Final
Site-Specific Safety and Health Plan

Lime Treatment Pilot Study
Plum Brook Ordnance Works –Pentolite Road Red Water Ponds (PRRWP)
Sandusky, Ohio

Contract No. W91237-06-C-0006

Prepared for:

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DEFINITIONS AND ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
COC	Contaminant of Concern
COCs	Contaminants of Concern
DERP-FUDS	Defense Environmental Restoration Program for Formerly Used Defense Sites
DNT	Dinitrotoluene
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
GSA	General Service Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response
HI	Hazard Index
HTF	Hypersonic Tunnel Facility
HTRW	Hazardous, Toxic, and Radioactive Waste
HSWA	Hazardous and Solid Waste Amendments
IDW	Investigation Derived Waste
ILCR	Incremental Lifetime Cancer Risk
IQCT	Independent Quality Control Team
ISRA	Interim Soil Removal Action
IT	International Technology Corporation
MCL	Maximum Contaminant Level
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
NASA	National Aeronautics and Space Administration

DEFINITIONS AND ACRONYMS (continued)

NCP	National Contingency Plan or National Oil and Hazardous Substance Pollution Contingency Plan
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NTCRA	Non-Time Critical Removal Action
ORO	Oil Range Organics
OSHA	Occupational Safety & Health Administration
PAH	Polynuclear Aromatic Hydrocarbons
PBOW	Plum Brook Ordnance Works
PBS	Plum Brook Station
PCBs	Polychlorinated Biphenyls
POC	Point of Contact
PQL	Practical Quanitation Limit
PPE	Personal Protective Equipment
PRGs	Preliminary Remediation Goals
PRRWP	Pentolite Road Red Water Ponds
QA	Quality Assurance
QC	Quality Control
QAP	Quality Assurance Plan
QCP	Quality Control Plan
RAB	Restoration Advisory Board
RBCs	Risk Based Concentrations
RCRA	Resource Conservation and Recovery Act
RGO	Remedial Goal Objective

DEFINITIONS AND ACRONYMS (continued)

RI/FS	Remedial Investigation/Feasibility Study
RPDs	Relative Percent Differences
SARA	Superfund Amendments and Reauthorization Act
SMCL	Secondary Maximum Contaminant Level
SOW	Scope of Work
SSHO	Site Safety and Health Officer
SSHP	Site-Specific Safety and Health Plan
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TNB	Trinitrobenzene
TNT	Trinitrotoluene
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TSDF	Treatment, Storage, and Disposal Facility
TSS	Total Suspended Solids
UCL	Upper Confidence Limit
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this site-specific safety and health plan (SSHP) is to establish mandatory safety practices and procedures for all work conducted for the United States Army Corps of Engineers (USACE). Applicability extends to all employees, subcontractors, and visitors. This plan assigns responsibilities and establishes standard operating procedures for field personnel working on this project. During development of this plan, consideration was given to safety standards as defined by the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), and the USACE Manual, EM 385-1-1, November 2003 Edition.

1.2 Visitors

McTech Corp personnel, the USACE and NASA points of contacts listed in Section 4.1 of this plan, personnel from C&K Industrial Services are not considered visitors, they are considered project personnel who have the necessary safety training (Hazardous Waste Operations and Emergency Response (HAZWOPER) training) to enter a potentially contaminated area. The surveyors (Mountain State) and transportation company if necessary (Molnar Construction) employees are also considered project personnel; however, they are limited to performing non-intrusive activities that are not likely to result in exposure; therefore, they are not required to have HAZWOPER training. All project personnel are required to review this SSHP. All others will be considered visitors to the site. All visitors entering the work area at the site will be required to sign in with the site safety and health officer (SSHO) or the Project Manager and review this site specific safety and health plan. Appendix C contains a copy of the visitor log form to be used on-site. Visitors that do not meet the training requirements of 29 CFR 1910.120 will not be allowed to perform intrusive activities. In the event that a visitor does not adhere to the provisions of this plan, that person will be asked to leave the work area.

1.3 Safety Policy Enforcement

McTech Corp field personnel and subcontractors are required to familiarize themselves with this plan, as well as NASA and Plum Brook Safety provisions, policies and procedures, so that they may adhere to its safety provisions. The provisions of this site specific safety policy will be enforced. Failure to comply will be grounds for disciplinary action for employees, and non-compliant visitors will be required to leave the work zone. A copy of the McTech Corp general safety policy is included in Appendix F.

Pursuant to the Scope of Work, coordination with Plum brook Station (PBS) personnel will be conducted by USACE to ensure that McTech Corp is allowed access to/from the site to perform all activities during this removal action. McTech Corp and its subcontractors shall be required to enter/exit through the PBS security gate and to adhere to the PBS security and safety regulations. McTech Corp personnel and subcontractors are required by NASA to review a safety video and orientation prior to performing any on-site activities. McTech Corp is responsible for ensuring that McTech Corp employees and subcontractors follow all rules set forth by the PBS personnel. Security and safety requirements, as set forth by PBS, shall not be compromised. A pre-construction meeting between McTech Corp personnel, McTech Corp subcontractors, USACE personnel, and NASA personnel shall be held prior to beginning intrusive field work.

2.0 PROJECT DESCRIPTION

2.1 Background and Purpose

The purpose of this work order at PRRWP is to study the application of lime for the treatment and reduction of nitroaromatic contamination in soil found in the PRRWP area of the NASA PBOW site, located in Sandusky, Ohio. The United States Corps of Engineers (USACE) is the responsible authority under the Defense Environmental Restoration Program (DERP) at PBOW. Based on the results of the completed*Interim Soil Removal Action (ISRA) (WTI 2006)* the USACE will investigate the possibility of reducing nitroaromatic contamination at the PRRWP area applying lime treatment technologies.

The single Contaminant of Concern (COC), 2,4,6 Trinitrotoluene (TNT) is at concentrations that exceed the preliminary remediation goals (PRGs) as identified in the "*Final Action Memorandum for the PRRWP Interim Removal Action* (USACE 2003). The PRGs are based upon Remedial Goal Objectives (RGOs), which are chemical and receptor specific, risk based remedial criteria that capture all the exposure assumptions and toxicological data used in risk assessment. This reduction in nitroaromatic contamination will be done to minimize the threats to, and provide adequate protection to, human health and the environment from exposure to soil at PRRWP. The study's approach will be to excavate soil from various levels to create eight test plots into which lime will be tilled. The pH of the plots will be measured and recorded. Samples will be collected weekly and analyzed to monitor the effectiveness of the treatment.

2.2 Site Location and History

The former PBOW is located approximately 4 miles south of Sandusky, Ohio and 59 miles west of Cleveland, Ohio. Although the PBOW site is primarily situated in Perkins and Oxford Townships, the eastern edge of the site extends into Huron and Milan Townships. The site is bounded on the north by Bogart Road, on the south by Mason Road, on the west by County Road 43, and on the east by U.S. Highway 250. The surrounding area is mostly agricultural and residential.

The 9,009 acre PBOW site was built by the United States Army in early 1941 as a manufacturing plant for 2,4,6-TNT, DNT, and Pentolite. Production of explosives at PBOW began in December 1941 and continued until 1945.

PBOW Pentolite Road Red Water Ponds (PRRWP) consists of an area of approximately 9 acres located at the north-central portion of the former PBOW. PRRWP is located just south of Pentolite Road, southeast of the former Pentolite Area and approximately one mile north of TNT B. During the operation of the site by the Department of Defense (DOD), the wastewater produced by the purification of TNT within the TNT A and TNT B areas was discharged by means of wooden flumes and/or ceramic pipes into various settling ponds (West Area Red Water Ponds and PRRWP). This wastewater was then transported to a wastewater treatment and incineration area, again, by wooden flumes and elevated pipes into different settling ponds at PRRWP. PRRWP received discharge from Wastewater Treatment Plant #1 that previously existed on site located approximately 700' east of the PRRWP area. Original PRRWP construction plans indicate pond dimensions of 200' wide (east-west) by 400' long (north-south) by 3' deep with a 1' high levee, which created a storage capacity of 182,000 cubic yards of wastewater. NASA had PRRWP filled in 1977 following a breach of the ponds.

NASA acquired the property on March 15, 1963 and currently utilizes the site. The GSA performed further decontamination efforts during the 1963 transfer. The decontamination process included removing contaminated surface soils above the drain tiles, flumes, etc., destruction of all buildings by fire, and the removal of all soil, debris, sumps, and concrete foundations. All materials, including the soil in those areas, were flashed. The area was then rough graded. The decontamination process also included the burning of excavated nitroaromatic filled flumes.

NASA currently operates the PBS of the John Glenn Research Center at Lewis Field. Most of the aerospace testing facilities built at the site in the 1960's are on standby or inactive status. On April 18, 1978, NASA declared approximately 2,152 acres of PBOW as excess. The Perkins Township Board of Education acquired 46 acres of the excess acreage and uses this area as a bus transportation area. The remaining excess acreage in the Southwest area was sold to various private concerns. NASA currently controls approximately 6,400 acres of land which includes approximately 5,400 acres within the fence line. Of the acreage inside the fence line, NASA has a use agreement with the Ohio National Guard for 604 acres and the remainder is utilized for aerospace research as a satellite operation of the Glenn Research Center. The acreage outside the fence remains part of the test facility exclusion zone and is leased to various farmers and the Erie County Conservations League. The details of land transactions are listed in the site management plan (ICI, 1995) and can be found at the NASA PBS.

2.3 Overview of Remedy and Proposed Action

To date, an ISRA has been conducted at the PRRWP area and a report prepared that addresses soil contamination limits that still remain in the area. The COC was identified as nitroaromatics, specifically, 2,4,6 TNT. TNT existed in surface soil, subsurface soil, and groundwater, however surface water and sediment were not found to be contaminated.

The objective of ISRA for PRRWP completed in 2003 and the current Lime Treatment Pilot Study at PRRWP is to minimize threats to, and provide adequate protection to, human health and the environment from exposure to contaminants in soil. The remedial objectives identified for soils at PRRWP are to:

1.) Minimize the potential for human exposure via incidental ingestion, dermal contact, and inhalation of soil contaminated with nitroaromatics.

2.) Minimize the potential for nitroaromatics to migrate from soil at the site to the groundwater.

Due to funding limitations, only the 20' x 20' x 10' area identified in the *PRRWP Final Action Memorandum, USACE 2003*, has been excavated and backfilled with clean soil. The area was only excavated to a depth of 8' rather than the 10' specified because groundwater was encountered. Exploratory test pits were used in place of continued excavation to determine the horizontal limits of the contamination. Following the test pit activities, confirmation sampling and the calculation of the hazard index (HI) determined that the original extent of contamination was grossly underestimated. Further excavation or treatment is necessary to minimize threats to, and provide adequate protection to, human health and the environment from exposure to the nitroaromatic contamination in the soil. In addition to the original excavation of 118 cubic yards, approximately 7,600 cubic yards of additional excavation or treatment would be required to remediate PRRWP.

The Lime Treatment Pilot Study project has become available due to newly distributed funding and will investigate the possibility of reducing the TNT found in the area below the PRG level so that the soil can remain on site rather than being disposed of off site.

Project actions consist of (at minimum): excavation, tilling (in lifts between 12" and 18") of the soil with hydrated/slaked lime, obtaining a pH that is conducive for treatment to occur, sampling periodically (field and lab confirmation analysis) to determine the decrease in the nitroaromatics, comparing the reduced levels to the identified PRG/RGO of 13.8 mg/kg for TNT. Surveying will also be performed to determine the volumes of soils tested prior to placing the soil back into the ground, seeding area with common grasses occurring naturally in the PRRWP area, and preparing a report documenting the processes performed in this pilot study along with its findings. Refer to the Plan of Operations for a full and detailed description of the field activities to be performed during this Lime Treatment Study. The results of this pilot study will also be presented to a Restoration Advisory Board (RAB) meeting.

In discussion with the Ohio EPA, it was agreed upon that the soil could be placed back in the ground at the PRRWP should the treatment not reduce the TNT levels below the RGO levels. This agreement was based on the facts that future funding will be available for a continuation of the Interim Soil Removal Action on the additional contaminated soil and because this soil was identified as non-hazardous

2.4 Overview of Tasks

McTech will provide all equipment, labor, materials, and supervision necessary for the Pilot Study as described by in the SOW. Activities generally consist of excavation, tilling, sampling, replacing soil back into the ground, and site restoration.

The following tasks are required to be performed under this SOW:

Task 1 Preparation and submission of a Site Specific Safety and Health Plan.

Task 2 Preparation and submission of a Quality Control Plan.

Task 3 Preparation and submission of a Plan of Operations

Task 4 Notification/ scheduling of field activities and coordination of utility marking with NASA officials prior to site mobilization.

Task 5 Site surveying is necessary for identifying limits of excavation.

Task 6(A&B) Excavation of contaminated material/ Tilling of hydrated or slaked lime.

Task 7 Field Screening/ Confirmation Analysis by Laboratory

Task 8 Site Restoration

Task 9 Preparation/ Submission of the Draft and Final Lime Treatment Pilot Study for PRRWP.

Task 10 Public meeting support will be provided to the USACE for the work defined by this delivery order.

The tasks outlined in this section are described in detail in the Plan of Operations (McTech Corp, October 2006). This work shall be conducted by the McTech in an environmentally acceptable manner conforming to existing federal, state, and local regulations under USACE Huntington District (CELRH) supervision.

3.0 HAZARD/RISK ANALYSIS

3.1 Activity Hazard Analysis

Appendix A summarizes field activities that may create or contribute to a hazard and the actions that can be taken to eliminate or minimize hazards at the site. A nuclear reactor is located at PBS. This reactor is currently being decommissioned. Exposure to radiation on-site is not expected to be an issue; however, personnel must be cognizant that radioactive material is present at the PBS site and that exposure, while highly unlikely, is possible. Therefore, McTech Corp Project Management must ensure that McTech Corp personnel and subcontractors work only in the areas designated and that all instructions provided by the PBS security and safety personnel is strictly adhered to. McTech Corp personnel and subcontractors are required by NASA to review a safety video prior to performing any on-site activities.

3.2 Chemical Hazards

The primary chemical hazards associated with these investigations are exposure to nitroaromatic compounds, and lead. Additionally, personnel will be potentially exposed to products brought

on the site by McTech Corp. Products that McTech Corp might bring on-site include Tornado-50 cleaner, hexane, nitric acid, acetone, lime, and fertilizer. Material safety Data Sheets (MSDS) will be provided on-site for all chemicals used at PBOW. Sections 3.2.1 through 3.2.13 give specific information concerning the chemicals that may be encountered during this project. The following standard safety precautions shall be adhered to for this project.

- Keep work areas clean and well ventilated.
- Clean up spills quickly and carefully.
- Personnel in the work zone shall not eat, drink, smoke or apply cosmetics.
- Only personnel meeting the training requirements of 29 CFR 1910.120 may perform this work. Personnel shall, at a minimum, be wearing Level D PPE as listed in Section 5.1. If site conditions so warrant, the Project Manager/SSHO shall require personnel to upgrade to a higher level of PPE.
- Any unnecessary contact with potentially contaminated substances shall be avoided.
- No horseplay.
- No matches or lighters shall be used in the work zone.
- During activities that present a risk to personnel, the buddy system as described in Section 6.1 will be implemented.

It is not expected, based on the result of the air monitoring performed during the initial excavations at the PBOW site, that permissible exposure limits (PELs) will be exceeded for any of the chemicals listed in this section. The following Table 1 contains a list of the potential chemical contaminants and their applicable OSHA PEL. These PELs are given as general information only and will not be utilized unless site conditions change.

PELs are time weighted average (TWA) concentrations that must not be exceeded during any 8-hour work shift of a 40-hour workweek. An 8-hour time weighted average concentration is calculated by taking the concentration of an air contaminant and multiplying it by the duration in hours of exposure and then dividing it by 8 hours. PEL concentrations were developed for normal healthy workers exposed on the job to air contaminants. Exposures in excess of a PEL value trigger certain requirements (emission and exposure controls), depending on the particular OSHA standard being exceeded. OSHA ceiling concentrations, designated by a "C" preceding the concentration value, must not be exceeded during any part of the workday. When instantaneous monitoring is not feasible, the ceiling limit may be assessed as a 15-minute TWA exposure. PEL and ceiling concentration standards are legally enforceable air contaminant concentration limits. An acceptable peak concentration is the acceptable maximum concentration above the established ceiling concentration that is allowed during an 8-hour shift. An Immediately Dangerous to Life and Health (IDLH) exposure condition is defined by NIOSH as a situation "that poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevents escape from such an environment." OSHA has established IDLH exposure concentrations for over 300 substances. OSHA's purpose in establishing IDLH values was to ensure that a worker could escape without injury or irreversible health effects from an IDLH exposure in the event of the failure of respiratory protection.

Table 1—OSHA Permissible Exposure Limits

Compound	PEL[1]	IDLH[1]
o-Dinitrobenzene	1 mg/m^3	200 mg/m^3
m-Dinitrobenzene	1 mg/m^3	200 mg/m^3
p-Dinitrobenzene	1 mg/m^3	200 mg/m^3
Nitrobenzene	1 ppm	200 ppm
Nitrotoluene	5 ppm	200 ppm
Dinitrotoluene	1.5 mg/m^3	200 mg/m^3
o-Dinitrotoluene	2 ppm	200 ppm
p-Dinitrotoluene	2 ppm	200 ppm
2,4,6-Trinitrotoluene	1.5 mg/m^3 (skin)	500 mg/m^3
Lead	50 ug/m^3	N/A[3]
Hexane	500 ppm	1100 ppm
Tornado-50 cleaner	N/A[2]	N/A[2]
Lime	5 mg/m^3	N/A[2]
Fertilizer	N/A[2]	N/A[2]
Acetone	1000 ppm	N/A[2]
Nitric Acid	2 ppm	N/A[2]
Aroclor® 1242	1 mg/m^3	5 mg/m^3
Aroclor® 1254	0.5 mg/m^3	5 mg/m^3

[1]PEL and IDLH values were taken from the NIOSH Pocket Guide to Chemical Hazards, .

[2]N/A=not applicable, there is not OSHA PEL or IDLH value for this compound

3.2.1 Dinitrobenzene (all isomers)

Dinitrobenzene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of dinitrobenzene are as follows:

- Dinitrobenzene has an approximate molecular weight of 168.1 g/mol.
- Dinitrobenzene is a pale white or yellow crystalline solid.
- Dinitrobenzene has a boiling point of 606 °F.
- Dinitrobenzene has a vapor pressure of less than 1 mm Hg at 68 °F.
- Dinitrobenzene has a solubility of 0.01 to 0.05 grams per 100 grams of water.
- Dinitrobenzene is incompatible with strong oxidizers, caustics, and chemically active metals such as tin or zinc.

Specific routes of exposure are:

- Skin absorption (solid, liquid, and vapor phases are readily absorbed through the skin)
- Eye contact
- Ingestion
- Inhalation

Ingestion of alcohol may cause aggravation of symptoms. Symptoms a worker may exhibit when exposed to dinitrobenzene include, but are not limited to the following:

- Eye and skin irritation
- Cyanosis
- Irritability
- Unpleasant taste or burning sensation in mouth
- Dry throat
- Reduced vision
- Jaundice
- Drowsiness
- Nausea
- Headache
- Shortness of breath
- Weakness
- Dizziness
- Anemia
- Unconsciousness

The target organs affected are:

- Eye
- Skin
- Blood
- Liver
- Central nervous system
- Cardiovascular system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If dinitrobenzene has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.

- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.2 Nitrobenzene

Nitrobenzene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of nitrobenzene are as follows:

- Nitrobenzene has a molecular weight of 123.1 g/mol.
- Nitrobenzene is a yellow, oily liquid with a pungent shoe polish odor.
- Nitrobenzene has a boiling point of 411 °F.
- Nitrobenzene has a vapor pressure of less than 1 mm Hg at 68 °F.
- Nitrobenzene has a solubility of 0.19 grams per 100 grams of water.
- Nitrobenzene is incompatible with concentrated nitric acid, nitrogen tetroxide, caustics, phosphorus pentachloride, and chemically active metals such as tin or zinc.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Ingestion of alcohol may cause aggravation of symptoms. Symptoms a worker may exhibit when exposed to nitrobenzene include, but are not limited to the following:

- Eye and skin irritation
- Cyanosis
- Irritability
- Drowsiness
- Nausea
- Headache
- Shortness of breath
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Eye
- Skin
- Blood
- Reproductive system
- Liver
- Kidneys
- Cardiovascular system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If Nitrobenzene has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.3 Nitrotoluene (all isomers)

Nitrotoluene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of nitrotoluene are as follows:

- Nitrotoluene has a molecular weight of 137.1 g/mol.

- Nitrotoluene is a yellow liquid or solid with a weak aromatic odor.
- Nitrotoluene has a boiling point of 432 °F.
- Nitrotoluene has a vapor pressure of 0.12 to 0.15 mm Hg at 68 °F.
- Nitrotoluene has a solubility of 0.04 to 0.06 grams per 100 grams of water.
- Nitrotoluene is incompatible with strong oxidizers, and sulfuric acid.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to nitrotoluene include, but are not limited to the following:

- Skin irritation
- Cyanosis
- Irritability
- Drowsiness
- Nausea
- Rapid pulse
- Headache
- Shortness of breath
- Heart irregularities
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Skin
- Blood
- Cardiovascular system
- Central nervous system
- Gastrointestinal tract

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If nitrotoluene has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.4 Dinitrotoluene

Dinitrotoluene (DNT) presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Dinitrotoluene has been shown to be a carcinogen and neoplastigens in laboratory experiments with animals. Some of the chemical and physical properties of DNT are as follows:

- DNT has a molecular weight of 182.2 g/mol.
- DNT is an orange-yellow crystalline solid.
- DNT has a boiling point of 572 °F.
- DNT has a vapor pressure of 1 mm Hg at 68 °F.
- DNT has a solubility of 0.03 grams per 100 grams of water.
- DNT is incompatible with strong oxidizers, caustics, and metals such as tin and zinc.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to DNT include, but are not limited to the following:

- Skin irritation
- Cyanosis

- Irritability
- Drowsiness
- Nausea
- Rapid pulse
- Headache
- Shortness of breath
- Heart irregularities
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Skin
- Blood
- Cardiovascular system
- Liver
- Reproductive system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If DNT has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.5 2,4,6-Trinitrotoluene

TrinitrotolueneTNT presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of trinitrotoluene (TNT) are as follows:

- TNT has a molecular weight of 227.1 g/mol.
- TNT is a colorless to pale yellow, odorless solid.
- TNT has a boiling point (it explodes) of 464 °F.
- TNT has a vapor pressure of 0.053 mm Hg at 68 °F.
- TNT has a solubility of 0.013 grams per 100 grams of water.
- TNT is a Class A explosive. Rapid heating may cause an explosion.
- TNT may affect the ability of blood to carry oxygen.
- TNT is incompatible with strong oxidizers, ammonia, strong alkalies, and combustible materials.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to TNT include, but are not limited to the following:

- Skin irritation
- Irritation to the eyes, throat, and nose
- Jaundice (skin, hair, and nails)
- Cyanosis
- Sneezing
- Coughing
- Sore throat
- Muscular pain
- Weakness
- Drowsiness
- Shortness of breath
- Heart irregularities

- Unconsciousness
- Cataracts

The target organs affected are:

- Skin
- Eyes
- Respiratory system
- Blood
- Cardiovascular system
- Liver
- Kidneys
- Central nervous system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If contaminant has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.6 Lead

Some of the chemical and physical properties of lead are as follows:

- Lead has a molecular weight of 207.2 and a molecular formula of Pb.
- Lead is a heavy, gray solid, which is ductile and soft.
- Lead begins to melt at 621 °F.
- Lead is incompatible and/or reactive with strong oxidizers, hydrogen peroxide and acids.

Specific routes of exposure to lead are:

- Inhalation
- Ingestion
- Skin contact

Symptoms a worker may exhibit when exposed to lead include, but are not limited to the following:

- Eye irritation
- Insomnia
- Nausea
- Malnutrition
- Constipation
- Colic
- Anemia
- Tremors
- Abdominal pain
- Hypotension
- Paralysis of wrist and/or ankles
- Pallor
- Gingival lead line
- Encephalopathy
- Will severely aggravate pre-existing conditions of gout

The target organs affected by lead are:

- Eyes
- Gastrointestinal tract
- Central nervous system
- Kidneys
- Blood
- Gingival tissue

Lead can cause diseases of the central and peripheral nervous system, the kidney and the blood. The OSHA PEL is 0.050 milligrams per cubic meter (mg/m^3) or 50 ug/m^3.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.

3.2.7 Hexane

Hexane will be used for decontamination of sampling equipment. Some of the chemical and physical properties of hexane are as follows:

- Hexane is a colorless liquid with a gasoline like odor.
- Hexane has a molecular weight of 86.2.
- Hexane is a flammable liquid. It has a lower explosive limit of 1.1% and an upper explosive limit of 7.5%.

The specific routes of exposure for hexane are:

- Inhalation
- Skin absorption
- Ingestion
- Skin and/or eye contact

Symptoms a worker may exhibit when exposed to hexane include, but are not limited to the following:

- Dermatitis
- Respiratory irritation

- Muscle weakness
- Dizziness
- Headache
- Drowsiness
- Eye irritation

The target organs affected by hexane are:

- Eyes
- Skin
- Respiratory System
- Central Nervous System
- Peripheral Nervous System

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If methanol have penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.

3.2.8 Tornado-50 Cleaner

Tornado-50 cleaner is a heavy-duty multi-purpose biodegradable, alkaline cleaner that will be used to clean the equipment. Some of the chemical and physical properties of Tornado-50 cleaner are as follows:

- Tornado-50 cleaner is a green-yellow liquid.
- Tornado-50 cleaner has a boiling point of 180 °F.
- Tornado-50 cleaner is incompatible and/or reactive with acids.

Specific routes of exposure to Tornado-50 cleaner are:

- Inhalation
- Dermal absorption
- Ingestion (Do not induce vomiting, if swallowed)

Symptoms a worker may exhibit when exposed to Tornado-50 cleaner include, but are not limited to the following:

- Eye and skin irritation
- Throat and nose irritation
- Skin redness
- Dizziness

The target organs affected by Tornado-50 cleaner are:

- Eyes
- Skin
- Respiratory system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally.
- Seek medical attention immediately.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.

3.2.9 Lime

Lime will be applied to soil to facilitate the alkaline hydrolysis of nitro aromatics in the soil. In addition, lime may be applied during re-seeding activities. Some of the chemical and physical properties of agricultural lime are as follows:

- Lime is a white powder with little if any odor.
- Lime does not have a flash point.
- Lime is incompatible and/or reactive with boric oxide, acids, fluorine, and many organic materials
- Hydrated lime is a strongly alkaline material

The specific routes of exposure for lime are:

- Inhalation
- Skin and/or eye contact
- Ingestion

Symptoms a worker may exhibit when exposed to lime include, but are not limited to the following:

- Eye and skin irritation
- Burns to the skin
- Chemical pneumonitis (if inhaled)
- Respiratory irritation
- Irritation to the digestive tract (if ingested)
- Will severely aggravate pre-existing conditions of bronchitis, emphysema and asthma

The target organs affected by lime are:

- Eyes
- Skin
- Gastrointestinal tract
- Respiratory tract

Lime does not pose any fire hazards. The OSHA permissible exposure limit (PEL) for lime is 5 mg/m^3. The American Conference of Government Industrial Hygienists (ACGIH) threshold limit values (TLV) for lime is 5 mg/m^3.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally. Wash eyes for a minimum of 15 minutes.
- Seek medical attention immediately.

- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin with large amounts of water.
- Remove any contaminated clothing.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Dilute by giving 2 glasses of milk or water to drink, followed by fruit juices or dilute vinegar to neutralize the alkali.
- Seek medical attention immediately.

3.2.10 Fertilizer

Fertilizer may be applied during re-seeding operations. Some of the chemical and physical properties of fertilizer are as follows:

- Fertilizer is a multi-colored granular substance with an ammonia odor.
- Fertilizer does not have a flash point.
- Fertilizer is incompatible and/or reactive with nitrates, strong alkalis, reducing agents, and active metals (such as aluminum & magnesium).

The specific routes of exposure for fertilizer are:

- Inhalation
- Skin and/or eye contact
- Ingestion

Symptoms a worker may exhibit when exposed to fertilizer include, but are not limited to the following:

- Eye and skin irritation
- Respiratory irritation
- Dermatitis
- Coughing
- Headaches
- Muscular weakness

- Irritation to the digestive tract (if ingested)
- Cyanosis
- Depression
- Inhalation of dust may aggravate existing respiratory conditions like asthma

The target organs affected by fertilizer are:

- Eyes
- Skin
- Gastrointestinal tract
- Respiratory tract
- Kidneys

Fertilizer itself is not flammable. However, fertilizer is comprised of materials, which are oxidizers in their pure, unmixed forms. Therefore, fertilizer will not burn but can provide oxygen for existing fires. OSHA has not set a permissible exposure limits (PELs) for fertilizer. The American Conference of Government Industrial Hygienists (ACGIH) has not set threshold limit values (TLV) for fertilizer.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally. Wash eyes for a minimum of 15 minutes.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin with soap and large amounts of water.
- Remove any contaminated clothing.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Have conscious person drink 1-2 glasses of water, and then induce repeated vomit until vomit is clear. Seek medical attention immediately.
- Seek medical attention immediately.

3.2.11 Acetone

Acetone will be used to extract the soil samples for the field-testing of nitroaromatics. Some of the chemical and physical properties of acetone are as follows:

- Acetone is a colorless liquid with a mint-like odor.
- Acetone has a molecular weight of 58.08.
- Acetone is a flammable liquid. It has a vapor density of 2.0 (air =1.0).
- Acetone is incompatible or reactive with concentrated nitric and sulfuric acid mixtures, oxidizing materials, chloroform, alkalis, chlorine compounds, and acids.

The specific routes of exposure for acetone are:

- Inhalation
- Skin absorption
- Ingestion
- Skin and/or eye contact

Symptoms a worker may exhibit when exposed to acetone include, but are not limited to the following:

- Dermatitis
- Respiratory irritation
- Dullness
- Dizziness
- Headache
- Eye irritation
- Unconsciousness
- Abdominal pain
- Nausea

The target organs affected by acetone are:

- Eyes
- Skin
- Respiratory System
- Central Nervous System
- Peripheral Nervous System

The OSHA PEL for acetone is 1000 ppm. The ACGHI threshold limit value for acetone is 500 ppm (TWA) and 750 STEL.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If acetone has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE vomiting. If vomiting occurs, keep head below hips to prevent aspiration into lungs.
- Seek medical attention immediately.

3.3 Physical Hazards

Activities performed during the project present dangers from physical hazards such as strains from lifting activities, hazards from walking and working surfaces, heat stress, harmful plants/animals/insects, excavation hazards, utility hazards, noise hazards, cuts, and injury from heavy equipment use. Personnel training, increased awareness through daily safety meetings, proper use of PPE and attention to site conditions will serve to mitigate these potential hazards from the activities listed in this section. Further information regarding training, safety procedures and PPE can be found in Sections 4.0 and 5.0.

3.3.1 Heavy Equipment Hazards

Heavy equipment (trucks, dozers, excavator, end loader, etc.) operations present inherent safety hazards. Operators qualified to operate this type of equipment have a minimum of 2 years experience. Every operator holds an STP Safety Training Passport that includes OSHA 10 hr plus 8 additional hours of craft specific training. Safeguards to follow when working around heavy equipment include, but are not limited to the following:

- Only qualified personnel will operate heavy machinery.
- Getting on or off of any equipment while it is in motion is prohibited.

- Machinery shall be operated in accordance with the manufacturer's recommendations.
- The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited.
- All machinery shall be inspected weekly (when in use) by a competent and knowledgeable person to ensure safe operating conditions. A copy of the inspection form that must be used to document this inspection is found in Appendix C.
- Personnel shall not operate heavy equipment in areas where the utilities have not been properly marked.
- All heavy equipment shall be equipped with working audible reverse signal alarms or motion alarms.
- Personnel shall wear hearing protection when working near heavy equipment.
- Personnel shall wear safety belts and only equipment with roll over protection will be used.

Physical hazards associated with heavy equipment operations that may be encountered on this project include, but are not limited to the following:

- Sharp objects may cause cuts or punctures.
- Falls from uneven terrain or slippery surfaces may occur.
- Sprains and strains from lifting activities are possible.
- Moving vehicles may injure personnel.
- Electrical shock/electrocution hazard exist if underground or aboveground power lines are encountered.
- Noise levels may be high which are both a health hazard and a hindrance to communication.
- Field ground personnel shall not perform work near moving heavy equipment. The heavy equipment operator shall ensure that other personnel are not performing work in the area where excavation work is occurring.

Only employees with proper training and experience are permitted to operate heavy equipment.

3.3.2 Utility Lines

A digging permit must be obtained from NASA PBS where subsurface intrusive work will be performed. Under no circumstances will intrusive work be performed in areas not pre-approved by NASA PBS. Work will not proceed until all utilities have been marked or identified by NASA PBS. Work will stop immediately if any underground utilities are detected and the NASA POC will be notified immediately.

3.3.3 Slips, Trips, and Falls

Due to the locations of this project, the walking and working surfaces present inherent dangers. Personnel will adhere to the following safety rules concerning walking and working surfaces:

- When possible, personnel will avoid walking through or working in water or mud.
- Personnel will avoid climbing over site debris or over equipment.
- Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
- Personnel will not walk on or attempt to crawl over stockpiles.

- Personnel will not walk or stand near the edges of the excavation areas.
- Personnel will be careful when walking in heavily vegetated areas. They will avoid traveling in the heavily vegetated areas whenever possible.

3.3.4 Lifting Techniques

Lifting and moving equipment improperly can place a great deal of stress on the back possibly resulting in severe injury. Lifting objects is inherent in performing field investigations; therefore, it is important to use good lifting techniques. Personnel shall adhere to the following basic rules when performing work that requires lifting:

- If a load is heavy or bulky, get help
- Remember to lift with your legs and keep your back straight.
- Keep the load as close to your body as you can.
- Do not jerk the load. Lift slowly and carefully.
- Make sure the area you will be carrying the load through is clear of obstacles.
- Do not twist or turn your spine when lifting or carrying the load.
- Be sure to have a good grip on your load at all times.
- Be careful when lowering your load (get help, if necessary).

Proper lifting techniques and back injury prevention techniques are addressed during annual safety training for McTech Corp personnel. Field personnel shall review the above rules for proper lifting prior to beginning fieldwork.

3.3.5 Inclement Weather Conditions

Work shall not be scheduled when inclement weather (heavy rains, strong winds, tornado, floods, extreme temperatures, and so forth) is predicted that could cause or contribute to an accident or exposure incident. If a change in the weather poses a health or environmental threat, the site shall be secured, and work shall cease. Extremes in temperature can pose serious physical hazards to personnel. Personnel shall be aware of appropriate steps that can be taken to minimize the effects of temperature extremes.

3.3.5.1 Heat Stress

Personnel who work outdoors during the summer to early fall months may be subject to heat stress. Heat stress may occur when protective clothing decreases natural body ventilation and/or when working in areas having elevated temperatures. The heat stress work/rest standards as outlined in the heat stress section of the ACGIH Threshold Limit Values (TLV) & Biological Exposure Indices (BEI) Handbook, and Section 6 of the EM 385-1-1 Safety and Health Requirement Manual will be followed.

Heat stress is any series of conditions where the body is under stress from overheating. It can include heat cramps, heat exhaustion, heat rash, or heat stroke. The victim often overlooks the signs of heat stress. The employee may at first be confused or unable to concentrate. Heat stress can produce bodily symptoms, which may include profuse sweating, dizziness, cessation of sweating, and collapse. Refer to Table 2 on the following page for common forms of heat stress.

Table 2--Heat Stress

Condition	Signs/Symptoms	First Aid
Heat cramps	Heavy sweating Painful muscle spasms	Sport drink intake (Gatorade) Rest in cool environment Salt water intake (0.5% solution)
Heat Syncope	Brief fainting Blurred vision	Water intake Lie down in cool environment
Dehydration	Fatigue and reduced movement	Fluid and salted food intake
Heat Exhaustion	Pale and clammy skin, possible fainting, weakness, fatigue, nausea, dizziness, heavy sweating, blurred vision, body temperature slightly elevated	Lie down in cool environment, water intake, loosen clothing
Heat Stroke	Skin hot and dry, red face, high body temperature, unconsciousness, collapse, convulsions, confusion or erratic behavior	Immediate total cooling Transport to hospital

The following precautions will be taken to prevent injury from heat stress:

- The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day.
- The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. The frequency and time of rest periods will be increased, if the SSHO believes that it is necessary to protect the workers' safety.
- Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water.
- The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety.

3.3.5.2 Cold Stress

Personnel who work outdoors during winter months are subject to cold stress. Exposure to extreme cold can result in severe injury or even death. Areas of the body that are most susceptible to the effects of cold stress are the fingers, toes, nose, and ears. The cold stress management requirements as outlined in section 6 of the EM 385-1-1 Safety and Health Requirement Manual will be followed. Precautions a worker may take to prevent injury from the cold includes, but is not limited to the following:

- Extremities shall be protected from extreme cold by protective clothing.
- The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor at a field site.
- Outer garments must provide ventilation to prevent wetting of inner clothing by sweat.

- Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent.

The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

3.3.6 Noise

Noise may be generated when heavy equipment (trucks, backhoes, and so forth) is used. Hearing protection is mandatory when working in areas where the noise levels exceed 85-dBA steady state or 120-dBA impulse.

3.3.7 Harmful Plants, Animals, and Insects

Personnel working in the field must be aware of the physical hazards posed by coming into contact with harmful plants, animals, and insects. Of the potential exposures to plants presented by this group, field personnel are likely to be most affected by exposure to poison ivy and poison oak, which are very common in this area. Both of these plants have greenish white flowers with berries that grow in clusters. The leaves are composed of three (3) leaflets each. These plants can cause a severe rash, which is characterized by redness, blisters, swelling, intense burning and itching. If these plants are required to be removed from the work area, precautions shall be taken and appropriate clothing shall be worn to protect field personnel from dermal contact with these plants.

Copperheads (Northern Copperhead) and rattlesnakes (Eastern Massasauga) are the predominant poisonous species of snakes in Ohio. Rattlesnakes have horny sheaths towards the end of the tail, which make a rattling sound. Copperheads are brown in color with a V-shaped head characteristic of poisonous snakes.

Mosquitoes, ticks, chiggers, and bees are likely to be encountered during the work being performed under this SOW. Personnel shall take care to avoid these stinging/biting insects. The following steps shall be considered in preventing these hazards.

- Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. This should be helpful in limiting skin exposure to harmful plants and insects.
- Insect repellants may not be used when sampling for nitroaromatics because they can interfere and cause false hits in subsequent analysis.
- A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions.
- Water and soap shall be provided on-site for personnel to wash affected skin areas.
- Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.

3.3.8 Excavation Hazards

McTech Corp will be performing excavation in the area. A long reach excavator will be used to excavate the contaminated soil. All excavation activities will comply with the requirements found in Chapter 35, NASA Glenn Safety Manual and will adhere to the following safety precautions. In the event of any discrepancies, the most restrictive requirements shall be met.

- Areas being excavated to a depth of 4 feet or more required sloped sides of 1:1.5, if personnel will be entering the excavation. McTech Corp does not anticipate entering the excavation pits. Samples of the walls and floor of all of the pits will be collected out of the backhoe bucket, which will be swung around away from the excavation area to prevent personnel from accidentally falling into the pit.
- Equipment shall not be parked or operated within 10 feet of any excavation. Additionally, soil or debris will not be stockpiled within 10 feet of the perimeter of the excavation area.
- Personnel are not allowed to work under raised loads.
- Personnel are required to stand away from the equipment being loaded or unloaded.
- Personnel are not to enter any excavation that is 4 feet or more in depth.
- Personnel shall not enter any excavation area that has obvious infiltration of water, regardless of depth.
- Safety fencing will be erected at a minimum distance around the perimeter of the pit at a minimum of ten feet from the edge of the excavation pit.
- Excavation areas shall be inspected daily while personnel are working in the area and then twice weekly until the pits are backfilled. Furthermore, the excavation areas shall be inspected after measurable amounts of rainfall.

3.3.9 Cuts

Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard. Preventative measures shall be taken to prevent cuts and scrapes. Personnel shall wear leather gloves to protect them from potential cuts whenever possible.

A 16-unit first aid kit will be available on-site in the event personnel are cut. Cut areas will be decontaminated and first aid rendered. If personnel are cut, they will be taken to the hospital for a tetanus shot if they have not recently had one.

3.3.10 Other Equipment

An All Terrain Vehicle (ATV) equipped with a tiller attachment will be used to homogenize the impacted soils and hydrated/slake lime. ATVs handle differently from other vehicles, including motorcycles and automobiles. The safe operation of ATVs not only requires specific riding techniques and skills, but also an elevated mental awareness of all risk factors. The primary cause of ATV accidents is operator error. At a minimum all McTech Corp employees will have and utilize all necessary safety equipment while using an ATV. These include; a DOT approved helmet, safety goggles or safety glasses, gloves, over the ankle boats, and long pants. In addition, all employees will receive training on the proper use and operation per manufacturers recommendations.

3.4 Accident Prevention

McTech Corp is committed to ensuring the safety of its employees, contractors, and visitors. The company believes that occupational injuries and illnesses can be prevented, that exposures to hazardous materials and hazardous work situations can be controlled, and that prevention of injuries and illnesses are equal in importance to production, quality, cost and morale. For this reason, McTech Corp has established a Safety & Health Plan complete with annual refresher training, monthly safety meetings, and "tailgate" safety meetings prior to each job. Before each new phase of a job, a safety meeting is to be held to review the activity hazard analysis for that specific job. The Activity Hazard Analysis for this project can be found in Appendix A. The hazard analysis provides a description of potential hazards and the actions to be taken to eliminate or minimize each of these hazards.

4.0 CONTRACTOR PROJECT ORGANIZATION AND TRAINING

4.1 Project Organization

The collection of quality data and the completion of any given project are strongly affected by the project organization. A project that is properly organized with personnel responsibilities well-delineated results in a successful project conclusion. A listing of functional areas and qualified personnel are given for this project.

A. **Government Technical POC** — These are the technical POC representing the USACE who will serve as a liaison between the USACE and the contractor.

USACE POC		Phone Number
Lisa Humphreys		(304) 399-5953
	Cellular	(304) 617-1461

B. **NASA Technical POC**— These are the technical POC representing NASA.

NASA POC	Phone Number
Robert Lallier	(419) 621-3234

NASA PBOSG	Phone Number
Gary Ponikvar	(419) 621-3342

C. **Contractor's Project Manager** – McTech Corp's Project Manager provides technical insight and provides supervision for the project. The Project Manager has overall responsibility to see that the project is completed in accordance with the Scope of Work.

McTech Corp Project Manager		Phone Number
Kimberlie Chambers	Cellular	(304) 215-0099
	Alternate	(218) 330-6436

D. **On-site Project Manager**—The On-site Project Manager will be in charge of field activities in coordination with the Contractor's Project Manager.

McTech Corp On-site Project Manager		Phone Number
Dan Cashbaugh		(216) 391-7700
	Cellular	(216) 404-8109

E. **Site Safety and Health Officer (SSHO)** – The SSHO is responsible for safety on site. This person has the authority to stop work if unsafe conditions warrant.

McTech Corp SSHO		Phone Number
Dan Cashbaugh		(216) 391-7700
James B. Russell (alternate)	Cellular	(216) 404-8109

F. **Quality Control Officer (QCO)**—This person is responsible for QC at the site. This person has the authority to stop the work if QC is not being met. The QCO is an employee of McTech Corp and is trained in QC.

McTech Corp QCO		Phone Number
Michael Malloy	Cellular	(216) 857-4517

G. **Field Personnel** – These personnel are responsible for assisting the Project Managers in completing the tasks required under this contract.

McTech Corp Field Personnel		Phone Number
Dan Cashbaugh		(216) 391-7700
C&K Industrial Services, Inc. Field Personnel		Phone Number
Gary Cooper		(216) 642-0055
	Cellular	(216) 956-9253

H. **McTech Corp Independent Quality Control Team**— An internal quality control team will independently review the work plans and reports to ensure that they meet requirements of the Scope of Work.

McTech Corp Independent Quality Control Team	Phone Number
Mark Perkins	(216) 391-7700
Kimberlie Chambers	(304) 201-2205

I. **REIC Laboratory**–Samples will be sent to the following USACE certified laboratory. REIC Laboratory is located in Beaver, West Virginia.

REIC Laboratory Contact	Phone Number
Grant Wilton	(800) 999-0105

J. **Erie County Landfill**— Non-hazardous materials removed from the site will be disposed of at the Erie County Landfill.

Erie County Landfill Contact	Phone Number
Fred Dobbert	(419) 433-3624

K. **Molnar Construction, Inc.**—This company will be used for the transportation of any non-hazardous materials removed from the site.

Molnar Construction Contact		Phone Number
Matt Molnar		(419) 732-2763
	Cellular	(419) 656-3423

L. **Mountain State**—Personnel from Mountain State will perform a survey of the treatment area and the area to be excavated.

Mountain State Contact	Phone Number
Jim Young	(304) 949-4762

M. **C&K Industrial Services, Inc.**—Non-hazardous IDW containing liquids will be managed by C&K Industrial Services, Inc. located in Cleveland, Ohio.

C&K Industrial Services Inc.		Phone Number
Scott Dean		(216) 642-0055
	Cellular	(216) 952-1375

4.1.1 Lines of Authority

The McTech Project Manager has overall responsibility for this project. The QCO and the SSHO have the authority to suspend the project in order to address quality control and safety issues. Refer to Appendix B of the QCP for a copy of the letter authorizing the QCO and the SSHO to perform their duties.

4.2 Training

All field personnel performing soil treatment and/or intrusive work on this project have received forty (40) hour HAZWOPER training. All field personnel performing soil sampling and/or intrusive work meet the training requirements as cited in 29 CFR 1910.120. At least two personnel at each work site will have received first aid and CPR training. Appendix B contains copies of all training certifications and dates of refresher training for employees that may work on this project.

4.2.1 Site Specific Training

All field personnel shall receive training and guidance concerning the provisions of this SSHP. Training will specifically address the activities, procedures, equipment, and hazard analysis for site operations. This training will allow personnel to ask questions, clarify misunderstandings, and reinforce their previous safety and health training.

4.2.2 Safety Meetings

In general, company safety meetings are conducted at least weekly for all personnel and monthly for Project Managers. Field personnel shall be briefed by the Project Manager or SSHO prior to daily field operations, and on an as needed basis. The Project Manager/SSHO shall hold daily

"tailgate" safety meetings. Before each new phase of a job, a safety meeting is to be held to review the activity hazard analysis for that specific job. Additional briefings will be performed when work practices change, if site conditions change, or if a deficiency has been found. The SSHO or the Project Manager conducting the meeting shall record the following information on a Daily Safety Meeting form. A copy of this form is located in Appendix C. This form, to be filled out daily and signed by the SSHO or Project Manager, will include the following:

- All personnel attending the safety meeting
- The date of the safety meeting
- Topics discussed in the safety meeting
- Discussion of work conditions and task expected to be completed that day
- Personnel comments and Project Manager / SSHO notes concerning the meeting
- The Project Manager / SSHO shall record any safety related incidents noticed by field personnel

4.2.3 CPR and First Aid

McTech Corp field personnel have received first aid and CPR training that meets course requirements as set forth by the American Red Cross and/or American Heart Association. Appendix B contains copies of field personnel's first aid and CPR certifications. At a minimum, two employees with CPR and first aid certifications will be on-site at all times.

5.0 SAFETY PROCEDURES/PPE PROGRAM

5.1 Personal Protective Equipment

Personnel will wear protective equipment meeting appropriate American National Standards Institute (ANSI) requirements when their activities involve known or suspected contaminated materials. Level D personal protective equipment (PPE) will be used for all site activities.

Based on the site conditions observed and the results of the air monitoring performed during the initial excavations at the PBOW site, it is not anticipated that Level C PPE will be required. However, as with any contamination clean up, site conditions may change. Therefore, information is provided in this section if an upgrade to Level C PPE is necessary.

Level D PPE will consist of:

- Steel-toed safety shoes/boots
- Safety glasses with side shields
- Leather gloves (general site work)
- Chemical resistant inner/outer gloves (used when performing sampling, decontamination activities, and running screening tests)
- Hard hat
- Hearing protection (when working around heavy equipment)
- Long trousers and sleeved shirt

Level C PPE will consist of:

- Tyvek overalls
- Full Face or Half-face Respirator (NIOSH approved which meets OSHA and USACE requirements)
- Appropriate chemical cartridges and/or filters
- Chemical resistant inner and outer work gloves
- Steel-toed safety boots/shoes
- Face shield or safety glasses with side shields to be used with half-faced respirator
- Hard hat

Appendix C contains a sample PPE inspection form. These inspection forms will be included in the daily safety inspection logs.

5.1.1 Respiratory Protection

Level D PPE will be used for this project and if site conditions change there is a possibility of an upgrade to Level C PPE. In addition, any employee may request the use of respiratory protection, even if site conditions do not warrant its use. The following information is provided for personnel using respirators.

Fitting a Respirator

Any respirator that does not fit properly can allow contaminants to slip through cracks and between the face piece and the skin. The negative-pressure and the positive-pressure fit tests shall always be performed just before entering any hazardous atmosphere.

To perform the negative-pressure fit test:

- Place your palms over the inhalation inlets.
- Inhale gently so the face piece collapses slightly.
- Hold your breath for about ten seconds.
- If the face piece holds the suction inside and no leaks are felt, the respirator fits well.

To perform the positive-pressure fit test:

- Block off the exhalation valve.
- Blow outward gently and hold for about ten seconds.
- If the positive pressure is maintained and no leaking is felt, you have a good fit.

Respirator Inspection

Personnel shall inspect their respirator before and after each use. Personnel shall inspect for:

- Holes in filters
- Loss of elasticity or tears in straps and hoses
- Broken or loose connectors and fittings

- Cracks or scratches on the face piece
- Detergent residue or dirt on valves
- General cleanliness

Respirator Cleaning and Storage

Personnel shall clean and disinfect their respirator after each use. The following is an acceptable cleaning procedure:

- Remove filters, screens, and headbands
- Scrub the respirator in detergent and warm water
- Rinse the respirator and treat it with disinfectant
- Rinse the respirator again, making sure to remove all detergent and disinfectant
- Air-dry the respirator
- Do not dry rubber parts under heat or sunlight
- Never use solvents to clean plastic or rubber
- Respirators must be stored away from dust, sunlight, heat, cold, moisture, and chemicals
- Respirators shall be placed in individual plastic bags and sealed

Selection of Respirator Cartridges/Filters

Personnel wishing to use respirators shall seek the advice of the SSHO on which canister would be most appropriate for the site conditions. Respirator selection takes into account health and safety factors, such as nature of hazard, intended use and limitations of respiratory protective devices, movement and work-rate limitations. Since there is a potential for unknown contaminants, it is possible that a change in respirator cartridge selection may occur if additional information would become available. Each respirator canister is painted a distinctive color or combination of colors as indicated by Table 3 on the following page:

Table 3--Respirator Cartridges

Atmospheric Contaminants	**Colors Assigned**[1]
Acid gases	White
Chlorine gas and Mercury vapor	Orange
Organic vapors	Black
Ammonia gas	Green
Formaldehyde and organic vapors	Olive green with black stripe
Acid gases and organic vapors	Yellow
Multigas	Olive Green
Particulates (dusts, fumes, mists, fogs, or smokes) lead asbestos arsenic.	P-100 (Magenta)

5.2 Safety Equipment

There shall be at minimum two fire extinguishers, a portable eyewash station, a 16-unit first aid kit, and personnel decontamination materials. The On-site Project Manager/ SSHO/ or the QCO will perform a daily check to assure that the safety equipment is present and in good working condition. Appendix C contains a copy of the safety equipment checklist to be used.

5.3 Medical Surveillance Program

McTech Corp field personnel undergo annual medical surveillance examinations and random drug testing. Appendix D contains a brief medical data sheet that all McTech Corp personnel working on-site will complete. A description of the employee medical monitoring program is located in Appendix D.

5.4 Standard Orders for Work Zone

All field sampling will be performed using the level of protection described in Section 5.1 of this SSHP. General safety procedures to be followed by all field personnel are:

- All workers and visitors entering the exclusion zone shall sign that they have read and will comply with the SSHP.
- All site workers and visitors shall follow the contents of this SSHP.
- All visitors to the site must sign in with the Project Manager/SSHO.
- Personnel will not be allowed to work on-site during periods of inclement weather that would endanger their lives.
- Personnel in the work zone shall not eat, drink, smoke, or apply cosmetics.
- Only personnel meeting the training requirements of 29 CFR 1910.120 may enter into the exclusion zone. Personnel shall adhere to the PPE requirements as listed in Section 5.1. If site conditions so warrant, the Project Manager/SSHO may require personnel to change their level of PPE.
- Any unnecessary contact with potentially contaminated substances shall be avoided.
- No horseplay.
- No matches or lighters shall be used in the work zone.
- During activities that present a risk to personnel, the buddy system as described in section 6.1 will be implemented.

5.5 Illumination

Work will be performed during daylight hours only.

5.6 Sanitation

An office trailer will be set-up on-site and sanitary requirements for water and toilet facilities will be provided. Potable water will be properly labeled and disposable cups will be available for personnel use. A receptacle for disposal of cups shall be available. Washing facilities for decontamination will be available on-site.

6.0 SITE CONTROL MEASURES

Site control is an essential component in the implementation of the site-specific safety and health program. This section defines the procedures for maintaining site control. Personnel shall isolate the work area to prevent public access. Personnel may use tape or other barrier guards to prevent unauthorized persons from wandering into a work area.

6.1 Buddy System

When conditions present a risk to personnel, the implementation of the buddy system is mandatory. A buddy system requires that at least two people work as a team; each looking out for the other. People utilizing the buddy system are required to use the same level of PPE. All site activities require the use of the buddy system.

6.2 Site Communication Plan

Successful communications between field personnel and support personnel is essential. The following hand signals shall be used during field activities at the site.

Distress Signals	Definition
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I am all right/ I understand
Thumbs down	No/Negative
Arms waving upright	Send backup support
Grip partners wrist	Exit area immediately

Construction Operation Signals	Definition
Thumbs up	Lifting object/moving bucket upward
Thumbs down	Lowering object/moving bucket down
Pointing toward eyes	Watch out
Pointing towards a direction	Move in that direction
Operator beeping horn without moving	Operator needs laborer's attention

In the event of an emergency, the signal for personnel to evacuate will be by sounding three blasts on a vehicle horn. If this occurs, personnel shall stop work immediately, evacuate the site and report to a predetermined offsite location so that all personnel may be accounted for. All personnel shall proceed with their buddy to a safe distance from the work area. Personnel will remain in the predetermined safe meeting area until the Project Manager provides them with further instructions.

7.0 DECONTAMINATION PLAN

All personnel and equipment exiting the work zone shall go through decontamination procedures. These procedures may be modified to suit site conditions and protective ensembles in use.

7.1 Personnel Decontamination

Decontamination involves the controlled removal of contaminants. All site personnel shall minimize contact with contaminants in order to minimize the need for extensive decontamination procedures. Personnel shall wear a disposable suit and booties when they are likely to come into contact with contaminants. The general procedures for personnel decontamination for this project is as follows:

The procedures for personnel decontamination for Level D PPE used for this project are as follows:

- **Equipment drop**
  The equipment drop is located as you enter the decontamination zone. Personnel will place all equipment here for later decontamination. Equipment shall be deposited on plastic or in plastic lined containers for subsequent cleaning.

- **Leather Boot Wash/Rinse**
  Remove gross contamination with scraper or brush. Wash boots with water and detergent and rinse with water.

- **Glove Wash/Rinse**
  Scrub gloves with detergent and water. Rinse off gloves with copious amounts of water.

- **Glove Removal**
  Remove gloves.

- **Field wash**
  Soap, water, and towels will be available for field washing. Wash hands and face with soap and water. Rinse with copious amounts of water.

The procedures for personnel decontamination for Level C PPE used for this project are as follows:

- **Equipment drop**
  The equipment drop is located as you enter the decontamination zone. Personnel will place all equipment here for later decontamination. Equipment shall be deposited on plastic drop cloths or in plastic lined containers for subsequent cleaning.

- **Boot Cover/Outer Glove/Safety Suit Removal**
  Remove foot cover, outer gloves, and safety suit and deposit them in a plastic container or a plastic lined container that has been designated for potentially contaminated PPE.

- **Inner Glove Wash/Rinse**
  Wash inner gloves with detergent and water. Rinse off gloves with copious amounts of water.

- **Face piece Removal**
  Remove face piece. Avoid touching face with gloves. Deposit face piece in container with plastic liner for subsequent cleaning.

- **Inner Glove Removal**
  Remove inner gloves and deposit in a plastic container or a plastic lined container that has been designated for potentially contaminated PPE.

- **Field wash**
  Soap, water, and towels will be available for field washing. Wash hands and face with soap and water. Rinse with copious amounts of water.

7.2 Equipment Decontamination

Stainless steel sampling spoons/trowels, a stainless steel mixing bowl, and a backhoe bucket will be used for sampling. Laboratory equipment (pipets, cuvettes, beakers, and so forth), as appropriate, associated with the field screening will be decontaminated. Also, the stainless steel sampling spoons/trowels, mixing bowl, and backhoe bucket will require decontamination. Stainless steel sampling spoons/trowels will be used to collect samples from the backhoe bucket for the field screening tests and the confirmation sampling. A mixing bowl may be used for sample compositing prior to performing field screening tests.

All non-disposable sampling equipment will be thoroughly cleaned. Decontamination of all of the sampling equipment will be accomplished prior to and between sampling. All decontamination activities for the backhoe bucket will be set up at a temporary decontamination pad. The steps of the decontamination process for the backhoe bucket will be as follows:

- Brush off the backhoe bucket to remove gross contamination
- Wash equipment with soap and water
- Rinse equipment with distilled water

Refer to Table 4 for general decontamination procedures for sampling equipment that will be reused at the site.

Table 4–Decontamination Procedures

Parameter	Detergent Wash	Tap Water Rinse	Inorganic Desorbing Agents	Tap Water Rinse	Organic Desorbing Agents	Deionized Water Rinse	Air Dry
Nitroaromatics	Yes	Yes	no	no	Hexane	yes	yes

In cases of gross contamination on sampling equipment, a tap water wash may first be performed to remove clumps of dirt in order to make the detergent wash more effective. The detergent wash shall be a non-phosphate detergent solution, which will be used with brushing or circulating techniques to remove gross contamination. Potable tap water will be used as a rinse for the equipment. A solvent rinse using hexane will be used as an organic desorbing agent. The analytical laboratory performing the analysis shall be consulted prior to sampling to ensure that decontamination procedures do not affect the subsequent analysis. It is recommended that all solvent rinses be made from an appropriate grade of chemical, such as pesticide or purge-and-trap grade quality. A triple rinse with deionized organic-free water shall follow all other decontamination reagents.

All rinsates will be collected and properly disposed. Drums, buckets, water, detergent, and brushes will be located in the work area. Drums will be available for containerizing the decontamination waste.

7.3 Investigation Derived Waste

Personnel shall wear appropriate PPE when drumming IDW. McTech Corp shall collect any used PPE, decontamination liquids, waste from field test kits, and all waste/media generated from the investigation activities. This media shall be containerized and placed in the most secure on-site area available until the results of the analyses are known. Potentially contaminated media shall remain in the area it was used or extracted and may not be combined with potentially contaminated media from another site. All drums containers shall be labeled as to project name, contents, and date of collection. The drums shall be secured with tarps and ropes and placed on pallets. McTech Corp will be responsible for laboratory analyses and proper disposal of the IDW in accordance with applicable state and federal laws. All manifest will be provided to the USACE for signature prior to disposal. The USACE will be provided with copies of documentation showing disposal, which will include manifest (hazardous or non-hazardous) and waste characterization profiles.

8.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the site. The provisions of this emergency response plan will be reviewed with all field personnel prior to beginning work at the site. NASA PBS protocol must be followed during emergency response activities. McTech Corp personnel and subcontractors are required by NASA to review a safety video and orientation prior to performing any on-site activities. Field personnel are to contact the main gate and the guards will make all other contacts for emergency response. Field personnel can contact the main gate by using the SSHO or QCO's cellular telephone.

8.1 Pre-Emergency Planning

Field personnel will be briefed concerning emergency response procedures, contingency plans, lines of authority as well as their role in the plan. The plan will be reviewed and revised, if necessary, on a regular basis by the SSHO and/or the Project Manager. This will ensure that the plan is adequate and consistent with site conditions.

8.2 Personnel Roles and Lines of Authority

The SSHO has the primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel, visitors, and the public. Possible actions may involve evacuation of personnel from the site area. The SSHO is additionally responsible for ensuring that corrective measures have been implemented and that the NASA PBS authorities have been notified. The Project Manager shall allow the NASA PBS personnel to contact outside emergency personnel unless authorized otherwise. A follow-up report concerning any emergency activities and corrective action shall be submitted to the NASA PBS. The Project Manager/SSHO has the authority to stop work in cases of an emergency. The SSHO and/or the Project Manager will direct responses to any medical emergency. All personnel are responsible for reporting potential safety hazards and shall assist the SSHO and/or Project Manager within the scope of their training and knowledge.

8.3 Emergency Recognition

Personnel will be familiar with techniques of hazard recognition from pre-assignment training and site specific briefings. Emergency situations include, but are not limited to, chemical release, fire, serious injury or illness. Conditions that may lead to such events will be identified and preventive measures will be implemented prior to an emergency occurring. The SSHO and/or the On-site Project Manager will brief the personnel concerning the hazard assessment associated with this project.

8.4 Evacuation Procedures

In the event of an emergency, the signal for personnel to evacuate will be by sounding three blasts on a vehicle horn. If this occurs, personnel shall stop work immediately, evacuate the site and report to a predetermined offsite location so that all personnel may be accounted for. Personnel will be expected to proceed with their buddy to a safe distance from the work area. Personnel will remain in the predetermined safe meeting area until the SSHO and/or the On-site Project Manager provides them with further instructions. Appendix E contains a map showing the route to the nearest hospital and the general routes of evacuation from the project area.

8.5 Emergency Contacts

In the event of a medical emergency, the Project Manager will notify the appropriate emergency organization. The Project Manager will notify the NASA PBS in the event of a fire or spill. NASA PBS may contact the appropriate local, state, and federal agencies or may request the McTech Corp Project Manager to do so. NASA PBS will require NASA issued walkie-talkies for emergency contact during on-site activities. Emergency contact numbers will be posted in the clean/support zone and a copy will be given to all personnel during the daily safety meetings. Emergency contact numbers are listed below:

Contact	Organization	Telephone
NASA Guard House Main Gate	NASA	(419) 621-3222
Police	---	(419) 621-3222
Ambulance	---	(419) 621-3222

Fire	---	(419) 621-3222
Hospital	Perkins Medical Clinic	(419) 625-0606
Poison Control	Poison Control Center	(800) 642-3625
National Response Center	National Response Center	(800) 424-8802
Lisa Humphreys	USACE	(304) 399-5953
	(cellular phone)	(304) 617-1461
Bob Lallier	NASA POC	(419) 621-3234
Dan Cashbaugh	McTech Corp	(216) 391-7700
	(cellular phone)	(216) 404-8109
Kimberlie Chambers	McTech Corp	(304) 215-0099
	(alternate phone)	(218) 330-6436

The police, fire, and ambulance may be contacted through the above listed numbers or may simply be contacting the NASA PBS guards by radio.

The Perkins Medical Clinic is located at 6015 Milan Road, Sandusky, Ohio. All field personnel shall become familiar with the route to the hospital. Appendix E contains a map showing the location of the hospital and evacuation routes for this area.

8.6 First Aid Response

At least two members of the field crew on-site will have valid first aid and CPR certificates. Each employee attempting to render first aid is performing the service as a Good Samaritan. To minimize contact with body fluids, personnel shall use disposal gloves when rendering first aid and use mouth guards when performing CPR.

Any person who becomes ill or injured in the work zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination shall be completed and first aid administered prior to transport. Personnel shall not move an injured or seriously ill person unless it is essential to prevent further injury. Non-designated employees, except in the case of severe bleeding or cessation of breathing, shall not administer first aid. While waiting for an ambulance or paramedics, designated personnel shall administer first aid. If the situation allows, a person who has already been through the decontamination step shall render first aid.

The Project Manager shall be notified of all emergencies. Victims of medical emergencies will be transported to the hospital. Upon entering the area to set up for work, field personnel shall familiarize themselves with the route to the hospital and general evacuation routes.

8.7 Fire or Explosion

In the event of a fire or explosion, the guards at the main gate will be contacted for coordination of outside emergency contacts. Personnel have been provided fire extinguisher training according to OSHA 1910.157(g). Training records can be found in Appendix B. The SSHO and/or Project Manager will advise the NASA PBS of the location, nature, and identification of hazardous materials on-site.

If it is safe to do so, site personnel may:

- Use fire-fighting equipment available on-site to control and/or extinguish the fire.
- Remove or isolate flammable or other hazardous materials, which may contribute to the fire.

8.8 Accident Reporting

In the event of an accident, employees are responsible for reporting all injuries or illnesses as soon as possible to the SSHO or the On-site Project Manager. The On-site Project Manager or the SSHO is responsible for investigating and reporting accident information and maintaining exposure data. The On-site Project Manager is also responsible for reporting accidents to the guard house at the main gate.

The SSHO shall report his findings to management along with a plan to correct whatever deficiency resulted in the accident. Any accident resulting in a serious injury or a fatality must be reported to OSHA within 24 hours and the accident scene shall not be disturbed until it has been released by the investigating authority, except for rescue and emergency measures. The SSHO or the On-site Project Manager will notify the USACE POC immediately in the event of an accident or incident and they will file form ENG 3394 with the USACE within 2 working days for all reportable accidents. An ENG 3394 will be submitted any time there is an occupational illness/injury resulting in lost work days, a fatality, permanent disability, or 3 or more persons are hospitalized. Also, a copy of ENG Form 3394 will be completed for property damage of $2,000.00 or more. A copy of form ENG 3394 is located in Appendix C.

8.8.1 Investigation and Reporting

Report all accidents immediately to the USACE POC. Additionally, the contractor shall thoroughly investigate the accident and submit the findings of the investigation along with appropriate corrective actions to the USACE POC on ENG Form 3394 as soon as is possible but no later than two (2) working days following the accident. Corrective actions will be implemented as soon as is reasonably possible.

8.8.2 Project Manager's Responsibility

For job related injuries which require medical treatment, a Project Manager of the injured employee shall accompany the injured employee to the medical treatment facility and explain the employee's regular duties and the availability of "Light Duty" so that the injured employee can return to work as soon as medically possible.

8.9 Emergency Equipment

Emergency equipment will be checked daily by the SSHO. The daily checks will be documented using the Safety Equipment Checklist found in Appendix C. The following emergency equipment shall be used on-site:

Equipment

Fire Extinguisher	Eye Wash Bottle

16-unit first aid kit Cellular phone

9.0 RECORD KEEPING

Implementation of the provisions of this SSHP shall be documented. The SSHO or the Project Manager will be responsible for documenting steps taken to be in full compliance with this plan. The SSHO or the Project Manager shall keep the following records:

- Copy of this SSHP
- ENG Form 3394 (USACE Accident Investigation Report Form)
- Records of safety violations and remedial actions taken
- Records of safety meetings
- Visitor register
- PPE checklist
- Other pertinent safety and health related observations or documents

10.0 REFERENCES

The following reference materials were used in compiling the information contained in this report and/or were be used in other documents associated with this project.

40 CFR Part 261, *Identification and Listing of Hazardous Waste,* United States Environmental Protection Agency

CELRHR 5-2-7, *Quality Management Plan*, U.S. Army Corps of Engineers, May, 1999

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EM 200-1-2, *Technical Project Planning Process*, U.S. Army Corps of Engineers, August 1998

EM-200-1-6, *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste Projects (HTRW)*, U.S. Army Corps of Engineers, October 1997

EM 385-1-1, Safety and Health Requirements Manual, Nov 2003

ER-1110-1-263, *Chemical Data Quality Management for Hazardous Waste Remedial Activities,* U.S. Army Corps of Engineers, April 1998

ER 1165-2-132, *HTRW Guidance for Civil Works Projects*, U.S. Army Corps of Engineers, June 1992

"Final Quality Control Plan", WTI, December 2002

"Final Plan of Operations for Stabilization, Excavation, and Disposal of Contaminated Soil for Pentolite Road Red Water Ponds", WTI, December 2002

"Final Site-Specific Safety and Health Plan for Pentolite Road Red Water Ponds", WTI, December 2002

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"Final Action Memorandum for Interim Removal Action for Pentolite Road Red Water Ponds", WTI, June 2003

"General Quality Control Plan", WTI, August 2004

"General Safety and Health Plan", WTI, August 2004

Irishearthworm Company, "Windrow Composting, an Introduction," web site at http://www.irishearthworm.com/windrow.html

UFGS 02191A, *Unified Facilities Guide Specification*, U. S. Army Corps of Engineers

University of Missouri-Columbia, Department of Horticulture web site at http://muextension.missouri.edu/xplor/agguides/hort/g06956.htm

United States Environmental Protection Agency, web site at http://www.epa.gov

APPENDIX A ACTIVITY HAZARD ANALYSIS

Hazard Analysis

Activity **Site Reconnaissance /Surveying** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform site reconnaissance and the excavation areas will be surveyed.	Surfaces may be muddy or uneven creating a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel shall avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Heat or cold stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety • Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall, at a minimum wear Level D PPE during reconnaissance/surveying.	Refer to PPE Checklist in Appendix C	Review SSHP

Hazard Analysis

Activity **Site Reconnaissance /Surveying** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform site reconnaissance and the excavation areas will be surveyed.	Can become exposed to on-site chemical hazards depending on contaminant location and type. Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Minimize exposure by being properly dressed and taking basic PPE on-site walk throughs. Do not enter an area that is thought to be contaminated without the proper PPE. • Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. This should be helpful in limiting skin exposure to harmful plants and insects. • Insect repellants may be used. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work. • Personnel shall attempt to stay away from all wildlife that they encounter.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall, at a minimum wear Level D PPE during reconnaissance/surveying.	Refer to PPE Checklist in Appendix C	Review SSHP

Hazard Analysis

Activity **Sampling and Decontamination** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform sampling.	Personnel may come into contact with or inhale potentially high concentration of contaminants during sampling and decontamination. Also personnel may come into contact with chemicals used in the field screening kits.	• Potential chemical contaminants at a site shall be reviewed prior to sampling and then personnel shall be notified of the appropriate PPE to use. • Personnel are required to wear the assigned level D PPE (refer to Section 5.1) while performing sampling and decontamination activities. • Personnel shall be careful when containerizing the decontamination waste so as not to further expose them.
	Heat or cold stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety • Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall at a minimum wear Level D PPE and have hearing protection around heavy equipment. Sampling containers, trowels, spoons, shovels, and field test kits.	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity **Sampling and Decontamination** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform sampling.	Personnel may be injured by lifting or moving heavy objects	• If a load is heavy or bulky, get help • Remember to lift with your legs and keep your back straight. • Keep the load as close to your body as you can. • Do not jerk the load. Lift slowly and carefully. • Make sure the area you will be carrying the load through is clear of obstacles. • Do not twist or turn your spine when lifting or carrying the load. • Be sure to have a good grip on your load at all times. • Be careful when lowering your load (get help, if necessary).
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. This should be helpful in limiting skin exposure to harmful plants and insects. • Insect repellants may NOT be used(Sec 3.3.7) • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• Preventative measures shall be taken to prevent cuts and scrapes. • Personnel shall wear leather gloves to protect them from potential cuts whenever possible. • A 16-unit first aid kit will be available on-site in the event personnel are cut. • Cut areas will be decontaminated and first aid rendered. Personnel will be taken to the hospital for a tetanus shot if they are cut and have not had a recent shot.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall at a minimum wear Level D PPE and hearing protection around heavy equipment. Sampling containers, trowels, spoons, shovels,	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity **Staging /Storage/treatment Area Construction** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Construction of the staging/storage/treatment area for soil.	Personnel may be injured by heavy equipment used in the construction of the staging/storage/ treatment area.	• Heavy machinery will be operated only by designated qualified personnel • Getting on or off of any equipment while it is in motion is prohibited • Machinery shall be operated in accordance with the manufacturer's recommendations • The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited. • All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions • Personnel shall not operate heavy equipment in area where the utilities have not been properly marked. • All heavy equipment shall be equipped with working audible reverse signal alarms • Personnel shall wear hearing protection when working nearing operating equipment.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. This should be helpful in limiting skin exposure to harmful plants and insects. • Insect repellants may be used. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE , hearing protection is need around equipment. Heavy equipment (excavator, trucks, ATV tiller, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity **Staging/Storage/Treatment Area Construction** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Construction of the staging/storage/treatment area for soil.	Heat or cold stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety • Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Personnel may be injured by lifting or moving heavy objects	• If a load is heavy or bulky, get help • Remember to lift with your legs and keep your back straight. • Keep the load as close to your body as you can. • Do not jerk the load. Lift slowly and carefully. • Make sure the area you will be carrying the load through is clear of obstacles. • Do not twist or turn your spine when lifting or carrying the load. • Be sure to have a good grip on your load at all times. • Be careful when lowering your load (get help, if necessary).
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• Preventative measures shall be taken to prevent cuts and scrapes. • Personnel shall wear leather gloves to protect them from potential cuts whenever possible. • A 16-unit first aid kit will be available on-site in the event personnel are cut. • Cut areas will be decontaminated and first aid rendered. • Personnel will be taken to the hospital for a tetanus shot if they are cut and have not had a recent shot.
	Personnel may be exposed to noise levels that will potentially harm their hearing.	Personnel shall wear hearing protection when working near heavy equipment.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE, hearing protection is needed around loud equipment. heavy equipment (excavator, trucks, ATV tiller, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity **Contaminated Soil Removal** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Excavation, Lime addition, and tilling of contaminated soil	Personnel may be injured by heavy equipment used in the excavation of the contaminated soil.	• Heavy machinery will be operated only by designated qualified personnel • Getting on or off of any equipment while it is in motion is prohibited • Machinery shall be operated in accordance with the manufacturer's recommendations • The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited. • All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions • Personnel shall not operate heavy equipment in area where the utilities have not been properly marked. • All heavy equipment shall be equipped with working audible reverse signal alarms • Personnel shall wear hearing protection when working nearing operating equipment.
	Personnel may be injured by falling into an excavation pit.	• Equipment shall not be parked or operated within 10 feet of any excavation. Additionally, soil or debris will not be stockpiled within 10 feet of the perimeter of the excavation area. • Personnel are not allowed to work under raised loads. • Personnel are required to stand away from the equipment being loaded or unloaded. • Personnel are not to enter any excavation that is 4 feet or more in depth. • Personnel shall not enter any excavation that is 4 feet or more in depth unless the excavation pit is equipped with a fixed means of ingress and egress. • Personnel shall not enter any excavation area that has obvious infiltration of water. Additionally, personnel shall not enter or remain within a pit during periods of rain. • Safety fencing will be erected at a minimum distance around the perimeter of the pit at a minimum of ten feet from the edge of the excavation pit. • Diversion ditches shall be constructed around the excavation area to inhibit run-off water from entering the pit. • Excavation areas shall be inspected daily while personnel are working in the area and the twice weekly until the pits are backfilled. Furthermore, the excavation areas shall be inspected after measurable amounts of rainfall.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, ATV tiller, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity **Contaminated Soil Removal** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Excavation, lime addition, and tilling of contaminated soil	Heat or cold stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. The frequency and time of rest periods will be increased, if the SSHO believes that it is necessary to protect the workers' safety. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety • Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Personnel may be injured by lifting or moving heavy objects	• If a load is heavy or bulky, get help • Remember to lift with your legs and keep your back straight. • Keep the load as close to your body as you can. • Do not jerk the load. Lift slowly and carefully. • Make sure the area you will be carrying the load through is clear of obstacles. • Do not twist or turn your spine when lifting or carrying the load. • Be sure to have a good grip on your load at all times. • Be careful when lowering your load (get help, if necessary).
	Personnel may come into contact with or inhale potentially high concentration of contaminants during contaminated soil removal activities.	• Potential chemical contaminants at a site shall be reviewed prior to sampling and then personnel shall be notified of the appropriate PPE to use. • Personnel are required to wear the assigned level of PPE while performing sampling and decontamination activities. Personnel shall be careful when containerizing the decontamination waste so as not to further expose them.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, ATV tiller, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity **Contaminated Soil Removal** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Excavation, lime addition, and tilling of contaminated soil	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. This should be helpful in limiting skin exposure to harmful plants and insects. • Insect repellants may be used. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• Preventative measures shall be taken to prevent cuts and scrapes. • Personnel shall wear leather gloves to protect them from potential cuts whenever possible. • A 16-unit first aid kit will be available on-site in the event personnel are cut. • Cut areas will be decontaminated and first aid rendered. • Personnel will be taken to the hospital for a tetanus shot if they are cut and have not had a recent shot.
	Personnel may be exposed to noise levels that will potentially harm their hearing.	Personnel shall wear hearing protection when working near heavy equipment.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, ATV tiller, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity **Backfilling of Excavation** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Backfill of the excavation.	Personnel may be injured by heavy equipment used when placing clean backfill in the excavation pits.	• Heavy machinery will be operated only by designated qualified personnel • Getting on or off of any equipment while it is in motion is prohibited • Machinery shall be operated in accordance with the manufacturer's recommendations • The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited. • All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions • Personnel shall not operate heavy equipment in area where the utilities have not been properly marked. • All heavy equipment shall be equipped with working audible reverse signal alarms • Personnel shall wear hearing protection when working nearing operating equipment.
	Personnel may be injured by falling into an excavation pit.	• Equipment shall not be parked or operated within 10 feet of any excavation. Additionally, soil or debris will not be stockpiled within 10 feet of the perimeter of the excavation area. • Personnel are not allowed to work under raised loads. • Personnel are required to stand away from the equipment being loaded or unloaded. • Personnel are not to enter any excavation that is 4 feet or more in depth. • Personnel shall not enter any excavation that is 4 feet or more in depth unless the excavation pit is equipped with a fixed means of ingress and egress. • Personnel shall not enter any excavation area that has obvious infiltration of water. Additionally, personnel shall not enter or remain within a pit during periods of rain. • Safety fencing will be erected at a minimum distance around the perimeter of the pit at a minimum of ten feet from the edge of the excavation pit. • Diversion ditches shall be constructed around the excavation area to inhibit run-off water from entering the pit. • Excavation areas shall be inspected daily while personnel are working in the area and the twice weekly until the pits are backfilled. Furthermore, the excavation areas shall be inspected after measurable amounts of rainfall.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE, hearing protection around heavy equipment (excavator, trucks, ATV tiller, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity **Backfill of Excavation** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Backfill of the excavation.	Heat or cold stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. The frequency and time of rest periods will be increased, if the SSHO believes that it is necessary to protect the workers' safety. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety • Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE, hearing protection around heavy equipment (excavator, trucks, ATV tiller, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity: Seeding and mulching activities **Reviewed by/date** RRB/10/05/06

Principal Steps	Potential Hazards	Recommended Controls
Seeding and mulching activities in disturbed areas	Personnel can be exposed to fertilizer and lime Heat stress can occur.	The personnel performing this work shall review this SSHP prior to performing the work. Personnel shall wear PPE whenever in the work area and when working with chemicals. • The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. The frequency and time of rest periods will be increased, if the SSHO believes that it is necessary to protect the workers' safety. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety • Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE	Refer to PPE Checklist in Appendix C,	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity: **Seeding and mulching activities** **Reviewed by/date** **RRB/10/05/06**

Principal Steps	Potential Hazards	Recommended Controls
Seeding and mulching activities in disturbed areas	Wet or muddy surfaces may create a tripping hazard.	Be alert and observe terrain while walking to minimize slips and falls. Wear appropriate footwear. When possible, personnel will avoid walking through or working in water or mud. Personnel will avoid climbing over site debris. Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Personnel may come into contact with stray animals, harmful plants (poison ivy/oak/sumac), or insects	Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. Insect repellants may be used. A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. Water and soap shall be provided on-site for personnel to wash affected skin areas. Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work. Personnel shall stay away from stray or wild animals
	Back strain and muscle fatigue may occur due to lifting, and shoveling.	Personnel shall be encouraged to use slow easy motions when performing these activities. Personnel shall receive refresher courses on proper lifting techniques as needed.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE	Refer to PPE Checklist in Appendix C,	40 hour HAZWOPER training. CPR and First Aid

APPENDIX B TRAINING CERTIFICATES

This is to certify that

KIMBERLIE K. CHAMBERS

has successfully completed the training course:

Hazardous Waste Operations and Emergency Response

8-Hour Annual Refresher Course (29 CFR 1910.120)

conducted by ECO-FIRST, Inc.

on January 20, 2006 at Teays Valley, West Virginia

Instructor: Dana L. Tomes

Dana L. Tomes, President/General Manager

ECO-FIRST, INC.
LESAGE, WEST VIRGINIA

THIS CERTIFIES THAT

Kimberlie Chambers

has completed the continuing education course entitled

Hazardous Waste Site Training

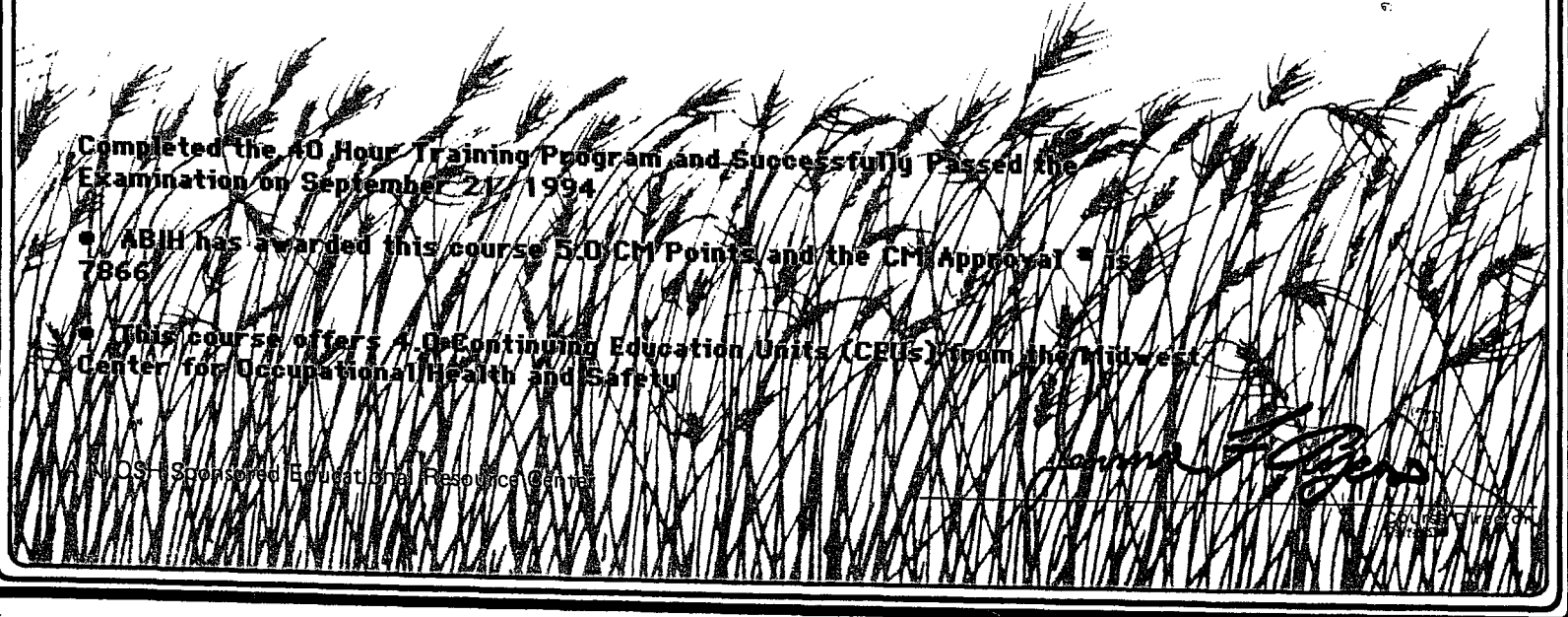
September 19, 1994 to September 23, 1994

given by the

Midwest Center for
Occupational Health & Safety

Program in Continuing Education — Occupational Health

4 CEU'S



Completed the 40 Hour Training Program and Successfully Passed the Examination on September 21, 1994

ABIH has awarded this course 5.0 CM Points and the CM Approval # is 7866

This course offers 4.0 Continuing Education Units (CEUs) from the Midwest Center for Occupational Health and Safety

A NIOSH Sponsored Educational Resource Center

American Heart Association.

Learn and Live.

Heartsaver First Aid

Kim Chambers

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for **Heartsaver First Aid** and:

Adult CPR / [redacted]

02-24-2006	February 2008
Issue Date	Recommended Renewal Date

American Heart Association.

Learn and Live.

Heartsaver First Aid

Gary Cooper

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for **Heartsaver First Aid** and:

Adult CPR / [redacted]

02-24-2006	February 2008
Issue Date	Recommended Renewal Date

This is to certify that

GARY COOPER

has successfully completed the training course:

Hazardous Waste Operations and Emergency Response

8-Hour Annual Refresher Course (29 CFR 1910.120)

conducted by ECO-FIRST, Inc.

on February 11, 2006 at Poca, West Virginia

Instructor: Dana L. Tomes

Dana L. Tomes, President/General Manager

ECO-FIRST, INC.

LESAGE, WEST VIRGINIA

C&K Industrial Services, Inc.

Certificate of Completion

This certifies that

Gary Cooper

has completed the 40 Hour HAZWOPER Training Course

Don Hanna, CET.

November 17, 1995

Date of Completion

C&K Industrial Services, Inc.

Certificate of Completion

This certifies that

James B. Russell

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

Chuck Hawes

May 19, 2006
Date of Completion

C&K Industrial Services, Inc.

Certificate of Completion

This certifies that

Dan Cashbaugh

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

Chuck Hawes — Chuck Hawes

May 19, 2006 — Date of Completion

U.S. ARMY CORPS OF ENGINEERS

PROFESSIONAL DEVELOPMENT SUPPORT CENTER
HUNTSVILLE, ALABAMA

CERTIFICATE

This is to certify that

Michael Malloy

has completed the Corps of Engineers Training Course

CONSTRUCTION QUALITY MANAGEMENT FOR CONTRACTORS

Given at Louisville ABC (Location) By CELRL-CD-Q (Instructional District) 5/31/06 (Date)

Wesley Barker
Facilitator

THIS CERTIFICATE EXPIRES FIVE YEARS FROM DATE OF ISSUE

Gary F. Anderson
Chief, USACE Professional Development Support Center

OSHACAMPUS™
powered by 360training

CERTIFICATE OF COURSE COMPLETION

Michael Malloy	Hazwoper 40 Hour Course	06/06/06
Student's Name	Course Title	Course Completion Date MM / DD / YYYY

472870
Certificate Number


Student's Signature

40
Approved # of Hours

I hereby attest and certify that I personally took the above named safety lesson in accordance to Safety University guidelines. I further state that I have paid for the course and that I did not use another's work (Plagiarism). Students should retain certificates and refer to course instructions to receive official certification where necessary.

360training
Corporate Headquarters
200 Academy Drive, Suite 260
Austin, Texas 78704
tel: 800-442-1149
fax: 512-441-1811
email: support@360training.com

American Red Cross

Together, we can save a life

This recognizes that

MICHAEL MALLOY

has completed the requirements for
STANDARD FIRST AID

conducted by
A R C

Date completed 6/28/06

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

Chairman, American Red Cross

Instructor's Signature

Chapter
Greater Cleveland Chapter

Holder's Signature

Cert. 053098 (Rev. Oct. 2001)

American Red Cross

Together, we can save a life

This recognizes that

MICHAEL MALLOY

has completed the requirements for
CPR/AED - ADULT

conducted by
A R C

Date completed 6/28/06

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

Chairman, American Red Cross

Instructor's Signature

Chapter
Greater Cleveland Chapter

Holder's Signature

Cert. 053098 (Rev. Oct. 2001)

EMPLOYEE FILE

REG ☐ WC ☐ CO. James Russell

CERTIFICATE OF TRAINING

Ohio Laborers' Training and Upgrading Trust Fund

25721 Coshocton Rd., Howard, Ohio 43028 (740) 599-7915

This is to certify that **James B Russell** *has successfully completed*

SAFETY TRAINING PASSPORT

A 16-hour OSHA Awareness Program which includes awareness training in the following topics:

- Personal Protective Equipment
- Equipment De-Energizing/Lockout
- Rigging and Material Handling
- Power Operated Tools
- Confined Space Hazards
- General Safety
- Asbestos/Lead
- Electrical Hazards
- Traffic Control
- Manlifts
- Fire Prevention
- Mobile Cranes
- Welding/Cutting
- Excavations
- Concrete Masonry
- Housekeeping

And Comprehensive Training In:

- Hazard Communication
- Fall Protection

* The STP Program includes requirements for certification of the OSHA 500 Safety 10-Hour Outreach Program.

2/18/06	Dirk J. Worden	XXX-XX-6578
Date	Executive Director	Social Security Number

Litho. in U.S.A.

APPENDIX C PPE CHECKLIST, MISC. FORMS

SAFETY INSPECTION CHECKLIST FOR CRAWLER TRACTORS, DOZERS, SCRAPERS, MOTOR GRADERS, BACKHOES, HEAVY HAULAGE UNITS

U.S. Army Engineers, Huntington District

INSTRUCTIONS

SECTION 1 -- GENERAL INFORMATION:

a. *Date*: enter month, day and year of Safety Inspection.

b. *Owner/User*: Enter designated ownership of equipment (Corps, Corps leased or Contractor by name).

c. *Contract Number*: Contractors enter the respective contract number

d. *Type of Equipment* : Enter *Ford 515 Backhoe, ID 450 Bulldozer,* etc.

e. *Number*: Enter equipment number which Contractor has issued on large scale operations.

f. *Inspected By*: Enter signature and title of Corps or Contractor inspector (Corps inspector may be a maintenance leader, maintenance mechanic or operator and a Contractor inspector may be a mechanic, operator or service person).

g. *Reviewed By*: Enter signature and title of Corps or Contractor reviewer (Corps reviewer may be the mechanic, shift leader, foreman or superintendent). Before a signature and title of Corps or Contractor reviewer is entered, the checklist must be reviewed by the next level of direct supervision and the equipment spot checked unannounced to insure inspections are performed.

SECTION 2 -- SAFETY INSPECTION CHECKLIST: Check **YES, NO** *or* **N/A** *if question or statement does not apply.*

SECTION 3 -- RECEIPT OF ACKNOWLEDGMENT: Sign, provide title and date checklist. If Corps personnel was the inspector and reviewer, a Corps manager, supervisor or responsible employee will sign the receipt of acknowledgment. If a Contractor personnel was the inspector and reviewer the checklist becomes a part of the official project file and a copy is furnished to the Contracting Officer Representative (COR). The COR will then sign the receipt of acknowledgment. The COR may request a copy of the checklist at any time. The COR or a representative may perform an unannounced spot check inspection to ensure compliance of safety inspection requirements. To determine if inspector and reviewer are Corps or Contractor personnel, see SECTION 1, Items f. and g.

SECTION 1	**GENERAL INFORMATION**	
a. Date	b. Owner/User	c. Contract Number
d. Type of Equipment		e. Number
f. Inspected by (*signature*) (*title*)	g. Reviewed by: (*signature*) (*title*)	

SECTION 2	**SAFETY INSPECTION CHECKLIST**		
NOTE: Reference USACE Manual EM 385-1-1, April 1981, as revised. Equipment must be in full compliance with checklist and contract requirements.			
1. Is protection (grills, screen, canopies) provided to shield the operator from falling or flying objects?			
2. Are adequate rollover protection and seat belts provided?			
3. Is a safe means of 3 point contact access to cab or operator's compartment provided -- steps, grab bars, non-slip surfaces, etc.?			
4. Are required head and tail lights, flashing lights and slow moving vehicle signs provided and properly positioned?			
5. Is the parking and service brake system capable of holding the equipment fully loaded on the grade of operation?			
6. Does the unit have an emergency brake system?			

SECTION 2, Cont.	YES	NO	NA
7. Does the emergency brake system work automatically when regular breaks fail?			
8. Can the emergency brake system be activated form the cab or operator's position?			
9. Are fuel tanks located so that spills or overflows do not run on the engine or electrical systems?			
10. Is the reverse alarm signal operable?			
11. Are cabs equipped with distortion free, shatterproof or safety glass?			
12. Are exhausts located so that discharges do not endanger or obstruct the view of the operator?			
13. Are moving parts, shafts, pulleys and belts adequately guarded?			
14. Are any of the units structural members bent, cracked or otherwise showing signs of physical damage?			
15. Are track rails, grousers, truck rollers, idlers and sprockets in good condition free from excessive wear, cracks, loose bolts or pins?			
16. Are hydraulic lines and cylinders adequately guarded and free of physical damage?			
17. Are tires on tire-mounted equipment free from excessive wear, breaks and of proper and equal size?			
18. Is the manufacturer-recommended tire inflation pressure maintained?			
19. Are all towing devices properly mounted and in good condition?			
20. Does the equipment have at least one dry chemical or CO2 fire extinguisher with minimal rating of 5 b:C available? (Corps owned or leased equipment must have extinguisher installed on the equipment)			
21. Is a 16 unit (minimum) first aid kit readily available in the equipment or on the job sit? Corps owned or leased equipment must have first aid kits installed.			
22. Are all instruments, ammeters, pressure gauges, temperature gauges, tachometers or other critical systems operable and in good condition?			
23. Are all operating levers, pedals, etc., in good operating condition?			
24. Do all modifications, replacement parts and/or repairs to the equipment maintain the same safety factor as originally designed and manufactured?			
25. Is the equipment equipped with outriggers or leveling devices and are they in operable condition?			
26. Is the equipment operations manual available to the operator?			

27. Remarks:

SECTION 3 **RECEIPT OF ACKNOWLEDGMENT**

Receipt Acknowledged by: *(Signature)* *(Title)* *(Date)*

(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 Suppl to AR 385-40)*	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	d. SOCIAL SECURITY NUMBER	e. GRADE
		☒ MALE ☐ FEMALE		

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 *(month/day/year)*	b. TIME OF ACCIDENT *(Military time)*	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME
	hrs		(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)
0 N/A	# N/A	0 N/A	# N/A

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
NOT: NO INJURY	# NOT	0.00	0.00	0.00

e. BODY PART AFFECTED	(CODE)	g. TYPE AND SOURCE OF INJURY/ILLNESS	(CODE)
PRIMARY N/A	# N/A		
SECONDARY N/A	# N/A	TYPE N/A	# N/A
f. NATURE OF ILLNESS / INJURY	(CODE)	SOURCE N/A	# N/A
N/A	# N/A		

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see help menu)*

a. ACTIVITY AT TIME OF ACCIDENT	(CODE)	b. PERSONAL FLOATATION DEVICE USED?
N/A	# N/A	☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
☐☐ PICKUP/VAN ☐☐ AUTOMOBILE ☐☐ TRUCK ☐☐ OTHER	☐ 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. TYPE OF VESSEL/FLOATING PLANT	(CODE)	b. TYPE OF COLLISION/MISHAP	(CODE)
N/A	# N/A	N/A	# N/A

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

See attached page.

11. CAUSAL FACTOR(S) *(Read Instruction 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?	☐	☐

a. *(CONTINUED)*	YES	NO
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?

☐ YES *(If yes, attach a copy.)* ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	(Month) (Day) (Year)

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a. DIRECT CAUSE

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:

See attached page.

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW *(1st)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a. ☐ CONC ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

10.	ACCIDENT DESCRIPTION *(Continuation)*

13a.	DIRECT CAUSE *(Continuation)*

13b.	INDIRECT CAUSES *(Continuation)*

14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

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 descretion 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 para 2-10 of USACE Suppl 1 to AR 385-40 and enter code and description from list below.

- NOI NO INJURY
- FAT FATALITY
- PTL PERMANENT TOTAL DISABILITY
- PPR ERMANENT PARTIAL DISABILITY
- LWD LOST WORKDAY CASE INVOLVING DAYS AWAY FROM WORK
- NLW RECORDABLE CASE WITHOUT LOST WORKDAYS

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

GENERAL BODY AREA	CODE	BODY PART NAME
HEAD, EXTERNAL	H1	EYES 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, BUTTOCK	LB	BOTH LEGS/HIPS/ ANKLES/BUTTOCKS
	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
	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
	RB	BRONCHITIS
	RE	EMPHYSEMA
	RP	PNEUMOCONIOSIS
	RS	SILICOSIS
	R9	RESPIRATORY DISEASE, OTHER
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES	VB	BRUCELLOSIS
	VC	COCCIDIOMYCOSIS
	VF	FOOD POISONING
	VH	HEPATITIS
	VM	MALARIA
	VS	STAPHYLOCOCCUS
	VT	TUBERCULOSIS
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC - OTHER
DISABILITY, OCCUPATIONAL	DA	ARTHRITIS, BURSITIS
	DB	BACK STRAIN, BACK SPRAIN
	DC	CEREBRAL VASCULAR CONDITION; STROKE

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
	DD	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	DE	EFFECT OF ENVIRON-MENTAL CONDITION
	DH	HEARING LOSS
	DK	HEART CONDITION
	DM	MENTAL DISORDER, EMOTIONAL STRESS, NERVOUS
CONDITION		
	DR	RADIATION
	DS	STRAIN, MULTIPLE
	DU	ULCER
	DV	OTHER VASCULAR CONDITIONS
	D9	DISABILITY, OTHER
SKIN DISEASE OR CONDITION	SB	BIOLOGICAL
	SC	CHEMICAL
	S9	DERMATITIS, UNCLASSIFIED

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
	STRUCK
0110	STRUCK BY
0111	STRUCK BY FALLING OBJECT
0120	STRUCK AGAINST
0210	FELL, SLIPPED, TRIPPED
0220	FELL ON SAME LEVEL
0230	FELL ON DIFFERENT LEVEL
	SLIPPED, TRIPPED (NO FALL)
	CAUGHT
0310	CAUGHT ON
0320	CAUGHT IN
0330	CAUGHT BETWEEN
	PUNCTURED, LACERATED
0410	PUNCTURED BY
0420	CUT BY
0430	STUNG BY
0440	BITTEN BY
	CONTACTED
0510	CONTACTED WITH (INJURED PERSON MOVING)
0520	CONTACTED BY (OBJECT WAS MOVING)
	EXERTED
0610	LIFTED, STRAINED BY (SINGLE ACTION)
0620	STRESSED BY (REPEATED ACTION)
	EXPOSED
0710	INHALED
0720	INGESTED
0730	ABSORBED
0740	EXPOSED TO
0800	TRAVELING IN

CODE	SOURCE OF INJURY NAME
0100	BUILDING OR WORKING AREA
0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC.)
0120	STAIRS, STEPS
0130	LADDER
0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0150	BOILER, PRESSURE VESSEL
0160	EQUIPMENT LAYOUT (ERGONOMIC)
0170	WINDOWS, DOORS
0180	ELECTRICITY
0200	ENVIRONMENTAL CONDITION
0210	TEMPERATURE EXTREME (INDOOR)
0220	WEATHER (ICE, RAIN, HEAT, ETC.)
0230	FIRE, FLAME, SMOKE (NOT TOBACCO)
0240	NOISE
0250	RADIATION
0260	LIGHT
0270	VENTILATION
0271	TOBACCO SMOKE
0280	STRESS (EMOTIONAL)
0290	CONFINED SPACE
0300	MACHINE OR TOOL
0310	HAND TOOL (POWERED; SAW, GRINDER, ETC.)
0320	HAND TOOL (NONPOWERED)
0330	MECHANICAL POWER TRANSMISSION APPARATUS
0340	GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK)

CODE	SOURCE OF INJURY NAME
0350	VIDEO DISPLAY TERMINAL
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL
0370	HEATING EQUIPMENT
0380	WELDING EQUIPMENT
0400	VEHICLE
0411	AS DRIVER OF PRIVATELY OWNED/RENTAL VEHICLE
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE
0421	DRIVER OF GOVERNMENT VEHICLE
0422	PASSENGER OF GOVERNMENT VEHICLE
0430	COMMON CARRIER (AIRLINE, BUS, ETC.)
0440	AIRCRAFT (NOT COMMERCIAL)
0450	BOAT, SHIP, BARGE
0500	MATERIAL HANDLING EQUIPMENT
0510	EARTHMOVER (TRACTOR, BACKHOE, ETC.)
0520	CONVEYOR (FOR MATERIAL AND EQUIPMENT)
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST
0540	HOIST, SLING CHAIN, JACK
0550	CRANE
0551	FORKLIFT
0560	HANDTRUCK, DOLLY
0600	DUST, VAPOR, ETC.
0610	DUST (SILICA, COAL, ETC.)
0620	FIBERS
0621	ASBESTOS
0630	GASES
0631	CARBON MONOXIDE
0640	MIST, STEAM, VAPOR, FUME
0641	WELDING FUMES
0650	PARTICLES (UNIDENTIFIED)
0700	CHEMICAL, PLASTIC, ETC.
0711	DRY CHEMICAL - CORROSIVE
0712	DRY CHEMICAL - TOXIC
0713	DRY CHEMICAL - EXPLOSIVE
0714	DRY CHEMICAL FLAMMABLE
0721	LIQUID CHEMICAL - CORROSIVE
0722	LIQUID CHEMICAL - TOXIC
0723	LIQUID CHEMICAL - EXPLOSIVE
0724	LIQUID CHEMICAL - FLAMMABLE
0730	PLASTIC
0740	WATER
0750	MEDICINE
0800	INAMINATE OBJECT
0810	BOX, BARREL, ETC.
0820	PAPER
0830	METAL ITEM, MINERAL
0831	NEEDLE
0840	GLASS

CODE	SOURCE OF INJURY NAME
0850	SCRAP, TRASH
0860	WOOD
0870	FOOD
0880	CLOTHING, APPAREL, SHOES
0900	ANIMATE OBJECT
0911	DOG
0912	OTHER ANIMAL
0920	PLANT
0930	INSECT
0940	HUMAN (VIOLENCE)
0950	HUMAN (COMMUNICABLE DISEASE)
0960	BACTERIA, VIRUS (NOT HUMAN CONTACT)
1000	PERSONAL PROTECTIVE EQUIPMENT
1010	PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES
1020	RESPIRATOR, MASK
1021	DIVING EQUIPMENT
1030	SAFETY BELT, HARNESS
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 ON 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, byproducts 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 the month, day, and year 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 when the corrective action(s) identified in section 14 will begin.

b. **COMPLETE DATE** - Enter the date when the corrective action(s) identified in section 14 will be completed.

c. **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 15.d, 15.e and 15.f below, the responsible USACE supervisor shall forward the report for mangement review as indicated in section 16.

d. **DATE SIGNED** - Enter the month, day, and year that the report was signed by the responsible supervisor.

e. **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 15.c. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

f. **OFFICE SYMBOL** - Enter the latest complete USACE Office Symbol for the USACE organization identified in block 15.e.

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 15.c 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.

PPE CHECKLIST

All personnel shall perform an inspection of their PPE prior to performing activities on-site. The following items shall be checked.

____ Determine that the clothing material is that which has been designated for this project.

____ Visually inspect clothing for: imperfect seams, non-uniform coatings, tears, malfunctioning closures

____ Hold up to light and check for pinholes

____ Flex product and make observations for cracks or other signs of shelf deterioration

____ If the product has been used before, inspect inside and out for signs of chemical attack, discoloration, swelling, or stiffness.

____ Visually inspect gloves for imperfect seams, tears, and non-uniform coating

____ Pressurize gloves with air; listen for pinhole leaks

____ Check hardhat for cracks or other signs of stress

____ Check the suspension of your hardhat. Look for loose or torn cradle straps, loose rivets, broken sewing lines or other defects.

____ If using earmuffs, check the muffs for cracks, cuts or missing gaskets.

____ If using earplugs, check the plugs for cracks and or cuts.

____ Check safety glasses for scratches

____ If using a respirator, check for holes in filters

____ If using a respirator, check for cracks or scratches on the face piece

____ If using a respirator, check for loss of elasticity or tears in straps

____ If using a respirator, check for general cleanliness

____ If using an air purifying respirator, check for proper fit by performing the positive-pressure and negative pressure tests

SAFETY EQUIPMENT CHECKLIST

_____ Fire Extinguisher (in office trailer)

_____Fire Extinguisher (on heavy equipment)

_____16-unit first aid kit

_____Eye wash bottle

_____Cellular phone

VISITOR LOG

Everyone entering the exclusion zone and the contamination reduction zone shall meet the training and medical requirements of 29 CFR 1910.120. Visitors not meeting these requirements are only allowed in the support/clean zone. All visitors to the project site are required to adhere to the Site Specific Health and Safety Plan.

Compliance Agreement

I have read and understand this Site Specific Health and Safety Plan. I will comply with the provisions contained herein.

Project Site: _____

Name (Printed)	Signature	Date

Daily Safety Meeting

Project: _____ Date: _____

Discussion of work conditions and task expected to be completed today:

Topics to be discussed: (list below) **Task related to Safety Topic:** (list below)

Comments from Project Manager or SSHO concerning the meeting:

Notes concerning any safety related incidents that occurred:

Safety Meeting attendance:

I have attended the daily safety meeting. I have been briefed on today's job tasks and fully understand the safety issues associated with each task.

Name (printed)	**Signature**	**Date**

APPENDIX D MEDICAL DATA SHEET/ MEDICAL MONITORING

MEDICAL DATA SHEET

This medical data sheet is to be completed by all on-site personnel and will be kept on-site during field operations. This data sheet shall accompany any personnel who need medical assistance.

Project: _____

Name: _____ Home Phone: _____

Address: _____

Name and telephone number of Person to notify in case of an Emergency:

_____

Drug or other Allergies: _____

_____

Do you wear contact lenses: _____ Are you wearing contacts on this job?(if so, notify SSHO) _____

What medications are you presently taking?

_____

_____

Name, Address, and Phone Number of your Personal Physician:

_____

_____

Summary of the
Medical Monitoring Program
For McTech Corp

McTech Corp requires employees to submit to routine medical examinations prior to job assignment, annually thereafter, and upon reassignment or termination of employment. McTech Corp will provide information to the examining physician concerning the employee's job duties and anticipated exposures. The contents of the routine medical examination include the following:

Medical and work history

Pulmonary function test

Chest X-ray

Drug screen and breathe alcohol

Audiograms

Blood work/Urinalysis

EKG

A physician will examine personnel exposed to hazardous substances above the permissible exposure limits as soon, as is possible. The examining physician will determine what actions are necessary, including follow-up examinations or consultations.

APPENDIX E MAP

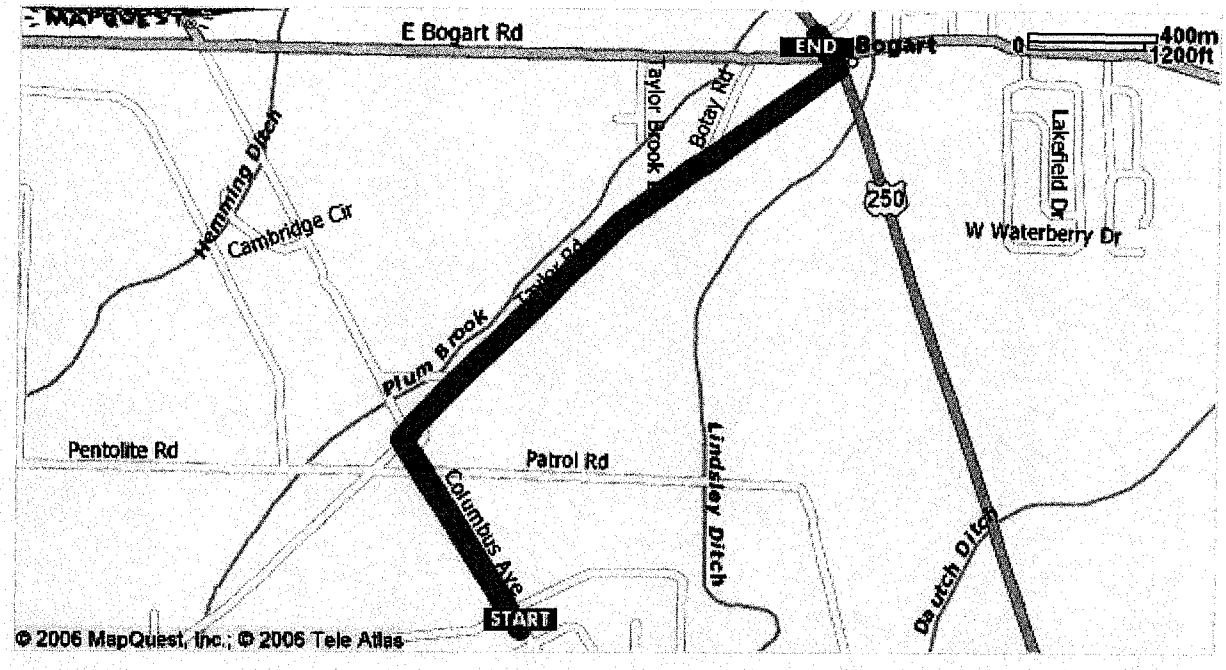
MAPQUEST.

Start: **6100 Columbus Ave**
Sandusky, OH 44870-8329, US

End: **6015 Milan Rd**
Sandusky, OH 44870-5869, US

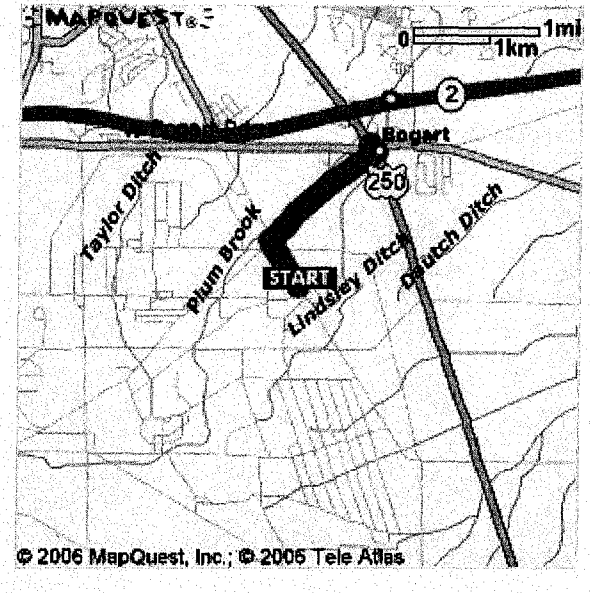
Notes:

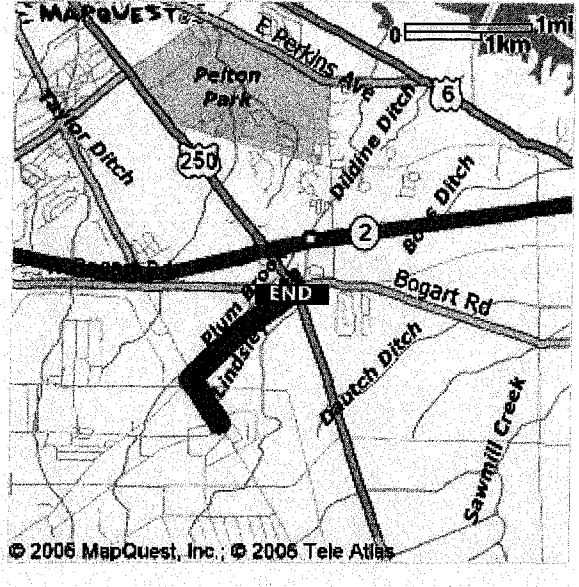
Directions	Distance
Total Est. Time: 5 minutes	**Total Est. Distance:** 1.61 miles
START **1:** Start out going NORTHWEST on COLUMBUS AVE toward PATROL RD.	0.4 miles
2: Turn RIGHT onto TAYLOR RD.	1.1 miles
3: Turn LEFT onto US-250.	<0.1 miles
END **4:** End at **6015 Milan Rd** Sandusky, OH 44870-5869, US	
Total Est. Time: 5 minutes	**Total Est. Distance:** 1.61 miles



Start:
6100 Columbus Ave
Sandusky, OH 44870-8329, US

End:
6015 Milan Rd
Sandusky, OH 44870-5869, US





APPENDIX F McTECH CORP GENERAL SAFETY POLICY

MCTECH CORP

www.mctechreadymix.com

OFFICE: 8100 GRAND AVENUE
CLEVELAND, OHIO 44104-3110
PHONE - (216)391-7700
FAX - (216)391-6951

TECH READY MIX
CONCRETE PLANT : 5000 CRAYTON AVENUE
CLEVELAND, OH 44101
PHONE – (216) 361-5000
FAX - (216) 361-2522

GENERAL SAFETY RULES

- **PROJECTS**
- **CONCRETE PLANT**

DRUG & ALCOHOL ABUSE PROGRAM

HAZCOM – MSDS
"RIGHT TO KNOW"

Each employee must acknowledge receipt of this program as part of the new employee information packet

Rev. 4/06

GENERAL SAFETY RULES

ELEMENTS OF A SITE SPECIFIC SAFETY PLAN GOVERNING THE PROJECT YOU ARE WORKING ON MAY SUPERCEDE OR TAKE PRECEDENCE OVER SOME PORTIONS OF THESE SAFETY GUIDELINE. YOU WILL BE INFORMED WHEN A SITE SPECIFIC PLAN IS IN PLACE.

1. All Poster Safety Rules shall be obeyed and shall not be removed except by management's authorization. Violation of these safety rules may cause for immediate dismissal of an employee. OSHA Employee Rights Poster is on hand at every project.

2. To comply with Federal and State Drug Free Workplace standards, McTech Corp., dba Tech Ready Mix ("McTech" or the "Company") Drug Free Workplace Program is incorporated as part of this safety plan and is strictly adhered to.

3. The written Hazardous Communication Program (HAZCOM), M.S.D.S. RIGHT TO KNOW, is incorporated as part of this safety plan. Each and every employee of McTech is trained in the M.S.D.S. Program.

4. All employees will report any infraction of the safety rules to their immediate supervisor for correction.

5. Accidents or injuries, regardless of their nature, shall be reported to the supervisor for immediate attention. All safety related complaints received by employees, agencies, or the general public will be investigated for legitimate concern and addressed accordingly.

6. ***Possession or use of intoxicating beverages and illegal drugs, on/or at the project or Plant areas, before or during working hours is strictly forbidden.***

7. **Safety vests, florescent green standard, must be worn on all projects at all times.** Hard hats shall be worn on the job by all personnel when in designated hardhat areas such as when working on bridges, in trenches, when working near, under or with working heavy equipment. Orange color vests are no longer acceptable.

8. Safety goggles or face shields shall be worn on grinding, chipping, welding, sawing, or other operations where eye injuries may result.

9. Gloves shall be worn by persons handling debris, old lumber, and rough or sharp edged materials. **USE COMMON SENSE.**

10. Shoes shall be first grade, hard soled, and ankle high. ***Tennis shoes are not permitted in the work area. Protective footwear must meet ANSIZ41.***

11. Good housekeeping shall be practiced on all construction projects.

12. Hand tools shall not be used for any other purpose than that intended, and all damaged or worn parts should be promptly repaired or replaced. If you are issued any tool in UNSAFE condition, alert your supervisor immediately.

13. Power tools shall be operated only authorized personnel, with guards furnished by the manufacturer "in place", and if electrical, shall be grounded or double insulated

14. Protruding nails shall be turned down or removed from lumber.

15. Ladders shall have side rail(s) extending three (3) feet above landing and shall be securely fastened at the top. The ladder feet shall be placed on a substantial base and the areas around the top and bottom of the ladder shall be kept clear. The ladder shall have safety feet.

16. A minimum clearance between electrical distribution and transmission lines and any part of the crane boom or load shall be ten (10) feet. Minimum clearance depends on voltage see USACE EM 585 1-1 Table 11-1.

17. A person shall be designated to observe clearance of the equipment and give timely warning to the operator to maintain the desired clearance by visual means.

18. Personal protective equipment (safety vest, goggles, hard hats, ear plugs etc.) will be issued to all employees as job conditions dictates. Replacements are available by contacting the Safety Director. Absolutely no tennis shoes are to be worn on projects or in the plant areas. Hard soled shoes must be worn on all projects. Long pants must be worn at all times. (No shorts or cutoffs permitted.) Shirts of at least ½ sleeve length must be worn by all personnel. (see items 7, 8, 9, 10, 38 and 42.) (Tank tops are not permitted.)

19. Fall Protection equipment will be issued as per project specific requirements. All fall protection equipment will be properly fitted, free of stress, and maintained in good condition. Safety harness and lanyard shall be stored hanging in a cool, dry place. Fall Protection equipment coming into contact with fuel, gasoline, or any caustic material will be immediately destroyed and returned to the Equipment Manager for re-issue.

20. We encourage wearing high-visibility (lime green) clothing; however, these shirts will not replace a vest. They are an enhancement to your visibility.

21. Operators of power activated tools shall be instructed and trained in their use. **Goggles must be worn in the operation of partner saws.**

22. Horseplay or practical jokes will not be tolerated in the project or plant areas.

23. Compressed gas cylinders shall be secured in an upright position at all times. No smoking

24. Valve protection caps shall be in place and secured.

25. Care will be given to protection of all public utilities. All mechanical excavation will be accompanied by a spotter with hand digging as necessary. We always obtain a Ohio Utilities Protection (OUPS) clearance before we dig.

26. Excavation: All slopes shall be executed to at least the angle or repose, except areas where solid rock allows for line drilling and presplitting.

27. The angle or repose shall be flattened when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost actions and slide planes appear.

28. In excavation where employees may be required to enter, excavated or other material shall be effectively stored and retained at least two (2) feet or more form the edge of the excavation.

29. TRENCHING: Banks more than five (5) feet high shall be shored, laid back to a stable slope, or some other equivalent means of protections shall be provided where employees may be exposed to moving ground or cave-ins.

30. Trenches less than five (5) feet in depth shall also be effectively protected when examination of the ground indicates hazardous ground movement by the expected.

31. Sides of trenches in unstable or soft material, five (5) feet or more in depth, shall be shall be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees working within them.

32. All ladders used in excavation or trenching operations shall be in accordance with the requirements or the General Safety Rules. All ladders shall have sturdy rungs and be tall enough for proper access.

33. Trenches more than four (4) feet deep shall have ladder or steps located so as to require no more than twenty-five (25) feet of lateral travel.

34. Open flames shall not be permitted within fifty (50) feet of explosives or flammable substances. Care will be given to removal of flammables **prior** to welding/cutting operation.

35. **FLAMMABLE AND COMBUSTIBLE LIQUIDS:** Only OSHA approved containers and portable tanks shall be used for storage and handling of flammable an combustible liquids.

36. Flammable liquids shall be kept in closed containers when not actually in use.

37. **Conspicuous and legible signs prohibiting smoking** shall be posted in service and refueling areas.

38. MOTOR VEHICLES AND MECHANIZED EQUIPMENT: All vehicles in use shall be checked at the beginning of each shift to assure that all parts, equipment, and accessories that affect safe operations are in proper operating condition and free from defects. All defects shall be corrected before the vehicle is mobilized.

39. No motor vehicle, earthmoving, or compacting equipment, having and obstructed view to the rear shall be used unless: The vehicle has a reverse signal backup alarm, distinguishable form the surrounding noise level, or the vehicle is back up only when an observer signals that it is safe to do so. Disconnection of any backup alarm will be cause for discharge.

40. Heavy machinery, equipment, dump truck or parts thereof shall be substantially blocked to prevent falling or shifting before employees are permitted to work under or between them.

41. WELDING, CUTTING AND HEATING: Proper eye protection equipment to prevent exposure of personnel shall be worn.

42. Proper precautions (isolating welding and cutting, removing fire hazards from the vicinity, providing a fire watch, etc.) for fire protection shall be taken in areas where welding or other "hot work is being done". All shop and maintenance employees will be scheduled according to the buddy system; do not work on equipment when alone.

43. Arc welding and cutting operations shall be shielded by noncombustible or flameproof shields to protect employees from direct arc rays.

44. Fuel, gas and oxygen hose shall be easily distinguishable and shall not be interchangeable. Hose shall be inspected at the beginning of each shift and shall be repaired if defective.

45. Respirators as a health and safety precaution will be issued as individual project or job site conditons warrant and at the request of the employee. In accordance with OSHA REQUIREMENTS FOR VOLUNTARY RESPRIATOR ISSUANCE, every employee will be issued Appendix "D" of the OSHA STANDARD at time of hire and its conditions will be abided by.

46. **ALL COMPANY FACILITIES ARE NON-SMOKING FACILITES.**

47. The Company Motor Vehicle Policy is incorporated as a part of this plan.

48. The Company Disciplinary Policy is incorporated as a part of this plan.

49. It is our Goal that every employee working for the Company will be trade-specific Safety trained. Therefore, every employee must, within the first 12 months of hire, receive a Safety Training Passport Certification equivalent to an OSHA 10-hour plus 4-hour trade specific training.

50. ***IN AN EMERGENCY:***

***** When calling Emergency Medical Service (EMS) or any authority have the following information ready: Use 911.**

1. Know the Location of emergency (full address – job site).
2. Type of emergency. If chemical is involved, state so.
3. Number of victims
4. Phone number from which you are calling.
5. All cell phones contain a 911 tracking GPS system.
6. Treatment that has been done.
7. If an employee, accompany to the treating center.

AS SOON AS SITE CONDITIONS ARE STABLE:

8. Call the Safety Director immediately to report injury.
   We post accident drug test.
   Certain injuries require OSHA notification; therefore,
   You must notify the Safety Director immediately to
   determine additional action required.

MCTECH CORP./TECH READY MIX

Santina Milczewski
Safety Director

APPENDIX G QA/QC REVIEW

Quality Control Certification

Site-Specific Safety and Health Plan

Lime Treatment Pilot Study
Plum Brook Ordnance Works –Pentolite Road Red Water Ponds (PRRWP)
Sandusky, Ohio

Contract No. W91237-06-C-0006

This document is provided to certify that the McTech Corp Independent Quality Control Team (IQCT) has reviewed the Site-Specific Safety and Health Plan in accordance with the Quality Control Plan. All comments resulting from the various reviews have been resolved and/or incorporated.

Assignment	Name	Signature	Date
Senior Review	Mark Perkins	Mark J. Perk	11/17/2006
Peer Review	Kimberlie Chambers	Kimberlie K. Chambers	11/15/06

Site-Specific Safety and Health Plan
Field Certification Form

INTERIM SOIL REMOVAL ACTION Continuation
Soil Excavation and Disposal
Plum Brook Ordnance Works –TNT Area B
Sandusky, Ohio

Contract No. W91237-06-C-0003

This document is provided to certify that field personnel have reviewed the Site-Specific Safety and Health Plan and will comply with its contents.

Print Name	Signature	Date

Comments on Site-Specific Safety and Health Plan

Site-Specific Safety and Health Plan

Lime Treatment Pilot Study
Plum Brook Ordnance Works –Pentolite Road Red Water Ponds(PRRWP)
Sandusky, Ohio

Contract No. W91237-06-C-0006

The following comments were provided by the McTech Corp Independent Quality Control Team (IQCT). All comments resulting from this review have been resolved and/or incorporated.

General:

Check spacing and reconcile the Table of Contents once all changes have been made. Also reformat and align. Currently, the page numbering and alignment is off.

Response: Spacing checked and Table of Contents page references changed and realigned as needed.

Specific: Corrections made and spacing checked.

1) Cover and throughout document: Please insert the correct contract number: W91237-06-C-0006. Also, remove the word, "in-situ" from the title and throughout the document as this will not be in place treatment, rather we will be excavating the soil prior to treatment.

Response: Concur, correct contract number inserted and "in-situ" term removed from document.

2) Section 3.3.5.2, section title: Correct the spelling of "Stres" to Stess.

Response: Concur, corrected.

3) Section 4.1, directly following B., Add Gary Ponikvar (see Plan of Operations) and adjust lettering as appropriate.

   Response: Gary Ponikvar added to NASA Technical POC list with phone number.

4) Appendix A: Since the Activity Hazard Analysis should have current review date and reviewers initials.

*Response: Concur, activity hazard analysis reviewed by **RRB/10/05/06**.*

Comments on Site-Specific Safety and Health Plan

Site-Specific Safety and Health Plan

Lime Treatment Pilot Study
Plum Brook Ordnance Works –Pentolite Road Red Water Ponds(PRRWP)
Sandusky, Ohio

Contract No. W91237-06-C-0006

The following comments were provided by the USACE Huntington District and NASA PBS. All comments resulting from this review have been resolved and/or incorporated.

CELRH-SO (385) 31 October 2006

MEMORANDUM FOR CELHR-EC-CE; ATTN: Shane Hall, Lisa Humphreys

SUBJECT: Review of McTech Corp Site-Specific Safety and Health and Accident Prevention Plan for Contract W91237-06-C-0006, PBOW Pentolite Road Red Water Ponds Lime Treatment Pilot Study

1. The subject plan has been reviewed by this office and is recommended for acceptance with the following modifications being considered:

a. Page 2, Paragraph 2.1. The acronym PRRWP is used for the first time and is not defined here or in the list of acronyms.

Response: Concur, PRRWP has been added to the list of acronyms.

b. Page 20, Paragraph 3.2.9. Lime is only mentioned here as being used for reseeding. The title of the project indicates that it is also to be used for treatment.

Response: Concur the following has been added, "Lime will be applied to soil to facilitate the alkaline hydrolysis of nitro aromatics in the soil. In addition,"

c. Page 44, Paragraph 10.0 EM 385-1-1, Safety and Health Requirements Manual, Nov. 2003, is not included in the list of references.

Response: Concur, EM 385-1-1, Safety and Health Requirements Manual, Nov 2003, has been added to the list of references.

d. Appendix A, Activity Hazard Analysis. There is no "activity" involving the treatment that is to be done. Also, on Site Reconnaissance/Surveying, no training requirements are listed.

Response: Concur, The "activity", "Excavation and tilling of contaminated soil" has been re-worded to include the treatment aspect as follows, "Excavation, lime addition, and tilling of contaminated soil". The following training requirement has been added to the Site Reconnaissance/Surveying Activity Hazard Analysis has found on Page 1, Section 1.2 Visitors, "Review SHHP" .

2. We appreciate the opportunity to review these plans. If there are any questions or concerns about these comments, the POC is the undersigned at 304 399-5094.

JEAN L. READ
Chief, Safety and Occupational
Health Office

CONSTRUCTION
HEALTH AND SAFETY PLAN REVIEW SHEET

Contractor Name : McTech
Contract Number: W91237-06-C-0006 Task Number: _____
Project Title: Lime Treatment Pilot Study
Work Location: Plum Brook Penolite Road Redwater Ponds
Date Received: October 16, 2006 COTR: N/A

SAFETY OFFICE COMMENTS:

Page 1 1.3 **Safety Policy Enforcement**
HASP should include NASA and Plum Brook Safety provisions, policies and procedures.

Page 29 3.3.8 **Excavation Hazards**
Must comply with NASA Glenn Safety Manual Chapter 35.

Appendix F

Plum Brook Emergency procedures shall be used. Phone numbers, specific the site, and emergency actions have been established for all workers at Plum Brook.

REVIEWER: Frank DeAngelo DATE: October 18, 2006

ENVIRONMENTAL MANAGEMENT OFFICE COMMENTS:

REVIEWER: _____ DATE: _____

In response to Mr. Frank DeAngelo's comments of October 18, 2006

Comment #1
Page 1 Section 1.3,

Response: Concur, the following has been added to the first sentence; ", as well as NASA and Plum Brook Safety provisions, policies and procedures,"

Comment #2
Page 29 Section 3.3.8,
Response: Concur, the opening paragraph of this section has been changed to; "McTech Corp will be performing excavation in the area. A long reach excavator will be used to excavate the contaminated soil. All excavation activities will comply with the requirements found in Chapter 35, NASA Glenn Safety Manual and will adhere to the following safety precautions. In the event of any discrepancies, the most restrictive requirements shall be met".

Comment #3
Appendix F,
Response: Concur, as stated on page 40, "NASA PBS protocol must be followed during emergency response activities." Site specific procedures for any and all emergencies that may occur in relation to this project's activities are found on pages 40 through 44, Section 8 EMERGENCY RESPONSE AND CONTINGENCY PLAN. Appendix F is McTech Corp General Safety Policy and is included as required by USACE, as reference.