT AND FIRST AID EQUIPMENT

14.1 EMERGENCY EQUIPMENT

The emergency equipment listed in **Table 14-1** will be maintained in proper working order and frequently inspected for completeness during operations at the Mount Gretna TCAR - West MRS.

Table 14-1

Emergency Equipment

Equipment	Location	Operation
First-aid kit	Support vehicle(s)	All operations
BBP kit	Support vehicle(s)	All operations
Eye wash	Support vehicle(s)	All operations
10-lb ABC fire extinguisher	Support vehicle(s)	All operations
Allergy response kit	Support vehicle(s)	All operations

14.2 FIRST RESPONDER KIT

Medical supplies required to be on-site are listed in **Table 14-2**. The minimum requirements of ANSI Z308.1-2009 and EM 385-1-1, November 2008, Section 03.B will be met. Documented monthly inspections of first-aid kits will be performed by the UXOSO/SSHO.

Two appropriately trained WESTON or subcontractor personnel will provide on-site first aid/CPR support. In the event that specialized/elevated care is necessary, either WESTON or the on-call ambulance service will transport the injured person to the appropriate medical facility.

Personnel needing basic first-aid treatment will also be documented as discussed in Subsection 15.7.4. An updated copy will be sent to the EHS Leader monthly to watch for trends in minor incidents.

907 **Table 14-2**
908
909 **Contents for First Responder Kit**

Description	Qty	Description	Qty
Absorbent compress, 32 sq. inches	1	Adhesive Tape, 3/8"x 5 yds	1
Adhesive Bandages, 1"x 3"	16	Analgesic/ pain reliever	16
Antibiotic Treatment, 1/32 Oz.	6	Antiseptic Wipes	6
Bandage Compress, 2" x 36"	4	Bandage Compress, 3" x 36"	2
Bandage Compress, 4" x 36"	1	Breathing Barrier	1
Burn Dressing, 4" x 4"	1	Burn Treatment, 1/32 Oz.	6
CleanseAway Poison Oak & Ivy Cleanser	1	Cold Pack, 4"x 5"	1
Eye Covering, 2.9 sq. inches per eye	2	Eye Wash, 4 Oz.	1
Medical Exam Gloves	2 pair	Roller Bandage, 2" x 6 yds	2
Roller Bandage, 4" x 6 yds	1	Sterile Pad, 3" x 3"	4
Triangular Bandage, 40 x 40 x 56 inches	1		
Contents for BBP Kit			
Breathing Barrier	1	Bodily Fluid Disposal Kit	1
Medical Exam Gloves	1 pair	PDI SaniCloth wipes	2

910

15. EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

15.1 EMERGENCY PROCEDURES

The site evacuation route and predetermined meeting location map will be developed and posted prior to mobilization. The evacuation route and predetermined meeting location map will be reviewed with all employees prior to the start of work and prior to the start of each new task.

Within a few days of the startup of work, a drill will be run for the emergency response plan. WESTON has evaluated the emergency medical services. The UXOSO/SSHO will have a roster of individuals on-site so that they can be accounted for in the event of an emergency.

15.2 PERSONNEL AND LINES OF AUTHORITY FOR EMERGENCY SITUATIONS

Fire and Emergency Medical Services (EMS) will provide support as necessary. The UXOSO/SSHO will be appointed as an Emergency Coordinator (EC), and a system will be implemented to provide a common framework within which people can work together effectively.

15.3 CRITERIA AND PROCEDURES FOR EMERGENCY RECOGNITION AND SITE EVACUATION

15.3.1 Medical Emergency and Personal Injury

The first worker who notices that a medical emergency or personal injury has occurred will immediately make a subjective decision whether the emergency is life-threatening and/or otherwise serious and will then proceed as described in the following subsections. Because of levels of the contaminant of concern (lead), emergency decontamination should be conducted. This will include removal of any PPE and visibly contaminated clothing or footwear.

15.3.1.1 Life-Threatening and/or Otherwise Serious Incident

If a life-threatening incident occurs, emergency medical assistance will be immediately requested. If an apparent life-threatening and/or otherwise serious incident has occurred, the first person who identifies the situation will summon the UXOSO/SSHO. The UXOSO/SSHO will assume the role of EC. The EC will be apprised of the situation and told where the injured

person(s) is/are located. As the EC proceeds to the accident scene, communications channels will be opened and kept on standby until the EC has surveyed the scene and performed a primary survey of the injured person. The EC will determine whether emergency assistance should be summoned and what information must be relayed, and will provide emergency action principles that are consistent with the injury. The EC will appoint a staff person or persons who will meet the emergency responders and take them quickly to the injured person. If necessary, decontamination of the individual will be performed at the direction of the EC.

15.3.2 Non-Life-Threatening Incident

If it is determined that no threat to life is present, the worker will assist the injured person to a safe location and contact the UXOSO/SSHO. The injured person will then be treated and monitored in accordance with standard first-aid procedures and this SSHP.

15.3.3 Worker Injury or Illness

The UXOSO/SSHO will be responsible for monitoring the general health of site workers. Site illnesses, conditions, or injuries that can be expected given the working conditions include heat stress, construction-related injuries, insect bites, and injuries caused by slips, trips, and falls.

These conditions will be prevented by properly training site workers in the appropriate use of health and safety equipment, dressing appropriately, monitoring the breathing zone atmosphere when necessary, and maintaining good housekeeping procedures.

The specific response to an injury or illness will depend on its type and severity, but in general, first aid will be administered in the field by the UXOSO/SSHO, who is certified in first aid and CPR. The worker may then be transported to the hospital designated in this SSHP (see **Table 15-1** and **Figure 15-1** for hospital information and directions). General guidelines for first aid are as follows:

- For minor injuries, routine first-aid procedures will be used and documented.
- For major injuries, an ambulance will be called immediately and the appropriate first aid administered while awaiting arrival of the ambulance.
- Trained personnel will use approved measures to administer treatment.

15.3.4 Emergency Response

During an emergency, the following actions will be taken, with some actions conducted concurrently. No one will attempt emergency response/rescue until the situation has been assessed and the appropriate response outlined. Emergency response planning may involve the following circumstances or activities:

- Fire or explosion and prevention
- Spills and spill prevention
- Inclement weather
- Evacuation planning

The minimum actions taken in case of emergency will be as follows:

- All work will cease.
- All affected employees and subcontractors will be warned/notified of the emergency.
- The area will be isolated.
- Appropriate notifications will be made.

Rescue/response may include the following:

- Assess: Assess existing and potential hazards to site personnel and the off-site population.
- Determine:
  - Whether and how to respond.
  - The need for evacuation of site personnel and off-site population.
  - The resources needed for evacuation and response.
- Survey Casualties:
  - Locate all injured persons and assess their condition.
  - Determine resources needed for stabilization and transport.
- Request Aid: Contact the required off-site/on-site personnel or facilities, such as the ambulance, fire department, and/or police.
- Allocate Resources: Allocate on-site personnel and equipment to rescue and initiate incident response operations.
- Extricate: Remove or assist injured persons from the area, using appropriate PPE equipment and procedures.

- Control: As trained, and as determined safe, assist in bringing the hazardous situation under complete or temporary control and use measures to prevent the spread of the emergency.
- Decontaminate (if necessary): Remove any protective clothing.
- Stabilize: Administer any medical procedures that are necessary before the injured person(s) can be moved. Stabilize or permanently fix the hazardous condition. Attend to what caused the emergency and anything damaged or endangered by the emergency.
- Transport: Transport personnel following any necessary decontamination for unforeseen or unexpected potential exposure or measures necessary to avoid contaminating others.
- Log Casualties: Record name of individual, time, destination, and condition upon transport.
- Evacuate:
  - Move site personnel to a safe distance upwind of the incident.
  - Monitor the incident for significant changes. The hazards may diminish, permitting personnel to re-enter the site, or hazards may increase and require public evacuation.
- Casualty Tracking: Record disposition, condition, and location.
- Notification: Notify appropriate individuals/entities.

15.3.4.1 Evacuation Routes and Procedures

Personnel will exit the site by the nearest means of egress during accidents requiring evacuation. Once personnel are off-site, the personnel will assemble at a location designated by the UXOSO/SSHO for accountability. Any missing personnel will be brought to the attention of the emergency responders.

15.3.4.2 Emergency Alarm Systems

Portable telephones will be available for site and emergency communications (PM, UXOSO/SSHO, and field staff). In addition, equipment spotters will be provided with emergency air horns to alert all personnel to stop work immediately. All field personnel will be trained regarding site emergency signals.

Emergency service personnel (police/fire/ambulance) will be summoned by requesting support from the Department of Emergency Services personnel. Emergency contact numbers are provided in **Tables 15-1** through **15-3,** and the hospital location and directions from Mount Gretna TCAR - West MRS are provided in **Figure 15-1**.

15.3.4.3 Hand and Emergency Signals Communications

It is essential that workers have a means of communicating rapidly and effectively during heavy equipment operations, construction, hazardous waste operations, and other types of activities. Communication while wearing PPE can be extremely difficult. The following information provides guidance for uniform communication protocols to be used, as needed, in field operations. **Tables 15-4** and **15-5** present emergency and general hand signals for uniform communication use.

15.3.4.4 Emergency Signals

Emergency signals are critical for alerting workers of danger and for maintaining site control during an emergency. Bullhorns, radios, air horns, and similar devices will be used as described below for emergency communications. Emergency hand signals should be used as a secondary means of communication.

Table 15-1

Emergency Contact Numbers

Organization/Point of Contact	Telephone Number
Department of Emergency Services (Ambulance, Fire, Police)	911
Mount Gretna Police Department (non-emergency)	(717) 272-2054
Mount Gretna Fire Department (non-emergency)	(717) 964-3511
Emergency Hospital: Good Samaritan Hospital 4th & Walnut Streets Lebanon, PA 17042	(717) 270-7612

Table 15-2

WESTON Emergency Contact Numbers

Organization/Point of Contact	Telephone Number
WESTON PM: Chris Kane, PMP	(603) 656-5428 (office) (603) 566-4658
WESTON EHS Leader: Larry Werts	(610) 701-3912 (office) (215) 815-6237 (cell)
WESTON Corporate EHS Director: Herold Hannah, CIH	(610) 701-3024 (office) (267) 516-0274 (cell)
WESTON Medical Programs Manager: Herold Hannah, CIH	(610) 701-3024 (office) (267) 516-0274 (cell)
WESTON SUXOS: Dave Holland	(727) 772-3087 (cell)
WESTON UXOSO/SSHO Doug Gates	(814) 229-0959 (cell)

Table 15-3

Other Emergency Contact Numbers

Organization/Point of Contact	Telephone Number
Poison Control Center	(800) 962-1253
Spill Response – ChemTel (Acct. MIS0003701)	(800) 255-3924
Spill Response - CHEMTREC	(800) 424-9300
National Response Center	(800) 424-8802
WorkCare Intervention	(888) 449-7787
WorkCare WESTON Medical Director: Dr. Peter Greaney WorkCare WESTON Program Administrator Heather Lind	06:00 to 16:30 Pacific Time, call (800) 455-6155, dial 0 or extension 175, Heather Lind to request the on-call clinician
WorkCare After-Business Hours Contact (Emergency Only)	16:31 to 05:59 Pacific Time and weekends and holidays, call (800) 455-6155 and dial 3 to reach the after-hours answering service. Request that the service connect you with the on-call clinician or the on-call clinician will return your call within 30 minutes.

Table 15-4

Emergency Signals

Signal	Meaning
One long sound/blast of the emergency alarm signal, air horn, siren, whistle	Emergency situation: face safety watch and watch or listen for directions
Pause; followed by a number of short sounds, 1, 2, 3, or 4	Evacuate to the predesignated emergency meeting place indicated by the number of sounds
Two long blasts of the emergency alarm signal, air horn, siren, whistle	All clear
Point one arm in direction of evacuation, make a large circling motion with the other arm in direction of evacuation	Evacuate the area
Hand clutching throat	Cannot breathe; out of air
Grip partner's wrist or place both hands around partner's arm	Leave area immediately

Table 15-5

General Hand Signals

Signal	Meaning
Point index finger toward self	I; me
Point index finger toward object	It; them
Point index finger toward person	You; them
Circle index finger at group	We; us; all of us
Pointed finger on extended arm	Look in that direction
Beckon with index finger	Come here
Point with thumb in a particular direction	Move this way; go this way
Hold index finger up near head	Wait
Slowly ease palm face down	Relax; slow down
Put palm over brow	Scout it out; check it out
Move hand far away from body	Stay away
Hands on top of head	Need assistance
Grip partner's wrist or place both hands around partner's arm	Leave area immediately
Thumbs up	OK; I'm all right
Thumbs down	No; negative; bad; not OK
Hand gripping throat	Cannot breathe; out of air
Wave hands over head from side-to-side	Attention; stand-by for the next signal
Swing hand from direction of person receiving signal to directly overhead and through in circle	Come here
Clenched fist of extended arm	Stop motion/hold position
Draw index finger across front of throat	Shut off engine; cut off power; quit
Place palm face down and rotate from side to side	Unsure; can't decide
Form a circle with thumb and index finger	OK; I understand; agree
Military salute	I understand and will comply

15.3.4.5 Radio Communications

When radio communication will be used, personnel will be instructed about the use of the radio, which channel should be used, and the following radio guidelines. Personnel will use the radio only for necessary work-related communication and will use the following procedures:

- Speak clearly.
- Call the name or call sign of the individual or unit you are trying to reach, and identify yourself (e.g., "Unit 1; this is Safety").
- Wait for acknowledgement (e.g., "Safety, this is Unit 1") before you continue transmission.
- Proceed with your transmission. When finished, say "Over" when you expect a response. When transmission is complete and no response is expected, say "Out."
- When receiving a radio call, acknowledge the call immediately unless doing so would interfere with safety.
- If a transmission is incomplete or not understood, request clarification.
- Emergency calls should begin with the words "Emergency, Emergency, Emergency." Give absolute priority to emergency communication. Unless answering or aiding the emergency call, do not use the radio until certain it will not interfere with further emergency communication.
- Ensure that radios are charged and tested prior to each work shift and as necessary thereafter.
- Malfunctioning radios must not be used and must be replaced immediately.
- Do not transmit false information or unidentified communication.
- Profanity and indecent language are prohibited. Transmittal of sensitive information over the radio is prohibited.

15.3.4.6 Decontamination and Medical Treatment of Injured Personnel

If medical treatment is required for injured personnel, emergency decontamination should be conducted because of the levels of the contaminant of concern (lead). Decontamination will include removal of any PPE and visibly contaminated clothing or footwear.

15.3.4.7 Emergency Medical Facilities and Phone Numbers for Responders

The emergency telephone numbers listed in **Tables 15-1** through **15-3** will be prominently posted in WESTON's vehicles. The emergency telephone numbers, along with the APP and SSHP, OSHA 300 Log, deficiency tracking system documents, safety and health promotional posters, date of last work day injury, and OSHA Safety and Health poster, will be kept unobstructed and readily available to the workers.

15.3.4.8 Criteria for Alerting Local Community Responders

In the event of an emergency requiring outside emergency services, WESTON personnel will immediately dial 911 to contact the appropriate organization. Following the phone call, WESTON personnel will contact on-site personnel to inform them that emergency service personnel and equipment will be entering the work area. Subsequent to these notifications, appropriate WESTON personnel will be contacted and informed regarding the situation.

Information provided by the servicing agencies is provided in Appendix F of the APP.

15.4 SPILL PLAN

The following procedures comprise the spill containment program in place for activities at the Mount Gretna TCAR - West MRS. Spill procedures will be reviewed by the UXOSO/SSHO with team members.

15.4.1 Measures for Preventing Fuel Spills

- Care shall be taken when transferring fuels.
- A containment dike around fuel storage tanks shall be constructed.
- Inspect all fuel storage tanks and containment structures for leaks daily.
- Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment (e.g., absorbent, pillow, shovels) will be stationed in the immediate area. The spill containment equipment must be sufficient to contain and isolate the entire volume of fuel being transferred.
- Fire-extinguishing equipment meeting 29 CFR Part 1926, Subpart F, shall be on hand and ready for use to control fires.

15.4.2 Fuel Spills Greater than Five Gallons

The following response procedures shall be followed for spills of flammable fuels greater than 5 gallons in volume:

- Shut down operation in area immediately.
- Limit ignition sources.
- Suppress vapors as required.
- Survey area with combustible gas indicator, if available; don protective equipment as necessary.
- Pump liquids into drums.
- Recover contaminated solids and place in containers.
- Clean up all residues.

15.5 FIREFIGHTING PLAN

Potential sources of fuel include grass and leaves. Types of fire suppression systems include multipurpose ABC portable fire extinguishers. In case of fire, evacuate the area immediately. Activate 911 or the established Fire Emergency Number from a safe location. Indicate what is happening, the location of the fire, and whether there are injuries. Comply with requests from the 911 operator for information. Do not hang up until told to do so by the operator, or allow the operator to hang up first. Upon completion of the emergency phase, comply with incident notification procedures.

If the fire is small and manageable with fire-extinguishing equipment at hand, and you are trained in the use of this equipment, you may make the decision to use this equipment while waiting for advanced assistance. Never place yourself in danger, always have a plan for escape, and never attempt to fight a fire if there are any doubts about the type of fire or your ability to successfully fight the fire. Never allow the fire to get between you and your escape route.

15.5.1 Fire Extinguishing Equipment

Fire extinguishing equipment that meets 29 CFR Part 1926, Subpart F, will be on hand and ready for use to control fires. The following procedures will be followed:

1. Flammable and Combustible Materials (liquids, gases):

   - Flammable materials must be properly labeled, stored, handled, and used.
   - No smoking or use of open flame-producing devices within 50 feet of flammable and combustible materials.
   - Obtain SDSs for all flammable materials in use and ensure all personnel are aware of hazards.
   - Label all containers with contents, the word "Flammable", and in accordance with hazard communication requirements.
   - Store materials in well-ventilated areas that are free of ignition sources and flame or sparks.
   - Ensure that incompatible materials are stored in remote locations from each other (e.g., keep flammables from oxidizers).
   - Limit quantities to minimum required.
   - Store cylinders in upright and secure positions.
   - Bond and ground containers as (and where) necessary.
   - Use proper storage cabinets for flammable and combustible materials. Contact EHS Staff for assistance.
   - Use only approved containers.
   - Use and dispense only in well-ventilated areas.

2. Combustible Materials (solids):

   - Solid combustible materials include wood, paper, and cloth. Proper housekeeping reduces concerns for combustion of these materials. Use proper receptacles for disposal, and dispose of solid combustible materials routinely.

3. Oxidizers:

   - An oxidizer is a substance that increases the flammability of materials, allowing them to burn more easily. Examples include pure oxygen, chlorine, and ammonium nitrate. Store oxidizers in a remote location from flammable and combustible materials.

4. Electric Appliances:

   - Do not use electric appliances near flammable or combustible materials. Never place an appliance on an unstable surface. Use only Underwriters Laboratories, Inc.- or Factory Mutual Research Corp.-approved appliances. Follow the manufacturer's recommendations or requirements for use and maintenance.

5. Smoking:

   - Smoking is prohibited indoors. Smoking is allowed only in outdoor, designated areas. Smokers are to maintain smoking areas in a clean and safe condition. Ensure that receptacles for disposal of cigarettes and other smoking materials are appropriately constructed, free of combustible debris, and, when necessary, are cool before emptying into waste receptacles.

6. Housekeeping:

   - Personnel are responsible for keeping work areas free of combustible materials and debris.

   - Weeds and grass must be properly maintained to limit potential fire hazard.

   - The UXOSO/SSHO will document and inspect all project fire extinguishers on a monthly basis.

15.6 WILD FIRES

15.6.1 Prevention

Site personnel should practice smart fire safety habits and watch out for hazardous conditions. If conditions are dry, wild fires can pose a threat—not only because there is plenty of fuel to burn, but also because rural areas and remote locations often do not have easy access for firefighters. There also is a chance that embers from a fire a mile or more away may fall onto nearby vegetation and cause them to catch fire. The following preventive measures will be observed:

   - Smoke only in designated areas.

   - Avoid driving through high grass or areas where vehicle exhaust or hot engine surfaces could cause fires.

- Keep a fire extinguisher handy.
- Be extra cautious during the dry season and observe warnings and prohibitions established by the Forestry Service or other agencies.
- Be aware of wild fires in neighboring areas.

15.6.2 Awareness and Response

Wild fires can spread quickly and without warning. A subtle shift in the wind could send the flames in your direction even though authorities may have deemed your area safe. Make sure you have a plan in place:

- Be aware of wild fires in neighboring areas.
- Do not attempt to fight forest fires. If fire or smoke is observed, notify all site personnel, initiate evacuation, and report the fire to the designated emergency agencies.
- Designate a place to meet if there is a fire.
- Identify multiple places you could evacuate to, such as a motel outside the danger zone.

It is very easy to panic, but if you remain calm and prepare for emergency situations, you will increase your chances of evacuating safely. If you are driving:

- Roll up your windows and close your air vents.
- Drive slowly and turn on your headlights.
- Do not drive through heavy smoke.

15.7 MEDICAL SUPPORT

15.7.1 On-Site Medical Support

In the event specialized/elevated care is necessary, either WESTON or the local on-call ambulance service will transport the injured person to the Good Samaritan Hospital. The local Fire and EMS Department can be notified of emergency situations by using the telephone numbers listed in **Table 15-1**. There will be fewer than 100 people on-site; therefore, WESTON will not be providing on-site medical support.

A first-aid kit complying with the criteria contained in ANSI Z308.1-2009 will be provided on-site.

- For minor injuries, routine first-aid procedures will be used and documented.
- For major injuries, an ambulance will be called immediately, and the appropriate first aid administered while awaiting the arrival of the ambulance.
- Trained personnel will use approved measures for treatment based on the training they have received.

15.7.2 Off-Site Medical Support

WESTON has contacted the local emergency resources to verify their availability and ability to respond to any emergencies encountered (see Appendix F of the APP).

15.7.3 Directions and Map to Nearest Hospital

The appropriate emergency vehicle will travel to the closest emergency hospital to the MRS, which is the Good Samaritan Hospital (see **Figure 15-1)**. **Figure 15-1** shows the route to the hospital from the Mount Gretna TCAR - West MRS (the driving distance is approximately 9 miles and the driving time is approximately 19 minutes). The map showing the route will be posted near the site telephone and in each site vehicle, and a written description of the route is included on the map. The hospital route will be verified prior to work initiation in case of unforeseen construction or other changes in the route.

15.7.4 First Aid Treatment

Personnel needing basic first-aid treatment will also be documented using the form presented as **Figure 15-2**. An updated copy will be sent to the WESTON EHS Leader monthly to watch for trends in minor incidents.

Copies of certifications for the individuals presented in **Table 15-6** are presented in Appendix B of the APP.

Table 15-6

First Aid and CPR Training

Name	First Aid (Expiration Date)	CPR (Expiration Date)	BBP (Expiration Date)
Doug Gates	1/26/17	1/26/17	4/21/16
David Holland	8/13/2017	8/13/2017	8/13/2016

Note: PM will ensure all field personnel are current with their certifications prior to the start of field work.

Walnut St

The Good Samaritan Hospital
4th & Walnut Streets
Lebanon, PA 17042
(717) 270-7612

Quentin Rd

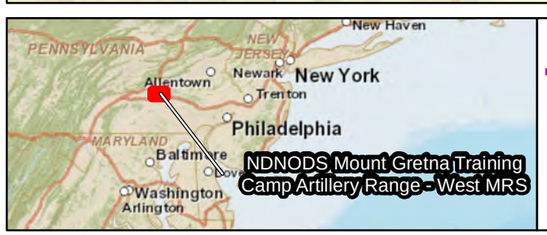
Butler Rd

Mount Gretna Training
Camp Artillery Range - West

Driving Directions

1. Head southeast on Timber Bridge Ln toward Mt Gretna Rd 33 ft
2. Turn left onto PA-117 S/Mt Gretna Rd 1.3 mi
3. Turn left onto Butler Rd 2.6 mi
4. Continue onto PA-241 N/Colebrook Rd 3.9 mi
5. Turn left onto Quentin Rd 0.3
6. Continue onto S 9th St 0.4 mi
7. Turn right onto W Walnut St 0.1 mi

Approximate Distance: 8.6 Miles
Approximate Time: 19 Mins



Hospital
Hospital Route

U.S Army Corps Of Engineers

Mount Gretna Training Camp Artillery Range - West
Lebanon County, PA

N

0 2,800 5,600 8,400 Feet
0 1,000 2,000 3,000 Meters

NOTES:
Data Source: Bing Topographic Mapping Service.
Quad: Manheim, PA. 1975

Figure 15-1
Route to Emergency Hospital
Good Samaritan Hospital
Lebanon County, Pennsylvania

Coordinate System:
UTM, Z18N, WGS84, Meter

2/25/2016
Revision: 0

File: Y:\NDNODS\Mount Gretna\MXD\SI\MountGretna_HospitalRouteMap.mxd, 2/25/2016 12:13:05 PM, johna

1248 **Figure 15-2**
1249 **First Aid Dealings Not Otherwise Reportable**

First Aid Tracking Form
Actions not otherwise Reportable

Date	Person	Location of Injury	Describe Actions taken	Follow-up Observations
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
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		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:
		Body Part: Left Right Upper Lower Joint		Dates:

1250

16. LOGS, REPORTS, AUDITS, INSPECTIONS, AND RECORDKEEPING

16.1 SAFETY LOG

The UXOSO/SSHO will maintain a safety log of all safety-related activities. The UXOSO/SSHO is responsible for ensuring that health and safety activities for the day, as well as safety meeting minutes, are documented in the safety log or filed appropriately. In addition, the UXOSO/SSHO will maintain a site OSHA 300 log.

16.2 TRAINING LOG

The UXOSO/SSHO is responsible for ensuring that all training conducted relative to job site activities is documented appropriately.

16.3 SITE CONTROL LOG

A log of all personnel visiting, entering, or working at the Mount Gretna TCAR - West MRS will be maintained. The log will include the following: date, name, agency or company, and the time entering and exiting the MRS. This information, including dates, will be recorded in the site control log.

16.4 INSPECTION FORMS

Daily safety and health inspections will be conducted by the UXOSO/SSHO with the results recorded in the safety log. The UXOSO/SSHO will conduct periodic safety and health audits to ensure site personnel are performing the tasks in accordance with the Work Plan and this SSHP.

The UXOSO/SSHO will also complete the Site-Specific Hazard Communication Checklist (see **Attachment 1**) and ensure that it is kept up to date.

ATTACHMENT 1

SITE-SPECIFIC HAZARD COMMUNICATION PLAN/CHECKLIST

SITE-SPECIFIC HAZARD COMMUNICATION PLAN/CHECKLIST

To ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will use this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communication Program as a means of meeting site- or location-specific requirements.

Although responsibilities for activities within this document are the primary responsibility of the WESTON UXO Safety Officer (UXOSO/SSHO), it is the responsibility of all WESTON and subcontractor personnel to ensure compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.

To ensure that information about the dangers of all hazardous chemicals used by WESTON is known by all affected employees, the following hazard communication program has been established. All affected personnel will participate in the hazard communication program. This written program, as well as WESTON's Corporate Hazard Communication Program, will be available for review by any employee, employee representative, representative of Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH), or any affected employer/employee on a multi-employer site.

☐ Site or other location name/address: Mount Gretna TCAR - West MRS
☐ Project Manager: Chris Kane
☐ Site/Location Safety Officer: Doug Gates
☐ List of chemicals compiled, format: HASP: ⊗ Other:
☐ Location of SDS Files: UXOSO/SSHO vehicle
☐ Training Conducted by: Name: Date:
☐ Indicate format of training documentation: Field Log: ☒ Other: Follow-up meetings
☐ Client briefing conducted regarding hazard communication: Entry
☐ If multi-employer site (client, subcontractor, agency, etc.), indicate name of affected companies: Subcontractor
☐ Other employer(s) notified of chemicals, labeling, and SDS information: All subs and vendors:
☐ Has WESTON been notified of other employer's or client's hazard communication program(s) as necessary?

List of Hazardous Chemicals

A list of known hazardous chemicals used by WESTON personnel must be prepared and available in a centrally identified location with the Safety Data Sheets (SDSs). Further information on each chemical may be obtained by reviewing the appropriate SDSs. The list will be arranged to enable cross-reference with the SDS file and the label on the container.

Container Labeling

The UXOSO/SSHO will verify that all containers received from the chemical manufacturer, importer, or distributor for uses on-site are clearly labeled.

The UXOSO/SSHO is responsible for ensuring that labels are placed where required and for comparing SDS and other information with label information to ensure correctness.

Safety Data Sheets (SDSs)

The SDSs will be obtained for all hazardous materials to be used in performance of this contract in accordance with Federal Acquisition Regulation (FAR) 52.223-3. These SDSs and an inventory of hazardous material will be compiled prior to bringing the material on-site. SDSs will be maintained at the job site and available to all employees and inspectors. The subcontractor must have an active Hazardous Communication Program in place for all employees as required by Code of Federal Regulations (CFR) 29 CFR 1910.1200. To assist this effort, the UXOSO/SSHO is responsible for establishing and monitoring WESTON's SDS program for the location. The UXOSO/SSHO will ensure procedures are developed to obtain the necessary SDSs and will review incoming SDSs for new or significant health and safety information. He/she will inform affected employees of any new information. If an SDS is not received at the time of initial shipment, the UXOSO/SSHO will contact the manufacturer and request delivery of an SDS for that product, in accordance with the requirements of WESTON's Written Hazard Communication Program.

The UXOSO/SSHO will maintain an SDS file that contains a log of, and copies of, SDSs for all hazardous chemicals in use at the site, and inform all site workers of the file's location. The SDSs will be readily available to all employees during each work shift. If an SDS is not available, immediately contact the WESTON UXOSO/SSHO or designated alternate. When a revised SDS is received, the UXOSO/SSHO will immediately replace the old SDS.

Employee Training and Information

The UXOSO/SSHO is responsible for the WESTON site-specific personnel training program. The UXOSO/SSHO will ensure that the following program information is supplied to all affected employees.

At the time of initial assignment for employees to the work site or whenever a new hazard is introduced into the work area, employees will attend a health and safety meeting or briefing that includes the information indicated below:

- Hazardous chemicals present at the work site.
- Physical and health risks of the hazardous chemicals.
- Signs and symptoms of overexposure.
- Procedures to follow if employees are overexposed to hazardous chemicals.
- Location of the SDS file and written hazard communication program.
- How to determine the presence or release of hazardous chemicals in the employee's work area.
- How to read labels and review SDSs to obtain hazard information.
- Steps WESTON has taken to reduce or prevent exposure to hazardous chemicals.
- How to reduce or prevent exposure to hazardous chemicals through use of control procedures, work practices, and personal protective equipment (PPE).
- Hazardous, nonroutine tasks to be performed (if any).
- Chemicals within unlabeled piping (if any).

Hazardous Nonroutine Tasks

When employees are required to perform hazardous nonroutine tasks, the UXOSO/SSHO will provide affected employee(s) with information about the hazardous chemicals he or she may be using during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps WESTON is using to reduce the hazards. These steps include, but are not limited to, ventilation, respirators, presence of another employee, and emergency procedures.

Multi-Employer Worksites

The UXOSO/SSHO is responsible for providing other employers with information about hazardous chemicals imported by WESTON to which their employees may be exposed, along with suggested safety precautions. The UXOSO/SSHO is responsible for obtaining information about hazardous chemicals used by other employers and that WESTON employees may be exposed to. WESTON's chemical list will be made available to other employers upon request. The SDSs will be provided as necessary.

The location, format, and/or procedures for accessing SDS information must be relayed to affected employees.

Hazardous Chemicals

Potentially Brought to Site

The hazardous materials that may be used on-site are presented in the following list, and Safety Data Sheets (SDSs) for all reagent type chemicals, solutions, or other identified materials are presented in **Attachment 2**. All subcontractors and other parties working nearby will be informed of the presence of these chemicals and the location of the SDSs.

Chemical Name	Quantity
Liquinox	**1 bottle**
Gasoline	**5 gallons**
Motor oil	**1 quart**
Diesel fuel	**5 gallons**
Lubricating grease	**1 tube**
Fire extinguisher	**One 10-lb**

ATTACHMENT 2

SAFETY DATA SHEETS

MATERIAL SAFETY DATA SHEET

LIQUINOX®

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

ALCONOX

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	**LIQUINOX®**
CHEMICAL FAMILY NAME:	Detergent.
PRODUCT USE:	Critical-cleaning detergent for laboratory, healthcare and industrial applications
U.N. NUMBER:	Not Applicable
U.N. DANGEROUS GOODS CLASS:	Non-Regulated Material
SUPPLIER/MANUFACTURER'S NAME:	Alconox, Inc.
ADDRESS:	30 Glenn St., Suite 309, White Plains, NY 10603. USA
EMERGENCY PHONE:	**TOLL-FREE in USA/Canada** 800-255-3924
	International calls 813-248-0585
BUSINESS PHONE:	914-948-4040
DATE OF PREPARATION:	May 2011
DATE OF LAST REVISION:	February 2008

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a pale yellow liquid no odor. Exposure can be irritating to eyes, respiratory system and skin. It is a non-flammable liquid. The Environmental effects of this product have not been investigated.

US DOT SYMBOLS	CANADA (WHMIS) SYMBOLS	EUROPEAN and (GHS) Hazard Symbols
Non-Regulated	Not Controlled	None

Signal Word: **Caution!**

EU LABELING AND CLASSIFICATION:

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1
EC# 231-791-2 This substance is not classified in the Annex I of Directive 67/548/EEC
EC# 268-356-1 This substance is not classified in the Annex I of Directive 67/548/EEC
CAS# 84133-50-6 Not Listed in EU Chemical Inventory
EC# 232-483-0 This substance is not classified in the Annex I of Directive 67/548/EEC
EC# 215-090-9 This substance is not classified in the Annex I of Directive 67/548/EEC
EC# 241-543-5 This substance is not classified in the Annex I of Directive 67/548/EEC

GHS Hazard Classification(s):
None

Hazard Statement(s):
None

Precautionary Statement(s):
P264: Wash hands thoroughly after handling
P271: Use only in well ventilated area.

Hazard Symbol(s):
Not Classified

Risk Phrases:
None

Safety Phrases:
S24/25: Avoid contact with skin and eyes

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE: Exposure to this product may cause irritation of the eyes, respiratory system and skin. Ingestion may cause gastrointestinal irritation including pain, vomiting or diarrhea.

CHRONIC: This product contains an ingredient which may be corrosive.

TARGET ORGANS: ACUTE: Eye, respiratory System, Skin CHRONIC: None Known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Water	7732-18-5	231-791-2	Not Listed	40 – 60%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Sodium (C10 – C16) Alkylbenzene Sulfonate	68081-81-2	268-356-1	Not Listed	10 – 20%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Alcohol Ethoxylate	84133-50-6	Not Listed	Not Listed	1 – 5%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Coconut Diethanolamide	8051-30-7	232-483-0	Not Listed	1 – 5%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Sodium Xylene Sulfonate	1300-72-7	215-090-9	1514	2 – 7%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Tripotassium EDTA	17572-97-3	241-543-5	Not Listed	1 - 5%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Balance of other ingredients are non-hazardous or less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2004 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard *JIS Z 7250: 2000*.

SECTION 4 - FIRST-AID MEASURES

Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to health professional with contaminated individual.

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention if irritation persists.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing dificulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or MSDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or eye problems may be aggravated by prolonged contact.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

SECTION 5 - FIRE-FIGHTING MEASURES

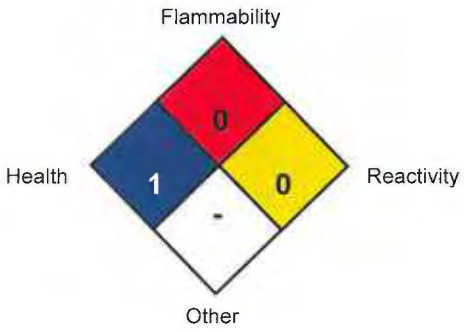
FLASH POINT: Not Flammable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): NA Upper (UEL): NA
FIRE EXTINGUISHING MATERIALS: As appropriate for surrounding fire. Carbon dioxide, foam, dry chemical, halon, or water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is non-flammable, however containers may rupture if exposed to heat or fire.

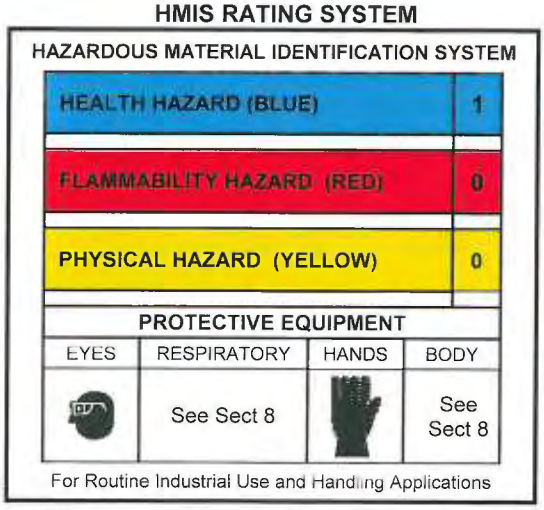
Explosion Sensitivity to Mechanical Impact: Not Sensitive.
Explosion Sensitivity to Static Discharge: Not Sensitive

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM



Hazard Scale: **0** = Minimal **1** = Slight **2** = Moderate **3** = Serious **4** = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.
SPILLS: Contain spill if safe to do so. Prevent entry into drains, sewers, and other waterways. Soak up with an absorbent material and place in an appropriate container for disposal. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing dusts generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Containers of this product must be properly labeled. Store containers in a cool, dry location. Keep container tightly closed when not in use. Store away from strong acids or oxidizers.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	SWA
Water	7732-18-5	Not Listed	Not Listed	Not Listed
Sodium (C10 – C16) Alkylbenzene Sulfonate	68081-81-2	Not Listed	Not Listed	Not Listed
Alcohol Ethoxylate	84133-50-6	Not Listed	Not Listed	Not Listed
Coconut Diethanolamide	8051-30-7	Not Listed	Not Listed	Not Listed
Sodium Xylene Sulfonate	1300-72-7	Not Listed	Not Listed	Not Listed
Tripotassium EDTA	17572-97-3	Not Listed	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below. Use local exhaust ventilation to control airborne dust. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact.. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE & ODOR:	Pale yellow liquid with no odor.
ODOR THRESHOLD (PPM):	Not Available
VAPOR PRESSURE (mmHg):	17 @ 20°C (68°F)
VAPOR DENSITY (AIR=1):	>1
BY WEIGHT:	Not Available
EVAPORATION RATE (nBuAc = 1):	<1
BOILING POINT (C°):	100°C (212°F)
FREEZING POINT (C°):	Not Available
pH:	8.5
SPECIFIC GRAVITY 20°C: (WATER =1)	1.083
SOLUBILITY IN WATER (%)	Complete
COEFFICIENT OF WATER/OIL DIST.:	Not Available
VOC:	None
CHEMICAL FAMILY:	Detergent

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable
DECOMPOSITION PRODUCTS: When heated to decomposition this product produces Oxides of carbon (COx), and Hydrocarbons
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids and strong oxidizing agents.
HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Contact with incompatible materials.

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is not available for mixture:

SUSPECTED CANCER AGENT: None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore is not considered to be, nor suspected to be a cancer-causing agent by these agencies.
IRRITANCY OF PRODUCT: Contact with this product can be irritating to exposed skin, eyes and respiratory system.
SENSITIZATION OF PRODUCT: This product is not considered a sensitizer.
REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.
ENVIRONMENTAL STABILITY: No Data available at this time.
EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on this product's effects on aquatic life.

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.
PROPER SHIPPING NAME: Non-Regulated Material
HAZARD CLASS NUMBER and DESCRIPTION: Not Applicable
UN IDENTIFICATION NUMBER: Not Applicable
PACKING GROUP: Not Applicable.
DOT LABEL(S) REQUIRED: Not Applicable
NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): Not Applicable
MARINE POLLUTANT: None of the ingredients are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

U.S. DEPARTMENT OF TRANSPORTATION (DOT) SHIPPING REGULATIONS:
This product is not classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:
This product is not classified as Dangerous Goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):
This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:
This product is not classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):
This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): None of the ingredients are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a Not Controlled Product, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory if Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett Global Safety Management, 10006 Cross Creek Blvd. Suite 440, Tampa, FL 33647

Disclaimer: To the best of Alconox, Inc. knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness is not guaranteed and no warranties of any type either express or implied are provided. The information contained herein relates only to this specific product.

ANNEX:

IDENTIFIED USES OF LIQUINOX® AND DIRECTIONS FOR USE

Used to clean: Healthcare instruments, laboratory ware, vacuum equipment, tissue culture ware, personal protective equipment, sampling apparatus, catheters, tubing, disk drives, clean rooms, medical devices, optical parts, electronic components, pharmaceutical apparatus, cosmetics manufacturing equipment, metal castings, forgings and stampings, industrial parts, pipes, tanks and reactors. Authorized by USDA for use in federally inspected meat and poultry plants. Passes inhibitory residue test for water analysis. Used for phosphate sensitive analysis ware. FDAcertified. Used to remove: Soil, grit, grime, slime, grease, oils, blood, tissue, particulates, deposits, chemical and solvents.

Surfaces cleaned: Corrosion inhibited formulation recommended for glass, metal, stainless steel, porcelain, ceramic, plastic, cement and fiberglass. Can be used on soft metals such as copper, aluminum, zinc and magnesium if rinsed promptly. Used for art restoration. Corrosion testing may be advisable.

Cleaning method: Soak, brush, sponge, cloth, ultrasonic, flow through clean-inplace. Will foam—not for spray or machine use.

Directions: Make a fresh 1% solution (2 1/2 Tbsp. per gal., 1 1/4 oz. per gal. or 10 ml per liter) in cold, warm or hot

water. If available, use warm water. Use cold water for blood stains. For difficult soils, raise water temperature and use more detergent. Clean by soak, circulate, wipe or ultrasonic method. Not for spray machines, will foam. RINSE THOROUGHLY—preferably with running water. For critical cleaning, do final or all rinsing in distilled, deionized or purified water. For food contact surfaces, rinse with potable water. Used on a wide range of glass, ceramic, plastic and metal surfaces. Corrosion testing may be advisable.

EXXON -- EXXON GASOLINE, 030000 - 00380 -- 9130-00F005173

========== Product Identification ==========

Product ID:EXXON GASOLINE, 030000 - 00380
MSDS Date:01/01/1987
FSC:9130
NIIN:00F005173
MSDS Number: BBRXG
=== Responsible Party ===
Company Name:EXXON/HOUSTON, TX 77001
Emergency Phone Num:(713) 656-3424
CAGE:FO023
=== Contractor Identification ===
Company Name:EXXON COMPANY U.S.A.
Box:2180
City:HOUSTON
State:TX
ZIP:77252-2180
Country:US
Phone:713-656-5949 / 713-656-3424
CAGE:29700
Company Name:EXXON/HOUSTON, TX 77001
CAGE:FO023

========== Composition/Information on Ingredients ==========

Ingred Name:BENZENE (SARA III)
CAS:71-43-2
RTECS #:CY1400000
Fraction by Wt: 4.9%
OSHA PEL:1PPM/5STEL;1910.1028
ACGIH TLV:10 PPM; A2; 9192
EPA Rpt Qty:10 LBS
DOT Rpt Qty:10 LBS

Ingred Name:HEXANE (N-HEXANE)
CAS:110-54-3
RTECS #:MN9275000
Fraction by Wt: 1-3%
OSHA PEL:500 PPM
ACGIH TLV:50 PPM; 9293
EPA Rpt Qty:1 LB
DOT Rpt Qty:1 LB

Ingred Name:TOLUENE (SARA III)
CAS:108-88-3
RTECS #:XS5250000
Fraction by Wt: 50%
OSHA PEL:200 PPM/150 STEL
ACGIH TLV:50 PPM; 9293
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:XYLENES (O-,M-,P- ISOMERS) (SARA III)
CAS:1330-20-7
RTECS #:ZE2100000
Fraction by Wt: 50%
OSHA PEL:100 PPM/150 STEL

ACGIH TLV:100 PPM/150STEL;9192
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:TETRAETHYL LEAD (SARA III)
CAS:78-00-2
RTECS #:TP4550000
OSHA PEL:S, 0.075MG/M3(PB)
ACGIH TLV:S, 0.1 MG/M3(PB)9192
EPA Rpt Qty:10 LBS
DOT Rpt Qty:10 LBS

========== Hazards Identification ==========

Effects of Overexposure:SKIN & EYE IRRIT, RESP TRACT, HEADACHES, DIZZINESS, ANESTHETIC, UNCONSCIOUSNESS, CNS EFFECT.

========== First Aid Measures ==========

First Aid:IF SPLASHED, FLUSH EYES W/WATER FOR 15 MINS. CALL A PHYS. IN CASE OF SKIN CONTACT, REMOVE ANY CONTAMINATED CLOTHING/WASH W/SOAP & WATER. INHALATION: IF OVERCOME BY VAPOR, REMOVE FROM EXPOSURE/CALL A P HYS. IF INGESTED, DON'T INDUCE VOMITING.

========== Fire Fighting Measures ==========

Flash Point:(-36F)
Lower Limits:1.4%
Upper Limits:7.6%
Extinguishing Media:USE DRY CHEMICAL, FOAM OR CO2
Fire Fighting Procedures:WATER MAY BE INEFFECTIVE. WATER COOL CONTAINERS.
Unusual Fire/Explosion Hazard:IF A LEAK OR SPILL HAS IGNITED/USE WATER TO DISPERSE THE VAPORS/PROTECT MEN ATTEMPTING TO STOP LEAK.

========== Accidental Release Measures ==========

Spill Release Procedures:SHUT OFF/ELIMINATE ALL IGNITION SOURCES. KEEP PEOPLE AWAY. RECOVER FREE PRODUCT. ADDAND, EARTH OR OTHER SUITABLE ABSORBENT TO SPILL AREA. MINIMIZE BREATHINGAPORS. MINIMIZE SKIN CONTACT. VENTILATE CONF INED SPACES. OPEN ALL WINDOWDOORS.

========== Handling and Storage ==========

Handling and Storage Precautions:KEEP CONTAINERS CLOSED WHEN NOT IN USE. DON'T HANDLE OR STORE NEAR HEAT, SPARKS, FLAME OR STRO OXIDANTS. ADEQUATE VENTILATION REQUIRED.
Other Precautions:FOR USE AS A MOTOR FUEL ONLY. DON'T USE AS A CLEANING SOLVENT/THINNER/OTHER NON-MOTOR FUEL USES. DON'T SIPHON BY MOUTH. MIN TS OF LIQ GASOLINE ASPIRATED INTO LUNGS CAUSE CHEM PNEUMONITIS

========== Exposure Controls/Personal Protection ==========

Respiratory Protection:USE AIR-SUPPLIED RESP PROTECTION IN CONFINED OR ENCLOSED SPACES.
Ventilation:PROVIDE >60 FEET PER MINUTE HOOD FACE VELOCITY.
Protective Gloves:CHEM-RESISTANT
Eye Protection:SPLASH GOGGLES/FACESHIELD
Other Protective Equipment:USE CHEMICAL-RESISTANT APRON OR OTHER IMPERVIOUS CLOTHING.

Supplemental Safety and Health
MSDS DATE: 07/01/85

========== Physical/Chemical Properties ==========

Boiling Pt:B.P. Text:70F
Vapor Density:5
Spec Gravity:0.74
Solubility in Water:NEGLIGIBLE
Appearance and Odor:CLEAR COLORED LIQ (ORANGE) GASOLINE HYDROCARBON
Percent Volatiles by Volume:100%

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG OXIDANTS/LIQUID CHLORINE/OXYGEN/CALCIUM HYPOCHLORITE.
Stability Condition to Avoid:WILL NOT REACT VIOLENTLY WITH WATER.
Hazardous Decomposition Products:FUMES, SMOKE, CO, ALDEHYDES & OTHER DECOMPOSITION PRODUCTS.

========== Disposal Considerations ==========

Waste Disposal Methods:KEEP PRODUCT OUT OF SEWERS & WATERCOURSES BY DIKING OR IMPOUNDING. ASSURE CONFORMITY WITH APPLICABLE GOVERNMENTAL REGULATIONS. CONTINUE TO OBSERVE PRECAUTIONS FOR VOLATILE, FLAMMABLE VAPORS FROM ABSOR BED MATERIAL.

Safety Data Sheet

Material Name: Hess 10W40 Motor Oil

SDS No. 14292
US GHS

Synonyms: Valvoline Product Code 52670414

* * * Section 1 - Product and Company Identification * * *

Manufacturer Information

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC
www.hess.com (Environment, Health, Safety Internet Website)

* * * Section 2 - Hazards Identification * * *

GHS Classification:

Skin Corrosion/Irritation – Category 2
Specific Target Organ Toxicity – Category 3 (narcosis)
Carcinogenicity - Category 1B

GHS LABEL ELEMENTS

Symbol(s)

Signal Word

WARNING

Hazard Statements

Causes skin irritation.
May cause cancer.
May cause drowsiness or dizziness.

Precautionary Statements

Prevention

Wash hands and forearms thoroughly after handling.
Wear protective gloves/protective clothing/eye protection.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing fume/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.

Response

If on skin: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention.
If exposed or concerned: Get medical advice/attention.
If inhaled: Remove person to fresh air and keep in a position comfortable for breathing. Call poison center or doctor if you feel unwell.

Storage

Store locked up.
Store in a well-ventilated place.
Keep container tightly closed.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
64742-65-0	Petroleum distillates, solvent dewaxed heavy paraffinic	83-93

Petroleum-based lubricating oil with detergent/dispersant engine oil package with zinc compounds.

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

If symptoms develop, move individual away from exposure and into fresh air. Flush eyes gently with water while holding eyelids apart. If symptoms persist or there is visual difficulty, seek medical attention.

First Aid: Skin

Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention. Launder clothing before reuse.

First Aid: Ingestion

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

First Aid: Inhalation

Remove person to fresh air. If person is not breathing provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

First Aid: Notes to Physician

Acute aspiration of large amounts of oil-laden material may produce a serious aspiration hazard. Patients who aspirate these oils should be followed for the development of long-term sequelae. Repeated aspiration of mineral oil can produce chronic inflammation of the lungs (i.e. lipoid pneumonia) that may progress to pulmonary fibrosis. Symptoms are often subtle and radiological changes appear worse than clinical abnormalities. Occasionally, persistent cough, irritation of the upper respiratory tract, shortness of breath with exertion, fever, and bloody sputum occur. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities. Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

See Section 9 for Flammability Properties.
Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. No special fire hazards are known to be associated with this product. Dense smoke may be generated while burning.

Hazardous Combustion Products

May form: carbon dioxide and carbon monoxide, oxides of sulfur, nitrogen and phosphorous, various hydrocarbons.

Extinguishing Media

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or gaseous extinguishing agent.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Unsuitable Extinguishing Media

None

Fire Fighting Equipment/Instructions

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

* * * Section 6 - Accidental Release Measures * * *

Recovery and Neutralization

Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

SMALL SPILL: Absorb liquid on vermiculite, floor absorbent or other absorbent material. Persons not wearing proper personal protective equipment should be excluded from area of spill.

LARGE SPILL: Prevent run-off to sewers, streams, or other bodies of water. If run-off occurs, notify authorities as required, that a spill has occurred. Persons not wearing proper personal protective equipment should be excluded from area of spill until clean-up has been completed.

Emergency Measures

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Personal Precautions and Protective Equipment

Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions

Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards

None

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Handle as a combustible liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

Storage Procedures

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks."

Incompatibilities

Avoid contact with: acids, halogens, strong oxidizing agents.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component Exposure Limits

ACGIH, OSHA, and NIOSH have not developed exposure limits for any of this product's components.

Engineering Measures

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands

Not normally required. However, wear resistant gloves such as nitrile rubber to prevent irritation which may result from prolonged or repeated skin contact with product.

Personal Protective Equipment: Eyes

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body

To prevent repeated or prolonged skin contact, wear impervious clothing and boots. Wear normal work clothing covering arms and legs.

Hygiene Measures

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance:	Dry, clear and bright	**Odor:**	None
Physical State:	Liquid	**pH:**	ND
Vapor Pressure:	ND	**Vapor Density:**	ND
Boiling Point:	>425 °F (218.3°C) @ 760.00 mmHg	**Melting Point:**	ND
Solubility (H2O):	Negligible	**Specific Gravity:**	0.881 @ 60°F (16°C)
Evaporation Rate:	Slower than ethyl ether	**VOC:**	ND
Viscosity:	<= 3300.0 cps @ -20°C; 13.5 - 14.5 cst @ 100°C	**Octanol/H2O Coeff.:**	ND
Flash Point:	435 °F (223.8 °C)	**Flash Point Method:**	COC
Upper Flammability Limit (UFL):	ND	**Lower Flammability Limit (LFL):**	ND
Burning Rate:	ND	**Auto Ignition:**	ND

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

This is a stable material.

Hazardous Reaction Potential

Will not occur.

Conditions to Avoid

None

Incompatible Products

Avoid contact with: acids, halogens, strong oxidizing agents.

Hazardous Decomposition Products

May form: aldehydes, carbon dioxide and carbon monoxide, hydrogen sulfide, oxides of sulfur, nitrogen and phosphorus, toxic fumes, various hydrocarbons.

* * * Section 11 - Toxicological Information * * *

Acute Toxicity

A: General Product Information

Harmful if large amounts are swallowed.

B: Component Analysis - LD50/LC50

Petroleum distillates, solvent dewaxed heavy paraffinic (64742-65-0)

Inhalation LC50 Rat >4.7 mg/L 4 h; Oral LD50 Rat >5000 mg/kg; Dermal LD50 Rabbit >5000 mg/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness

May cause mild skin irritation. Prolonged or repeated contact may dry the skin. Symptoms include redness, burning, drying and cracking of the skin, and skin burns. Additional symptoms of skin contact include: acne. Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

May cause mild eye irritation. Symptoms include stinging, tearing, and redness.

Potential Health Effects: Ingestion

Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful.

Potential Health Effects: Inhalation

It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms usually occur at air concentrations higher than the recommended exposure limits.

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity

This product is not reported to have any mutagenic effects.

Carcinogenicity

A: General Product Information

May cause cancer.

Used motor oil has been shown to cause skin cancer in laboratory animal continually exposed by repeated applications.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Reproductive Toxicity

This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Single Exposure

This product is not reported to have any specific target organ general toxicity single exposure effects.

Specified Target Organ General Toxicity: Repeated Exposure

This product is not reported to have any specific target organ general toxicity repeat exposure effects.

Aspiration Respiratory Organs Hazard

Acute aspiration of large amounts of oil-laden material may produce a serious aspiration hazard.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Petroleum distillates, solvent dewaxed heavy paraffinic (64742-65-0)

Test & Species	Conditions
96 Hr LC50 Oncorhynchus mykiss	>5000 mg/L
48 Hr EC50 Daphnia magna	>1000 mg/L

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Mobility in Soil

No information available.

* * * Section 13 - Disposal Considerations * * *

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 14 - Transportation Information * * *

DOT Information

Shipping Name: Not Regulated

* * * Section 15 - Regulatory Information * * *

Regulatory Information

Component Analysis

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

SARA Section 311/312 – Hazard Classes

Acute Health	Chronic Health	Fire	Sudden Release of Pressure	Reactive
X	X	--	--	--

SARA SECTION 313 - SUPPLIER NOTIFICATION

ZINC C1-C14 ALKYLDITHIOPHOSPHATE (CAS No. 68649-42-3)

State Regulations

Component Analysis - State

None of this product's components are listed on the state lists from CA, MA, MN, NJ, PA, or RI.

Component Analysis - WHMIS IDL

No components are listed in the WHMIS IDL.

Additional Regulatory Information

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Petroleum distillates, solvent dewaxed heavy paraffinic	64742-65-0	Yes	DSL	EINECS

* * * Section 16 - Other Information * * *

NFPA® Hazard Rating

Health	1
Fire	1
Reactivity	0

HMIS® Hazard Rating

Health	1*	Slight
Fire	1	Slight
Physical	0	Minimal
		*Chronic

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

Literature References

None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet

Material Safety Data Sheet

1. Product and company identification

Product name DIESEL FUEL NO. 2

MSDS # 11155

Code 11155

Product use Fuel.

Synonyms Ultra Low Sulfur No. 2 Amoco Premier Diesel Fuel, Ultra Low Sulfur No. 2 Amoco Premier Diesel Fuel – Winterized, Ultra Low Sulfur No. 2 BP Supreme Diesel, Low Sulfur No. 2 BP Diesel Fuel, Ultra Low Sulfur No. 2 BP Diesel Fuel, Ultra Low Sulfur No. 2 BP Diesel Fuel – Winterized

Supplier BP Products North America Inc.
150 West Warrenville Road
Naperville, Illinois 60563-8460
USA

EMERGENCY HEALTH INFORMATION: 1 (800) 447-8735

Outside the US: +1 703-527-3887 (CHEMTREC)

EMERGENCY SPILL INFORMATION: 1 (800) 424-9300 CHEMTREC (USA)

OTHER PRODUCT INFORMATION 1 (866) 4 BP - MSDS
(866-427-6737 Toll Free - North America)
email: bpcares@bp.com

2. Hazards identification

Physical state Liquid.

Color Colorless. to Various Colors. (May be dyed Red., Light Green. ,Yellow.)

Emergency overview WARNING !

COMBUSTIBLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.
HARMFUL IF SWALLOWED.
ASPIRATION HAZARD.
HARMFUL OR FATAL IF LIQUID IS ASPIRATED INTO LUNGS.
MAY CAUSE RESPIRATORY TRACT IRRITATION.
INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS, AND NAUSEA, AND MAY LEAD TO UNCONSCIOUSNESS.

Combustible liquid. Harmful if swallowed. Aspiration hazard if swallowed. Can enter lungs and cause damage. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. If ingested, do not induce vomiting. Avoid contact with eyes, skin and clothing. Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.

Potential health effects

Eyes Slightly irritating to the eyes.

Skin Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Inhalation May cause respiratory tract irritation. Inhalation causes headaches, dizziness, drowsiness and nausea and may lead to unconsciousness. See toxicological information (section 11).

Ingestion Harmful if swallowed. Aspiration hazard if swallowed. Can enter lungs and cause damage. See toxicological information (section 11).

See toxicological information (section 11)

3. Composition/information on ingredients

Ingredient name	CAS #	%
Petroleum distillates (Diesel Fuel No. 2)	68476-34-6	95 - 100
.		
Contains one or more of the following biodiesels:	Varies	0 - 5
soybean oil, me ester	67784-80-9	.
Fatty acids, sunflower-oil, Me esters	68919-54-0	.
Fatty acids methyl esters	67762-38-3	.
Fatty acids, vegetable-oil, Methyl esters	68990-52-3	.
rape oil, me ester	73891-99-3	.
Fatty acids, canola-oil, Me esters	129828-16-6	.
fatty acids, tallow, me esters	61788-61-2	.
Contains:		
Naphthalene	91-20-3	1 - 3

May also contain small quantities of proprietary performance additives.

4. First aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin contact Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation develops.

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. Fire-fighting measures

Flammability of the product Combustible liquid.

Auto-ignition temperature 257°C (494°F)

Flash point Closed cup: >38°C (>100.4°F) [Pensky-Martens.]

Explosion limits Lower: 0.6%
Upper: 7.5%

Fire/explosion hazards Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Unusual fire/explosion hazards Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Extinguishing media

Suitable In case of fire, use water fog, foam, dry chemicals, or carbon dioxide.

Not suitable Do not use water jet.

Fire-fighting procedures Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous combustion products Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)

Protective clothing (fire)

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards Do not use water jet.

6. Accidental release measures

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Personal protection in case of a large spill Chemical splash goggles. Chemical-resistant protective suit. Boots. Chemical-resistant gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested protective clothing might not be adequate. Consult a specialist before handling this product. CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

Methods for cleaning up

Large spill Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling Do not ingest. Never siphon by mouth. If ingested, do not induce vomiting. Put on appropriate personal protective equipment (see section 8). Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Storage Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Petroleum distillates	**ACGIH TLV (United States). Absorbed through skin.** TWA: 100 mg/m³, (measured as total hydrocarbons) 8 hour(s). Issued/Revised: 1/2002 Form: Total hydrocarbons
Naphthalene	**ACGIH TLV (United States).** STEL: 79 mg/m³ 15 minute(s). Issued/Revised: 5/1996 STEL: 15 ppm 15 minute(s). Issued/Revised: 5/1996 TWA: 52 mg/m³ 8 hour(s). Issued/Revised: 5/1996 TWA: 10 ppm 8 hour(s). Issued/Revised: 5/1996 **OSHA PEL (United States).** TWA: 50 mg/m³ 8 hour(s). Issued/Revised: 6/1993

TWA: 10 ppm 8 hour(s). Issued/Revised: 6/1993

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Some states may enforce more stringent exposure limits.

Control Measures

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Personal protection

Eyes

Avoid contact with eyes. Safety glasses with side shields.

Skin and body

Avoid contact with skin and clothing. Wear suitable protective clothing.

Respiratory

Use only with adequate ventilation. Do not breathe vapor or mist. If ventilation is inadequate, use a NIOSH-certified respirator with an organic vapor cartridge and P95 particulate filter.

CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

Hands

Wear gloves that cannot be penetrated by chemicals or oil.

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Consult your supervisor or Standard Operating Procedure (S.O.P) for special handling instructions.

9. Physical and chemical properties

Physical state

Liquid.

Color

Colorless. to Various Colors. (May be dyed Red., Light Green. ,Yellow.)

Odor

Petroleum

Flash point

Closed cup: >38°C (>100.4°F) [Pensky-Martens.]

Explosion limits

Lower: 0.6%
Upper: 7.5%

Auto-ignition temperature

257°C (494°F)

Specific gravity

<1 [Water = 1]

Density

820 to 875 kg/m^3 (0.82 to 0.875 g/cm^3)

Viscosity

Kinematic: 1.7 to 4.1 mm^2/s (1.7 to 4.1 cSt) at 40°C

Solubility

negligible <0.1%

10. Stability and reactivity

Stability and reactivity

Stable under recommended storage and handling conditions (see section 7).

Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid

Keep away from heat, sparks and flame. Avoid all possible sources of ignition (spark or flame).

Incompatibility with various substances

Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis. halogenated compounds.

Hazardous decomposition products carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)

Hazardous polymerization Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity

Classification

Product/ingredient name	IARC	NTP	OSHA
Naphthalene	2B	Possible	-
fuel, diesel no. 2	3	-	-

IARC :
2B - Possible carcinogen to human.
3 - Not classifiable as a human carcinogen.

NTP :
Possible - Reasonably anticipated to be human carcinogens.

Other Toxicity Data

Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Do not siphon by mouth.

Middle distillate: From skin-painting studies of petroleum distillates of similar composition and distillate range, it has been shown that these types of materials often possess weak carcinogenic activity in laboratory animals. In these tests, the material is painted on the shaved backs of mice twice a week for their lifetime. The material is not washed off between applications. Therefore, there may be a potential risk of skin cancer from prolonged or repeated skin contact with this product in the absence of good personal hygiene. This particular product has not been tested for carcinogenic activity, but we have chosen to be cautious in light of the findings with other distillate streams.

Occasional skin contact with this product is not expected to have serious effects, but good personal hygiene should be practiced and repeated skin contact avoided. This product can also be expected to produce skin irritation upon prolonged or repeated skin contact. Personal hygiene measures taken to prevent skin irritation are expected to be adequate to prevent risk of skin cancer.

Diesel exhaust particulates have been classified by the National Toxicological Program (NTP) to be a reasonably anticipated human carcinogen. Exposure should be minimized to reduce potential risk.

Naphthalene has been reported to cause developmental toxicity in mice after oral exposure to relatively high dose levels, but developmental toxicity was not observed in NTP (National Toxicology Program) sponsored studies in rats and rabbits. Ingestion or inhalation of naphthalene can result in hemolysis and other blood abnormalities, and individuals (and infants) deficient in glucose-6-phosphate dehydrogenase may be especially susceptible to these effects. Inhalation of naphthalene may cause headache and nausea. Airborne exposure can result in eye irritation. Naphthalene exposure has been associated with cataracts in animals and humans.

Other information

Potential chronic health effects

Carcinogenicity Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.

12. Ecological information

Ecotoxicity

No testing has been performed by the manufacturer.

Mobility Spillages may penetrate the soil causing ground water contamination.

Bioaccumulative potential This product is not expected to bioaccumulate through food chains in the environment.

Other ecological information

Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13. Disposal considerations

Waste information

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal

14. Transport information

International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information
DOT Classification	NA 1993	Diesel fuel	3	III	-
TDG Classification	UN 1202	Gas oil	3	III	-
IMDG Classification	UN 1202	Gas oil	3	III	**Remarks** Marine pollutant
IATA/ICAO Classification	UN 1202	Gas oil	3	III	**Remarks** Environmentally hazardous substance mark.

15. Regulatory information

U.S. Federal Regulations

United States inventory (TSCA 8b)

All components are listed or exempted.

TSCA 12(b) one-time export: Naphthalene

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Naphthalene
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: DIESEL FUEL NO. 2: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	Naphthalene	91-20-3	1.0035 - 3.0111
Supplier notification	Naphthalene	91-20-3	1.0035 - 3.0111

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):

CERCLA: Hazardous substances.: o-Xylene: 1000 lbs. (454 kg); Naphthalene: 100 lbs. (45.4 kg); benzo[def]chrysene: 1 lb. (0.454 kg); Ethylbenzene: 1000 lbs. (454 kg); xylene: 100 lbs. (45.4 kg); Cumene: 5000 lbs. (2270 kg); Phenol: 1000 lbs. (454 kg); Benzene: 10 lbs. (4.54 kg); Alkylaryl sulfonic acid: 1000 lbs. (454 kg); Toluene: 1000 lbs. (454 kg); Methanol: 5000 lbs. (2270 kg); 2-Butoxyethanol;

State regulations

Massachusetts Substances	The following components are listed: NAPHTHALENE
New Jersey Hazardous Substances	The following components are listed: DIESEL FUEL; # 2 HEATING OIL; NAPHTHALENE; MOTH FLAKES
Pennsylvania RTK Hazardous Substances	The following components are listed: NAPHTHALENE
California Prop. 65	**WARNING:** This product contains a chemical known to the State of California to cause cancer. Naphthalene; Ethylbenzene; benzo[def]chrysene **WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Toluene **WARNING:** This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. Benzene Prop 65 chemicals will result under certain conditions from the use of this material. For example, burning fuels produces combustion products including diesel exhaust, a Prop 65 carcinogen, and carbon monoxide, a Prop 65 reproductive toxin.

Inventories

Canada inventory	Not determined.
Europe inventory	At least one component is not listed.
Australia inventory (AICS)	At least one component is not listed.
China inventory (IECSC)	Not determined.
Japan inventory (ENCS)	At least one component is not listed.
Korea inventory (KECI)	At least one component is not listed.
Philippines inventory (PICCS)	At least one component is not listed.

16. Other information

Label requirements

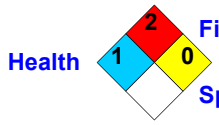
WARNING !

COMBUSTIBLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.
HARMFUL IF SWALLOWED.
ASPIRATION HAZARD.
HARMFUL OR FATAL IF LIQUID IS ASPIRATED INTO LUNGS.
MAY CAUSE RESPIRATORY TRACT IRRITATION.
INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS, AND NAUSEA, AND MAY LEAD TO UNCONSCIOUSNESS.

HMIS® Rating :

Health	*	**1**
Flammability		**2**
Physical Hazard		**0**
Personal protection		**X**

National Fire Protection Association (U.S.A.)



History

Date of issue 07/20/2010.

Date of previous issue 07/20/2010.

Prepared by Product Stewardship

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

CHEMTOOL INCORPORATED

MATERIAL SAFETY DATA SHEET
CAT ADVANCED 3MOLY GREASE (NLGI #2)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME CAT ADVANCED 3MOLY GREASE (NLGI #2)

PART No. 5P-0960, 7X-7699, 7X-7701, 9X-6489, 129-1922, 129-1924, 129-1926, 129-1952, 155-0708, 155-0709, 155-0710, 155-0711, 155-0712, 155-0714, 155-0715, 155-0716

PRODUCT USE Lubricating Grease

SUPPLIER
Chemtool Incorporated
P.O. Box 538
8200 Ridgefield Road
Crystal Lake, IL 60039-0538 USA
Tel: (815) 459-1250
Fax: (815) 459-1955

EMERGENCY TELEPHONE
Rocky Mountain Poison Center Denver, Colorado
(800) 458-5924 U.S. and Canada.
(303) 893-1322 Outside U.S.

2. COMPOSITION, INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS No.	WEIGHT
PETROLEUM OILS, SOLVENT-DEWAXED (CAS NOS 64742-62-7 & 64742-65-0)	Mixture	30-50 %
DISTILLATES, PETROLEUM, HYDROTREATED HEAVY NAPHTHENIC	64742-52-5	20-40 %
OCTADECANOIC ACID, 12-HYDROXY-, MONOLITHIUM SALT	7620-77-1	7-13 %
RESIDUAL OILS, PETROLEUM, SOLVENT DEASPHALTED	64741-95-3	5-10 %
CARBONIC ACID CALCIUM SALT (COMMON NAME: CALCIUM CARBONATE)	471-34-1	3-7 %
*MOLYBDENUM SULFIDE (MoS2)	1317-33-5	1-5 %
*PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALTS	68649-42-3	1-2 %
*ANTIMONY DIALKYLDITHIOCARBAMATE (PROPRIETARY INGREDIENT# 20630)	Proprietary	<0.3 %

* This chemical(s) is hazardous according to OSHA/WHIMIS criteria

COMPOSITION COMMENTS

Refer to section eight for exposure limits on ingredients.
Chemical ingredients not regulated by OSHA, SARA, state or federal agencies are treated confidentially.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Not regarded as a health hazard under current legislation.

ACUTE EFFECTS

INHALATION Inhalation hazard at room temperature is unlikely due to the low volatility of this product. Heating can generate vapors that may cause respiratory irritation, nausea and headaches.

INGESTION May cause stomach pain or vomiting.

SKIN Prolonged or repeated contact leads to drying of skin.

EYES May be slightly irritating to eyes.

CHRONIC EFFECTS

SENSITIZATION No known information.

CARCINOGENICITY IARC: Not listed as a Group 1, 2A, or 2B agent. OSHA: Not regulated. NTP: Not listed.

TERATOGENICITY No known information.

HEALTH WARNINGS

INHALATION. Heating can generate vapors that may cause respiratory irritation, nausea and headaches. Inhalation hazard at room temperature is unlikely due to the low volatility of this product. SKIN CONTACT. Repeated or prolonged contact can result in drying of the skin. EYE CONTACT. Slightly irritating. INGESTION. Can cause stomach ache and vomiting.

OTHER INFORMATION

ROUTE OF ENTRY Inhalation. Skin and/or eye contact. Ingestion.

4. FIRST AID MEASURES

INHALATION Move the exposed person to fresh air at once. For breathing difficulties oxygen may be necessary. Get medical attention if any discomfort continues.

EYES Rinse with water. Contact physician if discomfort continues.

SKIN Remove contaminated clothing. Wash skin thoroughly with soap and water. Get medical attention if any discomfort continues.

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

INGESTION DO NOT INDUCE VOMITING! Get medical attention immediately!

5. FIRE FIGHTING MEASURES

FLASH POINT (°C)	232 (450°F) Cd OC (Cleveland open cup).
FLAMMABILITY LIMIT - LOWER(%)	N/D
FLAMMABILITY LIMIT - UPPER(%)	N/D
EXTINGUISHING MEDIA	Water spray, fog or mist. Foam. Carbon dioxide (CO2). Dry chemicals, sand, dolomite etc.
SPECIAL FIRE FIGHTING PROCEDURES	Use water to keep fire exposed containers cool and disperse vapors. Water spray may be used to flush spills away from exposures and dilute spills to non-flammable mixtures. Avoid water in straight hose stream; will scatter and spread fire. Keep run-off water out of sewers and water sources. Dike for water control.
UNUSUAL FIRE & EXPLOSION HAZARDS	Volume and pressure increases strongly when heated. Risk of container explosion in fire.
HAZARDOUS COMBUSTION PRODUCTS	Acrid smoke/fumes. Oxides of: Carbon. Phosphorus. Sulfur.
PROTECTIVE MEASURES IN CASE OF FIRE	Self-contained breathing equipment and chemical resistant clothing recommended.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS	Minimize skin contact.
PRECAUTIONS TO PROTECT THE ENVIRONMENT	Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses or extensive land areas. Assure conformity with applicable government regulations.
SPILL CLEAN-UP PROCEDURES	Provide good ventilation. Use appropriate protective clothing. Carefully collect spilled material in closed containers and leave for disposal according to local regulations. Do not let washing down water contaminate ponds or waterways. Rinse area with water.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS	Keep away from heat, sparks and open flame. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Containers should be kept tightly closed. Avoid spilling, skin and eye contact. Eye wash and emergency shower must be available at the work place.
STORAGE PRECAUTIONS	Keep away from heat, sparks and open flame. Store separated from: Acids. Oxidizing materials.
STORAGE CRITERIA	Chemical storage.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

COMPONENT	STD	TWA	STEL	TWA	STEL
PETROLEUM OILS, SOLVENT-DEWAXED (CAS NOS 64742-62-7 & 64742-65-0)	OSHA			5 mg/m3 **(1)	
	ACGIH			5 mg/m3 **(1)	10 mg/m3 **(1)

DISTILLATES, PETROLEUM, HYDROTREATED HEAVY NAPHTHENIC	OSHA	5 mg/m3 **(1)	
	ACGIH	5 mg/m3 **(1)	10 mg/m3 **(1)
RESIDUAL OILS, PETROLEUM, SOLVENT DEASPHALTED	OSHA	5 mg/m3 **(1)	
	ACGIH	5 mg/m3 **(1)	10 mg/m3 **(1)
CARBONIC ACID CALCIUM SALT (COMMON NAME: CALCIUM CARBONATE)	OSHA	5 mg/m3 **(2)	
	ACGIH	10 mg/m3 **(e)	
MOLYBDENUM SULFIDE (MoS2)	OSHA	10 mg/m3	
	ACGIH	10 mg/m3	
ANTIMONY DIALKYLDITHIOCARBAMATE (PROPRIETARY INGREDIENT# 20630)	OSHA	0.5 mg/m3	
	ACGIH	0.5 mg/m3	

INGREDIENT COMMENTS **(1) For respirable oil mist.

PROTECTIVE EQUIPMENT

ENGINEERING CONTROLS Use engineering controls to reduce air contamination to permissible exposure level.

VENTILATION No specific ventilation requirements noted, but forced ventilation may still be required if air contamination exceeds acceptable level.

RESPIRATORS No specific recommendation made, but respiratory protection may still be required under exceptional circumstances when excessive air contamination exists.

PROTECTIVE GLOVES Chemical resistant gloves required for prolonged or repeated contact. Use protective gloves made of: Neoprene, nitrile, polyethylene or PVC.

EYE PROTECTION Use eye protection.

PROTECTIVE CLOTHING Wear appropriate clothing to prevent repeated or prolonged skin contact.

HYGIENIC WORK PRACTICES Wash at the end of each work shift and before eating, smoking and using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE Grease.

COLOR Grey.

ODOR Mild (or faint).

SOLUBILITY DESCRIPTION Insoluble in water.

DENSITY	0.90	**Temperature (°C)**	16 (60°F)

VAPOR DENSITY (air=1)	> 5		
VAPOR PRESSURE	< 0.01 mmHg	**Temperature (°C)**	20 (68°F)
EVAPORATION RATE	< 1	**Reference**	BuAc=1
pH-VALUE, CONC. SOLUTION	N/A		

10. STABILITY AND REACTIVITY

STABILITY	Normally stable.
CONDITIONS TO AVOID	Avoid contact with acids and oxidizing substances.
HAZARDOUS POLYMERIZATION	Will not polymerize.
HAZARDOUS DECOMPOSITION PRODUCTS	Oxides of: Carbon. Phosphorus. Sulfur.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION	No experimental toxicological data on the preparation as such is available.
COMPONENT	**PETROLEUM OILS, SOLVENT-DEWAXED (CAS NOS 64742-62-7 & 64742-65-0)**
TOXICOLOGICAL INFORMATION	---Based on testing of similar products and/or the components, per the manufacturer.
TOXIC DOSE - LD 50	> 2000 mg/kg (oral rat)
TOXIC DOSE - LD 50 SKIN	> 2000 mg/kg (skn rbt)
TOXIC CONC. - LC 50	> 5 mg/l/4h (inh-rat)
IRRITATION	EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less).
COMPONENT	**DISTILLATES, PETROLEUM, HYDROTREATED HEAVY NAPHTHENIC**
TOXIC DOSE - LD 50	> 5000 mg/kg (oral rat)
TOXIC DOSE - LD 50 SKIN	> 2000 mg/kg (skn rbt)
CARCINOGENICITY	The petroleum base oil contained in this product has been highly refined to remove aromatics and improve performance characteristics. The base oil is not listed as a carcinogen by NTP, IARC, or OSHA.
COMPONENT	**OCTADECANOIC ACID, 12-HYDROXY-, MONOLITHIUM SALT**
TOXIC DOSE - LD 50	N/A.
TOXIC CONC. - LC 50	N/A.
COMPONENT	**RESIDUAL OILS, PETROLEUM, SOLVENT DEASPHALTED**
TOXIC DOSE - LD 50	> 5000 mg/kg (oral rat)
TOXIC DOSE - LD 50 SKIN	> 2000 mg/kg (skn rbt)
CARCINOGENICITY	Base oils in this product cntain < 3% DMSO Extractable total polycyclic aromatic compound (PAC) per IP 346.
COMPONENT	**PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALTS**
TOXIC DOSE - LD 50	> 2000 mg/kg (oral rat)

TOXIC DOSE - LD 50 SKIN > 2000 mg/kg (skn rbt)

12. ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION No data on possible environmental effects have been found.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations.

14. TRANSPORT INFORMATION

DOT HAZARD CLASS Not regulated.

TDGR CLASS Not Regulated. Non réglementé.

SEA TRANSPORT NOTES Not regulated per IMDG.

AIR TRANSPORT NOTES Not regulated per IATA.

15. REGULATORY INFORMATION

US FEDERAL REGULATIONS

COMPONENT	SARA 302	CERCLA	SARA 313
PETROLEUM OILS, SOLVENT-DEWAXED (CAS NOS 64742-62-7 & 64742-65-0)	No	No	No
DISTILLATES, PETROLEUM, HYDROTREATED HEAVY NAPHTHENIC	No	No	No
OCTADECANOIC ACID, 12-HYDROXY-, MONOLITHIUM SALT	No	No	No
RESIDUAL OILS, PETROLEUM, SOLVENT DEASPHALTED	No	No	No
CARBONIC ACID CALCIUM SALT (COMMON NAME: CALCIUM CARBONATE)	No	No	No
MOLYBDENUM SULFIDE (MoS2)	No	No	No
PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALTS	No	***	N982 - Zn
ANTIMONY DIALKYLDITHIOCARBAMATE (PROPRIETARY INGREDIENT# 20630)	No	***	N010 - Sb

REGULATORY STATUS *** Indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985). Values in Section 313 column represent Category Codes for reporting under Section 313.

CLEAN AIR ACT

SARA(311/312) HAZARD CATEGORIES None

US STATE REGULATIONS

COMPONENT	CAS No	CA	FL	MA	MN	NJ	PA	RI
ANTIMONY DIALKYLDITHIOCARBAMATE (PROPRIETARY INGREDIENT# 20630)	CAT NA				Yes		EH	
PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALTS	CAT NA				Yes	Yes	EH	

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM - WHMIS

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

CONTROLLED PRODUCT CLASSIFICATION

Not a controlled product.

	INVENTORIES							
COMPONENT	CAN	US	EU	AUS	JAP	KOR	CHN	PHLP
PETROLEUM OILS, SOLVENT-DEWAXED (CAS NOS 64742-62-7 & 64742-65-0)	DSL	Yes	EINECS	Yes	Yes	Yes	Yes	Yes
DISTILLATES, PETROLEUM, HYDROTREATED HEAVY NAPHTHENIC	DSL	Yes	EINECS	Yes	Yes	Yes	Yes	Yes
OCTADECANOIC ACID, 12-HYDROXY-, MONOLITHIUM SALT	DSL	Yes	EINECS	Yes	Yes	Yes	Yes	Yes
RESIDUAL OILS, PETROLEUM, SOLVENT DEASPHALTED	DSL	Yes	EINECS	Yes	Yes	Yes	Yes	Yes
CARBONIC ACID CALCIUM SALT (COMMON NAME: CALCIUM CARBONATE)	DSL	Yes	EINECS	Yes	Yes	Yes	Yes	Yes
MOLYBDENUM SULFIDE (MoS2)	DSL	Yes	EINECS	Yes	Yes	Yes	Yes	Yes
PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALTS	DSL	Yes	EINECS	Yes	Yes	Yes	Yes	Yes
ANTIMONY DIALKYLDITHIOCARBAMATE (PROPRIETARY INGREDIENT# 20630)	NPRI	Yes	EINECS	Yes	Yes	Yes	Yes	Yes

All components of this product comply with new substance notification requirements under the Canadian Environmental Protection Act (CEPA).

16. OTHER INFORMATION

HEALTH Irritation, minor residual injury (1) - HMIS/NFPA

FLAMMABILITY Burns only if pre-heated (1) - HMIS/NFPA

REACTIVITY Normally Stable (0) - HMIS/NFPA

NPCA HMIS PERS. PROTECT. INDEX B - Safety Eyewear and Gloves

PREPARED BY James W. Hermann

DATE 2005-01-12

PRINTING DATE: 2005-01-12

DISCLAIMER While the information and recommendations set forth herein are believed to be accurate as of the date thereof, Chemtool Incorporated makes no warranty with respect thereto and disclaims all liability from reliance therein.

MATERIAL SAFETY DATA SHEET

Section 1. Chemical product and company identification

Product Name:	ABC Dry Chemical Fire Extinguishant
Synonym:	Multi-purpose Dry Chemical (CH555, F13)
Manufacturer:	AMEREX CORPORATION
Internet Address:	www.amerex-fire.com
Address:	7595 Gadsden Highway P.O. Box 81 Trussville, AL 35173-0081
Telephone:	(205) 655-3271
Emergency Contacts:	Chemtrec 1(800) 424-9300 or (703) 527–3887
Revised:	January, 2015

Section 2. Hazard identification and emergency overview

Emergency overview: Light yellow, fine solid powder, odorless.

Adverse health effects and symptoms: Irritating to the respiratory system, eyes and skin. Symptoms may include coughing, shortness of breath, and irritation of the lungs, eyes, and skin. Ingestion, although unlikely, may cause cramps, nausea and diarrhea.

Exposure guidelines:

Ingredients	OSHA PEL****	ACGIH TLV	DFG MAK *
Mono-ammonium phosphate	PNOC** Total dust, 15 mg/m^3 Respirable fraction, 5 mg/m^3	PNOC Total dust, 10 mg/m^3 Respirable fraction, 3 mg/m^3	PNOC Total dust, 4 mg/m^3 Respirable fraction, 1.5 mg/m^3
Mica	6 mg/m^3	3 mg/m3	NR
Fullers Earth	PNOC Total dust, 15 mg/m^3 Respirable fraction, 5 mg/m^3	PNOC Total dust, 10 mg/m^3 Respirable fraction, 3 mg/m^3	PNOC Total dust, 4 mg/m^3 Respirable fraction, 1.5 mg/m^3
Silicone oil	NR***	NR	NR

Calcium carbonate	PNOC Total dust, 15 mg/m^3 Respirable fraction, 5 mg/m^3	PNOC Total dust, 10 mg/m^3 Respirable fraction, 3 mg/m^3	-------
Amorphous silica	143 mg/m^3 <u>80 mg/m^3</u> or <u>% SiO_2</u>	10 mg/m^3	4 mg/m^3
Yellow 14 pigment	NR	NR	NR

*German regulatory limits **PNOC = Particulates not otherwise classified (ACGIH) also known as Particulates not otherwise regulated (OSHA) *** NR = Not Regulated. All values are 8 hour time weighted average concentrations. **** Total dust PEL for Washington state= 10mg/ m^3 for PNOC

Hazard symbols: WHMIS (Canadian workplace hazardous materials identification system

D2B Product may irritate eyes, skin, or mucous membranes

Section 3. Composition/information on ingredients

Name/Compound	Weight %	CAS #
Mono-ammonium phosphate	92-96	7722-76-1
Fullers Earth magnesium aluminum silicate-	<3	8031-18-3
Mica potassium aluminum silicate	1-2	12001-26-2
Silicone oil methyl hydrogen polysiloxane	<1	63148-57-2
Calcium carbonate	<1	1317-65-3
Amorphous silica precipitated synthetic zeolite	<1	112926-00-8
Yellow 14 pigment – di-azo dye	<1	5468-75-7

Section 4. First Aid Measures

Eye Exposure: Irrigate eyes with water and repeat until pain free. Seek medical attention if irritation develops or if vision changes occur.

Skin Exposure: In case of contact, wash with plenty of soap and water. Seek medical attention if irritation develops.

Inhalation: If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if irritation persists.

Ingestion: If victim is conscious and alert, give 2-3 glasses of water to drink and do not induce vomiting. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

Medical conditions possibly aggravated by exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema, or bronchitis. Skin contact may aggravate existing skin disease. Chronic overexposure may cause pneumoconiosis ("dusty lung" disease).

Section 5. Fire fighting measures

Extinguishing media: non combustible and non flammable – product is an extinguishing agent.

Unusual fire/explosion hazards: in a fire this material may decompose, releasing oxides of carbon (see Section 10).

Insensitive to mechanical impact or static discharge.

HMIS Hazard Ranking:
health = 1, flammability = 0, reactivity = 0, personal protective equipment: ½ mask APR w/HEPA cartridges (see Section 8).

Section 6. Accidental release measures

Clean up released material using vacuum or wet sweep and shovel to minimize generation of dust. Wear appropriate respiratory protection. Bag and drum for disposal. If product is used and/or contaminated, use PPE and containment appropriate to the nature of the mixture. Prevent material from entering waterways.

Section 7. Handling and storage

Avoid skin, eye, or respiratory exposure. Use appropriate PPE when handling or maintaining equipment, and wash thoroughly after handling (see Section 8). Keep product in original container or extinguisher. Contents may be under pressure – inspect for extinguisher rust periodically to insure container integrity. Do not mix with other extinguishing agents.

Section 8. Exposure controls/ personal protection

During the application of this product against fires, exhaust gases and the products of incomplete combustion (PICs) are the principal respiratory hazards. In the manufacture of extinguishers, automated systems and point source ventilation controls sufficiently minimize respiratory exposure. Employers and employees must use their collective judgment in determining occupational settings where the use of a dust mask or air purifying respirator is prudent. The need for respiratory protection is not likely for short-term use in well ventilated areas.

Respiratory protection: use N95 dust mask or air-purifying respirator (APR) with high efficiency particulate air (HEPA) filters.

Eye protection: wear chemical goggles.

Skin protection: use nitrile, latex, or similar gloves and coveralls. Good personal hygiene practices essential, such as avoiding food, tobacco products, or other hand-to-mouth contact when handling. Wash thoroughly after handling.

Section 9. Physical and chemical properties

Appearance: yellow powder, finely divided odorless solid.
Specific gravity: ~ .88 in aerated condition
Solubility: product is coated-not immediately soluble in water
Non –flammable
Flash point: none
Vapor pressure: < 1 mm Hg
pH: approximately 4-5
Boiling point: not applicable
No explosive or oxidizing properties

Section 10. Stability and reactivity

Stability: stable

Incompatibles: strong alkalis (bases), magnesium, strong oxidizers such as calcium hypochlorite (pool chlorine) and isocyanuric acids.

Decomposition products: heat of fire may release carbon monoxide and carbon dioxide. Oxides of phosphorous and ammonia reported.

Possibility of hazardous reactions: Slight. See incompatibilities above.

Section 11. Toxicological information

Acute toxicity: Mono ammonium phosphate LD_{50} (rat): > 1000mg/kg body weight
Target organs in man: respiratory system, eyes, skin. This product is an irritant to epithelial tissue, and may aggravate dermatitis. No information was found indicating the product causes sensitization.

Chronic toxicity: Pneumoconiosis, or “dusty lung” disease, may result from chronic exposure to any dust.

Reproductive toxicity: This product’s ingredients are not known to have reproductive or teratogenic effects.

Section 12. Ecological information

Ecotoxicity: negative effects unknown. Provides nutrient nitrogen and phosphorus to plant life.

Persistence/ Degradability: degrades rapidly in humid/wet environment.

Bioaccummulation: extent unknown.

Mobility in soil: slow evaporation rate; water soluble, may leach to groundwater.

Section 13. Disposal considerations

This product is not a RCRA characteristically hazardous or listed hazardous waste. Dispose of according to state or local laws, which may be more restrictive than federal laws or regulations. Used product may be altered or contaminated, creating different disposal considerations.

Section 14. Transportation information

This product is not a hazardous material under U.S. Department of Transportation (DOT) 49 CFR 172, and is not regulated by the DOT or Transport Canada "Transportation of Dangerous Goods" regulations.

When shipped in a stored pressure type fire extinguisher, and pressurized with a non-flammable, non-toxic inert expellant gas, the fire extinguisher is considered a hazardous material by the US Department of Transportation and Transport Canada. The proper shipping name shall be FIRE EXTINGUISHER and the UN designation is UN 1044. The DOT hazard class is Limited Quantity when pressurized to less than 241 psig and when shipped via highway or rail. Use a Non-Flammable Gas label (class 2.2) when shipping via air.

Section 15. Regulatory information

International Inventory Status:

All ingredients are on the following inventories

Country(ies)	Agency	Status
United States of America	TSCA	Yes
Canada	DSL	Yes
Europe	EINECS/ELINCS	Yes
Australia	AICS	Yes
Japan	MITI	Yes
South Korea	KECL	Yes

European Risk and Safety phrases:

EU Classification:	Harmful.	
R Phrases:	22	Harmful if swallowed.
	36/37/38	Irritating to eyes, respiratory system, and skin.
S Phrases:	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	36	Wear suitable protective clothing.

Components:

Mono ammonium phosphate:

EU Classification:	Harmful.	
R Phrases:	22	Harmful if swallowed.
	36/37/38	Irritating to eyes, respiratory system, and skin.
S Phrases:	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	36	Wear suitable protective clothing.

U.S. federal regulatory information:

None of the chemicals in this product are under SARA reporting requirements or have SARA threshold planning quantities (TPQs) or CERCLA reportable quantities (RQs), or are regulated under TSCA 8(d).

State regulatory information:

Chemicals in this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None
California – Permissible Exposure Limits for Chemical Contaminants: None
Florida – Substance List: Mica Dust
Illinois – Toxic Substance List: None
Kansas – Section 302/303 List: None
Massachusetts – Substance List: Mica Dust
Minnesota – List of Hazardous Substances: None
Missouri – Employer Information/Toxic Substance List: None
New Jersey – Right to Know Hazardous Substance List: None
North Dakota – List of Hazardous Chemicals, Reportable Quantities: None
Pennsylvania – Hazardous Substance List: None
Rhode Island – Hazardous Substance List: Mica Dust
Texas – Hazardous Substance List: No
West Virginia – Hazardous Substance List: None
Wisconsin – Toxic and Hazardous Substances: None

California Proposition 65: No component is listed on the California Proposition 65 list.

Section: 16

When shipped in a stored pressure type fire extinguisher, and pressurized with a non-flammable, non-toxic inert expellant gas, the fire extinguisher is considered a hazardous material by the US Department of Transportation and Transport Canada. The proper shipping name shall be FIRE EXTINGUISHER and the UN designation is UN 1044. The DOT hazard class/ division is 2.2 Non-Flammable Gas. Packing Group—N/A

Section 17. Other information

This MSDS conforms to requirements under U.S., U.K., Canadian, Australian, and EU regulations or standards, and conforms to the proposed 2003 ANSI Z400.1 format.

The information herein is given in good faith but no warranty, expressed or implied, is made. Updated by Lindsay R. Hill, CIH.

APPENDIX B

RESUMES AND CERTIFICATIONS FOR IDENTIFIED SAFETY PERSONNEL

Herold S. Hannah, Jr., CIH

Qualifications Summary

- Management and continuous improvement OSHA and HAZWOPER Training Programs, including the following:
    - Standardized training programs to assure consistent delivery across the Americas.
    - Assessment programs that ranked trainers and provided constructive actions to improve training skills.
    - Developed risk assessment tool that focused training needs to prioritize high risk activities and associated training.
- HUD Healthy Homes Program, Joint Venture – Managed and directed implementation of nationwide Healthy Homes (HUD) lead-based paint assessment program. Standardized assessment and reporting processes.
- Developed and piloted gap tool and corrective action tool for wastewater treatment plant and water treatment plant permit compliance.
- HSE Manager, Worldwide Environmental Remediation Services (WERS) contract (UXO/MMRP/MEC)
- HSE program management and technical support includes the following:
    - Senior leadership HSE performance and activity metrics.
    - HSE Committees start-up and support.
    - HSE initiatives:
        - Leadership Team HSE commitment statement.
        - HSE incentive programs.
    - Mentor HSE managers.
    - Publish HSE newsletters, alerts, and program communications.
    - Incident case management and support employee/supervisor/investigation.
    - Medical surveillance program development, management and support.
    - DOT/CMV Program support and technical guidance.
    - Substance abuse program support and technical guidance.
    - Develop and support operational program/management systems
        - Subcontractor assessments/approvals.
        - Major project review and technical direction/guidance.
    - Joint Venture (JV) HSE program (e.g., WSIP, BahaMar, TransUrban, VADOT, Dulles Airport).
    - HSE program ongoing review and update of SOPs.

  - Technical support/guidance industrial hygiene and general construction.
  - Air sampling program development and execution (EPA, NIOSH).

- Develop content and work with web developers and IT support for on-demand/online SH&E orientation training programs.
- Over 29 years of direct experience in industrial and construction hygiene, health, safety, rapid response, and occupational management. Environmental, construction, remediation, HazMat response, training programs, and NRC SH&E Program Consolidation.
- Corporate HSE director for three companies over a 20-year period.
- Develop the following HSE Construction Programs:
  - Development and execution of HSE program that aligned with oil and gas company requirements in the oil and gas programs.
  - SH&E construction program protecting employees working with UXO, chemical agent, and highly hazardous chemicals (Rocky Mountain Arsenal).
- Develop and implement train-the-trainer HSE mentoring programs.

Credentials

Certified Industrial Hygienist (CIH) (No. CP 6854), ABIH (1994)
Certified Safety Professional (CSP) (No. 14282), BCSP (1996)

Education

B.S., Biology/Microbiology - University of Pittsburgh (1986)

Training, Memberships & Awards

- American Board of Industrial Hygiene (ABIH)
- American Society of Safety Engineers (ASSE)
- American Industrial Hygiene Association (AIHA)

Employment History

1987 to 1991 NUS Corporation
1991 to 2003 Geo-Con, Inc.
2003 to 2004 Masi Max

2004 to 2009 AECOM Technical Services (Formerly Earth Tech)

2009 to 2014 AECOM

2014 to 2015 National Response Corporation

2015 to Present Weston Solutions, Inc.

Key Projects

NPC Site Baton Rouge LA, Baton Rouge, LA, NPC - Consortium of Oil and Gas Companies, Health and Safety Officer. Large high hazard remediation project that included landfill construction; lagoon stabilization; excavation; and consolidation and containment of volatile organic compounds (VOCs), tars, oil, and other byproducts of fractional oil distillations. Work involved extensive use of Level B and C Personal Protective Equipment (PPE). Construction of office and decontamination complexes for more than 100 employees. Contaminants of concern included benzene, ethyl benzene, toluene, and xylene (BETX), and hexachlorobutadiene. [1-90 to 6-91]

HAZWOPER Training Program, Multiple Locations, Various, HAZWOPER Training Manager. Managed 29 CFR1910.120 HAZWOPER training programs for internal and external clients. Provided 40-hour HAZWOPER, 40-hour Emergency Response, 8-hour Refresher, and 8-hour Supervisory training programs. Role consisted of content development, lesson planning, and program management across the US. [1-90 to 6-91]

HUD Healthy Homes Program – Lead-Based Paint Inspection and Reporting Standardization, Multiple Locations, HUD, Senior Industrial Hygienist. Managed and directed implementation of nationwide Healthy Homes (HUD) lead-based paint assessment program. Standardized assessment and reporting processes. Coordinated as a minority-owned business joint venture. [4-03 to 6-04]

Cambridge, MA, Release Abatement Measure, In Situ Soil Stabilization, Cambridge, MA, MassDEP, Health and Safety Manager. As a Release Abatement Measure (RAM) under the provisions of Massachusetts Environmental Regulations, project goal was to perform in situ Shallow Soil Mixing (SSM) of impacted soil (Light Non-Aqueous Phase Liquid [LNAPL] and Dense Non-Aqueous Phase Liquid [DNAPL]) over an area of approximately 2.2 acres. Approximately 103,000 cy of soils were stabilized in-place to an average depth of 22 feet below ground surface for this project.

The property was the former location of a Manufactured Gas Plant (MGP). Past MGP operations resulted in the release of hazardous chemicals into the soil and groundwater. Hazardous chemicals, including, but not limited to, volatile and semivolatile organic compounds were present in soil and groundwater at concentrations greater than Reportable Concentrations specified in the Regulations for the Commonwealth of Massachusetts.

The equipment being used to perform the stabilization included the following: a 4000 series Manitowoc crane, a rotary drill table (Caldwell CH-200 capable of developing 350,000 foot-pounds of torque), a 10-foot diameter mixing tool, a batch plant, a Soil Vapor Extraction (SVE) system, and a shroud and carbon filter. The SVE system was used to collect and treat any hazardous gases that might have been released during the stabilization process. Cement-Kiln Dust (CKD) and bentonite were the mixing reagents.

A spacing of 8.67 feet between the center of adjacent columns was implemented based on the effective 10-foot column mixed by the 10-foot-diameter mixing tool. This pattern layout allowed mixing of 100% of the soil mass and included approximately 35% overlap of each interior column. The SSM operation required approximately 590 columns for treatment of the LNAPL-impacted soils and approximately 1,620 columns for treatment of the DNAPL-impacted soils inside the treatment boundary.

All columns within the LNAPL stabilization area were stabilized to a depth of 12 feet below the existing ground surface. In areas where both LNAPL and DNAPL are present, stabilization occurred to a depth of 2 feet below the clay surface. All columns within the boundary of the DNAPL stabilization area were stabilized to a depth of 2 feet below the clay surface.

Prior to stabilizing the soil, excavation was performed within the limits of the stabilization area to locate and remove rock obstructions and abandoned subsurface structures to a depth of approximately 22 feet below the existing land surface. The subsurface structures consisted of gas holders, tar tanks, a boiler house, and other structures. The obstructions were either removed or broken in place and removed. The existing groundwater elevation is approximately 8 to 10 feet below land surface. To reduce the odors generated during the excavation of the substructures, the disturbed area was constantly foamed. [4-00 to 10-00]

Site Remediation, Municipal Gas Plant (MGP), Georgetown, DE, Health and Safety Manager. Site remediation project at a small site located within the city limits of Georgetown. A special concern of the client was the proximity (8 feet) of the proposed excavation area to a cold storage food warehouse because differential settlement could adversely impact its operations. Additionally, a completion date of April 30, 2001 was mandatory because warehouse operations commenced on May 1, 2001.

Initial work consisted of removal of several buildings and the foundation of a former gas holder, which involved approximately 150 tons of materials. A 2-foot wide, 10-foot deep diaphragm wall was installed, which allowed the successful removal of contaminated subsurface soils. A small offset excavator was used to excavate the trench. Bentonite slurry was simultaneously pumped and maintained in the trench during excavation. A truck-mounted drill rig preceded the excavator and augered 18-inch diameter holes through 22 feet of soil. The 23 holes were used to set the support columns and anchor them in 10 feet of virgin soil. Thereafter, 14 x 73 "H" beams spaced 10 to 15 feet from centers were placed in the holes. Upon trench completion, 3,000 psi concrete was pumped into the trench, displacing the slurry and creating the retention wall. The subsurface contaminated soils were excavated and loaded directly into trucks for disposal. Upon completion of back filling activities, final restoration was completed.

The project was completed on time with no movement of the cold storage warehouse foundations. Managed a confined work area and community concerns successfully in order to execute this project with zero incidents. [11-00 to 4-01]

Shallow Soil Mixing/Soil Vapor Extraction, Piketon, OH, Department of Energy - MMES, Health and Safety Manager. First full-scale project to use Shallow Soil Mixing (SSM)/Thermally Enhanced Vapor Extraction (TEVE) and Soil Vapor Extraction (SVE) to remove VOCs contamination from a waste disposal area. The site at the Portsmouth Gaseous Diffusion Plant in Piketon, OH, was contaminated to a depth of 22 feet. The cleanup was completed without excavation and the soils remained in place after treatment in accordance with Ohio EPA approvals. SSM was performed with 8- to 12-foot diameter mixing tools.

The site consisted of primarily silty and clayey soils with a groundwater table 15 feet below the surface. Trichloroethylene (TCE) contamination was spread over the site at levels that varied from 1 to 500 ppm. The VOCs were mobilized by SSM and TEVE and removed through an SVE treatment unit.

Considerable experimentation was required in auger/mixer designs, procedures, additives, and equipment during the work. Hydrogen peroxide was experimentally used during part of the process. Much of the work was performed in harsh winter conditions. Work was performed around the clock, 7 days per week to avoid state-mandated liquidated damages. Geo-Con completed the project on time and removed 200% of the planned amount of VOCs.

The specified objective of the Work Plan was to remove or destroy a minimum of 70 % of the VOCs. More than 90% of the VOCs were removed. This project was the first full-scale implementation of SSM/SVE and is being used as the model for future DOE cleanups. [5-96 to 7-96]

Site Remediation Island Sports Complex Neville Land Company, Excavation and Disposal, Neville Island, PA, Health and Safety Manager. Site remediation of a former steel byproducts waste disposal site entailed completion of a slurry cutoff wall, 9-acre multi-layer geomembrane cap, river bank slope stabilization, monitoring well abandonment, gas well abandonment, placement of 200,000 cy of soil fill, building and ancillary demolition, and installation of subsurface utilities for future use.

The project was a one-of-a-kind Superfund site where a multi-discipline sports complex was constructed above the cap. The complex consists of four ice hockey surfaces, batting cages, a nine-hole golf course, an indoor/outdoor golf dome, and a restaurant. The project presented significant challenges because the work scope was not initially developed and evolved as it progressed. This situation required significant management and scheduling demands to keep the project on track and within budget.

The primary contaminants of concern on this site were aromatic hydrocarbons, chlorinated VOCs, polynuclear aromatic hydrocarbons (PAHs), pesticides, and polychlorinated biphenyls (PCBs). Real-time monitoring on-site consisted of use of a photoionization detector (PID) for

the VOCs, a combustible gas indicator, an oxygen monitor, a total dust meter (PDM-3), and colorimetric evaluation. Meteorological conditions were tracked daily by using the Internet to collect weather data that provided current weather conditions (e.g., temperature, wind direction, humidity, precipitation). [4-00 to 11-00]

Rocky Mountain Arsenal Site Remediation; Soil Treatment (Lead, Pesticides, Chemical Agent, CO, Rocky Mountain PMC, Health and Safety Manager. Contractor at Rocky Mountain Arsenal in Denver, CO, for completion of a soil remediation project. The project consisted of the remediation of material in former disposal pits that contained waste from the manufacture of chemical weapons on the Arsenal. The material in the pits was excavated and combined with the clean soil surrounding the pits. This mixture was then fed through a pugmill plant where it was mixed with cement and water to produce a stabilized end product.

The primary contaminants treated were heavy metals such as arsenic, lead and mercury. The maximum mercury concentration in soil equaled 94.0 mg/kg. The 6% cement in the mixture was designed to bind the metals and reduce the leachability, achieving the Toxicity Characteristic Leaching Procedure (TCLP) criteria. The treated material was hauled to the on-post landfill. Initially completed trial batches of various cement contents to determine what would be used during full-scale production. The entire project was performed under Level B PPE.

Additionally, in order to minimize the possibility of vapors being released during the pugmill mixing, a custom built vapor extraction and treatment system was attached to the pugmill mixing chamber. Proper blending of the pit material and the clean surrounding material was achieved with a system of screens and belts equipped with a belt scale system. The belt scales were connected to a Central Processing Unit (CPU), which constantly monitored and adjusted the belt speeds to ensure the proper blending ratio. The cleanup at the Rocky Mountain Arsenal was a multi-contractor effort under the direction of the Program Management Contractor. [3-01 to 10-01]

EH&S Services for Hazardous Waste Sites; Superfund; 29 CFR 1910.120, Multiple Locations, Safety Manager. Developed and audited 150+ site-specific health and safety programs, including specifications for PPE, confined space entry, contaminated soil excavation, lockout tagout, HAZCOM, HAZWOPER, construction safety, heavy equipment operations, and cranes. Projects include the following:

- Shallow Soil Mixing, Slurry Wall and Cap, Oil Refinery Sludge Pond Closure, Whiting, IN.
- Slurry Wall, Cap and Cover, Kane & Lombard Superfund, Site Remediation, Baltimore, MD.
- In Situ Stabilization, Slurry Wall and RCRA Cap, Sinclair Refinery Superfund Site, Wellsville, NY.
- Remedial Action Work Site, Osborne Landfill Site, Grove City, PA.
- Site Remediation, Avesta Sheffield, Baltimore, MD.

- Site Remediation, Island Sports Complex, Neville Island, PA.
- Cap and Cover, Lock Haven, PA.
- Cutoff/Collection Trench, Streator, IL.
- Sonoma County Landfill, Soil Bentonite Cutoff Wall and Groundwater Collection Trench, Sonoma, CA.
- J. H. Baxter Superfund Site, Soil Bentonite Cutoff Wall and Groundwater Collection Trench, Weed, CA.
- Fresh Kills Landfill, Cutoff Wall Project, Staten Island, NY.
- Site Remediation, MGP Site, Georgetown, DE.
- Englewood Dam Crest Improvements, Cement-Bentonite Vertical Barrier, Dayton, OH.
- Groundwater Collection/Barrier Wall System Lis; Brine Ponds Landfill, Albemarle Corporation, Magnolia, AR.
- Bio-Polymer Slurry Trench, Air Injection Trench, Camp Lejeune, NC.
- HDPE Curtain Wall and Underdrain System, Sun Company, Philadelphia Refinery, PA.
- Bio-Polymer Trench, Philadelphia, PA.
- Air Sparging Trench Installation, Winder Leak Site, Winder, GA.
- Construction of a Seepage Cutoff Wall, Using Deep Soil Mixing and Jet Grouting, Vancouver, British Columbia.
- Deep Soil Mixed Cut-Off Wall, Bay City, MI.
- On-Base Containment Wall, Operable Unit No. 2, Hill Air Force Base, UT.
- Groundwater Barriers by Deep Soil Mixing, Rocky Mountain Arsenal, Commerce City, CO.
- Deep Soil Mixing, Piketon, OH.
- Deep Soil Mixing, Sheffield, IL.
- In Situ Stabilization via Shallow Soil Mixing (SSM) of Organic Contaminated Soils and Sludges, Bailey Waste Superfund Site, Bridge City, TX.
- In Situ Soil Stabilization, Shallow Soil Mixing (SSM), Columbus, GA.
- Shallow Soil Mixing, Former Railroad Yard, Pittsburgh, PA.
- In Situ Soil Stabilization, Shallow Soil Mixing, Cambridge, MA.
- Shallow Soil Mixing/Vapor Extraction, Brunswick, GA.
- Shallow Soil Mixing, Former MGP Site, Exeter, NH.
- Cadmium Remediation, Binghamton, NY.
- INEL, Idaho Falls, ID.[6-92 to 2-03]

NAVFAC Mid-Atlantic, Civil Engineering and Design Services IDIQ, Camp Lejeune, NC, NC, DoD/US Navy/NAVFAC, Contract Safety Manager. Safety manager responsible for development and review of site safety and health plans for a variety of task orders. Task orders included site development and engineering design for the Fisher House Wounded Warrior Barracks complex; site designs for various buildings, including a HAZMAT storage facility, portable armory, and personal vehicle and equipment parking areas, and environmental compliance tasks. [6-06 to 8-10]

Water and Wastewater Treatment Clients, Compliance Evaluations, Massachusetts, Rhode Island, and Connecticut, Lead Auditor. Lead auditor for assessment teams that evaluated 14 facilities for compliance with environmental discharge permits which included water, air, and solid waste discharge streams. Water treatment facilities were assessed using a national drinking water act compliance map. Wastewater facilities were evaluated using compliance maps that were based on state permits. Examples of assessment areas included SPCC, EPCRA, AST/UST, PSM, ERP, RMP, QA/QC, and laboratory compliance. [6-05 to 3-06]

Water and Wastewater Treatment Clients, Process Safety Management (PSM) Program, Multiple Sites, Program Health and Safety/QA Manager. Developed and implemented a process safety management (PSM) program for wastewater and water treatment facilities operated by company staff. Support included facility compliance assessment reviews, written program development, training, emergency response program reviews, best management practices, management of change, and process hazard analysis (PHA). The process hazard was chlorine gas. [6-05 to 2-06]

Multiple US Federal Agencies, IDIQ Contracts, US Department of Defense, US Navy, US Army, US Air Force, US Coast Guard, and USACE, Program Health and Safety Manager. Program safety, health, and environment manager for federal IDIQ contracts managed from Mid-Atlantic District. Responsible for development/review of program and site-specific health and safety plans and oversight of implementation of safety programs. Clients included AFCEE (4PAE, 4PAE08), US Air National Guard (Environmental Engineering, Professional, Technical, and Remediation Support Services), US Air Force Air Combat Command (ECAS), NAVFAC Washington (Facilities Planning and Natural/Cultural Resources Management Program Support), US Army Space and Missile Defense Command, and US EPA (ERRS). [6-06 to 10-13]

AFCEE, 4PAE08, Worldwide, Air Force Civil Engineer Center, Program Health and Safety Manager. Program health and safety manager for multidisciplinary environmental and A-E services contract. Task orders cover environmental restoration, compliance, planning, and conservation; information technology; force protection; and traditional Title I and Title II services at Air Force sites worldwide. [1-06 to 8-09]

US Army Corps of Engineers, Omaha District, Environmental Remediation Services Contract (ERSC), Multiple Sites, US Army Corps of Engineers, Omaha District, Health and Safety Manager. Health and safety manager with district-level oversight of EH&S issues for a wide range of environmental remediation services and ordnance explosive services to the Omaha District at various known or suspected HTRW sites and OE sites in the US under a 5-year ID/IQ contract. Task orders included performance-based statements of work. Projects included remediation efforts at MacDill AFB and Eglin AFB. [7-07 to 8-10]

Groundwater Treatment Plant, Robins AFB, GA, U.S. Air Force, District Safety Manager. District safety manager responsible for Health and Safety Plan development and review of safety programs (HAZWOPER, confined space, fall protection, hearing protection, respiratory safety). [6-07 to 8-10]

Anniston-Calhoun County Fort McClellan Development Joint Powers Authority (JPA), MEC Remediation Services, Fort McClellan, AL, USACE, SH&E Manager. Health and safety manager for MEC remediation services. Under a master services agreement with the JPA, provided surface and subsurface clearance services along the re-development corridor leading from Anniston to the Fort McClellan cantonment area. Part of Worldwide Environmental Remediation Services (WERS) Contract (UXO/MMRP/MEC)[1-09 to 10-13],

Lawrence J. Werts, III

Qualifications Summary

- Twenty-five years of professional experience.
- Eleven years of experience as a sampling/process technician. Duties include sampling soils, groundwater, surface water, and building surfaces; and pilot studies involving activated carbon, ion exchange, and activated aluminum technologies.
- Three years of experience coordinating reviews of aboveground storage tank (AST) compliance with federal regulations.
- One year of experience sampling asbestos for use in risk analyses and real estate assessments.
- Four years of experience coordinating training activities for an Army Reserve Unit.
- Three years of experience as an operator of a radioactive waste processing unit. Duties include personnel monitoring.
- Two years of experience providing training and inspections in hazardous waste management requirements.

Training, Memberships & Awards

- Electrical Safety Training Level II, NFPA 70E, OSHA 1910.331, KRT Associates (2010)
- CPR/First Aid Refresher, 29 CFR 1910, American Red Cross (2015)
- AED Refresher, 29 CFR 1910, American Red Cross (2015)
- AED Initial, 29 CFR 1910, MEDIC First Aid International (2009)
- Global Harmonization System Hazard Communication Training, 29 CFR 1910.1200, WESTON (2013)
- IATA/DOT Dangerous Goods Shipping Advisor Training Refresher, CFR 49 Parts 100 To 185, Bureau of Dangerous Goods, LTD. (2013)
- IATA/DOT Shipping and Transporting Dangerous Goods - Admin/Field Personnel Initial, CFR 49 Parts 100 To 185, Bureau of Dangerous Goods, LTD. (2010)
- 8-Hour Hazardous Waste Refresher Course, OSHA 29 CFR 1910.120(e)(8), WESTON (2012), WESTON (2015)
- 30-Hour Construction Safety and Health Training Course, OSHA 29 CFR 1926 Subparts C, E, M, P, & X, WESTON (2007)
- 40-Hour Hazardous Waste Site Training Course, OSHA 29 CFR 1910.120(e)(3), WESTON (1988)
- Bloodborne Pathogens Training, OSHA 29 CFR 1910.1030 (2007)

- Bloodborne Pathogens Refresher Training, OSHA 29 CFR 1910.1030, WESTON (2013) (2015)
- 8-Hour Managers and Supervisors Course (SHSC), OSHA 29 CFR 1910.120(e)(4), (1989)
- DOT/IATA Hazardous Materials Training, 49 CFR 172 Subpart H, Bureau of Dangerous Goods, LTD (2006)
- DOT/IATA Hazardous Materials Training – Refresher, 49 CFR 172 Subpart H, Bureau of Dangerous Goods, Ltd. (2013)
- Confined Space Training – Entrant, Attendant, Non-Entry Rescue, OSHA 29 CFR 1910.146, WESTON (2000)
- Trenching/Excavation Competent Person Training Course, OSHA 29 CFR 1026 Subpart P, WESTON (2007)
- Fall Protection Competent Person Training Course – Initial, OSHA 29 CFR 1926 Subpart M, WESTON (2007)
- Fall Protection Competent Person Training Course – Refresher, OSHA 29 CFR 1926 Subpart M, WESTON (2005)
- Dangerous Goods Shipping Procedures, 49 CFR 172 Subpart H, FedEx (2000)
- Dangerous Goods Shipping Waste, 49 CFR 172 Subpart H, PADEP (2002)
- CPR/First Aid Training, 29 CFR 1910, Medic First Aid (2009)
- The Emergency Program Manager, Federal Emergency Management Agency (FEMA) (1990)
- Emergency Management U.S.A., FEMA (1991)
- Hazardous Materials: A Citizens Orientation, FEMA (1991)
- Radiological Emergency Management, FEMA (1991)
- Preparedness Planning In Nuclear Crisis, FEMA (1991)
- Fundamentals Course for Radiological Monitors (1992)

Employment History

1988 to Present WESTON

1990 to Present U.S. Army Reserve

1987 to 1988 Alternative Ways, Inc.

1983 to 1987 New Jersey Department of Defense

1980 to 1983 Hydro Nuclear Services

1977 to 1980 Philadelphia Inquirer

Key Projects

Technical Operations and Maintenance, Pennsylvania, Confidential Client, Technician. Oversee the operation of six groundwater remediation systems. Responsibilities include minor electrical repairs and the rehabilitation of groundwater pumps and managing the overall sampling of the six remediation systems.

Technical Operations and Maintenance, Gibbsboro, NJ, Confidential Client, Technician. Oversee the operation of a Thermal Oxidizer and Product Recovery System, and perform minor adjustments on both.

Hazardous Waste Management Training and Inspections, Philadelphia, PA, Philadelphia International Airport, Division of Aviation, Technician. Co-authored a training manual and presented training on hazardous waste management, and provide airport facilities personnel with technical advice on management of hazardous and nonhazardous waste by way of monthly inspections.

Air Monitoring for Abandoned Pipeline Removal, Philadelphia, PA, Philadelphia International Airport, Division of Aviation, Technician. Provided emergency air monitoring immediately after a 10-foot, 18-inch-diameter pipe was encountered during construction activities at the airport. This was followed by additional air monitoring and construction oversight during the safe removal of the pipe.

Hazardous Waste Removal, Philadelphia, PA, Philadelphia International Airport, Division of Aviation, Technician. Provided sampling and oversight for the removal of numerous waste drums from airport property. Also made arrangements with a subcontractor for the safe disposal of the drums.

Soil Sampling, Philadelphia, PA, Philadelphia International Airport, Division of Aviation, Technician. Collected more than 150 soil samples to determine levels of total petroleum hydrocarbons. Using a field screening kit, determined areas needing further characterization.

Absorption Pilot System Installation and Operations Project, Various Locations, U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), Senior Crew Chief. Installed and operated a granular-activated carbon (GAC) alumina and ion exchange resin adsorption pilot system for the removal of explosives, arsenic, and volatile organic compounds (VOCs) from groundwater. Sampling, plumbing of columns, pumps, air stripper, tanks, and laboratory data management.

Soils Characterization, Various Locations, Confidential Client, Senior Technician. Characterized petroleum- and polychlorinated biphenyl (PCB)-contaminated soils from natural gas compressor stations. Project included the mapping and collection of soil, water, destructive, wipe, and groundwater samples.

Water Characterization, Industrial Manufacturing Facility, AVTEX Fibers, Senior Technician. Characterized water contaminated with zinc from unknown sources at a large industrial manufacturing facility. The project included remote sampler setup, lithium chloride testing, and stormwater system mapping.

Groundwater Characterization, Tooele Army Depot, Tooele, UT, Senior Technician. The project included installation and operation of a small-scale air stripper collecting samples of trichloroethylene (TCE) to evaluate the effectiveness of removing TCE from groundwater.

Groundwater Sampling, Chattanooga, TN, USATHAMA, Senior Crew Chief. Conducted groundwater monitor well sampling, both on-site and domestic.

Weir Construction, Iron Mountain, CA, ICI, Senior Crew Chief. Assisted in the construction of weirs in remote locations. In addition, assisted in the installation of measurement devices.

Planning and Coordination, Pennsylvania, Chester County, Federal Emergency Management Agency (FEMA), Plans/Operations NCO. Duties include the review and production of plans, and the implementation of procedures relating to attack preparedness, radiological defense, and shelter. Review of nuclear power plant emergency procedures and emergency plans. Review of Nuclear Material License in Chester County. In addition, participates in the review of Part B applications regarding public safety and radiological exercises at nuclear power plants.

Sludge Dewatering Study, Delaware, Star Refinery, Senior Technician. Monitored sludge dewatering unit operations and conducted sludge sampling for process control/monitoring purposes.

Drum Removal, Lanchester Landfill, Chester County, Senior Technician. Oversaw the removal and overpacking of buried drums in Level B protection.

Remedial Investigation/Feasibility Study (RI/FS), Massachusetts, U.S. Army, Senior Technician. Sampling and data evaluation for a U.S. Army site whose mission involved the production and handling of depleted uranium, beryllium, heavy metals, organics, and radionuclides associated with the operation of a nuclear reactor on-site. Assisted the field team leader in scheduling and overseeing field operations, attended public meetings, and assisted in data interpretation. In addition, involved in the radiological surveys of buildings, including reactor building survey, and sanitary and stormwater pipes. Team leader providing health physics support for a mixed waste study, including drum sampling, equipment, contractor, and environmental sampling.

Decontamination Support and Health Physics Support. Decontamination Support and Health Physics Support, Various Locations, Public Service Electric and Gas Company (PSE&G), Salem Nuclear Generating Station, Indiana and Michigan Electric Company, Donald C. Cook Nuclear Power Plant, Decontamination Technician, Respirator Fit Test Technician, Whole Body Count Technician, Health Physics Technician, and Radwaste Technician. Operator of a mobile counting laboratory and a radioactive waste processing unit involved in all types of decontamination motion work (floors, tools, walls, tanks, pumps, steam generators, reactor cavities, reactor parts, sump, and all other equipment associated with a nuclear power plant). Involved in health physics support (including radiation surveys, air monitoring, as low as reasonably achievable [ALARA] planning in high-radiation areas, to routine surveys of all types of equipment).

Lead-Based Paint Sampling, Fort Drum, NY, U.S. Army Corps of Engineers (USACE), Senior Technician. Involved in the development of a sampling procedure to obtain representative samples of building debris on a weight basis. Acts as a Team Leader in the sampling of 253 buildings slated for demolition.

Douglas E. Gates

Qualifications Summary

- More than 9 years of experience with MEC/UXO projects.
- UXO location and clearance experience at civilian locations and military installations

Credentials

Paramedic certified in Pennsylvania (2004)

Education

Graduate, UXO – Texas A&M UXO School (2004)

Training, Memberships & Awards

- 40-Hour Hazardous Waste Site Training Course, OSHA 29 CFR 1910.120(e)(3) (2004)
- 30-Hour Construction Safety and Health Training Course, OSHA 29 CFR 1926 (2011)
- 8-Hour Hazardous Waste Refresher Course, OSHA 29 CFR 1910.120(e)(8), WESTON (2015)
- 8-Hour Managers and Supervisors Course (SHSC), OSHA 29 CFR 1910.120(e)(4), WESTON (2011)
- First Aid/CPR/AED Training, American Red Cross (2015)
- Bloodborne Pathogens Refresher Training, WESTON (2015)
- Behavior-Based Safety Training – Phase I, WESTON (2009)
- Heavy Equipment Operator- Backhoe, Skid Steer, Bulldozer & Excavator, EODT (2005)
- Farm Rescue Training (2001)
- HAZMAT Recognition and Identification (1997)
- Emergency Medical Technician (1996)
- Vehicle Rescue Training (1996)
- Water Rescue (1996)

Employment History

2010 to Present Weston Solutions Inc.
2010 USA Environmental
2007 to 2010 Weston Solutions Inc.
2005 to 2007 UXO Technician with Various Environmental Consulting Firms
1998 to 2004 Paramedic with Various Emergency Response Organizations
1996 to 1998 Emergency Medical Technician with Shippenville Elk Ambulance Corps

Key Projects

Inspection of Draghead Screens, Surf City, New Jersey, U.S. Army Corps of Engineers (USACE), Philadelphia and Baltimore Districts, UXO Technician III. Inspected the draghead screens and other dredge apparatus for munitions and explosives of concern (MEC) during specified periods and collected the items. Conducted safety briefings, wrote daily reports, and performed duties of Team Lead. [5-2015 to 8-2015]

Remedial Investigation, Joint Base McGuire Dix Lakehurst, New Jersey, USACE, UXO Technician III. Conducted safety briefs, wrote daily reports, and provided site communications in support of ordnance remedial investigation. [3-2015]

Remedial Investigation, Engineering Evaluation/Cost Analysis, Camp Dawson, West Virginia, USACE Baltimore District, UXO Technician III. Performed Team Lead duties. Conducted tailgate safety briefings. Provided oversight of ordnance demolition. [12-2014]

Remedial Investigation, Bircham Bend, Massachusetts, USACE, UXO Technician III. Conducted ordnance surface and subsurface detection, investigation, excavation, transport, and storage operations. [11-2014]

Ordnance Removal Action, Tobyhanna Artillery Range (TOAR), USACE Baltimore District, UXO Technician III. Acted as Team Lead. Supervised personnel conducting surface and subsurface detection, investigation, excavation, transport, and demolition operations for World War II ordnance items. Provided tailgate safety briefings. [7-2013 to 12-2013]

Ordnance Removal Action, Tobyhanna Artillery Range (TOAR), USACE Baltimore District, UXO Technician II. Conducted surface and subsurface detection, investigation, excavation, transport, and demolition operations for World War II ordnance items. [1-2012 to 12-2012]

Ordnance Removal Action, Tobyhanna Army Depot/State Park, USACE Baltimore District Oversight, UXO Technician. Supervised personnel conducting munitions and explosives of concern (MEC) detection, investigation, excavation, and removal. Conducted surface and subsurface detection, investigations, excavation, and removal. Actively participated in daily safety briefings. Safety oversight of individual field teams. [3-2011 to Present]

Ordnance Removal Action, Tobyhanna Artillery Range (TOAR), PA, USACE, Baltimore District Oversight, UXO Technician. Conducted surface and subsurface detection, investigation, excavation, transport, and storage operations. Operated and conducted daily safety checks of heavy equipment. [11-10 to 1-11]

MEC Inspection of Draghead Screens on the Dredge *R.E. Lindholm*, Harvey Cedars, Long Beach Island, NJ, USACE, New England District (CENAE), Remedial Action Contract (RAC) -9, Philadelphia District, UXO Technician. Inspected the draghead screens and other dredge apparatus for MEC items during specified periods and collected the items. Also assisted in determining the integrity of the screens to continue to prevent MEC items from passing through. Managed the recovered MEC items and turned over the items and documentation to the on-site USACE Ordnance and Explosives (OE) Safety Specialist. Provided safety orientation to dredge personnel. Participated in shipboard safety and fire drills. [2-10 to 6-10]

Ordnance Removal Action, TOAR, PA, USACE, Baltimore District Oversight, UXO Technician. Conducted ordnance detection, investigation, excavation, transport, and storage operations. [5-09 to 11-09]

Non-Time-Critical-Removal Action (NTCRA), Surf City, NJ, USACE, Philadelphia/ Baltimore Districts, UXO Technician. Part of the "Surf Team," operated in a Dry Suit using an MK-26 to locate and investigate anomalies along the shoreline and in tidal waters. Conducted ordnance surface and subsurface detection, investigation, excavation, transport, and disposal operations. Provided safety briefings to vegetation clearance contractors. [2-09 to 4-09]

Reacquisition of Anomalies, Chino Hills, CA, Aerojet, UXO Technician 2. Conducted ordnance surface and subsurface detection, investigation, excavation, transport, and disposal operations. Schonstedts were utilized in a grid-type setting, but also warranted reacquiring anomalies established by using an EM-61. The data taken met criteria determined by both client and WESTON geographic information system (GIS) and allowed reacquisition. The areas inaccessible to the EM-61 were then swept. Provided safety briefings to heavy equipment operators and provided construction support. [1-09 to 2-09]

Ordnance Removal Action, Mare Island, CA, USACE, UXO Technician. Conducted ordnance surface and subsurface detection, investigation, excavation, transport, and storage operations. Provided safety briefings to heavy equipment operators. [11-08 to 12-08]

Ordnance Removal Action, Tobyhanna Army Depot, PA, USACE, Baltimore District Oversight, UXO Technician. Conducted ordnance surface and subsurface detection, investigation, excavation, transport, and storage operations. Provided safety briefings to vegetation clearance contractors. [11-08 to 12-08]

Ordnance Avoidance, Connecticut, Confidential Client, UXO Technician. Conducted UXO escort and avoidance to Geoscience personnel. Provided safety briefings to contractors. Provided safety oversight for drilling operations and performed downhole avoidance with MK 28 and probe. [09-08 to 10-08]

Munitions Response Action at Fort Miles Military Reservation Formerly Used Defense Site (FUDS), Lewes, DE, USACE, Baltimore District, UXO Technician. Conducted ordnance surface and subsurface detection, investigation, and excavation instrument detection depth. This work was conducted in sensitive ecological habitat areas (dune and beach systems). [1-08 to 3-08]

Time-Critical-Removal Action (TCRA), Tobyhanna State Park, PA, USACE, Baltimore District, UXO Technician. Conducted surface and subsurface detection, investigation, excavation, transportation, and storage operations. [9-07 to 10-07]

ERRG, Red Mountain, CA, Confidential Client, Safety Officer. Performed duties of a site safety officer. Provided safety briefings, air monitoring, and respirator fit tests. Equipment safety checks and responsible for safety reports, road signage, flag personnel at a silver mine tailing site with concentrated levels of arsenic. [11-06 to 12-06]

The Texas A&M University System
Texas Engineering Extension Service
Public Safety & Security

Doug Gates

has successfully completed

Unexploded Ordnance Technician Level I

September 7, 2004
200 Hours
A DOD Certified Course

Robert L. Smith
Director, Texas Engineering Extension Service

Thomas A. Swann
Division Director, Public Safety & Security

Compliance Solutions

"Today's Training... Tomorrow's Solution"

Certificate of Completion

This is to certify that

Doug Gates

has successfully completed the classroom requirements for

40 Hour HAZWOPER

29 CFR 1910.120(e)

Presented

Friday, December 03, 2004

Compliance Solutions Occupational Trainers, Inc.

Certificate Number 63789

Neval Gupta
Vice President

George Morrison
Instructor

WESTON SOLUTIONS®

Restoring Resource Efficiency

This Certifies That

DOUGLAS GATES

Has Completed the

8-Hour HAZWOPER Refresher Training Course

In accordance with 29 CFR 1910.120(e)(8) completed on 04/22/2015 in West Chester, PA

TRAINING MANAGER
Herold Hannah, CIH, CSP

INSTRUCTOR
Lawrence J. Werts III

1_15391_04222015

Weston Solutions, Inc • 1400 Weston Way • West Chester, PA • 19380

American Red Cross

Certificate of Completion

Doug Gates

has successfully completed requirements for

Adult First Aid/CPR/AED - valid 2 Years

conducted by
American Red Cross

Date Completed: 01/26/2015
Instructors: Lawrence John Werts III

Certificate ID: GR80MJ

To verify, scan code or visit:
redcross.org/confirm

OSHA Occupational Safety and Health Administration

11-600524129

This card acknowledges that the recipient has successfully completed a 30-hour Occupational Safety and Health Training Course in

Construction Safety and Health

Douglas E. Gates

Theodore L. Blackburn
(Trainer name – print or type)

03/11/2011
(Course end date)

WESTON SOLUTIONS®

Restoring Resource Efficiency

This Certifies That

DOUGLAS GATES

Has Completed the

8-Hour Site Manager and Supervisor Training Course

In accordance with 29 CFR 1910.120(e)(4) completed on 11/10/2011 in West Chester, PA

TRAINING MANAGER
Owen B. Douglass, Jr., PhD, CIH

INSTRUCTOR
George M. Crawford Jr CIH

195_15391_11102011

Weston Solutions, Inc • 1400 Weston Way • West Chester, PA • 19380

Restoring Resource Efficiency

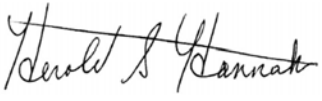
This Certifies That

DOUGLAS GATES

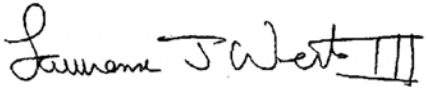
Has Completed the

Bloodborne Pathogens Training Course Refresher

In accordance with 29 CFR 1910.1030 completed on 04/22/2015 in West Chester, PA



TRAINING MANAGER
Herold Hannah, CIH, CSP



INSTRUCTOR
Lawrence J. Werts III

2_15391_04222015

Weston Solutions, Inc • 1400 Weston Way • West Chester, PA • 19380

David L. Holland

Qualifications Summary

- More than 20 years of experience with MEC/UXO projects.
- Experience with the following types of ordnance encountered: bombs, rockets, missiles, grenades, projectiles, land mines, and improvised explosive devices.

Credentials

Blasters License, Florida (2008)

Education

Graduate, Explosive Ordnance - Disposal School Indian Head Maryland (1993)

Training, Memberships & Awards

- Game of Logging, Level I, Dolmar (2013)
- Bloodborne Pathogens Refresher Training, American Heart Association (2015)
- First Aid/CPR/AED Training, American Heart Association (2015)
- Naval School Explosive Ordnance Disposal, EOD Phase II (1993)
- Naval School Explosive Ordnance Disposal Advanced EOD Management and Technology (1998)
- Hoisting License, Massachusetts Department of Public Safety
- 10-Hour Construction Safety Training, OSHA 29 CFR 1926 (2006)
- 30-Hour Construction Safety and Health Training Course, OSHA 29 CFR 1926 (2010)
- 8-Hour Managers and Supervisors Course (SHSC), OSHA 29 CFR 1910.120(e)(4)
- 8-Hour Hazardous Waste Refresher Course, OSHA 29 CFR 1910.120(e)(8), Safety Unlimited (2015)
- 40-Hour Hazardous Waste Site Training Course, OSHA 29 CFR 1910.120(e)(3) (1999)

Employment History

2012 to Present Weston Solutions Inc.

2000 to 2012 Various Environmental Consulting Positions

1993 to 2000 United States Marine Corps

Key Projects

Remedial Investigation (RI) at Shoreline Munitions Response Site (MRS) at Former Nansemond Ordnance Depot (FNOD), Norfolk, VA, Senior Unexploded Ordnance Supervisor (SUXOS). Conduct Phase II investigation of designated areas for potential unexploded ordnance (UXO) and/or munitions and explosives of concern (MEC) presence. Provide leadership and guidance for the investigation of areas of concern (AOC). Supervise the safe excavation of AOCs with heavy equipment "excavator". Ensure the quality of work of the field staff consisting of UXO Safety Officer (UXOSO), Quality Control Specialist (QCS), Tech III, and Tech II personnel. Prepare daily SUXOS reports to the Project Manager (PM). [1-14 to Present]

Tobyhanna Artillery Range (TOAR) Formerly Used Defense Site (FUDS) MRS 2B & 2C, Tobyhanna, PA, U.S. Army Corps of Engineers (USACE) Baltimore District, SUXOS. Provided leadership and guidance to six UXO teams consisting of four 6-Tech teams and two 7-Tech teams. Supervised the safe disposal of thousands of UXO items utilizing the Buried Explosion Module (BEM) and processed several hundred thousand pounds of material documented as safe (MDAS). Downloaded team data nightly to the UXO Fast database and provided daily SUXOS reports to the PM. [3-12 to 12-13]

Schofield Barracks, HI (Chemical Warfare Material Area) Construction Support BAX Project, HI, UXOSO/Field Supervisor. Provided leadership and guidance to 40 UXO Technicians and over 50 subcontractors. Supervised the safe disposal of thousands of UXO items and several responses on possible CWM munitions. Supervised and conducted periodic chemical warfare material (CWM) response and decontamination rehearsals. [8-09 to 2-12]

UXO Remediation at Fort McClellan, Anniston, AL, UXOSO. Responsibilities included site safety briefings, daily supervision of safe operations during UXO remediation, establishing exclusion zones for disposal operations, and safety supervisor for explosive disposal operations. [8-06 to 1-07]

UXO Remediation Operations, Brooksville, FL, UXOSO. Responsibilities at the Turret Gunnery Range included daily safety briefings, safety supervisor during UXO remediation operations, and safety supervisor for explosive disposal operations. Coordinated with federal, state, and local officials in the explosive disposal of 2.36-inch (M6 and M7) rockets at High Point residential area. [10-05 to 6-06]

UXO Clean-up, Cranbury, NJ, UXOSO. This site was a former chemical plant that detonated in 1956. Items encountered are 6-lb. incendiary bombs, M48 trip flares, 20 millimeter (mm) high-explosive incendiary (HEI) rounds, and M26 grenade fuzes. Developed the site Health and Safety Plan (HASP), conducted daily UXO safety briefs, safety supervisor during UXO remediation, and safety supervisor during UXO explosives disposal operations. [6-05 to 10-05]

Ordnance Clearance, FL, UXO Technician III. Team Leader and heavy equipment operator for ordnance clearance at the naval bombing range, Switzerland, Florida. Operated D6 dozer, backhoes, dump trucks, excavator, and sifting plant. [11-04 to 6-05]

UXO Support at Hawthorne Army Depot, Hawthorne, NV, UXO Quality Assurance QA and UXO Safety Supervisor. Supervised the shredding and disposal of 1,000,000+ wooden ammunition containers. Supervised personnel and inspected each container to ensure it was clear of ordnance prior to shredding. Presented daily UXO identification and UXO safety briefs to non-UXO personnel working on the plant. [8-04 to 10-04]

UXO Support, Benicia, CA, UXO Technician III. Supervised personnel in the clearance of UXO using both manual and heavy equipment techniques. Supervised sifting plant operations ensuring the safety of team members. Responsible for the safe disposal of UXO using the confined detonation chamber (CDC). [5-03 to 8-04]

Operation Enduring Freedom, IR, UXO Technician II. Responsibilities included identification, avoidance, and disposal of UXOs. Provided UXO support to the first responders KBR and O'Brian to repair pipe lines and gas oil separation plants in the Rumaila oil fields. [4-03 to 5-03]

UXO Construction Support, HK, UXO Technician. Responsibilities were identification, avoidance, and disposal of UXOs for the construction of Penny's Bay Disneyland project. [10-02 to 3-03]

Clean-up at Massachusetts Military Reservation (MMR), Cape Cod, MA, UXO Technician / Heavy Equipment Operator. Responsibilities included identification, remediation, and disposal of UXOs. Operated Komatsu PC200 Excavator for over 2,000 hours, John Deere 850 Dozer, Case and John Deere 821 Loaders, articulating trucks, and 25 and 30 ton John Deere and Bell Terex. Field foreman for UXO excavations and sifting operations. [6-00 to 6-02]

Explosives Ordnance Disposal (EOD) Support, Camp Pendleton, CA, EOD Technician. Supervised, organized, and participated in over 6 years of EOD operations to include surface and subsurface range clearances of foreign and domestic ordnance, inerting operations, land mine instruction to marines of MSSG-13, and research and development (R&D) operations. Types of ordnances encountered were bombs, rockets, missiles, grenades, projectiles, landmines, and improvised explosive devices. [6-93 to 3-00]

Naval School
Explosive Ordnance Disposal

Certificate of Completion

Presented To

Sergeant
David L. Holland, USMC

For having successfully completed
the prescribed course of study for

EXPLOSIVE ORDNANCE DISPOSAL PHASE II

16 Jun 1993

Date

JOHN J. WALSH, CDR, USN

Commanding Officer

United States Marine Corps

This is to certify that

SSGT D.L. HOLLAND [redacted] **USMC**

has completed the course prescribed by the

29 CFR 1910.120, 40 CFR 264.16/265.16
40 HOUR HAZARDOUS WASTE HANDLER COURSE

Given at
Industrial Hygiene/Safety, G-4
1st Force Service Support Group
Camp Pendleton, California 92055-5700

this 14th *day of* May, *19* 99

D. Kobayashi
D. KOBAYASHI
LCDR USN
INDUSTRIAL HYGIENE, OIC

T. Hope
T. M. HOPE
SSGT USMC
CHIEF INSTRUCTOR

(1550)

NAVMC 184 (REV. 11-85) (Supersedes NAVMC 184a) SN: 000-00-000-4806 U/I: PKG OF 100

Certificate of Completion

This certifies that

David Holland

Has Successfully completed

8 Hour HAZWOPER Refresher Training

Refresher certification does NOT necessarily indicate initial 24 or 40 Hour HAZWOPER certification

In Accordance w/Federal OSHA Regulation 29 CFR 1910.120(e) & (p)

And all State OSHA and EPA Regulations As Well

This course is approved for 8 Contact Hours (0.8 CEUs) of continuing education per the California Department of Public Health for Registered Environmental Health Specialist (REHS) issued by Safety Unlimited, Inc. (Accreditation # 044)

Julius P. Griggs	1504125137227	4/12/2015
Julius P. Griggs Instructor #892	Certificate Number	Issue Date

SAFETY UNLIMITED, Inc.
OSHA Compliant Safety Training Since 1993

2139 Tapo St., Suite 228 Simi Valley, CA 93063
888 309-SAFE (7233) or 805 306-8027 866-869-7097 (fax)
www.safetyunlimited.com

Proof of initial certification and subsequent refresher training is NOT required to take refresher training
Want to be sure this certificate is valid? Visit safetyunlimited.com/verification

Certificate of Completion

OSHAclasses.com

This Certifies That

Dave Holland

is awarded this certificate for

OSHA - 30 Hour Construction Industry Outreach Training Program

Credit Hours: 30

Completion Date: 03/18/2010 00:23 CST

Certificate Number: 1499283

Student Signature

Michael Millsap, Trainer C 0034819 and G 0021414

Association of
Bay Area Governments

ABAG Training Center
www.hazmatschool.com

CERTIFICATE OF COMPLETION

DAVID HOLLAND

has successfully completed the course titled

OSHA 8-hr Training for Supervisors

Satisfies 29 CFR 1910.120(e)(4)

on

March 26, 2007

and has earned

IACET authorized 0.8 CEUs (Continuing Education Units) from the program

Certificate No 55189
(verify at www.hazmatschool.com)

Brian Kirking, Training Director
Sharon McCreadie, Training Coordinator
www.abag.ca.gov; (510) 464-7964

Paul W Gantt

Paul W. Gantt, REA
Safety Compliance Management, Inc.

HEARTSAVER FIRST AID CPR AED

Heartsaver®
First Aid CPR AED

American Heart Association.

PEEL HERE

DAVID HOLLAND

This card certifies that the above individual has successfully completed the objectives and skills evaluations in accordance with the curriculum of the AHA Heartsaver First Aid CPR AED Program. Optional completed modules are those **NOT** marked out:

Child CPR AED | Infant CPR | Written test

08-13-2015
Issue Date

08-2017
Recommended Renewal Date

HEARTSAVER FIRST AID CPR AED

Training Center Name: St. Joseph's Hospital Training Center TC ID #

TC Info: 3001 W. MLK Blvd., Tampa, FL 33607
Charlotte Young, TCC 813.554.8679

Course Location: Teach Me Now Inc. www.teachmenow.biz
813-478-4585 863-5814177

Instructor Name: Cathleen A. Signer Inst. ID # 0509131348 4

Holder's Signature

 Tampering with this card will alter its appearance. 90-1815

Strike through the modules ***NOT*** completed.

This card contains unique security features to protect against forgery.

90-1815 3/11

American Heart Association

Learn and Live

Participation Certificate

David Holland

Has successfully participated in the general portion of the Heartsaver® Bloodborne Pathogens Online Course by the American Heart Association.

To meet OSHA regulations, you must also receive training in your employer's site-specific exposure control plan.

Ask your employer for more information about this part of your training.

SCIDDWU7D4EL	August 13, 2015
Key Number	Date Completed

2/09 KJ0663

14:46:38 GMT-0400 (EDT)

APPENDIX C

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

ENVIRONMENTAL HEALTH AND SAFETY INSPECTION CHECKLIST

Project Name: _____

Inspector: _____

Submit to: _____

Date: _____

THE WESTON SITE APPEARANCE

YES	NO		COMMENT
		Is the site secured to prevent inadvertent, unnecessary, or unauthorized access? Are gates closed and locked at any time that the access point is not occupied or visible to site workers?	
		Are access points posted with signs to indicate client and end-user client name, WESTON's name and logo, names of other contractors and sub-contractors, project name and location, and appropriate safety messages?	
		Are required postings in place (e.g., Labor Poster, Emergency Phone Numbers, Site Map, etc.)?	
		Are site trailers tied down per local code and provided with stairs that have a landing platform with guard and stair railings?	
		Is a Site Safety file system established in the office to maintain records required by applicable safety regulations	
		Is the Health and Safety Plan (HASP) or Accident Prevention Plan (APP) amended as scope of work changes, hazards are discovered or eliminated or if risk change?	
		Is the Site Safety Plan and the Safety Officers Field Manual on site?	
		Is new employee indoctrination provided?	
		Have site Rules been provided, discussed and signed off on by all employees	
		Incident Reporting procedure explained to all?	
		Is site management trained in the WESTON (and client as applicable) Incident Reporting system?	
		Are NOI and Supplemental Report forms and OSHA 300 Log available on site?	
		Is Site Management aware of the Case Management and Incident Investigation Procedures?	
		Is there a list of preferred provider medical facilities available?	
		Has the "Inspection By A Regulatory Agency" procedure been reviewed by all site management?	
		Will Competent Persons be required because of activities to be performed, equipment to be used or hazards to be encountered?	

POLICIES

YES	NO		COMMENT
		Each individual employee is aware that he or she responsible for complying with applicable safety requirements, wearing prescribed safety equipment and preventing avoidable accidents.	
		Do employees understand that they will wear clothing suitable for existing weather and work conditions and the minimum work uniform will include long pants, sleeved work shirts, protective footwear, hard hat, and safety glasses unless otherwise specified via the HASP.	
		Are employees provided safety and health training to enable them to perform their work safely ? Is all training documented to indicate the date of the session, topics covered, and names of participants?	
		Safety meetings are conducted daily. The purpose of the meetings are to review past activities, review pertinent tailgate safety topics and establish safe working procedures for anticipated hazards encountered during the day.	
		Training has been provided to all personnel regarding handling of emergency situations that may arise from the activity or use of equipment on the project.	
		Employees/contractors are informed and understand that they may not be under the influence of alcohol, narcotics, intoxicants or similar mind-altering substances at any time. Employees found under the influence of or consuming such substances will be immediately removed from the job site.	
		Site workers and operators of any equipment or vehicles are able to read and understand the signs, signals and operating instructions of their use.	
		Have contractors performing work provided copies of relevant documentation (such as medical fit-for-duty, training certificates, fit-tests, etc.) prior to initiation of the project?	

SANITATION
29 CFR 1926 Subparts C, D. EM 385-1-1, Section 2

YES	NO		COMMENT
		Is an adequate supply of drinking water provided. Is potable/drinking water labeled as such? Are there sufficient drinking cups provided?	
		Is there a sufficient number of toilets?	
		Are washing facilities readily available and appropriate for the cleaning needs?	
		Are washing facilities kept sanitary with adequate cleansing and drying materials?	
		Waste is secured so as not to attract rodents, insects or other vermin?	
		Is an effective housekeeping program established and implemented?	

ACCIDENT PREVENTION SIGNS, TAGS, LABELS, SIGNALS, AND PIPING SYSTEM IDENTIFICATION
29 CFR 1926 Subpart G. EM 385-1-1, Section 8

YES	NO		COMMENT
		Are signs, tags, and labels provided to give adequate warning and caution of hazards and instruction/directions to workers and the public?	
		Are all employees informed as to the meaning of the various signs, tags and labels used in the workplace and what special precautions are required?.	
		Are construction areas posted with legible traffic signs at points of hazard?	
		Are signs required to be seen at night lighted or reflectorized?	
		Tags contain a signal word (“danger” or “caution”) and a major message to indicate the specific hazardous condition or the instruction to be communicated to the employee. Tags follow requirements as outlined in 29 CFR 1926.200.	

MEDICAL SERVICES AND FIRST AID
29 CFR 1926 Subparts C, D. EM 385-1-1, Section 3

YES	NO		COMMENT
		Is a local medical emergency facility (LMEF) identified in the HASP or APP?	
		Has the LMEF been visited to verify the directions and establish contacts?	
		Has site management reviewed WESTON’s incident management procedures?	
		Have clinics and specialists that will help WESTON manage injuries and illnesses been identified?	
		Is there at least two (2) people certified in First Aid and CPR?	
		Are first aid kits available at the command post and appropriate remote locations?	
		Are first Aid Kits and Eyewash/Safety Showers inspected weekly?	
		Are 15 minute eyewash/safety showers in place if required.	

FIRE PREVENTION AND PROTECTION
29 CFR 1926 Subpart F. EM 385-1-1, Section 9

YES	NO		COMMENT
		Is an Emergency Response and Contingency Plan in place?	
		Are emergency phone numbers posted?	
		Are fire extinguishers selected and provided based on the types of materials and potential fire classes in each area.	
		Are fire extinguishers provided in each administrative and storage trailer, within 50 ft but no closer than 25 ft of any fuel or flammable liquids storage, on welding and cutting equipment, on mechanical equipment?	
		Are fire extinguishers checked daily and inspected monthly?	
		Do site personnel know the location of fire extinguishers and how to use them?	
		Are flammable and combustible liquids stored in approved containers?	
		Safety cans are used for dispensing flammable or combustible liquids in 5 gallon or less volumes.	
		Are flammable and combustible liquids stored in flammable storage cabinets or appropriate storage areas?	
		Are flammable materials separated from oxidizers by at least 20 feet (or 5 foot tall, ½ -hour rated fire wall) when in storage?	
		Are fuel storage tanks double walled or placed in a lined berm?	
		Spills are cleaned up immediately and wastes are disposed of properly.	
		Combustible scrap, debris and waste material (oily rags) are stored in closed metal containers and disposed of promptly.	
		Vehicle fueling tanks are grounded and bonding between the tank and vehicle being fueled is provided?	
		LPG is stored, handled and used according to OSHA regulations 29 CFR 1926.	
		LPG cylinders are not stored indoors.	
		Is a hot work permit program in place? See WESTON FLD-36	
		Is smoking limited to specific areas, prohibited in flammable storage areas and are signs posted to this effect?	

HAZARDOUS SUBSTANCES, AGENTS AND ENVIRONMENTS
29 CFR 1926 Subparts D, Z. EM 385-1-1, Sections 6, 28

YES	NO		COMMENT
		Are operations, materials and equipment evaluated to determine the presence of hazardous contaminants or if hazardous agents could be released in the work environment?	
		Are MSDS for substances made available at the work-site when any hazardous substance is procured, used, or stored?.	
		Are all containers and piping containing hazardous substances labeled appropriately?	
		Is there an inventory of hazardous substances?	
		Is there a site Specific Hazard Communication Program?	
		Spill kits appropriate for the hazardous materials present are on site and their location is known to spill responders.	
		Is disposal of excess hazardous chemicals performed according to WESTON's guidelines and RCRA regulations.	
		Before initiation of activities where there is an identified asbestos or lead hazard, is there a written plan detailing compliance with OSHA and EPA asbestos or lead abatement requirements? Does the plan comply with state and local authority, and USACE requirements, as applicable?	
		Are personnel trained and provided with protection against hazards from animals, poisonous plants and insects?	

PERSONAL PROTECTIVE AND SAFETY EQUIPMENT, RESPIRATORY AND FALL PROTECTION
29 CFR 1926 Subparts D, E, M. EM 385-1-1, Section 5

YES	NO		COMMENT
		Do employees understand that the minimum PPE is hard hat, safety glasses with side shields and safety shoes or boots and that long pants and a sleeved shirt are required?	
		Has the SSHC reviewed the PPE requirements in the HASP against actual site conditions and certified that the PPE is appropriate? (see Field Manual, PPE Program)	
		PPE is inspected, tested and maintained in serviceable and sanitary condition as recommended by the manufacturer. Is defective or damaged equipment taken out of service and repaired or replaced?	
		Are workers trained in the use of the PPE required?	
		Are personnel exposed to vehicular or equipment traffic, including signal persons, spotters or inspectors required to vests or apparel marked with a reflective or high visibility material?	
		Is there a noise hazard? If yes, hearing protection will be required.	
		Is there a splash or splatter hazard? Face shields or goggles will be required.	
		Will personnel be working in or over water? Personnel Floatation devices will be required.	
		Is there a welding hazard? Welding helmet and leathers will be required. Is there a cutting torch hazard? Goggles and protective clothing will be required.	
		Is each person on a walking/working surface with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level protected from falling by the use of guardrail systems, safety net systems or personal fall arrest systems? See WESTON FLD 25 (Note General Industry standard is four feet).	
		Guardrail systems are used as primary protection whenever feasible. Guardrail construction meets criteria in 29 CFR 1926.502(b).	
		Personal fall arrest systems (PFAS) are inspected and appropriate for use.	
		Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses are from synthetic fibers.	
		Safety nets and safety net installations are constructed, tested and used according to 29 CFR 1926.502.c	
		Is respirator use required? See WESTON Respiratory Protection Program	
		Persons using respiratory protection have been successfully medically cleared, trained and fit tested.	
		Respirators are used according to the manufacturer's instructions, regulatory requirements, selection criteria and health and safety plan provisions.	
		For Level C operations with organic vapor contamination, is the cartridge change-out schedule documented?	
		Is breathing certified as Grade D, or better, and certification available on-site?	

MACHINERY AND MECHANIZED EQUIPMENT
29 CFR 1926 Subparts N, O. EM 385-1-1, Sections 16, 17, 18

YES	NO		COMMENT
		Are inspections of machinery by a competent person established?	
		Is equipment inspected daily before its next use?	
		Equipment inspection reports are reviewed, followed-up on negative findings and records of inspections are maintained?	
		Machinery or equipment found to be unsafe is taken out of service until the unsafe condition has been corrected.	
		Is there a preventive maintenance program established?	
		Are operators of equipment qualified and authorized to operate?	
		Is all self-propelled construction and industrial equipment equipped with a reverse signal alarm?	
		Are seats or equal protection provided for each person required to ride on equipment. Are seatbelts installed and worn on motor vehicles, as appropriate.	
		All equipment with windshields is equipped with powered wipers. If fogging or frosting is possible, operable defogging or defrosting devices are required.	
		Internal combustion engines are not operated in enclosed areas unless adequate ventilation are made. Air monitoring is conducted to assure safe working conditions.	
		Is each bulldozer, scraper, dragline, crane, motor grader, front-end loader, mechanical shovel, backhoe, or similar equipment equipped with at least one dry chemical or carbon dioxide fire extinguisher with a minimum rating of 5-B:C?	
		Will cranes or other lifting devices be used? If so, are the following documents available on site: 1) a copy of the operating manual, 2) load rating chart, 3) log book, 4) a copy of the last annual inspection and 5) the initial on-site inspection?	
		Do operators have certificates of training to operate the type of crane(s) to be used?	
		Is a signal person provided when the point of operation is not in full view of the vehicle, machine or equipment operator? When manual (hand) signals are used, is only one person designated to give signals to the operator?	
		Signal persons back one vehicle at a time. While under the control of a signal person, drivers do not back or maneuver until directed. Drivers stop if contact with the signal person is lost.	
		Is a critical lift plan prepared by a competent person whenever: a lift is not routine, or a lift exceeds 75% of a crane's capacity, a lift results in the load being out of the operator's line of sight, or a lift involves more than one crane, a man basket is used, or the operator believes there is a need for a critical lift plan.	
		Fork Lifts (Powered Industrial Trucks) - Will forklifts be used on site?	
		All fork lifts meet the requirements of design, construction, stability, inspection, testing, maintenance and operation as indicated in ANSI/ASME B56.1 Safety Standards for Low Lift and High Lift Trucks.	
		Do forklift operators have certificates of training?	
		Are pile driving operations conducted according to EM 385-1-1, Section 16.L?	
		Is drilling equipment operated, inspected, and maintained as specified in the manufacturer's operating manual? Is a copy of the manual available at the work-site? See also the Drilling Safety Guide in the Safety Officers Field Manual.	
		Are flag persons provided when operations or equipment on or near a highway expose workers to traffic hazards? Do flag persons and persons working in proximity to a road wear high visibility vests? Are persons exposed to highway vehicle traffic protected by signs in all directions warning of the presence of the flag persons and the work? Do signs and distances from the work zone conform to federal and local regulations?	

MOTOR VEHICLES
29 CFR 1926 Subpart O. EM 385-1-1, Section 18

YES	NO		COMMENT
		Motor vehicle operators have a valid permit, license, or certification of ability for the equipment being operated.	
		Inspection, maintenance and repair is according to manufacturer's requirements by qualified persons.	
		Vehicles are inspected on a scheduled maintenance program.	
		Vehicles not in safe operating condition are removed from service until defects are corrected.	
		Glass in windshields, windows, and doors is safety glass. Any cracked or broken glass is replaced.	
		Seatbelts are installed and worn.	
		The number of passengers in passenger-type vehicles does not exceed the number which can be seated.	
		Trucks used to transport personnel have securely anchored seating, a rear endgate, and a guardrail.	
		No person is permitted to ride with arms or legs outside of a vehicle body; in a standing position on the body; on running boards; seated on side fenders, cabs, cab shields, rear of the truck or on the load.	
		ATV operators possess valid state drivers license, have completed an ATV training course prior to operation of the vehicle, and wear appropriate protective equipment such as helmets, boots, and gloves.	

EXCAVATING AND TRENCHING
29 CFR 1926 Subpart P. EM 385-1-1, Section 25

YES	NO		COMMENT
		Has the known or estimated location of utility installations such as sewer, telephone, fuel, electric, water lines, or any other underground installations that may be expected to be encountered during excavation been determined before excavation? Have utility locations been verified by designated state services according to state regulations? Has the client provided clearance where state jurisdiction doesn't apply?	
		Have overhead utilities in excavation areas been identified and either de-energized, shielded or barricaded so excavating equipment will not come within 10 feet?	
		Are inspections of the excavation, the adjacent areas, and protective systems made daily and as necessary by a competent person?	
		Are Protective systems in place as prescribed by the competent person?	
		Is material removed from excavations managed so it will not overwhelm the protective systems?	
		Are barriers provided between excavations and walkways?	
		Are excavations by roadways barricaded to warn vehicles of presence or to prevent them from falling in?	
		Is there a means of exit from the excavation every 25 feet?	
		Is air monitoring required? If yes, Is it performed?	

CONFINED SPACES
29 CFR 1910 Subpart J. EM 385-1-1, Section 6

YES	NO		COMMENT
		Is there a Confined Space Entry Program in place?	
		Are the confined Spaces identified and labeled?	
		Will the Confined Spaces be entered?	
		Is appropriate entry documentation used and on-file?	

ELECTRICAL
29 CFR 1926 Subpart K. EM 385-1-1, Section 11

YES	NO		COMMENT
		Are electrical installations made according to the National Electrical Code and applicable local codes?	
		Qualified electricians make all connections and perform all work within 10 feet of live electric equipment.	
		Location of underground, overhead, under floor, behind wall electrical lines is known and communicated. Lines are documented by qualified person as de-energized where necessary.	
		Workers understand they must not work near live parts of electric circuits, unless they are qualified as required by OSHA or are protected by de-energizing and grounding the parts, guarding the parts by insulation, or other effective means?	
		Employees who regularly work on or around energized electrical equipment or lines are instructed in the cardiopulmonary resuscitation (CPR) methods.	
		Workers are prohibited from working alone on energized lines or equipment over 600 volts.	
		Are Ground-fault circuit interrupters (GFCI's) or is ground fault circuit protection provided to protect employees from ground-fault hazards for all 115 – 120 Volt, 15 and 20 amp receptacle outlets which are not a part of the permanent wiring of a building or structure at construction sites?	
		Circuit breakers are labeled.	
		Circuit breaker and all cabinets with exposed electric conductors are kept tightly closed.	
		Unused openings (including conduit knockouts) in electrical enclosures and fittings are closed with appropriate covers, plugs or plates.	
		Sufficient access and working space is provided and maintained about all electrical equipment to permit ready and safe operations and maintenance.	
		Motors are located within sight of their controllers or controller disconnecting means are capable of being locked in the pen position or is a separate disconnecting means installed in the circuit within sight of the motor.	
		Are visual inspections of extension cords and cord-and plug-connected equipment conducted daily? Is equipment found damaged or defective tagged and removed from service, and not used until repaired?	
		Wet Areas - Is portable lighting used in wet or conductive locations, such as tanks or boilers operated at no more than 12 volts and protected by GFCIs.	
		Are electrical installations in hazardous areas to NEC?	
		Metal ladders and tools including tape measures or fabric with metal thread are prohibited where contact with energized electrically parts is possible.	
		All extension cords are the three-wire type, designed and rated for hard or extra hard usage?	
		Worn or frayed electrical cords or cables are taken out of service. Fastening with staples, hanging from nails or suspending extension cords by wire is prohibited.	
		Electric wire/flexible cord passing through work areas is protected from damage such as foot traffic, vehicles, sharp corners, projections and pinching? Flexible cords and cables passing through holes are protected by bushings or fittings?	
		Before an employee or contractor performs any service or maintenance on a system where the unexpected energizing, start up, or release of kinetic or stored energy could occur and cause injury or damage, the system is to be isolated. Only authorized persons may apply and remove lockouts and tags.	
		Contractors planning to use hazardous energy control procedures submit their hazardous energy control plan to the WESTON site safety officer or designee before implementing lockout/tagout procedures.	
		There is a site specific hazardous energy control plan that clearly and specifically outlines the scope, purpose, authorization, rules and techniques to be used for the control of hazardous energy.	
		Workers possess the knowledge and skills required for the safe application, usage and removal of energy controls.	

WELDING AND CUTTING
29 CFR 1926 Subpart J. EM 385-1-1, Section 10

YES	NO		COMMENT
		Prior to performing welding, cutting or any other heat or spark producing activity, an assessment of the area is made by a competent person to identify combustible materials and potential sources of flammable atmospheres.	
		Welders, cutters and their supervisors are trained in the safe operation of their equipment, safe welding and cutting practices, hot work permit requirements, and fire protection.	
		Welding and cutting equipment is inspected daily before use. Unsafe equipment is taken out of use, replaced or repaired.	
		Workers and the public is shielded from welding rays, flashes, sparks, molten metal and slag.	
		Employees performing welding, cutting or heating are protected by PPE appropriate for the hazards (e.g., respiratory, vision and skin protection).	
		Compatible fire extinguishing equipment is provided in the immediate vicinity of welding or cutting operations.	
		Drums, tanks, or other containers and equipment which have contained hazardous materials shall be thoroughly cleaned before welding or cutting. Cleaning shall be performed in accordance with NFPA 327, Cleaning or Safeguarding Small Tanks and Containers, ANSI/AWS F4.1, Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, and applicable health and safety plan requirements.	

HAND AND POWER TOOL SAFETY
29 CFR 1926 Subpart I. EM 385-1-1, Section 13

YES	NO		COMMENT
		Power tools are from a manufacturer listed by a nationally recognized testing laboratory for the specific application for which they are to be used.	
		Hand & power tools are inspected, maintained, tested and determined to be in safe operating condition before use.	
		Tools found to be unsafe are not used, tagged and repaired or destroyed.	
		Users of tools are trained in safe use.	
		Electrical tools have cords and plug connections in good repair.	
		Electrical tools are effectively grounded or approved double insulated.	
		Reciprocating, rotating, and moving parts of equipment are guarded if they may be accessed by employees or they otherwise create a hazard.	
		Safety clips/retainers are installed and maintained on pneumatic impact tool connections.	
		Chain saws have an automatic chain brake or anti-kickback device.	
		Pneumatic and hydraulic hoses and fittings are inspected regularly.	
		Employees who operate powder actuated tools are trained and carry valid operators cards.	
		Powder activated tools are stored in individual locked containers, when not in use and are not loaded until ready to use.	
		Powder actuated tools are inspected for obstructions or defects daily before use.	
		Powder actuated tool operators have appropriate PPE.	

RIGGING
29 CFR 1926 Subpart H. EM 385-1-1, Section 15

YES	NO		COMMENT
		Rigging equipment is inspected as specified by the manufacturer, by a qualified person, before use on each shift and as necessary to assure that it is safe.	
		Defective equipment is removed from service.	
		Rigging not in use is removed from the work area, properly stored, and maintained in good condition.	
		Wire rope removed from service for defects is cut up or plainly marked as unfit for use as rigging.	
		The number of saddle clips used to form eyes in wire rope conforms with Table H-20, are spaced evenly and the saddles are on the live side.	
		Chain rigging has a tag clearly indicating load limits, is inspected before initial use, then weekly, and is of alloyed metal.	
		Fiber rope rigging is not used if it is frozen or has been subject to acids or excessive heat.	
		Slings and their fittings and fastenings are inspected before use on each shift and as needed during use.	
		Drums, sheaves, and pulleys on rigging hardware are smooth and free of surface defects that can damage rigging.	

MATERIAL HANDLING, STORAGE, AND DISPOSAL
29 CFR 1926 Subpart H. EM 385-1-1, Section 14

YES	NO		COMMENT
		Employees are trained in and use safe lifting techniques.	
		Materials are not moved or suspended over workers unless positive precautions have been taken to protect workers.	
		Conveyors are constructed, inspected, & maintained by qualified persons according to manufacturer's recommendations.	
		All conveyors are to be equipped with emergency stopping devices.	
		Hazardous exposed moving machine parts are guarded mechanically, electrically or by location.	
		Controls are clearly marked and/or labeled to indicate the function controlled.	
		Taglines are used for suspended loads where the movement may be hazardous to persons.	
		Material in storage is protected from falling or collapse by effective stacking, blocking, cribbing, etc.	
		Walkways and aisles are to be kept clear.	
		Materials are not stored on scaffolds or runways in excess of normal placement or in excess of safe load limits.	
		Work areas and means of access are maintained safe and orderly.	
		Tools, materials, extension cords, hoses or debris do not cause tripping or other hazards.	
		Storage and construction sites are kept free from the accumulation of combustible materials.	
		Waste materials and rubbish are placed in containers or, if appropriate, in piles. Waste materials are disposed of in accord with applicable local, state, or federal requirements.	

FLOATING PLANT AND MARINE ACTIVITIES
29 CFR 1926 Subpart O. EM 385-1-1 Section 19

YES	NO		COMMENT
		Floating plants that are regulated by the USCG have current inspections and certificates.	
		Before any floating plant is brought to the job site and placed in service it is inspected and determined to be in safe operating condition	
		Periodic inspections are made such that safe operating conditions are maintained. Strict compliance with EM 385-1-1, Section 19 is expected.	
		Plans are in place for removing or securing the plant and evacuation of personnel endangered by severe weather and other marine emergencies such as; fire, flooding, man overboard, hazardous materials incidents, etc..	
		Means of access are properly secured, guarded, and maintained free of slipping and tripping hazards.	
		Dredging operations follow guidelines as established in EM 385-1-1, Section 19.D.	

PRESSURIZED EQUIPMENT AND SYSTEMS
29 CFR 1926 Subparts I, F. EM 385-1-1, Section 20

YES	NO		COMMENT
		Pressurized equipment and systems are inspected before being placed into service.	
		Pressurized equipment or systems found to be unsafe are tagged “Out of Service-Do Not Use”.	
		Systems and equipment are operated, inspected and maintained by qualified, designated personnel.	
		Safe clearance, lockout/tagout procedures are followed as appropriate during maintenance or repair.	
		Air hose, pipes, fittings are pressure-rated for the activity. Defective hoses are removed from service.	
		Hoses aren’t laid over ladders, steps, scaffolds, or walkways in a manner that creates a tripping hazard.	
		The use of compressed air for personal cleaning is prohibited. The use of compressed air for other cleaning is restricted to less than 30 psig.	
		Compressed gas cylinders are stored in well-ventilated locations.	
		Cylinders in storage are separated from flammable or combustible liquids and from easily ignitable materials by at least 40 feet or by a minimum five feet tall, ½ -hour fire resistive partition.	
		Stored cylinders containing oxidizing gases are separated from fuel gas cylinders by at least 20 feet or by a minimum five feet tall, ½ -hour fire resistive partition.	
		Cylinder valve caps are in place when cylinders are in storage, in transit, or a regulator is not in place.	
		Compressed gas cylinders in service are secured in substantial fixed or portable racks or hand trucks.	
		Oxygen cylinders and fittings are kept away from, and free from oil and grease.	
		Cylinder Storage areas are posted with the names of the gases in storage and with signs indicating "No Smoking or Open Flame".	
		Cylinders are to be stored such that mechanical and corriosion damage is avoided. Cylinders are not to be stored in areas required as an egress path.	
		Cylinders may be stored in the open outdoors, however, they must be protected from the ground to prevent corrosion and must be protected from temperatures that may exceed 125 degrees F.	

WORK PLATFORMS/SCAFFOLDS
29 CFR 1926 Subparts L, M, N. EM 385-1-1 Sections 21, 22

YES	NO		COMMENT
		Work platforms are erected, used, inspected, tested, maintained and repaired according to manufacturer's requirements.	
		Construction, inspection, and disassembly of scaffolds is under the direction of a competent person.	
		Workers on scaffolding have been trained by a qualified person.	
		Scaffolds are erected on a firm and level surface and are square and plumb.	
		Scaffolds are not loaded in excess of rated capacity.	
		Working levels of work platforms are fully planked or decked.	
		Planks are in good condition and free from obvious defects.	
		Fabricated frame scaffolding four times higher than the base width is secured to building/structure according to manufacturer's instruction and/or OSHA requirements.	
		Working platforms of scaffolding over ten feet in height have guard rails meeting OSHA specifications. Fall protection is suggested at four feet or greater.	
		Scaffolding/work platforms are accessed by means of a properly secured ladder or equivalent. Built on ladders conform to scaffold ladder requirements. Climbing of braces is not allowed.	
		Crane supported work platforms are designed and used in accordance with OSHA standards.	
		Elevating work platforms are operated, inspected and maintained according to the equipment operations manual.	
		Employees working in aerial lifts remain firmly on the floor of the basket. Employees use fall protection while in an aerial lift basket.	

WALKING AND WORKING SURFACES AND STAIRS
29 CFR 1926 Subparts L, M, X. EM 385-1-1, Sections 21, 22, 24

YES	NO		COMMENT
		Work areas are clean, sanitary, and orderly	
		Work surfaces are kept dry or appropriate means are taken to assure the surfaces are slip-resistant	
		Accumulations of combustible dust are routinely removed.	
		Aisles and passageways are kept clear and marked as appropriate.	
		There is safe clearance for walking in aisles where motorized or mechanical handling equipment is operating.	
		Materials or equipment is stored in such a way that sharp projections will not interfere with the walkway.	
		Changes of direction or elevation are readily identifiable.	
		Aisles or walkways that pass near moving or operating machinery, welding operations or similar operations are arranged so employees will not be subjected to potential hazards.	
		Standard guardrails are provided wherever aisle or walkway surfaces are elevated more than 30 inches above any adjacent floor or the ground and bridges provided where workers must cross over conveyors and similar hazards.	
		There are standard stair rails or handrails on all stairways having four or more risers or with an elevation of 30 or more inches.	
		Stairways are at least 22 inches wide. (General Industry Standard)	
		Stairs angle no more than 50 and no less than 30 degrees, risers are uniform from top to bottom (plus or minus 1/4 inch) and are provided with a surface that renders them slip resistant.	
		Stairway handrails are not less than 36 inches above the leading edge of stair treads and have at least 3 inches of clearance between the handrails and the wall or surface they are mounted on.	
		Where doors or gates open directly on a stairway, there is a platform provided so the swing of the door does not reduce the width of the platform to less than 20 inches.	
		Where stairs or stairways exit directly into any area where vehicles may be operated, there are adequate barriers and warnings provided to prevent employees stepping into the path of traffic.	
		Signs are posted showing the load capacity of elevated storage areas.	
		An appropriate means of access and egress is provided for surfaces with 19 or more inches of elevation change.	
		Material on elevated surfaces is minimized, with that necessary for immediate work requriements piled, stacked or racked in a manner to prevent it from tipping, falling, collapsing, rolling or spreading.	

FLOOR AND WALL HOLES AND OPENINGS
29 CFR 1926 Subpart M. EM 385-1-1, Section 24

YES	NO		COMMENT
		Floor and roof openings that persons can walk into or fall through are guarded by a physical barrier or covered.	
		Holes (defined as equal to or greater than 2 inches in least dimension) where person could trip must be covered/protected.	
		Unprotected sides and edges on a walking/working surface six feet or more (note four feet in General Industry) are protected by guardrail system, safety net or Personal Fall Arrest System (PFAS).	
		Unused portions of service pits and pits not actually in use are either covered or protected by guardrails or equivalent.	
		Coverings for holes or other openings must be constructed of sufficient strength to support any anticipated load, must be secured in place to prevent accidental removal or displacement and must be marked indicating purpose (e.g., stenciled "Hole" or painted contrasting color to surroundings).	

LADDERS
29 CFR 1926 Subpart X. EM 385-1-1, Section 21

YES	NO		COMMENT
		Portable ladders are used for their designed purpose only.	
		Portable ladders are examined for defects prior to, and after use.	
		Ladders found to be defective are clearly tagged to indicate "DO NOT USE" if repairable, or destroyed immediately if no repair is possible.	
		Workers are trained in hazards associated with ladder use and how to inspect ladders.	
		Ladders have secure footing provided by a combination of safety feet, top of ladder tie-offs and mud cills or a person holding the ladder to prevent slipping.	
		The handrails of a straight ladder used to get from one level to another extend at least 36 inches above the landing.	
		Ladders conform to construction criteria of ANSI Standards A-14.1 and A-14.2.	
		Wooden ladders are not painted with an opaque covering such that signs of flaws, cracks or drying are obscured.	
		Fixed ladders are constructed and used according to OSHA Standards, 29 CFR 1910.27 and ANSI A-14.3.	
		Rungs, cleats or steps, and side rails that may be used for handholds when climbing, offer adequate gripping surface and are free of splinters, slivers or burrs, and substances that could cause slipping.	
		Fixed ladders of greater than 24 feet have cages or other approved fall protection devices. (note General Industry is 20 feet).	
		Where fall protection is provided by ladder safety systems (body belts or harnesses, lanyards and braking devices with safety lines or rails), systems meet the requirements of and are used in accordance with WESTON Fall Protection Standard Practices and are compatible with construction of the ladder system.	

DEMOLITION
29 CFR 1926 Subpart T. EM 385-1-1, Section 23

YES	NO		COMMENT
		Prior to initiating demolition activities an engineering survey (by a competent person) and a demolition plan (by a competent person) is completed.	
		All employees engaged in demolition activities are instructed in the demolition plan.	
		It has been determined through the engineering survey and outlined in the plan, if any hazardous materials, or conditions (e.g., asbestos, lead, utility connections, etc.) exist. Such hazards are controlled or eliminated before demolition is started.	
		Continued inspections, by a competent person, are conducted to ensure safe employee working conditions.	

TREE MAINTENANCE AND REMOVAL
29 CFR 1910 Subpart R. EM 385-1-1, Section 31

YES	NO		COMMENT
		Tree maintenance or removal is done is under the direction of a qualified person.	
		Tree work, in the vicinity of charged electric lines, is by trained persons qualified to work with electricity and tree work. Appropriate distances are maintained for all workers who are not qualified.	
		Equipment is inspected, maintained, repaired and used in accordance with the manufacture's directions.	
		Prior to felling actions are planned to include clearing of the area to permit safe working conditions and escape.	
		Employees must be trained in the safe operation of all equipment.	
		All equipment and machinery is inspected and determined safe prior to use.	
		Work is performed under requirements of FLD 43.	

BLASTING
29 CFR 1926 Subpart U. EM 385-1-1, Section 29

YES	NO		COMMENT
		A blasting safety plan is developed prior to bringing explosives on-site.	
		The transportation, handling, storage, and use of explosives, blasting agents, and blasting equipment must be directed and supervised by a person with proven experience and ability in blasting operations. Licensing of person is verified.	
		Blasting operations in or adjacent to cofferdams, piers, underwater structures, buildings, structures, or other facilities must be carefully planned with full consideration to potential vibration and damage.	

HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE AND UNDERGROUND STORAGE TANK (UST) ACTIVITIES
29 CFR 1926 Subpart D. EM 385-1-1, Section 28

YES	NO		COMMENT
		All construction activities performed with known or potential exposure to hazardous waste are conducted in accordance with Hazardous Waste Operations and Emergency Response requirements.	

CONCRETE and MASONRY CONSTRUCTION
29 CFR 1926 Subpart Q. EM 385-1-1, Section 27

YES	NO		COMMENT
		Construction loads are not placed on a concrete or masonry structure or portion of a concrete or masonry structure unless the employer determines, based on information from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.	
		Employees are not permitted to work above or in positions exposed to protruding reinforcing steel or other impalement hazards unless provisions have been made to control the hazard.	
		Sections of concrete conveyances and airlines under pressure are secured with wire rope (or equivalent material) in addition to the regular couplings or connections.	
		Structural and reinforcing steel for walls, piers, columns, and similar vertical structures is supported and/or guyed to prevent overturning or collapse	
		All form-work, shoring, and bracing is designed, fabricated, erected, supported, braced, and maintained so it will safely support all vertical and lateral loads that may be applied until the loads can be supported by the structure.	
		Shoring equipment is inspected prior to erection to determine that it is specified in the shoring design. Any equipment found to be damaged is not used.	
		Erected shoring equipment is inspected immediately prior to, during, and immediately after the placement of concrete. Any shoring equipment that is found to be damaged, displaced, or weakened is immediately reinforced or re-shored.	
		Shoring, vertical slip forms and jacks conform with requirements of Section 27.B.08-13 of USACE EM 385-1-1.	
		Forms and shores (except those on slab or grade and slip forms) are not removed until the individual responsible for forming and/or shoring determines that the concrete has gained sufficient strength to support its weight and all superimposed loads.	
		Precast concrete members are adequately supported to prevent overturning or collapse until permanent connections are complete	
		No one is permitted under pre-cast concrete members being lifted or tilted into position except employees required for the erection of those members.	
		Lift slab operations are planned and designed by a registered engineer or architect.	
		Hydraulic jacks used in lift slab construction have a safety device that causes the jacks to support the load in any position if the jack malfunctions	
		No one is permitted under the slab during jacking operations.	
		A limited access zone is established whenever a masonry wall is being constructed.	
		Fall protection is provided to masonry workers exposed to falls of 6 feet or more.	

STEEL ERECTION
29 CFR 1926 Subpart R. EM 385-1-1, Section 27

YES	NO		COMMENT
		Impact wrenches have a locking device for retaining the socket. Containers shall be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.	
		Structural and reinforcing steel for walls, piers, columns, and similar vertical structures shall be guyed and supported to prevent collapse	
		No loading is placed upon steel joists until all bridging is completely and permanently installed**.**	
		Workers are provided fall protection whenever they are exposed to falls of 1.8 m (6 ft) or more (EM 385-1-1).	
		Temporary flooring in skeleton steel erection conforms with Section 27.F of USACE 385-1-1	

ROOFING
29 CFR 1926 Subpart M. EM 385-1-1, Sections 21, 22, 24, 27

Yes	No		Comments
		In the construction, maintenance, repair, and demolition, of roofs, fall protection systems is provided that will prevent personnel from slipping and failing from the roof and prevent personnel on lower levels from being struck by falling objects	
		On all roofs greater than 4.8 m (16 ft) in height, a hoisting device, stairways, or progressive platforms are furnished for supplying materials and equipment.	
		Roofing materials and accessories that could be moved by the wind, including metal roofing panels, that are on the roof and unattached are secured when wind speeds are greater than, or are anticipated to exceed, 10 mph.	
		Level, guarded platforms are provided at the landing area on the roof**.**	
		When their use is permitted, warning line systems comply with USACE Section 27.07 of EM 385-1-1.	
		Workers involved in roof-edge materials handling or working in a storage area located on a roof with a slope -/= to four vertical to twelve horizontal and with edges 6 ft or more above lower levels are protected by the use of a guardrail, safety net, or personal fall arrest system along all unprotected roof sides and edges of the area.	

ENVIRONMENTAL COMPLIANCE

Yes	No		Comments
		Environmental Compliance and Waste Management Plan on file.	
		Waste Determination Made.	
		Manifest and/or Shipping Papers prepared and filed.	
		Manifest Exception Reports Prepared, as necessary. Procedures to track manifests in place.	
		State Annual and EPA Biennial Reporting Information Available.	
		RCRA Personnel Training Records on file.	
		CAA Permits on file.	
		CWA Permits on file.	
		RCRA Permits on file.	
		State and/or Local Permits on file.	
		RCRA Inspections conducted and Documentation on file.	
		Transporter and TSD compliance information on file.	
		Waste Accumulation Areas Managed Properly.	
		Wetlands Areas Identified and Protected.	
		Endangered, Threatened or Special Concern Species or Areas Identified and Protective Methods Determined.	
		Runon and Runoff Concerns Identified and Managed.	
		Adjacent Land Areas Protected as Necessary.	
		Non-Hazardous Solid Wastes Managed Properly.	

MISCELLANEOUS REGULATORY and POLICY COMPLIANCE

Yes	No		Comments
		Personnel Training Records for DOT Materials Handling on file.	
		Noise Control Issues Addressed and Managed.	
		Site Security Issues Identified and Managed.	
		Known Historical, Archeological and Cultural Resources Identified and Managed.	
		WESTON EHS Analysis Checklist In Use.	
		Safety Observation and Recognition Program in place.	
		Weekly EHS Report Card System in place.	
		Federal, State and Local Required Postings in place.	
		Site specific Lockout/Tagout Program is in place.	
		Site-specific Confined Space Program is in place.	
		Site Safety Officer filing system is in place and up to date.	

APPENDIX D

DEFICIENCY TRACKING FORM

SAMPLE DEFICIENCY TRACKING FORM
Site Information and Date

No.	Description	Risk Rating	Date Identified	Status/Date	Reference	Comments	Corrective Action/ Date to be Completed	Responsible Party
EX	PPE	IV	1/2010		EM385-1-1.05.B	Several individuals not using glasses - forgotten, left on hardhat, or dangling from neck strap	Develop program to ensure PPE items specified are worn. Have supervisors lead by example.	
1								
2								
3								
4								
5								
6								
7								
8								

Notes:
Risk Ratings:
I – Catastrophic
II – Serious
III – Severe
IV – Moderate
V – Minor

BMP – Best Management Practice

Requirement of EM 385-1-1, Section 01.A.06 (e)

APPENDIX E

PRELIMINARY ACCIDENT NOTIFICATION (PAN) FORM AND USACE ENG FORM 3394 ACCIDENT INVESTIGATION REPORT

WORK SHEET FOR PRELIMINARY ACCIDENT NOTIFICATION

This work sheet is a field tool to assist the collection of information about an accident and facilitate the completion of a Preliminary Accident Notification. For Member of the Public Recreation Visitor accidents use the Initial Notification of Public Recreation Accident Work Sheet

Project Name: _____ Project Office Symbol: _____ Date Worksheet Completed: _____
Date of Accident: _____ Time of Accident: _____ Person Completing Worksheet: _____ Phone #: _____

Location and Incident Information
Exact Location of Accident: _____
Number of Persons Involved: ____ Number of Properties Involved: ____
Personnel Classification
Government: Civilian [ ] Military [ ] Government Direct Contractor [ ] Foreign National [ ] Volunteer [ ]
Contractor [ ] Member of the Public [ ]
Type of Accident (Mark all that are applicable)
Injury/Illness [ ] Fatality [ ] Motor Vehicle [ ] Property Damage [ ] Fire [ ] Diving [ ]
Personal Data (If more than 2 persons involved provide their personal data on a separate sheet)
Person 1 - Name: Last _____ First _____ Middle Initial ___ Age: ___Gender: Male [ ] Female [ ]
Date of Birth: _____ Address: _____
Job Series/Title: _____ Grade: ___ Duty Status: On Duty [ ] Off Duty [ ] TDY [ ] Time Began Work _____
Unit and Station Assignment: _____ Office Symbol: _____ Date Hired: _____
Nature of Injury: _____ Body Part(s) Affected Primary _____ Secondary _____
Type of Injury _____Source of Injury _____
Severity of Injury: (See definitions on reverse side) Fatality: **Yes/No** Permanent Total Disability: **Yes/No**
Permanent Partial Disability: **Yes/No** Other Serious Injury: **Yes/No**
Estimated Days away from Work: _____ Estimated Days Restricted Duty/Job Transfer: _____
Primary Language Spoken: _____ English Literate: **Yes/No**
Does this person wish to remain anonymous **Yes/No**
What was employee worker doing before the accident occurred? _____
Name of Physician/Health Care Professional: _____
Medical Treatment Facility: _____
Address: _____ Phone # _____
Person 2 - Name: Last _____ First _____ Middle Initial ___ Age: ___Gender: Male [ ] Female [ ]
Date of Birth: _____ Address: _____
Job Series/Title: _____ Grade: ___ Duty Status: On Duty [ ] Off Duty [ ] TDY [ ] Time Began Work _____
Unit and Station Assignment: _____ Office Symbol: _____ Date Hired: _____
Nature of Injury: _____ Body Part(s) Affected Primary _____ Secondary _____
Type of Injury _____Source of Injury _____
Severity of Injury: (See definitions on reverse side) Fatality: **Yes/No** Permanent Total Disability: **Yes/No**
Permanent Partial Disability: **Yes/No** Other Serious Injury: **Yes/No**
Estimated Days away from Work: _____ Estimated Days Restricted Duty/Job Transfer: _____
Primary Language Spoken: _____ English Literate: **Yes/No**
Does this person wish to remain anonymous **Yes/No**
What was employee worker doing before the accident occurred? _____

Name of Physician/Health Care Professional: _____
Medical Treatment Facility: _____
Address: _____ Phone # _____

Summary of Accident: (Use additional sheet if needed)

Remarks:

Describe Any Information Released to the Public:

Nature of Injury

Amputation	Drowning	Stroke	Tuberculosis
Abrasion	Fracture	Traumatic Food Poisoning	Traumatic Virological/Infective
Back Strain	Hearing Loss	Traumatic Heart Condition	Parasitic Disease
Burn	Hernia	Traumatic Mental Disorder	Traumatic Injury Other (list)
Contusion/Bruise	Laceration/Cut	Traumatic Respiratory	
Concussion	Puncture	(Carbon Monoxide)	
Dislocation of joint	Strain	Traumatic Skin Disease	

Type of Injury

Struck by/against	Punctured/lacerated	Exerted	Ingested
Fell/slipped/tripped	Stung/bit by	Exposed	Absorbed
Caught on/in/between	Contact with/by	Inhaled	Traveling In

Severity of Injury

Injury	Illness	Fatality	Permanent Disability

Source of Injury

Environmental Condition	Mechanical Equipment	Noise	
Building or other Area	Guard/Shield	Radiation	Inanimate Object
Walking surface	Video Display Terminal	Light	Animal Insect
Electricity	Heating	Ventilation	Human (Violence)
Temperature Extreme	Motor Vehicle/Cycle	Smoke	Diving Equipment
Weather	Boat	Stress	Parachute
Fire	Bicycle/Other non-	Confined Space	
Water	motorized vehicle	Carbon Monoxide	

Body Parts

Arm or Wrist	Brain	Face	Vertebrae
Breast	Cranial Bones	Scalp	Trunk Bones other
Testicle	Teeth	Knee	Shoulder
Abdomen	Jaw	Leg	Lung
Chest	Throat/Larynx	Hip	Kidney
Lower Back	Mouth	Ankle	Heart
Penis	Nose	Buttock	Liver
Side	Tongue	Hand	Reproductive Organs
Upper Back	Head Other External	Feet	Stomach
Waist	Elbow	Collar Bone	Intestines
Trunk Other	Finger	Shoulder Blade	Trunk/internal
Ear	Thumb	Rib	
Eye	Toe	Sternum	

(For safety staff only)	REPORT NO.	EROC CODE	**UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT** For use of this form, see Help Menu and USACE Supplement to AR 385-40 The proponent agency is CESO	REQUIREMENT CONTROL SYMBOL: CEEC-S-8 *(R2)*

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE		MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED	☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED	☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER			☐	

2. PERSONAL DATA

a. NAME *(Last, First MI.)*	b. AGE	c. SEX ☐ MALE ☐ FEMALE	d. SOCIAL SECURITY NUMBER	e. GRADE

f. JOB SERIES/TITLE	g. DUTY STATUS AT TIME OF ACCIDENT	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
	☐ ON DUTY ☐ TDY ☐ OFF DUTY	☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER *(Specify)*

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(YYYYMMDD)*	b. TIME OF ACCIDENT *(Military Time)* hrs.	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME (1) PRIME (2) SUBCONTRACTOR

e. CONTRACT NUMBER	f. TYPE OF CONTRACT	g. HAZARDOUS/TOXIC WASTE ACTIVITY
☐ CIVIL WORKS ☐ MILITARY ☐ OTHER *(Specify)*	☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER *(Specify)*	☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER *(Specify)*

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see help menu)*

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 help menu)*

a. SEVERITY OF ILLNESS/INJURY (CODE) #	b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED	g. TYPE AND SOURCE OF INJURY/ILLNESS
PRIMARY (CODE) #	TYPE (CODE) #
SECONDARY (CODE) #	
f. NATURE OF ILLNESS / INJURY (CODE) #	SOURCE (CODE) #

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see help menu)*

a. ACTIVITY AT TIME OF ACCIDENT (CODE) #	b. PERSONAL FLOTATION DEVICE USED?
	☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT					
a. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT APPLICABLE
☐☐ PICKUP/VAN ☐☐ AUTOMOBILE ☐☐ TRUCK ☐☐ OTHER *(Specify)* _____	☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER *(Specify)* _____	(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 help menu)*

a. ACTIVITY AT TIME OF ACCIDENT	(CODE)	a. ACTIVITY AT TIME OF ACCIDENT	(CODE)
_____	# ☐	_____	# ☐

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary, see attached page 4.)*

11. CAUSAL FACTOR*(s) (Read instructions before completing)*

a. *(Explain YES answers in item 13)*	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐
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?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident?	☐	☐
b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT? *(If yes, attach a copy.)*	☐	☐

12. TRAINING		
a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? ☐ YES ☐ NO	b. TYPE OF TRAINING ☐ CLASSROOM ☐ ON JOB	c. DATE OF MOST RECENT FORMAL TRAINING *(YYYYMMDD)*

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*(s) (Attach additional sheets as needed, See page 4)*

b. INDIRECT CAUSE*(s) (Attach additional sheets as needed, See page 5)*

14. ACTION(s) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(s)		
DESCRIBE FULLY *(Attach additional sheets as necessary, See page 5)*		
15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.		
a. BEGINNING *(YYYYMMDD)*	b. ANTICIPATED COMPLETION *(YYYYMMDD)*	
c. DATE SIGNED *(YYYYMMDD)*	d. TITLE OF SUPERVISOR COMPLETING REPORT	e. CORPS SIGNATURE, SUPERVISOR COMPLETING REPORT
c. DATE SIGNED *(YYYYMMDD)*	d. TITLE OF SUPERVISOR COMPLETING REPORT	e. CONTRACTOR SIGNATURE, SUPERVISOR COMPLETING REPORT
f. ORGANIZATION IDENTIFIER *(Division, Branch, Section, etc.,)*		g. OFFICE SYMBOL
16. MANAGEMENT REVIEW *(1st)*		
a. ☐ CONCUR b. ☐ NONCONCUR c. COMMENTS		
DATE *(YYYYMMDD)*	TITLE	SIGNATURE
17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.,)*		
a. ☐ CONCUR b. ☐ NONCONCUR c. COMMENTS		
DATE *(YYYYMMDD)*	TITLE	SIGNATURE
18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW		
a. ☐ CONCUR b. ☐ NONCONCUR c. ADDITIONAL ACTIONS/COMMENTS		
DATE *(YYYYMMDD)*	TITLE	SIGNATURE
19. COMMAND APPROVAL		
COMMENTS		
DATE *(YYYYMMDD)*	COMMANDER SIGNATURE	

10. ACCIDENT DESCRIPTION *(Continuation)*

13a. DIRECT CAUSE*(s) (Continuation)*

13b. INDIRECT CAUSE*(s) (Continuation)*

14. ACTION*(s)* TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE*(s) (Continuation)*

GENERAL. Complete a separate report for each person who was injured, caused, or contributed to the accident *(excluding uninjured personnel and witnesses).* Use of this form for reporting USACE employee first-aid type injuries not submitted to the Office of Workers' Compensation Programs *(OWCP)* shall be at the discretion of the FOA commander. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16 and 17.

INSTRUCTIONS FOR SECTION 1 - ACCIDENT CLASSIFICATION

(Mark All Boxes That Are Applicable)

a. GOVERNMENT. Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.

(1) INJURY/ILLNESS/FATALITY - Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of OWCP Forms CA-1 *(injury)*, CA-2 *(illness)* or CA-6 *(fatality)* to OWCP; mark if accident resulted in military personnel lost-time or fatal injury or illness.

(2) PROPERTY DAMAGE - Mark the appropriate box if accident resulted in any damage of $1000 or more to government property *(including motor vehicles).*

(3) VEHICLE INVOLVED - Mark if accident involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY - Mark if the accident involved an in-house USACE diving activity.

b. CONTRACTOR.

(1) INJURY/ILLNESS/FATALITY - Mark if accident resulted in any contractor lost-time injury/illness or fatality.

(2) PROPERTY DAMAGE - Mark the appropriate box if accident resulted in any damage of $1000 or more to contractor property *(including motor vehicles).*

(3) VEHICLE INVOLVED - Mark if accident involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY - Mark if the accident involved a USACE Contractor diving activity.

c. PUBLIC.

(1) INJURY/ILLNESS/FATALITY - Mark if accident resulted in public fatality or permanent total disability. *(The "OTHER" box will be marked when requested by the FOA to report an unusual non-fatal public accident that could result in claims against the government or as otherwise directed by the FOA Commander).*

(2) VOID SPACE - Make no entry.

(3) VEHICLE INVOLVED - Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" is marked.

(4) VOID SPACE - Make no entry.

INSTRUCTIONS FOR SECTION 2 - PERSONAL DATA

a. NAME - *(MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS).* Enter last name, first name, middle initial of person involved.

b. AGE - Enter age.

c. SEX - Mark appropriate box.

d. SOCIAL SECURITY NUMBER - *(FOR GOVERNMENT PERSONNEL ONLY)* Enter the social security number *(or other personal identification number if no social security number issued).*

e. GRADE - *(FOR GOVERNMENT PERSONNEL ONLY)* Enter pay grade. Example: 0-6; E-7; WG-8; WS-12; GS-11; etc.

f. JOB SERIES/TITLE - For government civilian employees enter the pay plan, full series number, and job title, e.g., GS-0810/Civil Engineer. For military personnel enter the primary military occupational specialty *(PMOS)*, e.g., 15A30 or 11G50. For contractor employees enter the job title assigned to the injured person, e.g., carpenter, laborer, surveyor, etc.

g. DUTY STATUS - Mark the appropriate box.

(1) ON DUTY - Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.

(2) TDY - Person was on official business, away from the duty station and with travel orders at time of accident. Line-of-duty investigation required.

(3) OFF DUTY - Person was not on official business at time of accident.

h. EMPLOYMENT STATUS - *(FOR GOVERNMENT PERSONNEL ONLY)* Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3 - GENERAL INFORMATION

a. DATE OF ACCIDENT - Enter the month, day, and year of accident.

b. TIME OF ACCIDENT - Enter the local time of accident in military time. Example: 1430 hrs *(not 2:30 p.m.)*.

c. EXACT LOCATION OF ACCIDENT - Enter facts needed to locate the accident scene, *(installation/project name, building number, street, direction and distance from closest landmark, etc.)*.

d. CONTRACTOR NAME

(1) PRIME - Enter the exact name *(title of firm)* of the prime contractor.

(2) SUBCONTRACTOR - Enter the name of any subcontractor involved in the accident.

e. CONTRACT NUMBER - Mark the appropriate box to identify if contract is civil works, military, or other: if "OTHER" is marked, specify contract appropriation on line provided. Enter complete contract number of prime contract, e.g., DACW 09-85-C-0100.

f. TYPE OF CONTRACT - Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.

g. HAZARDOUS/TOXIC WASTE ACTIVITY *(HTW)* - Mark the box to identify the HTW activity being performed at the time of the accident. For Superfund, DERP, and Installation Restoration Program *(IRP)* HTW activities include accidents that occurred during inventory, predesign, design, and construction. For the purpose of accident reporting, DERP Formerly Used DoD Site *(FUDS)* activities and IRP activities will be treated separately. For Civil Works O&M HTW activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4 - CONSTRUCTION ACTIVITIES

a. CONSTRUCTION ACTIVITY - Select the most appropriate construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

1. MOBILIZATION
2. SITE PREPARATION
3. EXCAVATION/TRENCHING
4. GRADING (EARTHWORK)
5. PIPING/UTILITIES
6. FOUNDATION
7. FORMING
8. CONCRETE PLACEMENT
9. STEEL ERECTION
10. ROOFING
11. FRAMING
12. MASONRY
13. CARPENTRY
14. ELECTRICAL
15. SCAFFOLDING/ACCESS
16. MECHANICAL
17. PAINTING
18. EQUIPMENT/MAINTENANCE
19. TUNNELING
20. WAREHOUSING/STORAGE
21. PAVING
22. FENCING
23. SIGNING
24. LANDSCAPING/IRRIGATION
25. INSULATION
26. DEMOLITION

b. TYPE OF CONSTRUCTION EQUIPMENT - Select the equipment involved in the accident from the list below. Enter the name and place the corresponding code number identified in the box. If equipment is not included below, use code 24, "OTHER", and write in specific type of equipment.

CONSTRUCTION EQUIPMENT

1. GRADER
2. DRAGLINE
3. CRANE *(ON VESSEL/BARGE)*
4. CRANE *(TRACKED)*
5. CRANE *(RUBBER TIRE)*
6. CRANE *(VEHICLE MOUNTED)*
7. CRANE *(TOWER)*
8. SHOVEL
9. SCRAPER
10. PUMP TRUCK *(CONCRETE)*
11. TRUCK *(CONCRETE/TRANSIT MIXER)*
12. DUMP TRUCK *(HIGHWAY)*
13. DUMP TRUCK *(OFF HIGHWAY)*
14. TRUCK *(OTHER)*
15. FORKLIFT
16. BACKHOE
17. FRONT-END LOADER
18. PILE DRIVER
19. TRACTOR *(UTILITY)*
20. MANLIFT
21. DOZER
22. DRILL RIG
23. COMPACTOR/VIBRATORY ROLLER
24. OTHER

INSTRUCTIONS FOR SECTION 5 - INJURY/ILLNESS INFORMATION

a. SEVERITY OF INJURY/ILLNESS - Reference paragraph 2-10 of USACE Supplement 1 to AR 385-40 and enter code and description from list below.

NOI	NO INJURY
FAT	FATALITY
PTL	PERMANENT TOTAL DISABILITY
PPR	PERMANENT PARTIAL DISABILITY
LWD	LOST WORKDAY CASE INVOLVING DAYS AWAY FROM WORK
NLW	RECORDABLE CASE WITHOUT LOST WORKDAYS
RFA	RECORDABLE FIRST AID CASE
NRI	NON-RECORDABLE INJURY

b. ESTIMATED DAYS LOST - Enter the estimated number of workdays the person will lose from work.

c. ESTIMATED DAYS HOSPITALIZED - Enter the estimated number of workdays the person will be hospitalized.

d. ESTIMATED DAYS RESTRICTED DUTY - Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties.

e. BODY PART AFFECTED - Select the most appropriate primary and when applicable, secondary body part affected from the list below. Enter body part name on line and place the corresponding code letters identifying that body part in the box.

GENERAL BODY AREA	CODE	BODY PART NAME
ARM/WRIST	AB	ARM AND WRIST
	AS	ARM OR WRIST
TRUNK, EXTERNAL MUSCULATURE	B1	SINGLE BREAST
	B2	BOTH BREASTS
	B3	SINGLE TESTICLE
	B4	BOTH TESTICLES
	BA	ABDOMEN
	BC	CHEST
	BL	LOWER BACK
	BP	PENIS
	BS	SIDE
	BU	UPPER BACK
	BW	WAIST
	BZ	TRUNK OTHER
HEAD, INTERNAL	C1	SINGLE EAR INTERNAL
	C2	BOTH EARS INTERNAL
	C3	SINGLE EYE INTERNAL
	C4	BOTH EYES INTERNAL
	CB	BRAIN
	CC	CRANIAL BONES
	CD	TEETH
	CJ	JAW
	CL	THROAT, LARYNX
	CM	MOUTH
	CN	NOSE
	CR	THROAT, OTHER
	CT	TONGUE
	CZ	HEAD OTHER INTERNAL
ELBOW	EB	BOTH ELBOWS
	ES	SINGLE ELBOW
FINGER	F1	FIRST FINGER
	F2	BOTH FIRST FINGERS
	F3	SECOND FINGER
	F4	BOTH SECOND FINGERS
	F5	THIRD FINGER
	F6	BOTH THIRD FINGERS
	F7	FOURTH FINGER
	F8	BOTH FOURTH FINGERS
TOE	G1	GREAT TOE
	G2	BOTH GREAT TOES
	G3	TOE OTHER
	G4	TOES OTHER
HEAD, EXTERNAL	H1	EYE EXTERNAL
	H2	BOTH EYES EXTERNAL
	H3	EAR EXTERNAL
	H4	BOTH EARS EXTERNAL
	HC	CHIN
	HF	FACE
	HK	NECK/THROAT
	HM	MOUTH/LIPS
	HN	NOSE
	HS	SCALP
KNEE	KB	BOTH KNEES
	KS	KNEE
LEG, HIP, ANKLE, BUTTOCKS	LB	BOTH LEGS/HIPS/ ANKLES/
BUTTOCK	LS	SINGLE LEG/HIP/ ANKLE/BUTTOCK
HAND	MB	BOTH HANDS
	MS	SINGLE HAND
FOOT	PB	BOTH FEET
	PS	SINGLE FOOT
TRUNK, BONES	R1	SINGLE COLLAR BONE
	R2	BOTH COLLAR BONES
	R3	SHOULDER BLADE
	R4	BOTH SHOULDER BLADES
	RB	RIB
	RS	STERNUM *(BREAST BONE)*
	RV	VERTEBRAE *(SPINE; DISC)*
	RZ	TRUNK BONES OTHER
SHOULDER	SB	BOTH SHOULDERS
	SS	SINGLE SHOULDER
THUMB	TB	BOTH THUMBS
	TS	SINGLE THUMB
TRUNK, INTERNAL ORGANS	V1	LUNG, SINGLE
	V2	LUNGS, BOTH
	V3	KIDNEY, SINGLE
	V4	KIDNEYS, BOTH
	VH	HEART
	VL	LIVER
	VR	REPRODUCTIVE ORGANS
	VS	STOMACH
	VV	INTESTINES
	VZ	TRUNK, INTERNAL; OTHER

f. NATURE OF INJURY/ILLNESS - Select the most appropriate nature of injury/illness from the list below. This nature of injury/illness shall correspond to the primary body part selected in 5e, above. Enter the nature of injury/illness name on the line and place the corresponding CODE letters in the box provided.
* The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
*TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION
	TB	BACK STRAIN
	TC	CONTUSION; BRUISE; ABRASION
	TD	DISLOCATION
	TF	FRACTURE
	TH	HERNIA
GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
	TK	CONCUSSION
	TL	LACERATION, CUT
	TP	PUNCTURE
	TS	STRAIN, MULTIPLE
	TU	BURN, SCALD, SUNBURN
	TI	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TR	TRAUMATIC RESPIRATORY DISEASE
	TQ	TRAUMATIC FOOD POISONING
	TW	TRAUMATIC TUBERCULOSIS
	TX	TRAUMATIC VIROLOGICAL/INFECTIVE/ PARASITIC DISEASE
	T1	TRAUMATIC CEREBRAL VASCULAR CONDITION/STROKE
	T2	TRAUMATIC HEARING LOSS
	T3	TRAUMATIC HEART CONDITION
	T4	TRAUMATIC MENTAL DISORDER, STRESS; NERVOUS CONDITION
	T8	TRAUMATIC INJURY - OTHER *(EXCEPT DISEASE, ILLNESS)*

** A nontraumatic physiological harm or loss of capacity produced by systemic infection; continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc.; or other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational illness/disease or disability is any reported condition which does not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME			
**NON-TRAUMATIC ILLNESS/DISEASE OR DISABILITY					
RESPIRATORY DISEASE	RA	ASBESTOSIS		DD	ENDEMIC DISEASE *(OTHER THAN CODE TYPES R&S)*
	RB	BRONCHITIS			
	RE	EMPHYSEMA		DE	EFFECT OF ENVIRONMENTAL
	RP	PNEUMOCONIOSIS	CONDITION		
	RS	SILICOSIS		DH	HEARING LOSS
	R9	RESPIRATORY DISEASE, OTHER		DK	HEART CONDITION
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES				DM	MENTAL DISORDER, EMOTIONAL STRESS, NERVOUS CONDITION
	VB	BRUCELLOSIS		DR	RADIATION
	VC	COCCIDIOMYCOSIS		DS	STRAIN, MULTIPLE
	VF	FOOD POISONING		DU	ULCER
	VH	HEPATITIS		DV	OTHER VASCULAR CONDITIONS
	VM	MALARIA		D9	DISABILITY, OTHER
	VS	STAPHYLOCOCCUS			
	VT	TUBERCULOSIS	SKIN DISEASE OR		
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC - OTHER	CONDITION	SB	BIOLOGICAL
DISABILITY,	DA	ARTHRITIS, BURSITIS		SC	CHEMICAL
OCCUPATIONAL	DB	BACK STRAIN, BACK SPRAIN		S9	DERMATITIS, UNCLASSIFIED
	DC	CEREBRAL VASCULAR CONDITION; STROKE			

g. TYPE AND SOURCE OF INJURY/ILLNESS *(CAUSE)* - Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the initiating source of the incident *(see example 1, below)*. Examples:

(1) An employee tripped on carpet and struck his head on a desk. TYPE: 210 *(fell on same level)* SOURCE: 0110 *(walking/working surface)*.

NOTE: This example would NOT be coded 120 *(struck against)* and 0140 *(furniture)*.

(2) A Park Ranger contracted dermatitis from contact with poison ivy/oak.

TYPE: 510 *(contact)* SOURCE: 0920 *(plant)*

(3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.

TYPE: 410 *(punctured by)* SOURCE: 0830 *(metal)*

(4) An employee was driving a government vehicle when it was struck by another vehicle.

TYPE: 800 *(traveling in)* SOURCE: 0421 *(government-owned vehicle, as driver)*

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to collect data on the type of vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME		
			EXERTED
		0610	LIFTED, STRAINED BY *(SINGLE ACTION)*
	STRUCK	0620	STRESSED BY *(REPEATED ACTION)*
0110	STRUCK BY		EXPOSED
0111	STRUCK BY FALLING OBJECT	0710	INHALED
0120	STRUCK AGAINST	0720	INGESTED
	FELL, SLIPPED, TRIPPED	0730	ABSORBED
0210	FELL ON SAME LEVEL	0740	EXPOSED TO
0220	FELL ON DIFFERENT LEVEL	0800	TRAVELING IN
0230	SLIPPED, TRIPPED *(NO FALL)*		
	CAUGHT	**CODE**	**SOURCE OF INJURY NAME**
0310	CAUGHT ON		
0320	CAUGHT IN	0100	BUILDING OR WORKING AREA
0330	CAUGHT BETWEEN	0110	WALKING/WORKING SURFACE *(FLOOR, STREET, SIDEWALKS, ETC.)*
	PUNCTURED, LACERATED		
0410	PUNCTURED BY	0120	STAIRS, STEPS
0420	CUT BY	0130	LADDER
0430	STUNG BY	0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0440	BITTEN BY	0150	BOILER, PRESSURE VESSEL
	CONTACTED	0160	EQUIPMENT LAYOUT *(ERGONOMIC)*
0510	CONTACTED WITH *(INJURED PERSON MOVING)*	0170	WINDOWS, DOORS
0520	CONTACTED BY *(OBJECT WAS MOVING)*	0180	ELECTRICITY

0200	ENVIRONMENTAL CONDITION	0631	CARBON MONOXIDE
0210	TEMPERATURE EXTREME *(INDOOR)*	0640	MIST, STEAM, VAPOR, FUME
0220	WEATHER *(ICE, RAIN, HEAT, ETC.)*	0641	WELDING FUMES
0230	FIRE, FLAME, SMOKE *(NOT TOBACCO)*	0650	PARTICLES *(UNIDENTIFIED)*
0240	NOISE	0700	CHEMICAL, PLASTIC, ETC.
0250	RADIATION	0711	DRY CHEMICAL - CORROSIVE
0260	LIGHT	0712	DRY CHEMICAL - TOXIC
0270	VENTILATION	0713	DRY CHEMICAL - EXPLOSIVE
0271	TOBACCO SMOKE	0714	DRY CHEMICAL FLAMMABLE
0280	STRESS *(EMOTIONAL)*	0721	LIQUID CHEMICAL - CORROSIVE
0290	CONFINED SPACE	0722	LIQUID CHEMICAL - TOXIC
0300	MACHINE OR TOOL	0723	LIQUID CHEMICAL - EXPLOSIVE
0310	HAND TOOL *(POWERED; SAW, GRINDER, ETC.)*	0724	LIQUID CHEMICAL - FLAMMABLE
0320	HAND TOOL *(NONPOWERED)*	0730	PLASTIC
0330	MECHANICAL POWER TRANSMISSION APPARATUS	0740	WATER
0340	GUARD, SHIELD *(FIXED, MOVEABLE, INTERLOCK)*	0750	MEDICINE
0350	VIDEO DISPLAY TERMINAL	0800	INAMINATE OBJECT
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL	0810	BOX, BARREL, ETC.
0370	HEATING EQUIPMENT	0820	PAPER
0380	WELDING EQUIPMENT	0830	METAL ITEM, MINERAL
0400	VEHICLE	0831	NEEDLE
0411	AS DRIVER OF PRIVATELY OWNED/RENTAL VEHICLE	0840	GLASS
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE	0850	SCRAP, TRASH
0421	DRIVER OF GOVERNMENT VEHICLE	0860	WOOD
0422	PASSENGER OF GOVERNMENT VEHICLE	0870	FOOD
0430	COMMON CARRIER *(AIRLINE, BUS, ETC.)*	0880	CLOTHING, APPAREL, SHOES
0440	AIRCRAFT *(NOT COMMERCIAL)*	0900	ANIMATE OBJECT
0450	BOAT, SHIP, BARGE	0911	DOG
0500	MATERIAL HANDLING EQUIPMENT	0912	OTHER ANIMAL
0510	EARTHMOVER *(TRACTOR, BACKHOE, ETC.)*	0920	PLANT
0520	CONVEYOR *(FOR MATERIAL AND EQUIPMENT)*	0930	INSECT
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST	0940	HUMAN *(VIOLENCE)*
0540	HOIST, SLING CHAIN, JACK	0950	HUMAN *(COMMUNICABLE DISEASE)*
0550	CRANE	0960	BACTERIA, VIRUS *(NOT HUMAN CONTACT)*
0551	FORKLIFT	1000	PERSONAL PROTECTIVE EQUIPMENT
0560	HANDTRUCK, DOLLY	1010	PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES
0600	DUST, VAPOR, ETC.		
0610	DUST *(SILICA, COAL, ETC.)*	1020	RESPIRATOR, MASK
0620	FIBERS	1021	DIVING EQUIPMENT
0621	ASBESTOS	1030	SAFETY BELT, HARNESS
0630	GASES	1040	PARACHUTE

INSTRUCTIONS FOR SECTION 6 - PUBLIC FATALITY

a. ACTIVITY AT TIME OF ACCIDENT - Select the activity being performed at the time of the accident from the list below. Enter the activity name on the line and the corresponding number in the box. If the activity performed is not identified on the list, select from the most appropriate primary activity area *(water related, non-water related or other activity)*, the code number for "Other", and write in the activity being performed at the time of the accident.

WATER RELATED RECREATION

1. Sailing
2. Boating-powered
3. Boating-unpowered
4. Water skiing
5. Fishing from boat
6. Fishing from bank dock or pier
7. Fishing while wading
8. Swimming/supervised area
9. Swimming/designated area
10. Swimming/other area
11. Underwater activities *(skin diving, scuba, etc.)*
12. Wading
13. Attempted rescue
14. Hunting from boat
15. Other

NON-WATER RELATED RECREATION

16. Hiking and walking
17. Climbing *(general)*
18. Camping/picnicking authorized area
19. Camping/picnicking unauthorized area
20. Guided tours
21. Hunting
22. Playground equipment
23. Sports/summer *(baseball, football, etc.)*
24. Sports/winter *(skiing, sledding, snowmobiling etc.)*
25. Cycling *(bicycle, motorcycle, scooter)*
26. Gliding
27. Parachuting
28. Other non-water related

OTHER ACTIVITIES

29. Unlawful acts *(fights, riots, vandalism, etc.)*
30. Food preparation/serving
31. Food consumption
32. Housekeeping
33. Sleeping
34. Pedestrian struck by vehicle
35. Pedestrian other acts
36. Suicide
37. "Other" activities

b. PERSONAL FLOTATION DEVICE USED - If fatality was water-related was the victim wearing a person flotation device? Mark the appropriate box.

INSTRUCTIONS FOR SECTION 7 - MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE - Mark appropriate box for each vehicle involved. If more than one vehicle of the same type is involved, mark both halves of the appropriate box. USACE vehicle(s) involved shall be marked in left half of appropriate box.

b. TYPE OF COLLISION - Mark appropriate box.

c. SEAT BELT - Mark appropriate box.

INSTRUCTIONS FOR SECTION 8 - PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM - Describe all property involved in accident. Property/material involved means material which is damaged or whose use or misuse contributed to the accident. Include the name, type, model; also include the National Stock Number *(NSN)* whenever applicable.

b. OWNERSHIP - Enter ownership for each item listed. *(Enter one of the following: USACE; OTHER GOVERNMENT; CONTRACTOR; PRIVATE)*

c. $ AMOUNT OF DAMAGE - Enter the total estimated dollar amount of damage *(parts and labor)*, if any.

INSTRUCTIONS FOR SECTION 9 - VESSEL/FLOATING PLANT ACCIDENT

a. TYPE OF VESSEL/FLOATING PLANT - Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in specific type of vessel floating plant.

VESSEL/FLOATING PLANTS

1. ROW BOAT
2. SAIL BOAT
3. MOTOR BOAT
4. BARGE
5. DREDGE/HOPPER
6. DREDGE/SIDE CASTING
7. DREDGE/DIPPER
8. DREDGE/CLAMSHELL, BUCKET
9. DREDGE/PIPE LINE
10. DREDGE/DUST PAN
11. TUG BOAT
12. OTHER

b. COLLISION/MISHAP - Select from the list below the object*(s)* that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

1. COLLISION W/OTHER VESSEL
2. UPPER GUIDE WALL
3. UPPER LOCK GATES
4. LOCK WALL
5. LOWER LOCK GATES
6. LOWER GUIDE WALL
7. HAULAGE UNIT
8. BREAKING TOW
9. TOW BREAKING UP
10. SWEPT DOWN 0N DAM
11. BUOY/DOLPHIN/CELL
12. WHARF OR DOCK
13. OTHER

INSTRUCTIONS FOR SECTION 10 - ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT - Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role*(s)* in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11 - CAUSAL FACTORS

a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider, as a minimum, the following:

(1) DESIGN - Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) INSPECTION/MAINTENANCE - Did inadequately or improperly maintained equipment, tools, workplace, etc. create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?

(3) PERSON'S PHYSICAL CONDITION - Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was over exertion a factor?

(4) OPERATING PROCEDURES - Did a lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?

(5) JOB PRACTICES - Were any of the provisions of the Safety and Health Requirements Manual *(EM 385-1-1)* violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice *(including EM 385-1-1)* fail to adequately address the task or work process? Would better job practices improve the safety of the task?

(6) HUMAN FACTORS - Was the person under undue stress *(either internal or external to the job)*? Did the task tend toward overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach, strength, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?

(7) ENVIRONMENTAL FACTORS - Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun, temperature changes, wind, tides, floods, currents, dust, mud, glare, pressure changes, lightning, etc., play a part in the accident?

(8) CHEMICAL AND PHYSICAL AGENT FACTORS - Did exposure to chemical agents *(either single shift exposure or long-term exposure)* such as dusts, fibers *(asbestos, etc.)*, silica, gases *(carbon monoxide, chlorine, etc.,)*, mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation *(UV radiation created during welding, etc.)* contribute to the accident/incident?

(9) OFFICE FACTORS - Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

(10) SUPPORT FACTORS - Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources *(in terms of employee skills, number of workers, and adequate supervision)* available to get the job done properly? Was funding available, utilized, and adequate to provide proper tools, equipment, personnel, site preparation, etc.?

(11) PERSONAL PROTECTIVE EQUIPMENT - Did the person fail to use appropriate personal protective equipment *(gloves, eye protection, hard-toed shoes, respirator, etc.)* for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard*(s)*? Did lack of or inadequate maintenance of protective gear contribute to the accident?

(12) DRUGS/ALCOHOL - Is there any reason to believe the person's mental or physical capabilities, judgment, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".

b. WRITTEN JOB/ACTIVITY HAZARD ANALYSIS - Was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. If one was performed, attach a copy of the analysis to the report.

INSTRUCTIONS FOR SECTION 12 - TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? - For the purpose of this section "trained" means the person has been provided the necessary information *(either formal and/or on-the-job (OJT) training)* to competently perform the activity/task in a safe and healthful manner.

b. TYPE OF TRAINING - Mark the appropriate box that best indicates the type of training; *(classroom or on-the-job)* that the injured person received, before the accident happened.

c. DATE OF MOST RECENT TRAINING - Enter YYYYMMDD of the last formal training completed that covered the activity task being performed at the time of the accident.

INSTRUCTIONS FOR SECTION 13 - CAUSES

a. DIRECT CAUSES - The direct cause is that single factor, which most directly lead to the accident. See examples below.

b. INDIRECT CAUSES - Indirect causes are those factors which contributed to but did not directly initiate the occurrence of the accident.

Examples for section 13:

a. Employee was dismantling scaffold and fell 12 feet from unguarded opening.

Direct cause: failure to provide fall protection at elevation. Indirect causes: failure to enforce USACE safety requirements; improper training/motivation of employee *(possibility that employee was not knowledgeable of USACE fall protection requirements or was lax in his attitude towards safety)*; failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

b. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by USACE vehicle. *(Note: USACE vehicle was in proper/safe working condition).*

Direct cause: failure of USACE driver to maintain control of and stop USACE vehicle within safe distance.

Indirect cause: failure of employee to pay attention to driving *(defensive driving).*

INSTRUCTIONS FOR SECTION 14 - ACTION TO ELIMINATE CAUSE*(s)*

DESCRIPTION - Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/ illnesses. Continue on blank sheets of paper if necessary to fully explain and attach to the completed report form.

INSTRUCTIONS FOR SECTION 15 - DATES FOR ACTION

a. **BEGIN DATE** - Enter the date YYYYMMDD when the corrective action(s) identified in section 14 will begin.

b. **COMPLETE DATE** - Enter the date YYYYMMDD when the corrective action(s) identified in section 14 will be completed.

c. **DATE SIGNED** - Enter YYYYMMDD that the report was signed by the responsible supervisor.

d.e.. **TITLE AND SIGNATURE -** Enter the title and signature of supervisor completing the accident report. For a GOVERNMENT employee accident/illness the immediate supervisor will complete and sign the report. For PUBLIC accidents the USACE Project Manager/Area Engineer responsible for the USACE property where the accident happened shall complete and sign the report. For CONTRACTOR accidents the Contractor's project manager shall complete and sign the report and provide to the USACE supervisor responsible for oversight of that contractor activity. This USACE supervisor shall also sign the report. Upon entering the information required in 15c., 15d., 15e., 15f. and 15g. below, the responsible USACE supervisor shall forward the report for management review as indicated in section 16.

f. **ORGANIZATION NAME** - For GOVERNMENT employee accidents enter the USACE organization name *(Division, Branch, Section, etc.)* of the injured employee. For PUBLIC accidents enter the USACE organization name for the person identified in block 15d. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

g. **OFFICE SYMBOL** - Enter the latest complete USACE Office Symbol for the USACE organization identified in block 15f.

INSTRUCTIONS FOR SECTION 16 - MANAGEMENT REVIEW (1st)

1ST REVIEW - Each USACE FOA shall determine who will provide 1st management review. The responsible USACE supervisor in section 15d. shall forward the completed report to the USACE office designated as the 1st Reviewer by the FOA. Upon receipt, the Chief of the Office shall review the completed report, mark the appropriate box, provide substantive comments, sign, date, and forward to the FOA Staff Chief *(2nd review)* for review and comment.

INSTRUCTIONS FOR SECTION 17 - MANAGEMENT REVIEW (2nd)

2ND REVIEW - The FOA Staff Chief *(i .e., FOA Chief of Construction, Operations, Engineering, Planning, etc.)* shall mark the appropriate box, review the completed report, provide substantive comments, sign, date, and return to the FOA Safety and Occupational Health Office.

INSTRUCTIONS FOR SECTION 18 - SAFETY AND OCCUPATIONAL HEALTH REVIEW

3RD REVIEW - The FOA Safety and Occupational Health Office shall review the completed report, mark the appropriate box, ensure that any inadequacies, discrepancies, etc. are rectified by the responsible supervisor and management reviewers, provide substantive comments, sign, date and forward to the FOA Commander for review, comment, and signature.

INSTRUCTION FOR SECTION 19 - COMMAND APPROVAL

4TH REVIEW - The FOA Commander shall *(to include the person designated Acting Commander in his absence)* review the completed report, comment if required, sign, date, and forward the report to the FOA Safety and Occupational Health Office. Signature authority shall not be delegated.

APPENDIX F

CONFIRMATION AND EVALUATION OF EMERGENCY MEDICAL SERVICES (EMS)

EVALUATION OF FIRE/RESCUE PROVIDERS **Date: 2/3/2016**

Name of Responding Group or Agency: Mount Gretna Fire Company

Name of Individual(s) Contacted: _____

Confirmation of Authority to commit to supporting Weston:

Contact information: Non Emergency Phone Number: 717-964-3511

Emergency Phone Number: ___-___-911

Address : 41 Boulevard Ave, Mt Gretna, PA 17064

_____

Distance in miles and time from EMS provider to site(s): Miles: 1.3 Time: 4 minutes

Note: Time to be able to institute rescue operation must be determined and documented based on known or perceived hazards. In the event of hazardous atmospheres typical response times should be 5 minutes or less.

Hours of availability: ___ AM to _____ PM or 24 Hours X

Staffing: Volunteer X Full-time_____

Ability to respond to more than one emergency at a time: Yes_____ NO X

If "NO", provisions must be made for other rescue options or entry operations must cease until responders are available again.

If "NO" what mechanism(s) will be in place to verify when responders are both unavailable and when they are available to respond again (e.g., phone call, radio to responder channel, etc.).

County will automatically dispatch the next available units.

Medical Facility **Date: 2/3/2016**

Name of Responding Group or Agency: _Good Samaritan_____

Name of Individual(s) Contacted: _Desk Clerk_____

Confirmation of Authority to commit to supporting Weston:

Contact information: Non Emergency Phone Number: _717-270-7612

Emergency Phone Number: ___-___-____

Address : __4th & Walnut Streets_____
_____Lebanon, PA 17042_____
_____

Distance in miles and time to Medical Facility from site(s): Miles: 9 Time: 19 minutes

Hours of availability: ___ AM to _____ PM or 24 Hours _X___

Does the Facility have capabilities to deal with:

Chemical Exposure Yes _X___ No _____

Trauma: Yes ____ No _X____ If yes, Level: _____

If no, nearest Trauma Center:
__Hershey Medical_____

APPENDIX G

BLOODBORNE PATHOGENS EXPOSURE CONTROL PLAN

BLOODBORNE PATHOGENS EXPOSURE CONTROL PLAN – FIRST AID PROVIDERS

SCOPE

WESTON personnel do not provide medical assistance as a primary job duty; however, this Bloodborne Pathogen Exposure Control Plan (ECP) is applicable to designated first aid providers. WESTON workers expected to administer first aid must have a basic understanding of bloodborne pathogens in order to protect themselves effectively from any hazards. At a minimum, this Bloodborne Pathogen ECP for First Aid Providers will be on site

WESTON personnel may deliver First Aid and CPR in a nonclinical setting. First Aid and CPR duties are often performed in uncontrolled environments, which, due to a lack of time and other factors, do not allow for application of a complex decision-making process to the emergency at hand.

This ECP is intended to assist personnel in making decisions concerning the use of personal protective equipment (PPE) and resuscitation equipment, as well as for decontamination, labeling, containerizing and disposal procedures.

Information Program

Identification and assessment of risk from exposure to biological hazards is conducted as part of the development of the APP and SSHP. This ECP deals with forms of infection that are of concern to workers who can come in contact with bodily fluids associated with blood.

WESTON training programs provide information on bloodborne pathogens and the Occupational Exposure to Bloodborne Pathogens Standard to all field personnel with special emphasis on those employees who are certified and called upon to perform First Aid.

Exposure Control

This ECP is designed to eliminate or minimize employee exposure to bloodborne pathogens through information and training, use of PPE, safe handling procedures, decontamination, and proper disposal methods.

Exposure Determination

Employees certified in First Aid and CPR may be at risk from bloodborne pathogens when these services are rendered. Attachment 1 identifies tasks in which occupational exposure may occur, potential contact, and required protective measures for First Aid providers.

METHODS OF COMPLIANCE

Universal Precautions

When treating a victim for an injury, conducting CPR, or handling potentially infectious waste, the use of universal precautions is the recommended approach to infection control. Universal precautions assume all human blood and certain human body fluids are infectious for HIV, HBV and other bloodborne pathogens. Other body substances, including feces, urine, or vomit are not included, unless they contain visible blood. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

Work Practice Controls

Work practice controls reduce the likelihood of exposure by formalizing the manner in which a task is performed.

- All first aid procedures involving blood or other potentially infectious materials shall be performed in a manner that minimizes splashing, spraying, spattering, and generation of droplets of these substances.
- Mouth suctioning of blood or other infectious materials is prohibited.
- When handling sharps such as needles used for bee stings or diabetes, do not recap, purposely bend, break by hand, remove from disposable syringes, or otherwise manipulate by hand.
- As soon as possible after use, contaminated sharps are to be placed in puncture proof/leak proof containers until they can be disposed.
- Broken glassware which may be contaminated shall not be picked up directly with the hands unless gloves are used to protect the hands against cuts. It is best to use mechanical means, such as a brush and dust pan then place contaminated broken glass in a puncture proof/leak proof container.
- When handling red bag waste, hold the top end of the bag rather than the bottom.
- Containers of potentially infectious waste should be labeled with a biohazard label.
- All PPE should be inspected prior to use. PPE should not be worn if the PPE barrier is compromised.
- Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood, other body fluids to which universal precautions apply, or their potentially contaminated articles. Hands should always be washed after gloves are removed even if the gloves appear intact.
- Where hand washing facilities are not readily accessible, an antiseptic hand cleaner along with clean cloth/paper towels or antiseptic towelettes should be used. When antiseptic hand cleaners or towelettes are used hands shall be washed with soap and running water as soon as feasible.

Engineering Controls

Engineering controls isolate or remove the bloodborne pathogen hazard from the workplace.

- Proper containerizing, labeling and disposal of contaminated items are required for all potentially infectious waste.
- Minimizing needle sticks by placing them in a puncture proof container.
- Limiting access or close off areas which contain potentially infectious materials.

Administrative Controls

Administrative controls reduce or eliminate bloodborne pathogen hazards from the workplace by program development (i.e., ECP), auditing to ensure these programs are in place and implemented, and providing information and training.

Personal Protective Equipment (PPE)

PPE is specialized clothing or equipment worn by an employee for protection against a hazard. Attachment 1 provides examples of recommendations for PPE in the nonclinical setting; the list is not intended to be all-inclusive.

First-aid kits will be supplemented with bloodborne pathogen kits or supplies and will be readily accessible at all times.

If the chance of being exposed to blood is high, the caregiver should put on protective attire before beginning CPR or First Aid. Protective barriers should be used in accordance with the level of exposure encountered.

Under rare or extraordinary circumstances, a responding employee may decide, based on his or her judgment, that use of PPE would prevent delivery of care or pose an increased hazard to safety of the employee or co-worker. When this judgment has been made, an investigation of the event will be initiated and documented in order to determine what changes in procedures or protective equipment is needed.

Resuscitation Equipment

No transmission of HBV or HIV infection during mouth to mouth resuscitation has been documented. However, because of the risk of salivary transmission of other infectious diseases and the theoretical risk of HIV and HBV transmission during artificial ventilation of trauma victims, disposable mouth to mouth resuscitation masks (one-way valve type only) should be used. These devices are designed to isolate emergency response personnel from contact with victim's blood and blood-contaminated saliva, respiratory secretions, and vomit. Disposable resuscitation equipment and devices should be disposed of once they have been used.

Decontamination and Disposal

All PPE will be removed prior to leaving a contaminated area and secured properly for decontamination or proper disposal.

Decontamination uses physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal. All spills of blood and blood-contaminated fluids should be promptly cleaned up. The area should be decontaminated with a commercial disinfectant solution or a 1:100 solution of household bleach. Soiled cleaning equipment should be cleaned and decontaminated with the disinfectant solution.

If a victim's clothes become soiled with blood during First Aid or CPR, the soiled material (i.e., clothes, resuscitation equipment or disposable towels) should be placed in a red or orange plastic bag. If possible this bag should accompany the victim to the hospital or ambulance. Where on-site emergency care is given and additional medical treatment is not likely, soiled material should be placed in a red or orange plastic bag and then pick-up should be arranged by a local medical waste disposal company. Containers must be identified prior to transport or pick-up.

Any questions regarding the disposal or management of soiled garments or materials should be directed to Federal Team Health and Safety Officer or Division Environmental Health and Safety Officer.

Containerizing

The potentially contaminated materials and sharps container generated from giving First Aid and CPR will be placed in a red or orange container/bag. When PPE is removed it shall be placed in an appropriate designated area for containerization. If the outside contamination of the primary container occurs, the primary container shall be placed within a second container which prevents leakage during handling processing storage, transport or shipping and is labeled or color coded.

Sharps such as needles used for bee stings or diabetes should be placed in a puncture proof/leak proof color coded or labeled container. If other contents could puncture the primary container, the primary container shall be placed within a secondary container which is puncture resistant. The liquid generated from the decontamination process should be contained in a leak proof container until a local medical waste disposal company can provide information on proper disposal based on local, state and federal regulations.

Labeling and Hazard Communication

Biohazard warning labels required by the Standard [29 CFR 1910.1030(g)(1)(i)(B)] must be attached to containers of regulated wastes or other containers of potentially infectious materials during storage, transport or shipment. Red or orange bags may be substituted for labeling requirements, otherwise, a biohazard label with lettering or symbols should be affixed to the outside of each bag or container generated. Consequently, any container so labeled or any red or orange bagged waste or materials shall be considered to contain either blood or other infectious material.

Incident Reporting

When an employee gives First Aid or CPR, or is potentially exposed to a bloodborne pathogen, a Notification of Incident (NOI) Report must be completed. The report must indicate "Potential Exposure to Bloodborne Pathogens

<u>Vaccination and Post-Exposure Evaluation and Follow-up</u>

The pre-work Hepatitis B Vaccination for First Aid providers is not required, it will therefore, be offered post-exposure.

Hepatitis B vaccines are effective in preventing hepatitis B following a documented exposure when given within 1 week after HBV exposure. The vaccine may be more effective when combined with HBIG, a preparation of immune globulin with high levels of antibody to HBV (anti-HBs). The U.S. Public Health Service and Center for Disease Control guidelines should be accessed for current information.

Upon suspicion or verification of exposure to blood or infectious materials, Hepatitis vaccine will be made available to the exposed individual(s) at no cost to the employee. The employee will immediately be referred to WESTON's Occupational Medical Consultant (OMC) for counseling and management.

Upon learning of exposure to a source or source individual found to be positive for HBV or HIV, WESTON's OMC will provide direction on case management. The OMC, after discussion of the exposure situation with the medical clinic or hospital where the victim was evaluated and treated for injury, will determine whether the exposed employee should be tested for HBV or HIV prior to the status of the source being known (or in the case where the source is unknown).

HBV and HIV testing of the source individual should be done at the local offices' medical clinic or at the hospital where the victim was treated for injury. Local laws may apply for testing source individuals in situations where consent cannot be obtained because the source refuses testing or cannot be identified (i.e., an unconscious patient). If the job location does not allow access to the local offices' medical clinic then a new WESTON OMC will be consulted for guidance. The alternate clinic/hospital must offer pretest counseling, post test counseling and referral for treatment.

Consult with WESTON's OMC to determine if the exposed employee should be given the HBV post-exposure vaccination.

Collection and testing of blood for HBV and HIV serological status shall be performed as soon as feasible on the exposed employee's blood (after consent) where the source is found to be positive for HIV or HBV. Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed by the Medical Safety Officer of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual. When the source individual is already known to be infected with HBV or HIV testing of the source individual known HBV or HIV status need not be repeated (Center for Disease Control, 1985).

If the source of the exposure is a needle stick or bloodstained material (i.e., blood stained material contacted an open wound on a field team member) the source should be placed in an appropriate container (i.e., sharps container for needles and red bag for blood tainted material). The container should be given to the WESTON medical clinic for analysis. If the source is found to be HBV or HIV positive, the incident report must be updated to change the status from suspected to confirmed exposure. At this point the NOI Report will be placed in a limited control access portion of incident filing system to maintain confidentiality.

Human Immunodeficiency Virus Post Exposure Management

For any exposure to a source or source individual who has AIDS, who is found to be positive for HIV infection or who refuses testing, the worker should be counseled regarding the risk of infection and evaluated clinically and serologically for evidence for the HIV infection as soon as possible after the exposure. WESTON's OMC will provide direction on the case management.

If the source individual was tested and found to be seronegative, follow-up will be determined by WESTON's OMC.

If the source or source individual cannot be identified, decisions regarding appropriate follow-up should be individualized. Serological testing will be made available to all workers who may be concerned they have been infected with HIV through an occupational exposure. WESTON's OMC will provide direction on the case management.

Communication of Hazards to Employees

Training Schedule

WESTON ensures that employees, who are certified to provide First Aid and CPR, are trained in all components of the bloodborne pathogen standard upon assignment and at the annual refresher training. All First Aid providers must be aware of task modifications or procedure changes which might affect occupational exposure.

Training Contents

A training sign-up sheet will be completed to include course title, date, attendees' names, signatures, job classifications, instructor's name, and duration of the class. Training content will include the following information:

- Where an accessible copy of the regulatory text and the WESTON's ECP can be found.
- An explanation of WESTON's ECP and the means by which employees can obtain a copy of the written plan.
- A general explanation of the epidemiology and symptoms of bloodborne diseases.

- An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.
- An explanation of the use and limitations of methods 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 disposal of PPE.
- An explanation of the basis for selection of PPE.
- Information on the Hepatitis B vaccine (or any new vaccines), including information on its efficacy, safety, method of administration, the benefits of being vaccinated.
- An 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 post-exposure evaluation and follow-up that WESTON is required to provide for the employee following an exposure incident.
- An explanation of the signs and labels and/or color coding for disposal of infectious materials.
- An opportunity for interactive questions and answers with the person conducting the training session.

Recordkeeping

When an employee gives First Aid or CPR and in doing so becomes subject to this ECP, he/she will verbally report the incident within 1 hour and complete a WESTON NOI Report within 24 hours. As part of a medical record, the circumstances of exposure will be kept confidential. Relevant information includes the activities in which the worker was engaged at the time of exposure, the extent to which appropriate work practices and PPE were used, and a description of the source of exposure (USHHS and NIOSH, 1989). When the source is tested for HIV or HBV, the incident report is updated and placed in a confidential file.

ATTACHMENT 1
TASK IDENTIFICATION, POTENTIAL CONTACT, AND PROTECTION

CPR AND FIRST AID			
EMERGENCY SITUATION	**SERVICE**	**POTENTIAL CONTACT**	**PPE SUGGESTED**
Victim is lying on the ground	Primary survey of victim and opening victims airway	Skin to skin contact	Gloves
Victims breathing has ceased	Rescue breathing	Skin to skin contact Mouth to mouth contact	Gloves Resuscitation mouthpiece
No pulse	CPR	Skin to skin contact	Gloves Resuscitation mouthpiece
Victim is lying on the ground	Secondary survey of victim	Skin to skin contact	Gloves
Choking without stoppage of breathing	Heimlich maneuver	Skin to skin contact	None required if skin is intact Non-intact skin requires gloves
Heart Attack	Comfort victim	Skin to skin contact	Gloves
Bleeding with spurting blood	External control	Skin to skin contact	Gloves Gown or coveralls Apron (option) Mask or face protection Eyewear
Minimal bleeding	External control	Skin to skin contact	Gloves
Compound fractures	External control	Skin to skin contact	Gloves
Burns	External control	Skin to skin contact	Gloves
Poisoning	If induced vomiting is needed	Skin to skin contact	Gloves Eyewear
Diabetic shock	Giving an injection	Sharps from needle could cause direct injection	Gloves Sharps container
Bites and stings	Giving an injection	Sharps from needle could cause direct injection	Gloves Sharps container
Seizures	External control	Eyes and skin contact	Gloves Eyewear

CPR AND FIRST AID			
EMERGENCY SITUATION	**SERVICE**	**POTENTIAL CONTACT**	**PPE SUGGESTED**
Stroke	Provide comfort	None	Gloves
Heat Stress/Cold Stress	External control	Skin to skin contact	Gloves
Victim has fainted	Raise legs for shock	Skin to skin contact	Gloves
Victim falls down in hazardous atmosphere	Rescue victim from area	Skin to skin contact	Gloves
Soiled clothes handling	Place soiled clothing and materials in red/orange bag	Skin contact with bloodborne pathogens in clothing fabrics	Gloves Gown or apron (as needed)
Decontamination	Scrub with disinfectant	Skin contact with bloodborne pathogens in clothing fabrics	Gloves Gown or apron (as needed)
Containerization	Place contaminated clothing into bags	Potential skin contact with residual bloodborne pathogen on bags	Gloves Gown or apron (as needed)