

*East Central Intergovernmental  
Association EPA Brownfields RLF  
Cleanup Project  
211 & 213 East Broadway Street  
Stanwood, Iowa 52237*

## **Health and Safety Plan**

Prepared for:  
*East Central Intergovernmental  
Association*

Prepared by:  
**Environmental Management Services of  
Iowa  
5170 Wolff Road #2  
Dubuque, Iowa 52002  
[https://www.environmentalmgmtservices  
.com/](https://www.environmentalmgmtservices.com/)**

Date:  
*10/26/2022*

## Emergency Contact Information

**Site Name:** *211 & 213 East Broadway Street*

**Specific Location:** *211 and 213 East Broadway Street, Stanwood, Iowa 52337*

**Table 1. Emergency Response Telephone Roster**

Contact	Name	Office phone #	Mobile phone #
<b>Local Fire Department</b>	Stanwood Fire Department	563.942.3340	
<b>Local Hospital</b>	Jones Regional Medical Center	319.462.6131	
<b>Local Police</b>	Cedar County Sheriff's Office	563.886.2121	
<b>Environmental Management Services of Iowa Principal</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Project Manager</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Corporate Health &amp; Safety Director</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Designated Site Safety &amp; Health Officer (SSHO)</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Health &amp; Safety Coordinator</b>	Jeff Stahr	563.583.0808	563.599.3597
<b>Client Contact</b>	Dawn Danielson	563.690.5772	
<b>Contractor:</b>			
<b>(Other):</b>			
<b>Poison Control</b>		800-222-1222	

**Potential Chemicals of Concern:**

*Potential contaminants that may be encountered during site operations include asbestos.*  
*Potential routes of exposure include inhalation of particulates.*

## **Route to Hospital:**

**Hospital name:** *Jones Regional Medical Center*

**Hospital Address:** *1795 IA-64 E, Anamosa, Iowa 52205*

**Hospital Phone Number:** *1 + 319.462.6131*

**Work Site Name:** *211 & 213 East Broadway Street*

**Work Site Address:** *211 and 213 East Broadway Street, Stanwood, Iowa 52337*

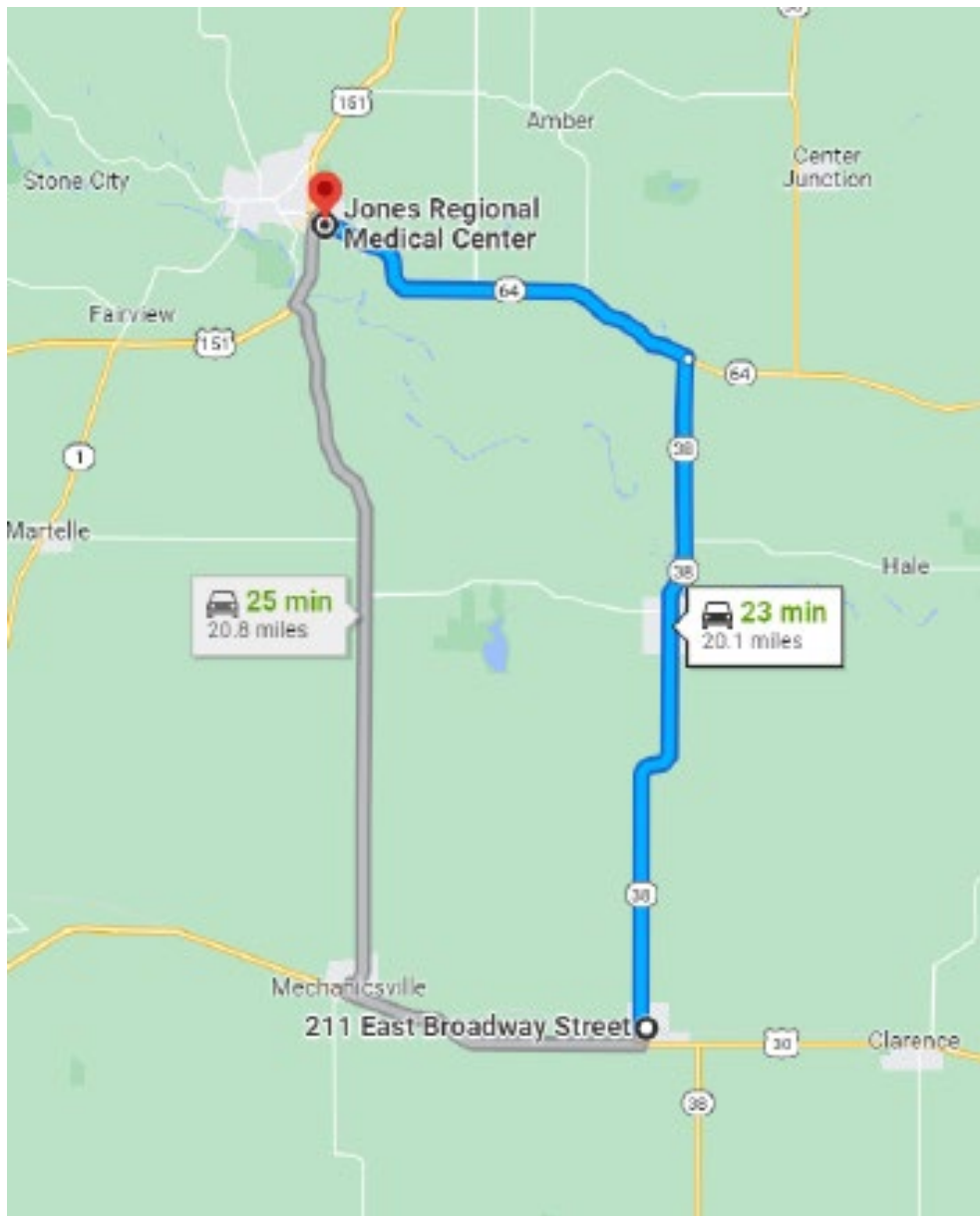
### Description of Route to Hospital

*Describe Route to Hospital with Both Turn by Turn and Google maps:*

- *Head West on E Broadway Street toward N Elm Street (0.1 mi)*
- *Turning Right onto IA\_38 N/N Ash Street (12.5 mi)*
- *Turn left onto IA-64 W (7.5 mi)*
- *Turn Left*

*End: 1795 IA-64 E, Anamosa, Iowa 52205 (Destination will be straight ahead)*

Example Map to Hospital:



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## Health & Safety Plan Review and Approval:

By signing below, it is acknowledged that this HASP identifies the activities that are anticipated to be performed in the field. In addition, this HASP identifies the personal protective and monitoring equipment that may be necessary to be on site and be available for use. It is also understood that the provisions of this HASP will be updated if there is a change of a task and/or the addition of tasks and will be approved by the individuals listed below or their designee.

<u>Mark Hogan</u> Principal-in-Charge	_____	_____
	Signature	Date

<u>Mark Hogan</u> Project Manager	_____	_____
	Signature	Date

<u>Mark Hogan</u> Corporate Health & Safety Director	_____	_____
	Signature	Date

<u>Mark Hogan</u> Designated Site Safety & Health Officer	_____	_____
	Signature	Date

<u>Jeff Stahr</u> Designated Health & Safety Coordinator	_____	_____
	Signature	Date

<u>Mark Hogan</u> Designated HASP Reviewer	_____	_____
	Signature	Date

This form **MUST** be signed prior to starting the on-site work. In addition, a copy of this form should be returned to the office Health & Safety Coordinator prior to leaving for the field. After completion of the project, the original signed HASP must be retained in the project file



# 1 Introduction

This Site-Specific Health and Safety Plan (HASP) has been developed to define the protocols and requirements to be followed by Environmental Management Services of Iowa personnel while performing work at 211 & 213 East Broadway Street in Stanwood, Iowa. All personnel participating in field activities must be trained in the general and specific hazards unique to the job they are performing and, if applicable, meet recommended medical examination and/or training requirements. All Environmental Management Services of Iowa employees shall follow the guidelines, rules, and procedures contained in this site-specific HASP. Environmental Management Services of Iowa personnel shall contact the Project Manager (PM) if unexpected conditions are encountered at the site, including but not limited to new processes; changes in operation, products, services; additional or changes in the chemicals of concern; and/or unsafe conditions are encountered which were not previously addressed in this HASP.

Each contractor, subcontractor, and visitor shall be expected to review and understand the hazards, risks, and control methods (including emergency procedures) as outlined in this HASP and sign off on the HASP. This can be accomplished either during the project planning stage or during the first safety briefing on site. However, contractors and subcontractors will be required to prepare their own HASP to address site safety and work hazards associated with their proposed site activities prior to mobilization to the site. In addition, each subcontractor will be required to provide Environmental Management Services of Iowa with their site-specific HASP and communicate the types of hazards and control methods associated with their activities to Environmental Management Services of Iowa during the first safety briefing on site and as conditions change. Relevant Contractor information regarding the identification of hazards and appropriate control strategies for the hazards for their particular job tasks should also be presented and a site-specific HASP should be available for review by all parties. Each contractor or subcontractor must assume direct responsibility for its own employees' health and safety.

Copies of the HASPs will be kept on site for review and reference during all site activities. Upon completion of the project, the finalized and signed copy of the HASP will be placed in the project file.

## 1.1 Site Description

*The site includes two dilapidated former commercial buildings. The client is requesting the structures be removed to remove health hazards and prepare the properties for redevelopment. Due to the condition of the structures and presence of asbestos containing materials in each structure, both structures will be demolished and disposed of as regulated asbestos containing materials (RACM).*

## 1.2 Specific Work Activities

The field activities currently underway or planned for the immediate future include the following work activities or tasks:

- *Task 1 – Impact7G will conduct project observation of RACM demolition at the site.*

Each of these Tasks are further described as follows:

*Task 1 – Asbestos Abatement Observation*

*Environmental Management Services of Iowa personnel will provide project observation for the duration of the RACM demolition project. This task includes observing RACM demolition, monitoring work progress, and collecting air samples to document exposure to asbestos fibers from the RACM demolition.*

**1.3 Site Safety Requirements**

*Environmental Management Services of Iowa personnel will stay out of the demolition work area unless absolutely necessary for the completion of the project. Although entry of the work area is not expected to be required, any Environmental Management Services of Iowa field staff entering the work area must have a current HAZWOPER certification, respirator fit test, and medical monitoring approval (e.g. "Site" training classification), and must wear level C PPE including a half-face air purifying respirator with appropriate P100-rated cartridges for protection from dust, as detailed in Section 7. Environmental Management Services of Iowa personnel will stay at least 25-30 feet away from large machinery wherever possible. When approaching the equipment, personnel will always make eye contact with the operator before approaching. In addition to any PPE required by the facility, Environmental Management Services of Iowa personnel will also wear a high-visibility reflective vest at all times when in the vicinity of large machinery.*

Site activities performed by Environmental Management Services of Iowa personnel will be conducted in accordance with applicable provisions of the Occupational Safety and Health Act of 1970 and the standards issued there under, including but not limited to the Hazardous Waste Site Operations and Emergency Response standard (OSHA 29 CFR 1910.120), the Respiratory Protection standard (29 CFR 1910.134), and the Lead in Construction Standard (29 CFR 1926.62).

## **2 Safety and Health Administration**

An efficient on-site operation requires that all key personnel be identified and that their roles and responsibilities be clearly defined. Below is a discussion of the management structure for this project.

### **2.1 Principal in Charge/Project Manager**

Responsibilities include overall coordination of site activities. The Environmental Management Services of Iowa Principal in Charge (PIC) and the project manager (PM) have overall accountability and responsibility for the safety of operations and the health and safety of all personnel.

### **2.2 Health and Safety Representatives**

The Environmental Management Services of Iowa Health and Safety Representatives are a resource for the HASP and will be consulted on all related health and safety issues that arise in the field, including any changes in the scope of work. The Environmental Management Services of Iowa Health and Safety representatives will make all final decisions regarding questions on the HASP.

### **2.3 Designated Site Safety and Health Officer (SSHO)**

The Environmental Management Services of Iowa SSHO is responsible for field-related activities under the direction of the PM and for maintaining field operations in accordance with project requirements. This person is responsible for enforcing daily implementation of the HASP and resolving health and safety issues. In addition, this person will:

- Establish and ensure maintenance of site work zones.
- Monitor the work area and personal breathing zone and ensure compliance of workers relative to pre-established personal protection levels.
- Evaluate site conditions (i.e., weather, chemical, physical) and recommend any modifications to existing levels of protection.
- Ensure that daily safety briefings are conducted and documented in this HASP (see Acknowledgement of Instruction) or in the field logbook.
- Initiate emergency response procedures with immediate communication to the project manager.
- Exercise stop-work authority in the event of imminent danger to project personnel.
- Notify PM of any noncompliance and/or unsafe conditions.
- Conduct regular inspections to determine effectiveness of the HASP.

### **2.4 Project Personnel**

Project personnel involved in field activities are responsible for:

- Taking all reasonable precautions to prevent injury to themselves and to fellow employees.
- Conducting only those tasks that they believe they can do safely.
- Reporting all occurrences and/or unsafe conditions to the supervisor and/or project manager.

Further, any person working on-site has the authority to **stop work** if any operation threatens the health and safety of on-site workers or the surrounding community. In the event that such a situation occurs, the Environmental Management Services of Iowa SSHO shall be notified immediately. Environmental Management Services of Iowa’s SSHO will update the Environmental Management Services of Iowa PIC/PM and on all project-related health and safety issues as they arise.

**Table 2: Environmental Management Services of Iowa Personnel Contact Information**

Company/Title	Personnel	Office	Cell
Environmental Management Services of Iowa Principal in Charge	Mark Hogan	563.583.0808	563.590.5467
Environmental Management Services of Iowa Project Manager	Mark Hogan	563.583.0808	563.590.5467
Environmental Management Services of Iowa Corporate Health & Safety Director	Mark Hogan	563.583.0808	563.590.5467
Environmental Management Services of Iowa Designated Site Safety & Health Officer	Mark Hogan	563.583.0808	563.590.5467
Environmental Management Services of Iowa Project Health & Safety Coordinator	Jeff Stahr	563.583.0808	563.599.3597
Client Contact	Dawn Danielson	563.690.5772	

**Table 3: Contractor/Subcontractor Contact Information**

Company/Title	Personnel	Office	Cell

### **3 Medical Surveillance Requirements**

Surface and air contamination may be encountered during the course of this investigation. All Environmental Management Services of Iowa personnel participating in this project shall be enrolled in a health-monitoring program in accordance with the provisions of OSHA 29 CFR 1910.134 and 29 CFR 1926.62. Each project participant shall be certified by a Doctor of Medicine as fit for respirator and semi-permeable/impermeable protective equipment use. All personnel shall have received an environmental physical examination within one year prior to the start of project activities. A consulting physician will determine the content of the physical examinations.

Follow-up medical examinations will also be provided in the event of job site injury or unprotected exposure to contaminants in excess of eight-hour time weighted average permissible exposure limits. The Environmental Management Services of Iowa Corporate Health & Safety Director will maintain certificates of medical examinations.

## **4 Employee Training Requirements**

All Environmental Management Services of Iowa personnel participating in this project must have completed 40-hour Hazardous Waste Operations (HAZWOPER) Training and at least three days of supervised field activity per requirements of OSHA 29 CFR 1910.120. In addition, a current 8-hour annual refresher-training certificate will be required for all field personnel. The Environmental Management Services of Iowa Corporate Health & Safety Director and/or the SSHO will maintain training certificates for all project personnel at the Dubuque Office. The SSHO and at least one other Environmental Management Services of Iowa site participant shall maintain a current certificate in basic First Aid training as provided by the American Red Cross. First Aid Guidance is included in Appendix C.

At least one person must be assigned to the project that can be considered the “competent person” for the requirements of OSHA 29 CFR 1926.62. All employees conducting work must be trained on the standard and its appendices.

Per the scope of this project, Environmental Management Services of Iowa personnel will maintain a State of Iowa Asbestos Contractor/Supervisor certificate. Copies of each certificate will be kept in the project folder within the field vehicle during the project.

Prior to the start of site activities, all Environmental Management Services of Iowa project personnel will participate in a pre-project safety and health briefing outlining the contents of this HASP. The personnel responsible for project safety and health will be addressed, as will site history, scope of work, site control measures, emergency procedures, and site communications. Daily “tailgate” safety and health briefings will be presented by the SSHO at the start of each workday. Records of safety and health briefings will be maintained for the duration of this project.

Subcontractors under the direction of Environmental Management Services of Iowa are not anticipated to be necessary as part of this project.

## 5 Hazard Evaluation

The Project Hazard Analysis below identifies the hazards anticipated to be encountered by the project team based on the tasks presented in Section 1.2.

**Table 4: Project Hazard Analysis**

Chemical Hazards Present:  <input type="checkbox"/> None	<input type="checkbox"/> Flammable/combustible <input type="checkbox"/> Compressed gas <input type="checkbox"/> Explosive <input type="checkbox"/> Organic peroxide <input type="checkbox"/> Oxidizer <input type="checkbox"/> Water reactive <input type="checkbox"/> Unstable reactive <input type="checkbox"/> Dust/Fumes/Particulates	<input type="checkbox"/> Corrosive <input type="checkbox"/> Toxic <input type="checkbox"/> Highly Toxic <input type="checkbox"/> Irritant <input type="checkbox"/> Sensitizer <input type="checkbox"/> Carcinogen <input type="checkbox"/> Mutagen <input type="checkbox"/> Other:
Physical Hazards Present:  <input type="checkbox"/> None	<input type="checkbox"/> Heat <input type="checkbox"/> Cold <input type="checkbox"/> Walking/working surfaces <input type="checkbox"/> Visible Dust <input type="checkbox"/> Traffic/Vehicles <input type="checkbox"/> Noise <input type="checkbox"/> Other:	<input type="checkbox"/> Ionizing radiation <input type="checkbox"/> Non-ionizing radiation <input type="checkbox"/> Electricity <input type="checkbox"/> Severe Weather <input type="checkbox"/> Poor lighting <input type="checkbox"/> Overhead Hazards
Environmental Management Services of Iowa Instrument/Equipment Hazards Present:  <input type="checkbox"/> None	<input type="checkbox"/> Heavy machinery/ Drill Rigs <input type="checkbox"/> Trenching/excavation <input type="checkbox"/> Docks-marine operations <input type="checkbox"/> Docks-loading <input type="checkbox"/> Drilling <input type="checkbox"/> Forklifts <input type="checkbox"/> Operations on Water <input type="checkbox"/> Elevated heights (includes fall protection) <input type="checkbox"/> Overhead/Underground utilities <input type="checkbox"/> Confined spaces <input type="checkbox"/> Power tools	<input type="checkbox"/> Cranes/Hoists/Rigging <input type="checkbox"/> Ladders <input type="checkbox"/> Scaffolding <input type="checkbox"/> Manlifts <input type="checkbox"/> Gas cylinders <input type="checkbox"/> Roadway work <input type="checkbox"/> Railroad work <input type="checkbox"/> Energized equipment (LO/TO) <input type="checkbox"/> Pressurized equipment (LO/TO) <input type="checkbox"/> Drums and containers <input type="checkbox"/> Others:
Biological Hazards Present:  <input type="checkbox"/> None	<input type="checkbox"/> Animal/human fluids or blood <input type="checkbox"/> Animal/human tissue(s) <input type="checkbox"/> Poisonous/irritating plants <input type="checkbox"/> Other: municipal waste	<input type="checkbox"/> Contaminated needles <input type="checkbox"/> Live bacterial cultures <input type="checkbox"/> Insects/rodents/snakes <input type="checkbox"/> Other:
Ergonomics Hazards Present:  <input type="checkbox"/> None	<input type="checkbox"/> Repetitive motion <input type="checkbox"/> Awkward position <input type="checkbox"/> Heavy Lifting <input type="checkbox"/> Frequent Lifting	<input type="checkbox"/> Limited movement <input type="checkbox"/> Forceful exertions <input type="checkbox"/> Vibration <input type="checkbox"/> Other:
Personal Safety/Security:  <input type="checkbox"/> None	<input type="checkbox"/> Personal safety <input type="checkbox"/> Security issue <input type="checkbox"/> Project site in isolated area <input type="checkbox"/> Employees working alone <input type="checkbox"/> Wild/Feral Animals	<input type="checkbox"/> Employees working early/late <input type="checkbox"/> Potentially dangerous wildlife <input type="checkbox"/> Guard or stray dogs in area <input type="checkbox"/> No/limited cell phone service <input type="checkbox"/> Other:

**5.1 Specific Chemicals of Concern**

The chemicals listed in the table below includes the identification of chemical contaminants known and/or suspected of being present on-site, the affected media and source of contaminants, known concentrations (if applicable), the Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV), or the Action Level (i.e., 50% of the PEL/TLV). This information will be inserted into Table 5 below. In addition, Appendix A contains specific hazardous property information for commonly encountered chemicals.

**Table 5: Summary of Site-Specific Chemicals of Concern**

<b>Chemical Name</b>	<b>Environmental Media / Source</b>	<b>Highest Concentration Measured</b>	<b>Exposure Limit / Action Level</b>
Asbestos	Air / Building Components		1 fiber/cc PEL-TWA OSHA

**5.2 Physical Hazards**

The potential physical hazards of concern anticipated during site work are listed in Tables 4 and 6. Personnel should be aware that as personal protective equipment increases, dexterity, and visibility may be impacted and performing some tasks may be more difficult.

At any site, the potential exists to encounter unknown materials such as sharp or jagged debris, broken glass, or rusty metal which can pose puncture and potential laceration hazards.

Physical hazard exposures were estimated using engineering judgement and experience from similar projects.

**5.3 Biological Hazards**

Surface biological hazards such as disease-causing microorganisms (bacteria, fungus, viruses) are expected to exist at the site. Disease-carrying, biting insects could be encountered on-site. Rodents, wild dogs, raccoons, and other wild animals, which could bite or carry disease, are not anticipated at the project location.

**5.4 Other Site Specific Hazards**

Tailgate safety meetings will include a discussion of other possible site-specific safety hazards, and will address emergency procedures for evacuation, notification of emergency response agencies, and assembly checkpoints.



**Table 6: Biological and Physical Hazards**

<b>Name of Physical Hazard</b>	<b>Source</b>	<b>Exposure Level/Potential</b>	<b>Exposure Limit</b>
Utilities (elect., gas, water, etc.) Overhead/Underground	Operations	Unlikely	N/A
Other (Please Specify)	Unstable portions of building	Unlikely	N/A
Other (Please Specify)	Uneven surface	Likely	N/A
Other (Please Specify)	Sharp Objects	Unlikely	N/A
Electrical	Operations	Unlikely	N/A
Heat (Ambient)	Operations	Unlikely	N/A
Inclement Weather	Operations	Likely	N/A
Material Handling	Sample	Unlikely	N/A
Motion of Machinery (Struck by Hazards)	Operations	Unlikely	N/A
Noise (Sound Pressure Level), dBA	Operations	Likely	90 dBA TWA OSHA
Rolling or Pinching Objects	Operations	Unlikely	N/A
Slips/Trips/Falls	Operations	Likely	N/A
Traffic-On or Near Site	Operations	Likely	N/A

## 6 Hazard Controls

A general summary of the hazards and an evaluation of those hazards are presented below. More detailed control procedures are provided in the Appendix B or in other section of this HASP as indicated in Table 7.

**Table 7: Summary of Hazards**

Task Number(s)	Hazards	Relative Hazard /Risk Rating*	Hazard Controls Appendix and/or HASP Section
	Chemical	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B1
1	Physical	NA <input type="checkbox"/> Low <input type="checkbox"/> Medium <input checked="" type="checkbox"/> High <input type="checkbox"/>	B2
1	Mechanical	NA <input type="checkbox"/> Low <input type="checkbox"/> Medium <input checked="" type="checkbox"/> High <input type="checkbox"/>	B3
1	Traffic/Equipment	NA <input type="checkbox"/> Low <input checked="" type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B4
	Electrical Hazards	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B5/B18
	Fire/Explosion	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B6
1	Noise (acoustical)	NA <input type="checkbox"/> Low <input type="checkbox"/> Medium <input checked="" type="checkbox"/> High <input type="checkbox"/>	B7
	Ventilation / Oxygen Deficiency	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B8
	Heat Stress	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B9
1	Cold Stress	NA <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input checked="" type="checkbox"/>	B10
	Insects, Spiders, Snakes	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B11
	Poisonous Plants	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B12
	Personal Safety	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B13
	Working Alone	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B14
1	Severe Weather	NA <input type="checkbox"/> Low <input checked="" type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B15
1	Above and Underground Utilities	NA <input type="checkbox"/> Low <input checked="" type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B16
	Trenching/Excavation	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	Section 13
	Ergonomics / Material Handling	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B17
	Power Tools	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B18
1	Vehicle Use	NA <input type="checkbox"/> Low <input checked="" type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B19
	Seasonal Hunting	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	B20
	Confined Space	NA <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <input type="checkbox"/>	Section 14

NOTE: A single hazard maybe listed under several Tasks. In this case, use the highest Severity ranking of the tasks evaluated as the overall ranking.

**Table 8: \*Hazard/Risk Matrix Decision Table**

The Hazard...	Has No Severity	Has Minimal Severity	Has Moderate Severity	Has High Severity
<b>Is Not Present (i.e., 0% of your on-site time does not expose you to this Hazard)</b>	NA	NA	NA	NA
<b>Is Rarely Present (i.e., &lt;25% of your on-site time exposes you to this Hazard)</b>	NA	LOW	LOW	MED
<b>Is Sometimes Present (i.e., 25% - &lt;50% of your time exposes you to this Hazard)</b>	NA	LOW	MED	HIGH
<b>Is Frequently to Constantly Present (i.e., 50% to 100% of your time exposes you to this Hazard)</b>	NA	MED	HIGH	HIGH

\*Relative Risk Rating Scale takes into account the frequency of the hazard and the severity of injury the hazard can cause to employees without regard to PPE usage. In general,

- Minimal Severity requires first aid;
- Moderate Severity requires professional medical attention; and
- High Severity requires immediate medical attention/life threatening.

## 7 Personal Protective Equipment Requirements

This section of the Site Health and Safety Plan is a reference of selection for different levels of Personal Protective Equipment (PPE). The protective equipment will be selected based on the contaminant type(s), concentration(s) in air (if any), standing liquid (if any), or other applicable matrix, and the known route(s) of entry into the human body.

**Table 9: Task Specific PPE**

Task Description	Level of Protection				
	A	B	C	Mod D	D
RACM Demolition Observation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Key:**

**Level D:** Long sleeve shirt\*; long pants\*; hard hat; eye protection; hearing protection; and safety shoes.

**Level D Modified:** Level D protection plus protective coveralls, as required; and appropriate hand protection.

**Level C:** Level D (Modified) protection plus negative pressure respiratory protection with appropriate cartridges; chemical protective coveralls in lieu of general coveralls; use of inner and outer sets of hand protection.

**Level B:** Level C protection plus Pressure-demand supplied air respirator with escape bottle in lieu of negative pressure respirator; chemical resistant coveralls with hood; chemical resistant boots.

**Level A:** Level B protection plus fully encapsulating (gas tight) chemically resistant suit.

\*Clothing made of natural fibers shall be worn when a shock or arc flash hazard exists.

**Table 10: Personal Protection Equipment and Supplies**

Equipment	Req	Rec	NA	Equipment	Req	Rec	NA
Steel-toe Boots	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SCBA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Outer Disposable Boots	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Full-face Airline Resp.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Long Sleeve Shirt and Pants	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Full Face Negative Pressure Resp.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Flame Retardant Coveralls	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Half Face Negative Pressure Resp (required if entering containment areas – not expected to be necessary)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tyvek Suit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Powered Air Purifying Resp	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Poly-coated Tyvek / Saranex Suit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	First Aid Kit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fully Encapsulated Chemical Suit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fire Extinguisher	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hearing Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mobile Phones	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Leather Gloves	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Walkie Talkies	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Outer Chemical Gloves (Type): Nitrile	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water or Other Fluid Replenishment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Inner Chemical Gloves (Type):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Eye Wash	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hard Hat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sunscreen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety Glasses with Side Shields	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Insect Repellent	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vented (Splash proof) Goggles	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other: Reflective Vest	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Key:** **Req** = Required; **Rec** = Recommended; **NA** = Not Applicable

Engineering controls may be implemented with the approval of the Environmental Management Services of Iowa Corporate Health & Safety Director, Project Manager, or Health & Safety Coordinator to facilitate a safer working environment such that modified Level D PPE may be utilized. Constant monitoring will be required until conditions are again at previously designated working levels.

## 8 Air Monitoring / Sampling Procedures

Conducting an applicable task may necessitate using one or more monitoring devices as listed in Table 11, particularly if gases, vapors, explosion hazards and/or oxygen deficient atmosphere can occur or are expected. If a monitoring device will be utilized, the corresponding device letter should be placed in the column labeled "Monitoring Instrument Required" in Table 12.

**Table 11: Monitoring Devices Available**

A	PID (10.6 eV)	H	Summa Canister
B	PID (11.7 eV)	I	Heat Stress Monitor
C	FID	J	Low Flow Pumps
D	OVA	K	High Flow Pumps
E	CGI/LEL	L	Radiation Detector
F	Colorimetric Indicator Tubes	M	Gas Multimeter
G	Dust Monitoring	N	Other Device:

With respect to Table 11, also insert the task and the applicable Action Level in the appropriate box using 50% of the most restrictive (lowest) PEL or TLV as the Trigger. For example, if the most restrictive PEL for a particular VOC is 50 ppm, use 25 ppm as the "Trigger" value.

**Table 12: Required Monitoring**

Required Monitoring	Constituent	Task(s)	Trigger (action level)	Monitoring instrument required
If monitoring is necessary to identify that a risk is at or above tolerable limits and/or is used in controlling a risk on site, document the task and the maximum allowable exposure or trigger, and the monitoring instrument required to be used.	Asbestos	1	1 fiber / cc	J
	Lead-Based Paint		30 µg/m <sup>3</sup>	
	Oxygen		19.5% to 23.5%	
	Carbon Monoxide		25 ppm	
	H <sub>2</sub> S		5 ppm	
	C <sub>2</sub> S			
	CH <sub>4</sub>		0.5% or 5000 ppm	
	VOCs: Total		0.5 ppm	
	SVOCs:			
	Metals			
	Dusts			
	Others:			
	Others:			

### 8.1 Odors

If strong odors are encountered or if personnel develop headaches, dizziness or other potential exposure symptoms, the personnel shall leave the work area to a well ventilated area and contact the Environmental Management Services of Iowa PM and SSHO for further instructions.

## **8.2 Dusts**

The permissible exposure levels for total and respirable dusts are 15 and 5 mg/m<sup>3</sup>, respectively. In general, at these concentrations you will not be able to read the face of a wristwatch (with your arm extended) when the total dust concentration reaches 15 mg/m<sup>3</sup>. Particles of dust in the respirable size range cannot be seen without the aid of a microscope but in aggregate, may be perceived as a haze. More importantly and with few exceptions, when dust is noticeable in the air, more respirable particles will exist than larger particles.

Typically, controlling dusty investigative activities through the use of a water sprayer will control potential exposures. However, in the event that dusty conditions exist that are not related to investigative/remedial activities (dry, uncovered soils with high winds), personnel shall leave the area and contact the Environmental Management Services of Iowa PM and SSHO for further instructions.

## **9 Decontamination**

### **9.1 Personnel Decontamination**

All site personnel should minimize contact with contaminants. All disposable PPE will be disposed of in approved 55-gallon drums (including respirator cartridges). Non-disposal PPE must be decontaminated, particularly the safety boots. Any PPE that cannot be decontaminated should be disposed of along with waste generated from field operations. The drums will be sealed and labeled appropriately, stored at a single secure location on the site, and be disposed of appropriately off-site.

Personnel shall wash and remove PPE prior to leaving the site. At a minimum, gross removal of contaminants from the PPE, removal of the PPE, and washing of hands and face shall be required upon exiting the work area.

During emergencies, the need to quickly respond to an accident or injury must be weighed against the risk to the injured party from chemical exposure. It may be that the time lost or additional handling of an injured person during the decontamination process may cause greater harm to the individual than from the exposure that would be received by undressing that person without proper decontamination. The decision must be made by the SSHO.

### **9.2 Equipment Decontamination**

Decontamination involves the orderly controlled removal of contaminants. All undedicated sampling equipment and sampling meters (if applicable) will be cleaned prior to and between each use. All on-site equipment will be decontaminated and allowed to air dry before leaving the site. Decontamination may be accomplished using an approved cleaner, water, and steam. Subcontractors will be responsible for decontamination of their own equipment used during field operations, as well as disposal of the decontamination fluids. Decontamination fluids will be temporarily stored in on-site 55-gallon drum and pending offsite disposal.

### **9.3 Investigation Derived Material Disposal**

1. Decontamination solutions: Not expected to be generated
2. Used disposable PPE such as boot covers: Appropriately disposed in accordance with facility instructions



## **10 Site Communications**

Communication between personnel within the project areas will be via verbal communication or hand signals. Visual contact between members of task teams should be possible throughout the course of project activities. Contact with the Environmental Management Services of Iowa SSHO will be through direct verbal communication. The hand signals listed below will be used by personnel wherever respiratory protection and/or equipment noise limit verbal communication.

<u>Signal</u>	<u>Meaning</u>
Thumbs up	Ok, all is well
Grab throat with both hands	Can't breathe
Shake head, thumbs down	No, negative
Point right when facing equipment operator	Move/steer left
Point left when facing equipment operator	Move/steer right
Grab partner's wrist	Leave area immediately

## **11 Emergency Response Plan (ERP)**

NOTE: Specific emergency contact information and applicable directions to the nearest medical facility are contained in Appendix B (i.e., the FIRST AND LAST PAGES of this HASP). In the event that an emergency situation occurs, SECURE the safety of yourself and those working under your direction and then contact appropriate site and Environmental Management Services of Iowa representatives that are referenced in Section 2.4 of this HASP.

### **11.1 Stop Work Authority**

All Environmental Management Services of Iowa employees have the authority and obligation to stop any task or operation where concerns and/or questions regarding the control of environmental health and safety risk exist, are not clearly established, or are not understood. Management is responsible for creating a culture where Stop Work Authority is exercised freely and without fear of retribution or intimidation.

When an unsafe condition is identified, a Stop Work intervention will be initiated and treated as a “near miss”. As such, an incident report will be completed in accordance with Standard Practice Instruction 19 entitled “Incident Reporting” so that the unsafe condition can be documented, reviewed, and corrective actions and preventative measures be implemented as applicable.

These actions will be coordinated by the Environmental Management Services of Iowa Site Supervisor, with support from the PM or PIC and the SSHO, and all affected personnel will be notified of the Stop Work issue. No work will resume until all Stop Work issues and concerns have been adequately addressed. Most issues can be resolved in a timely manner at the job site, but occasionally additional investigation and corrective actions may be required. Work may resume when it is safe to do so.

### **11.2 General Emergency guidelines are as follows:**

#### **11.2.1 First Aid Procedures**

Each field project should have a first aid kit available for use. The contents of which should be based the treatment of the following potential injuries: major wounds, minor wounds (cuts and abrasions), minor burns and eye injuries including protective gloves, breathing barrier, eyewash solutions, and bandages. Since each workplace is unique, additional first aid products should be selected to augment required contents based on the particular work environment.

If an employee is injured, general first aid will be administered. If safety concerns or hazardous conditions are still present, the individual shall be moved to avoid further injury or risk. In the event that an employee is injured in a contaminated area, general first aid will be administered and then the employee will be moved to the support zone for decontamination (if applicable), additional first aid, and preparation for transportation, giving due consideration to which risk will be greater; the spread of contamination or the health/safety of the individual.

### **11.2.2 Fire Procedures**

In the event of a fire, the client contact and/or the local firefighting authorities shall be immediately notified. If safe and feasible, a fire extinguisher may be used to attempt to extinguish the fire. Upon depletion of one fire extinguisher, all personnel shall evacuate the area and await local fire fighters.

### **11.2.3 Spill Procedures**

If warranted, before any work is initiated at the site, applicable local, state, and/or Federal Emergency Response Authorities will be identified by the preparer of this HASP. In the event of a spill, the client contact shall be immediately notified. If possible and feasible, attempts should be made to contain the spill. If it is determined by consultation with the Environmental Management Services of Iowa PM and Client contact that there is no apparent threat to the population or environment, arrangements should be made with a commercial cleanup company to mitigate the spill.

## **11.3 Incident Reporting**

With respect to incidents, the following types of environmental health and safety incidents are to be reported:

- All employee injuries and illnesses that include first aid, doctor/hospital visits which may or may not involve restricted work and/or lost time;
- Environmental incidents and exposures, such as spills or other unplanned releases to the environment or nonconformance to operating procedures;
- All evacuations (false or real);
- Any Property damage;
- Near miss incidents which could have resulted in an injury, an accident, environmental impact or significant loss of facilities;
- Public/third party liability - Incidents that involve injury, illness, or property damage due to the actions of any non- Environmental Management Services of Iowa employee arising out of, or in connection with the Firm's contracted scope of work, operations, products, or premises.

All of the incident types outlined above MUST be communicated by the affected employee or a Environmental Management Services of Iowa employee witnessing the incident to either the local SSHO, PM, or PIC immediately following the incident, either in person or via phone, e-mail, or text messaging. This contacted person will then ensure that the other core project members, plus the Corporate Health & Safety Director, and the PIC are informed either in person or via phone, e-mail, or text messaging, regardless of time of day. The Environmental Management Services of Iowa PIC will notify the client of the incident as appropriate in a timely fashion. For incidents involving three or more employees which need in-patient hospitalization and/or the death of any employee, the applicable regulatory agency will be notified by the Corporate Health & Safety Director.

In the event of an incident, an Incident Investigation Report form will be forwarded for completion by the affected employee and sent to the core project members (i.e., the local SSHO, PM, or PIC), the Corporate Health & Safety Director, and the PIC for preliminary root cause analysis. The root cause analysis will not be deemed complete until input from the Corporate Health & Safety Director and the PIC (and others as necessary) has been obtained. Similarly, the implementation of any corrective/preventive actions will NOT be implemented until input from the Corporate Health & Safety Director and the PIC (and others as necessary) has been obtained.

#### **11.4 Emergency Equipment**

The Environmental Management Services of Iowa SSHO will ensure that at least one 10# A/B/C-rated fire extinguisher is mobilized to the project site during intrusive activity. In addition, a Class B / Type III (minimum) first aid kit and a supply of potable water will be immediately available at the project site at all times.

## **12 Standard Safe Operating Procedures**

- Environmental Management Services of Iowa personnel not entering a building will remain a safe distance from the exterior of all existing buildings on-site activities.
- Prior to entering any building or structure, Environmental Management Services of Iowa personnel will contact the facility manager or operator of that property and inquire whether the utilities have been de-energized, knowledge of any stored chemicals, or any other known potential hazards.
- If site activities interrupted the normal flow of pedestrians or vehicular traffic, appropriate barricades will be erected around the project site. Safety orange work vests will be worn by personnel working within 10 feet of any active roadway.
- The Environmental Management Services of Iowa Site Safety Officer will ensure that unauthorized personnel do not enter the work zone. Authorized visitors will be briefed on site contaminants, personal protective equipment requirements and decontamination provisions of this HASP.
- The Environmental Management Services of Iowa Site Safety Officer will continually inspect the work area for infractions of safety and health requirements contained in this plan.
- The Environmental Management Services of Iowa Site Safety Officer will investigate and immediately report all accidents to the Environmental Management Services of Iowa Corporate Health & Safety Director.
- Site activities will be conducted only during daylight hours unless adequate portable lighting is mobilized to the project site.

## **13 Permit-Required Confined Spaces**

This section of the HASP represents the site-specific written confined space entry program. The purpose of the HASP is to identify all permit-required confined spaces (permit spaces) on-site and to describe the procedures that have been developed and implemented to ensure worker safety and health in permit-required confined spaces. In compliance with the requirements of 29 CFR 1910.120(b)(4)(ii)(I), this section of the HASP is included even when no permit-required confined spaces are present on-site in order to indicate that a site-specific evaluation for permit spaces has been made.

An evaluation of the project site indicates that confined space entry procedures are not needed for this site. (Update if confined space entry procedures are needed for the site)

## Acknowledgement of Instruction

The following must be completed prior to performing site activities. The following acknowledgement must be completed as accurately as possible. It is not a waiver. It is the only method used to compile your environmental on-the-job training and experience records. By written request you may obtain a copy of your environmental work record from the Corporate Health & Safety Director.

I have read, understood, and agree with the health and safety protocols presented in the Health and Safety Plan (HASP) and the information discussed in the health and safety briefing. I also understand that noncompliance with the HASP may result in dismissal from the site.

<b>Printed Name</b>	<b>Title</b>	<b>Company</b>	<b>Signature</b>

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

Location: \_\_\_\_\_

Conducted By: \_\_\_\_\_

Signed By: \_\_\_\_\_

## Safety Meeting Checklist

The Site Supervisor should consider discussing the following topics with all field personnel conducting work as part of this HASP, as applicable.

Date and Time of Meeting:

Conducted By:

### CHECK TOPIC(S) DISCUSSED:

#### HASP Content

- Chemicals of Concern
- Tasks to be Performed
- Location of Tasks
- Hazards/Risks of Tasks
- Site Limitations (e.g., cell phone use)

#### First Aid

- Facilities
- Reporting and Records
- Treatment of \_\_\_\_\_

#### Personal Protective Equipment

- Glasses, Goggles, and Shields
- Hard Hats
- Respirators
- Gloves
- Other \_\_\_\_\_

#### Emergency Procedures

- Communications
- Primary Rally Point:
- Secondary Rally Point:
- Headcount
- Hospital Location/Route
- PPE/Decon
- Other \_\_\_\_\_

#### Special Tools / Equipment

- Chain saws / Chop saws
- Other \_\_\_\_\_
- Other \_\_\_\_\_

#### HASP Content

- Personnel On-Site (Introductions)
- Responsibilities
- Monitoring equipment
- Other \_\_\_\_\_
- Other \_\_\_\_\_

#### Industrial Sanitation and Hygiene

- Drinking water
- Restrooms/Porta toilets
- Personal Cleanliness

#### Housekeeping

- Waste Containers
- Waste Materials
- Other \_\_\_\_\_

#### Fire Prevention

- Extinguisher Locations
- Designated Smoking Areas
- Hot Work
- Flammable Liquids Present
- Explosives Present
- Other \_\_\_\_\_

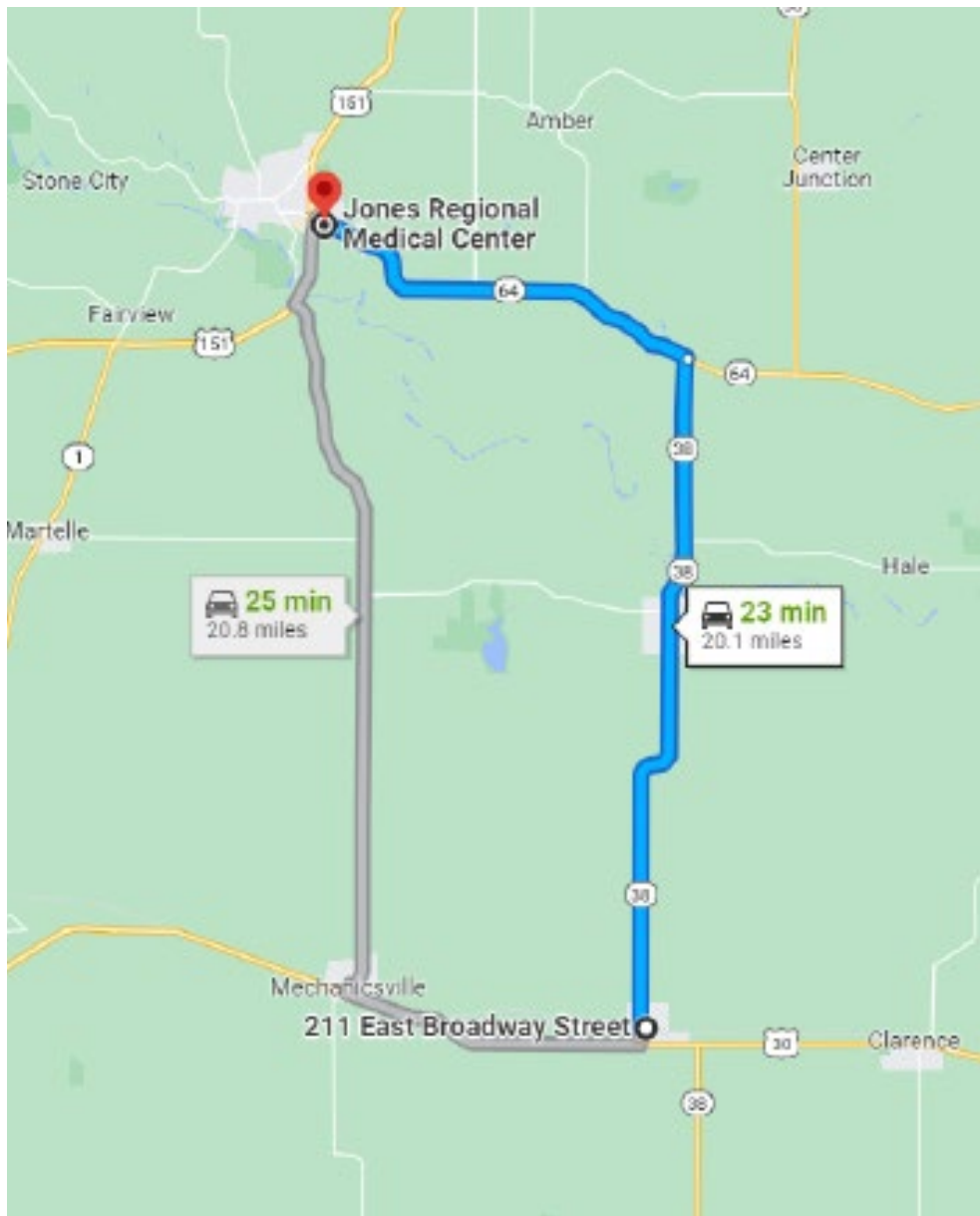
#### Vehicles/Heavy Equipment

- Transportation of Employees
- Operation and Inspection
- Preventative Maintenance
- Other \_\_\_\_\_

Discussion \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Hospital Route Map



**Appendix A**  
**Chemical Information and Material Safety Data Sheets**

## Hazardous Property Information

Check if Present	Material (CAS #)	Water Solubility <sup>a</sup>	Specific Gravity	Flash Point °F)	Vapor Pressure <sup>d</sup>	LEL UEL	OSHA - Cal/OSHA PEL- TWA <sup>f</sup>	IDLH Level <sup>h</sup>	Odor Threshold Geometric mean <sup>i</sup> (ppm)
<b>Volatil Organic Compounds (VOCs)</b>									
<input type="checkbox"/>	Acetic acid (64-19-7)	Miscible	1.05	103	11 mm	4.0% 19.9%	10 ppm	50 ppm	0.074 (d)
<input type="checkbox"/>	Acetone (67-64-1)	Miscible	0.79	0	180 mm	2.5% 12.8%	250 ppm	2,500 ppm	62 (d) 130 (r)
<input type="checkbox"/>	Acrolein (107-02-8)	40%	0.84	-15	210 mm	2.8% 31%	C 0.1 ppm Skin	2 ppm	1.8 (d)
<input type="checkbox"/>	Acrylonitrile (107-13-1)	7%	0.81	30	83 mm	3% 17%	2 ppm Skin	85 ppm Ca	1.6 (d)
<input type="checkbox"/>	Benzene (71-43-2)	0.07%	0.88	12	75 mm	1.2% 7.8%	1 ppm Skin	500 ppm Ca	61 (d) 97 (r)
<input type="checkbox"/>	Bromodichloromethane (75-27-4)	4500 mg/l	1.98	--	50 mm	Non-flam	None established	None determined	--
<input type="checkbox"/>	Bromoform (75-25-2)	0.10%	2.89	--	5 mm	Non-flam	0.5 ppm Skin	850 ppm	1.3 <sup>j</sup>
<input type="checkbox"/>	Bromomethane (74-83-9)	2%	1.73	--	1.9 atm	10% 16.0%	1 ppm Skin	250 ppm Ca	80 <sup>j</sup>
<input type="checkbox"/>	Carbon Tetrachloride (56-23-5)	0.05%	1.59	--	91 mm	Non-flam	2 ppm Skin	200 ppm Ca	252 (d)
<input type="checkbox"/>	Chlorobenzene (108-90-7)	0.05%	1.11	82	9 mm	1.3% 9.6%	10 ppm	1000 ppm	1.3 (d)
<input type="checkbox"/>	2-Chloroethyl-vinyl Ether (110-75-8)	0.02%	1.05	61	27 mm	--	None established	None determined	--
<input type="checkbox"/>	Chloroethane (75-00-3)	0.60%	0.92	-58	1000 mm	3.8% 15.4%	100 ppm Skin	3800 ppm	4.2 <sup>j</sup>
<input type="checkbox"/>	Chloroform (67-66-3)	0.50%	1.48	--	160 mm	Non-flam	2 ppm	500 ppm Ca	192 (d)
<input type="checkbox"/>	Chloromethane (74-87-3)	0.50%	0.92	--	5.0 ATM	8.1% 17.4%	50 ppm	2000 ppm Ca	10 <sup>j</sup>
<input type="checkbox"/>	Dibromochloromethane (124-48-1)	2700 mg/l	2.5	--	76 mm	--	None established	None Determined	--
<input type="checkbox"/>	Dibutyl phthalate (84-74-2)	0.001% (77°F)	1.05	315	0.00007 mm	0.5% --	5 mg/m <sup>3</sup>	4,000 mg/m <sup>3</sup>	--
<input type="checkbox"/>	1,2-Dichlorobenzene (95-50-1)	0.01%	1.3	151	1 mm	2.2% 9.2%	25 ppm Skin	200 ppm	--
<input type="checkbox"/>	1,1-Dichloroethane (75-34-3)	0.60%	1.18	2	182 mm	5.4% 11.40%	100 ppm	3,000 ppm	--
<input type="checkbox"/>	1,1-Dichloroethylene (DCE) (75-35-4)	0.04%	1.21	-2	500 mm	6.5% 15.5%	1 ppm	None determined	190 <sup>j</sup>
<input type="checkbox"/>	1,2-Dichloroethane (107-06-2)	0.90%	1.24	56	64 mm	6.2% 16%	1 ppm	50 ppm Ca	26 (d) 87 (r)
<input type="checkbox"/>	1,2-Dichloroethylene (540-59-0)	0.40%	1.27	36-39	180-265 mm	5.6% 12.8%	200 ppm	1,000 ppm	17 - 170 <sup>k</sup>
<input type="checkbox"/>	1,2-Dichloropropane (78-87-5)	0.30%	1.16	60	40 mm	3.4% 14.5%	75 ppm	400 ppm Ca	0.26 (d) 0.52 (r)
<input type="checkbox"/>	1,3-Dichloropropene (542-75-6)	0.20%	1.21	77	28 mm	5.3% 14.5%	1 ppm Skin	None Determined Ca	1 <sup>j</sup>
<input type="checkbox"/>	Bis-(2-Ethylhexyl)-phthalate (DEHP) (117-81-7)	0.00%	0.99	420	<0.01 mm	0.3% --	5 mg/m <sup>3</sup>	5,000 mg/m <sup>3</sup> Ca	--
<input type="checkbox"/>	Diethyl phthalate (84-66-2)	0.10%	1.12	322	0.002 mm	0.7% --	5 mg/m <sup>3</sup>	None Determined	--

Health and Safety Plan  
**Environmental Management Services of Iowa – ECIA**  
**EPA Brownfield RLF Cleanup Project**

Check if Present	Material (CAS #)	Water Solubility <sup>a</sup>	Specific Gravity	Flash Point °F )	Vapor Pressure <sup>d</sup>	LEL UEL	OSHA - Cal/OSHA PEL- TWA <sup>f</sup>	IDLH Level <sup>h</sup>	Odor Threshold Geometric mean <sup>i</sup> (ppm)	
<input type="checkbox"/>	Dinitrotoluene (DNT) (25321-14-6)	Insoluble	1.32	404	1 mm	--	0.15 mg/m <sup>3</sup> Skin	50 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Endrin (72-20-8)	Insoluble	1.7	--	0.00001 mm Low	--	0.1 mg/m <sup>3</sup> Skin	2 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Ethyl benzene (100-41-4)	0.01%	0.87	55	7 mm	0.8% 6.7%	100 ppm	800 ppm	2.3 <sup>j</sup>	
<input type="checkbox"/>	Hydrazine (302-01-2)	Miscible	1.01	99	10 mm	2.9% 98%	0.01 ppm Skin	50 ppm Ca	3.7 (d)	
<input type="checkbox"/>	Methyl ethyl ketone (MEK) (78-93-3)	28%	0.81	16	78 mm	1.4% 11.4%	200 ppm	3000 ppm	16 (d) 17 (r)	
<input type="checkbox"/>	Methyl tert-butyl ether (MTBE) (1634-04-4)	5.1 g/100ml	0.7	-18	245 mm	1.6% 8.4%	40 ppm	None determined	0.32 – 0.47mg/m <sup>3</sup> <sup>1</sup>	
<input type="checkbox"/>	Methylene chloride (75-09-2)	2%	1.33	--	350 mm	13% 23%	25 ppm	2,300 ppm Ca	160 (d) 230 (r)	
<input type="checkbox"/>	Phenol (108-95-2)	9% (77°F)	1.06	175	0.4 mm	1.8% 8.6%	5 ppm Skin	250 ppm	0.06 (d)	
<input type="checkbox"/>	1,1,2,2-Tetrachloroethane (79-34-5)	0.30%	1.59	--	5 mm	Non-flam	1 ppm Skin	100ppm Ca	7.3 (d)	
<input type="checkbox"/>	Tetrachloroethylene (PCE) (127-18-4)	0.02%	1.62	--	14 mm	Non-flam	25 ppm	150 ppm Ca	47 (d) 71 (r)	
<input type="checkbox"/>	Toluene (108-88-3)	0.07% (74°F)	0.87	40	21 mm	1.1% 7.1%	50 ppm Skin	500 ppm	1.6 (d) 11 (r)	
<input type="checkbox"/>	1,1,1-Trichloroethane (71-55-6)	0.40%	1.34	--	100 mm	7.5% 12.5%	350 ppm	700 ppm	390 (d) 710 (r)	
<input type="checkbox"/>	1,1,2-Trichloro-ethane (79-00-5)	0.40%	1.44	--	19 mm	6% 15.5%	10 ppm Skin	100 ppm Ca	--	
<input type="checkbox"/>	1,2,4-Trichlorobenzene (120-82-1)	0.003%	1.45	222	1 mm	2.5% 6.6% (302 °F)	C 5 ppm	None Determined	3 <sup>j</sup>	
<input type="checkbox"/>	Trichloroethylene (TCE) (79-01-6)	0.1% (77°F)	1.46	--	58 mm	8% 10.5%	25 ppm	1,000 ppm Ca	82 (d) 110 (r)	
<input type="checkbox"/>	Trichlorofluoromethane (75-69-4)	0.1% (75°F)	1.47	--	690 mm	Non-flam	C 1,000 ppm	2000 ppm	--	
<input type="checkbox"/>	1,1,2-Trichloro-1,2,2-trifluoroethane (76-13-1)	0.02%	1.56	--	285 mm	--	1,000 ppm	2,000 ppm	--	
<input type="checkbox"/>	1,2,4-Trimethylbenzene (95-63-6)	0.006%	0.88	112	1 mm	0.9% 6.4%	25 ppm	None determined	2.4 (d)	
<input type="checkbox"/>	Vinyl Chloride (75-01-4)	0.1% (77°F)	0.91	--	3.3 atm	3.6% 33%	1 ppm Skin	None Determined Ca	--	
<input type="checkbox"/>	Xylene (o, p, m, mix) (1330-20-7)	Slightly soluble	0.86-0.88	81-90	7-9 mm	0.9% 7%	100 ppm	900 ppm	20 (d) 40 (r)	
<b>Metals</b>										
<input type="checkbox"/>	Aluminum metal and oxide (as Al)	b	2.7	--	0 mm	e	10 mg/m <sup>3</sup> (respirable)	None determined	--	
<input type="checkbox"/>	Antimony (7440-36-0)	b	6.69	--	0 mm	e	0.5 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Arsenic (inorganic compounds, as As)	b	5.73	--	0 mm	e	0.010mg/m <sup>3</sup>	5 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Arsenic (organic compounds, as As)	Properties vary depending upon the specific organic arsenic compound.						0.2mg/m <sup>3</sup>	None determined	--

Health and Safety Plan  
*Environmental Management Services of Iowa – ECIA*  
*EPA Brownfield RLF Cleanup Project*

Check if Present	Material (CAS #)	Water Solubility <sup>a</sup>	Specific Gravity	Flash Point °F )	Vapor Pressure <sup>d</sup>	LEL UEL	OSHA - Cal/OSHA PEL- TWA <sup>f</sup>	IDLH Level <sup>h</sup>	Odor Threshold Geometric mean <sup>i</sup> (ppm)	
<input type="checkbox"/>	Barium chloride(as Ba) (10361-37-2)	38%	3.86	--	low	Non-flam	0.5 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Barium nitrate (as Ba) (10022-31-8)	9%	3.24	--	Low	e	0.5 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Beryllium and compounds (as Be)	b	1.85	--	0 mm	e	0.0002 mg/m <sup>3</sup>	4 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Cadmium dust (as Cd)	b	8.65	--	--	e	0.005 mg/m <sup>3</sup>	9 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Chromium (III) compounds (as Cr)	b	Properties vary depending upon the specific compound.					0.5 mg/m <sup>3</sup>	25 mg/m <sup>3</sup>	--
<input type="checkbox"/>	Cobalt metal dust and fume (as Co) (7440-48-4)	Insoluble	8.92	--	0 mm	e	0.02 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Copper dust and mist (as Cu)	b	8.94	--	0 mm	e	1 mg/m <sup>3</sup>	100 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Lead	Insoluble	11.34	--	0 mm	e	0.05 mg/m <sup>3</sup>	100 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Manganese, Fume and compounds (as Mn) (7439-96-5)	Insoluble	7.2	--	0 mm	Combustible	0.2 mg/m <sup>3</sup>	500 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Mercury compounds (as Hg) Except alkyl compound	b	13.6	--	0.0012 mm	e	0.025 mg/m <sup>3</sup> Skin	10 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Molybdenum (7439-98-7)	Insoluble	10.28	--	0 mm	Combustible	10 mg/m <sup>3</sup> 3 mg/m <sup>3</sup> (resp.)	5,000 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Nickel and other compounds (as Ni)	Insoluble	8.9	--	0 mm	e	1 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Selenium (7782-49-2)	Insoluble	4.28	--	0 mm	Combustible	0.2 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Silver, metal dust, and soluble compounds (as Ag)	b	10.49	--	0 mm	e	0.01 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Thallium (soluble compounds, as Ti)	b	Properties vary depending upon the specific compound.					0.1 mg/m <sup>3</sup> Skin	15 mg/m <sup>3</sup>	--
<input type="checkbox"/>	Vanadium pentoxide dust and Fume (1314-62-1)	0.8%	3.36	--	0 mm	e	0.05 mg/m <sup>3</sup> (Respirable)	35 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Zinc oxide (1314-13-2)	b	5.61	--	0 mm	e	5 mg/m <sup>3</sup>	500 mg/m <sup>3</sup>	--	
<b>Miscellaneous</b>										
<input type="checkbox"/>	Ammonia (7664-41-7)	34%	--	--	8.5 atm	15% 28%	25 ppm	300 ppm	17 (d)	
<input type="checkbox"/>	Asbestos (1332-21-4)	Insoluble	--	--	0 mm	Non-flam	0.1 fibers/cc	None determined	--	
<input type="checkbox"/>	Chromic Acid and chromates (1333-82-0)	63%	2.7	--	Very low	Non-flam	0.005 mg/m <sup>3</sup>	15 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Cyanide (as CN)	--	--	--	--	Non-flam	5 mg/m <sup>3</sup> Skin	--	--	
<input type="checkbox"/>	DDT (50-29-3)	Insoluble	0.99	162-171	0.0000002 mm	--	1 mg/m <sup>3</sup> Skin	500 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Diesel Fuel #2 (68476-34-6)	Insoluble	0.81-0.90	130	--	0.6-1.3 6-7.5	None established	None determined	--	
<input type="checkbox"/>	Fluorides, as F	--	--	--	--	--	2.5 mg/m <sup>3</sup>	None determined	--	

Health and Safety Plan  
**Environmental Management Services of Iowa – ECIA**  
**EPA Brownfield RLF Cleanup Project**

Check if Present	Material (CAS #)	Water Solubility <sup>a</sup>	Specific Gravity	Flash Point °F)	Vapor Pressure <sup>d</sup>	LEL UEL	OSHA - Cal/OSHA PEL- TWA <sup>f</sup>	IDLH Level <sup>h</sup>	Odor Threshold Geometric mean <sup>i</sup> (ppm)	
<input type="checkbox"/>	Gasoline (8006-61-9)	Insoluble	0.72-0.76	-45	38-300 mm	1.4% 7.6%	300 ppm	Ca None determined	--	
<input type="checkbox"/>	Kerosene (8008-20-6)	Insoluble	0.81	100-162	5 (100°F)	0.7% 5.0%	200 mg/m <sup>3g</sup> Skin	None determined	--	
<input type="checkbox"/>	Naphthalene (91-20-3)	0.03%	1.15	174	0.08 mm	0.9% 5.9%	10 ppm	250 ppm	0.038 (d)	
<input type="checkbox"/>	PCB (42% chlorine) (53469-21-9)	Insoluble	1.39	--	0.001 mm	Non-flam	1 mg/m <sup>3</sup> Skin	5 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	PCB (54% chlorine) (11097-69-1)	Insoluble	1.38	--	0.00006 mm	Non-flam	0.5 mg/m <sup>3</sup> Skin	5 mg/m <sup>3</sup> Ca	--	
<input type="checkbox"/>	Phosphorus (yellow) (7723-14-0)	0.0003%	1.82	--	0.03 mm	-- --	0.1 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	--	
<input type="checkbox"/>	Polycyclic Aromatic Hydrocarbons (PAH)	Properties vary depending upon the specific compound. Listed in NIOSH as Coal Tar Pitch Volatiles						0.2 mg/m <sup>3</sup>	80 mg/m <sup>3</sup> Ca	--

**SITE-SPECIFIC SUBSTANCES**  
**(Add hazardous property information on any substances that are of concern at the site but are not listed above.)**

**EXPLANATIONS AND FOOTNOTES:**

- <sup>a</sup> Water solubility is expressed in different terms in different references. Many references use the term "insoluble" for materials that will not readily mix with water, such as gasoline. However, most of these materials are water soluble at the part per million or part per billion level. Gasoline, for example, is insoluble in the gross sense, and will be found as a discrete layer on top of the ground water. But certain gasoline constituents, such as benzene, toluene, and xylene, will also be found in solution in the ground water at the part per million or part per billion levels.
- <sup>b</sup> Solubility of metals depends on the compound in which they are present.
- <sup>c</sup> Several chlorinated hydrocarbons exhibit no flash point in a conventional sense, but will burn in the presence of high energy ignition source or will form explosive mixtures at temperatures above 200°F.
- <sup>d</sup> Expressed as mm Hg under standard conditions.
- <sup>e</sup> Explosive concentrations of airborne dust can occur in confined areas.
- <sup>f</sup> OSHA and/or CAL/OSHA Time-weighted Average (TWA) Permissible Exposure Limits (PELs) except where noted in g. The substances designated by "Skin" in the PEL column may be absorbed into the bloodstream through the skin, the mucous membranes and/or the eye, and contribute to the overall exposure. "C" notation indicates the number given is a ceiling value.
- <sup>g</sup> TLV-TWA adopted by the American Conference of Governmental Industrial Hygienists (ACGIH). Currently, there is no OSHA and/or CAL/OSHA PEL.
- <sup>h</sup> The substances with a "Ca" notation in the IDLH column are considered to be potential occupational carcinogens by NIOSH.
- <sup>i</sup> Odor thresholds values extracted from "ODOR THRESHOLDS for Chemicals with established Occupational Health Standards", American Industrial Hygiene Association, 1997.
  - (d) Odor detection threshold: Lowest concentration at which a stimulus is being detected.
  - (r) Odor recognition threshold: Lowest concentration at which a definite odor character is detected.
- <sup>j</sup> Values extracted from the U.S. Environmental Protection Agency Technology Transfer Network, Air Toxics website. URL: [www.epa.gov/ttn/atw/](http://www.epa.gov/ttn/atw/), 2006
- <sup>k</sup> Value extracted from "HESIS Guide to Solvent Safety" California Department of Health Services, 2004. URL: [http://www.dhs.ca.gov/ohb/HESIS/solv\\_ch.htm](http://www.dhs.ca.gov/ohb/HESIS/solv_ch.htm)
- <sup>l</sup> Value extracted from "Chemical Summary For Methyl-Tert-Butyl Ether", U.S. Environmental Protection Agency, Office Of Pollution Prevention and Toxics, August 1994. URL: [http://www.epa.gov/chemfact/s\\_mtbe.txt](http://www.epa.gov/chemfact/s_mtbe.txt)

**Appendix B**  
**Control Mechanisms**

**The following control methods should be implemented for the listed hazards**

**B1 Chemical Hazards** – Environmental Management Services of Iowa personnel, contractors, subcontractors, and visitors shall wear appropriate personal protective equipment (PPE) while performing site activities. At a minimum, equipment shall include safety glasses, steel-toed boots, and hard hats (when overhead work being performed or when overhead hazards exist). Environmental Management Services of Iowa personnel shall familiarize themselves with the appropriate health and safety responses for exposure to known on-site chemicals prior to beginning work at the site. See Attachment A for chemical safety data. Consult with your local Site Safety & Health Officer (SSHO) for any personal air monitoring requirements.

**B2 Physical Hazards** – Environmental Management Services of Iowa personnel shall minimize the risk of slips, trips, and falls by keeping the work area clear of excess equipment and cleaning up wet surfaces as soon as possible. In addition, the floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Employees should avoid walking through/on wet and/or cluttered surfaces and be conscious of the fact the wet surfaces could be slippery and could cause injury. Spilled materials should be cleaned up immediately.

Sufficient illumination should be provided in all areas at all times. Employees should notify the responsible person (e.g., Principal-in-Charge, Project Manager, and/or Health & Safety Coordinator) of conditions where there is an absence of sufficient natural and/or permanent artificial light.

All employees are responsible for maintaining the work area(s) and in a clean and orderly manner, and for notifying the responsible person (e.g., Principal-in-Charge, Project Manager and/or Health & Safety Coordinator) of conditions beyond their control.

**B3 Mechanical Hazards** – Environmental Management Services of Iowa personnel shall not attempt to operate equipment they are not familiar with and/or are not equipped with protection devices (e.g., guards). Personnel shall familiarize themselves with the equipment being utilized on site and shall at a minimum, know how to stop or turn off the equipment.

**B4 Traffic/Heavy Equipment Safety** - Environmental Management Services of Iowa personnel should, under no circumstances, operate or ride on heavy equipment which is being used by a subcontractor. Site personnel will maintain a safe distance of at least 20 feet (6.5 meters) or more, depending on circumstances and directives, from all heavy equipment in operation. If activities warrant closer proximities to operating equipment, personnel will don brightly colored vests and a second person will stand watch to keep him/her out of the path of equipment while performing the required activity. Eye contact with the equipment operator will be maintained.

**B5 Electrical Hazards** – Electricity may pose a particular hazard to site workers due to the use of portable electrical equipment. If wiring or other electrical work is needed, a qualified electrician must perform it.



Properly ground all electrical equipment. Avoid standing in water when operating electrical equipment. Ground fault outlets or adapters shall be used for any electrical equipment. Apparatus, tools, equipment, and machinery will not be repaired while in operation. Lockout/Tagout (LOTO) procedures will be implemented when necessary. If equipment must be connected by splicing wires, electrical work must be performed by a licensed and competent electrician.

**B6 Fire and Explosion Hazards** – The presence of petroleum and solvent contaminated material presents a potential fire hazard. Smoking and use of open flame will be prohibited in the Lab. The use of non-sparking tools and equipment will be implemented if conditions warrant. Where the potential of fire exists, Environmental Management Services of Iowa will provide portable fire extinguishers. Where applicable, all fire extinguishers shall be mounted no higher and no lower than 4 feet (1.22 m) from the floor and/or shall be readily accessible for use, where applicable. All fire extinguishers shall be maintained as follows:

- Fully charged and in operable condition;
- Clean and free of defects; and
- Readily accessible at all times

**B7 Acoustical Hazards** – Hearing protection will be worn by all personnel operating or working within the vicinity of equipment when noise is sufficient to interfere with general conversation at a normal speaking volume; when noise levels exceed 85dBA; and/or when manufacturers' requirements indicate that it's usage is mandatory. Personal hearing protectors, such as earplugs or earmuffs, may be used to reduce the amount of noise exposure while the above control measures are being evaluated or if such controls fail to reduce the exposure levels to below the PELs.

**B8 Ventilation/Oxygen Deficiency Hazards** – Environmental Management Services of Iowa personnel shall monitor the work area for oxygen deficiency hazards using monitoring devices that have been appropriately calibrated and are recommended for this specific use, as applicable. If direct air monitoring readings suggest an oxygen deficiency and/or the build-up of harmful substances, leave the area and contact your Project Manager. Implementation of corrective actions may include but not be limited to increasing work zone ventilation or evaluating alternatives (e.g., removing equipment that is generating combustion exhaust or venting the exhaust to the exterior of the building). However, work will not continue until the ventilation/oxygen deficiency hazard has been properly addressed, implemented, and verified.

**B9 Heat Stress** – Heat stress can be a significant hazard, especially for workers wearing protective clothing. Depending on the ambient conditions and the work being performed, heat stress can occur very rapidly, within as little as 15 minutes. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and in the prevention of heat stress incidents.

Workers will be encouraged to immediately report any heat-related problems that they experience or observe in fellow workers. Any worker exhibiting signs of heat stress and exhaustion should

be made to rest in a cool location and drink plenty of water. Emergency help by a medical professional is required immediately for anyone exhibiting symptoms of heat stroke, such as red, dry skin, confusion, delirium, or unconsciousness. Heat stroke is a life-threatening condition that must be treated by competent medical authority.

Heat Stress Prevention

Whenever possible or within the control of Environmental Management Services of Iowa, engineering controls should be utilized to protect workers from heat related hazards. For example, isolation from the heat source, ventilation such as open windows, fans, or other methods of creating air flow, and heat shielding such as awnings or umbrellas. Appropriate work practices can also lessen the chances of heat related hazards. Some of these include:

- a. Water intake should be about equal to the amount of sweat produced (i.e., drinking 5-7 ounces of water every 15-20 minutes). Electrolyte fluids may also be necessary.
- b. Whenever possible, gradual exposure to heat is preferred to allow the body’s internal temperature to acclimate to the working conditions.
- c. Whenever possible, adjust the work schedule to reduce risk of heat stress. For example, postpone nonessential or heavier work to the cooler part of the day and perform work in the shade if portable.
- d. Rotate personnel to reduce the amount of time spent working in direct sun and heat.
- e. Increase the number and/or duration of rest breaks, and whenever possible, rest break areas should be in a cool area and as close to the work area as is feasible.

Wear appropriate PPE when necessary, such as thermally conditioned clothing, self-contained air conditioning in a backpack, and plastic jackets/vests with pockets that can be filled with dry ice or ice. However, based on the type of work being done, where work is being performed, or other required PPE, these options may be prohibited or make the use of this PPE impossible or impractical.

Allocation of Work in a Work/Rest Cycle	Acclimatized				Action (Unacclimatized)				Limit
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy	
75-100%	31.0 (87.8F)	28.0 (82.4F)	--	--	28.0 (82.4F)	25.0 (77F)	--	--	
50-75%	31.0 (87.8F)	29.0 (84.2F)	27.5 (81.5)	--	28.5 (83.3F)	26.0 (78.8F)	24.0 (75.2F)	--	
25-50%	32.0 (89.6F)	30.0 (86F)	29.0 (84.2F)	28.0 (82.4F)	29.5 (85.1F)	27.0 (80.6F)	25.5 (77.9)	24.5 (76.1F)	
0-25%	32.5 (90.5F)	31.5 (88.7F)	30.5 (86.9F)	30.0 (86F)	30.0 (86F)	29.0 (84.2F)	28.0 (82.4F)	27.0 (80.6F)	

**B10 Cold Stress** - The four Environmental Management Services of Iowa environmental conditions that cause cold-related stress are low temperatures, high/cool winds (wind chill),

dampness, and cold water. One or any combination of these factors can cause cold-related hazards. Cold stress, including frostbite and hypothermia, can result in severe health effects.

A dangerous situation of rapid heat loss may arise for any individual exposed to high winds and cold temperatures. Major risk factors for cold-related stresses include:

- Wearing inadequate or wet clothing increases the effects of cold on the body.
- Taking certain drugs or medications such as alcohol, nicotine, caffeine, and medication that inhibits the body's response to the cold or impairs judgment.
- Having a cold or certain diseases, such as diabetes, heart, vascular, and thyroid problems, may make a person more susceptible to the winter elements.
- Being male increases a person's risk to cold-related stresses. Men experience far greater death rates due to cold exposure than women, perhaps due to inherent risk-taking activities, body-fat composition, or other physiological differences.
- Becoming exhausted or immobilized, especially due to injury or entrapment, may speed up the effects of cold weather.
- Aging -- the elderly are more vulnerable to the effects of harsh winter weather.

**TABLE 2. Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature (under calm conditions)\***

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security			INCREASING DANGER Danger from freezing of exposed flesh within one minute.				GREAT DANGER Flesh may freeze within 30 seconds.				
Trenchfoot and immersion foot may occur at any point on this chart.												

\*Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

■ Equivalent chill temperature requiring dry clothing to maintain core body temperature above 36°C (96.8°F) per cold stress TLV

### Cold Stress Prevention

Engineering controls should be utilized whenever possible to protect workers from cold related hazards. For example, on-site heat sources, heated shelters, work areas shielded from drafty or windy conditions, and the use of thermal insulating material on equipment handles. Effects arising from cold exposure will be minimized by the following control measures:

- Personnel will be trained to recognize cold stress symptoms.

- Field activities will be curtailed or halted if the equivalent chill temperature is below 20 F.
- As much as possible, work that exposes personnel to the cold will be done during the warmest hours of the day.
- Inactivity in cold conditions will be kept to a minimum.
- Frequent short breaks in warm, dry shelters will be taken.
- Vehicles will be equipped with supplies in case the vehicle becomes inoperable (e.g., blanket, dry clothing, water, food, a shovel, etc).

The following PPE will be provided during work in cold environments:

- Workers will be provided with insulated dry clothing when the equivalent chill temperature is less the 30 F.
- Feet, hands, the face, and the head should be protected (40% of the body's heat can be lost when the head is exposed).
- Foot and hand wear may also need to be waterproof.
- Clothing should be layered so that adjustments can be made to changing environmental temperatures and conditions. For example, an outer layer to break the wind, a middle layer that will absorb sweat and retain insulation when wet, and an inner layer that allows ventilation.

**B11 Insects, Snakes and Spiders** - Care will be taken by all site workers to avoid stinging or biting insects such as ticks, spiders, bees, wasps, hornets, and yellow jackets. Workers allergic to any particular insect sting or bite should seek medical attention if stung or bitten and may need to carry emergency medicine prescribed by their doctor.

Care should always be taken to avoid these insects and increased vigilance is necessary during high infestation seasons, when opening protective casings of monitoring wells, and when walking through areas of heavy vegetation or areas known to be infested.

To minimize the chance of bites/stings:

- Wear appropriate PPE such as light-colored clothing so you can see insects, long pants tucked into boots, long sleeves when possible, a hat, and gloves if you are cutting brush or need to handle or move vegetation.
- Check your body and clothing for insects, shower after work and wash/dry clothes at as high temperature as possible.
- Don't swat at insects and don't eat in areas where there are insects.
- Avoid sweet smelling personal hygiene products and, unless contraindicated by the work being performed (e.g., sampling, data collection), wear EPA approved repellants such as those containing DEET.



*Black Widow Spider*



*Brown Recluse Spider*

Spider bites generally cause only localized reactions such as swelling, pain, and redness. However, bites from a Black Widow or Brown Recluse, or if you are allergic to spiders, can cause symptoms that are more serious.

***First Aid for spider bites:***

- Clean the bite area with soap and water and place a cold pack over the bite area to reduce swelling.
- Monitor for allergic reactions. If victim has more than minor pain, or if nausea, vomiting, difficulty breathing, or swallowing occurs, medical attention should be sought immediately.



*Tick*



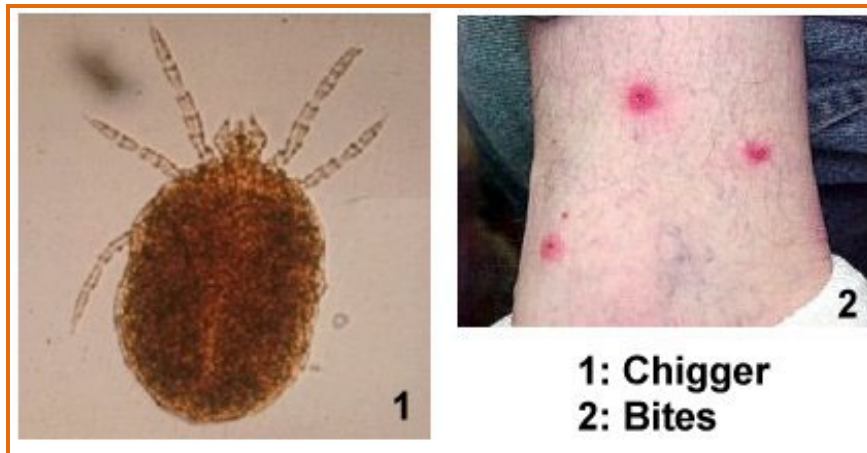
*Removing a tick*

Ticks are common, especially in the warmer weather months and may carry diseases such as Rocky Mountain Spotted Fever and Lyme disease.

***First Aid for tick bites:***

- Use a fine tipped tweezers, grasp tick firmly as close to skin as possible and pull the body away from skin. Avoid crushing the body and don't twist.
- If parts of the tick remain in the skin, don't be alarmed as the mouth will dislodge as skin sloughs off.
- Wash area with soap and water and apply antiseptic or antibiotic ointment to prevent infection.
- If unexplained symptoms develop such as severe headaches, fever, or rash within 10 days of the bite, seek medical attention.

- If possible, contain tick in an airtight container for identification purposes in the event of a serious reaction.



Chiggers are tiny, s-legged wingless organisms that grow up to become a type of mite. They are found in tall grass and weeds and their bites cause severe itching.

***First Aid for chiggers:***

- Reduce discomfort and prevent infection
- The affected area should be kept clean by washing with soap and water
- A topical hydrocortisone cream, antihistamine, or local anesthetic may be of value in reducing the itching
- The wounds should not be scratched, if possible
- If signs of infection occur, consult your physician



*Wasp*



*Bee*

Bees and wasps belong to the phylum Arthropod family, and they are crucially important to the pollination of plants, specifically flowers, fruits, and vegetables. A sting from a bee or wasp will cause itching, irritation, redness and/or swelling at the sting site.

***First Aid for bee stings:***

- Remove the stinger as quickly as possible - venom continues to enter the skin from the stinger for 45 to 60 seconds following a sting – using a flat dull object, like a credit card. Slid the flat object in the opposite direction of the stinger to remove it from the skin
- Wash the wound using soap and water

- Apply ice for swelling and pain
- A topical hydrocortisone cream, antihistamine, or local anesthetic may be of value in reducing itching
- If the sting occurs on the neck or mouth, seek medical attention immediately, swelling in these areas may cause suffocation

A small percentage of people are allergic to stings and a sting can be fatal, caused by a disruption to breathing and circulatory systems called anaphylactic shock. If the sting is followed by severe symptoms, seek medical attention immediately. Allergic people should never be alone for outdoor activities since help may be needed for prompt emergency treatment. Allergic people should have an identification bracelet as well as carry something like an “EpiPen” for immediate treatment for anaphylactic shock.



Fire ants are a variety of stinging ants with over 280 species worldwide. Typically, a colony produces large mounds in open areas, and feeds mostly on young plants, seeds, and insects. They nest in the soil, often near moist areas such as riverbanks and pond edges. Unlike other ants which bite and then spray acid on the wound, fire ants bite only to get a grip and then sting, injecting toxic alkaloid venom. This results in a painful stinging sensation, similar to what a fire burn feels like.

***First Aid for fire ant bites:***

- Move rapidly away from the nest
- Quickly remove or kill ants on skin and clothing to prevent further stings
- Wash the area gently with soap and water to rid the skin of any venom
- Place cool cloth or ice cloth on sites for 15 minutes, and to relieve pain, dab the area with calamine lotion, a topical (cortisone) or oral antihistamine (e.g. benadryl) to help with swelling
- Do not scratch the blister because this can lead to infection
- Allergic response is rare, but symptoms are difficulty breathing, light headedness, and weakness. Immediate medical attention is required

Snakes serve as an important role as predators in the ecosystem and help maintain populations of rodents and other prey.

***First Aid for venomous snake bites:***

- Wash and immobilize the injured area, keeping it lower than the heart if possible
- Seek medical attention immediately
- **DO NOT** apply ice, cut the wound, apply a tourniquet, or suck the bite
- Remain calm and try not to move the bitten body part
- Wash the bite with soap and water
- Remove jewelry or other items that may be affected by rapid swelling of affected body parts
- Try to identify the type of snake: note color, size, patterns, and markings
- The bite will be painful and have two distinct puncture wounds
- If venom is injected there will be burning and swelling
- **ONLY FOR CORAL SNAKE BITES:** apply a mild wrapping on the wound



*Water Moccasin (aka cotton mouth)*



*Rattlesnake*



*Coral Snake*



*Copperhead*

**B12 Poisonous Plants** – Plants poison on contact, through ingestion, or by absorption or inhalation. They cause painful skin irritations upon contact and can cause internal poisoning when eaten.



*Poison Ivy*







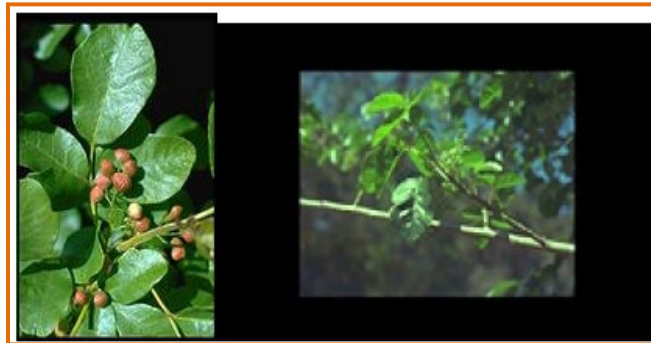
*Poisonous Sumac*



*Giant Hogweed*



Poison Pacific Oaks



### ***First Aid for poisonous plants:***

- Wash exposed areas with cold running water as soon as you can
- When possible, wash your clothing
- Relieve itching by taking cool showers and applying topical anti-itch medications or hydrocortisone
- The rash is often arranged in streaks or lines where you brushed against the plant
- In a few days, the blisters become crusted and take 10 days or longer to heal
- If the reaction is severe or worsens, seek medical attention.

**B13 Personal Safety** - If it is deemed that a work site is in an area where an employee's personal safety may be at risk from potential criminal acts, wild animals, etc. the risks will be evaluated and implementation of preventative measures will be taken to minimize the risk. Informational resources such as the client, local law enforcement officials, Park or Wildlife Service, and Animal Control could be utilized to assess the risk and to ensure the safest possible work environment. For example, local law enforcement can be made present or make frequent drive-bys while work is being done, outside security can be hired, and work can occur only during certain times of the day or work may not proceed at all. Some general guidelines are provided here, but each situation is different and actions must be taken based on the specifics of each.

In areas of risk, employees will communicate via cell phones or two-way radios and will check-in at predetermined times throughout each workday. If employees do not call in to the Project

Manager or designated representative, the team will be contacted, and if unsuccessful, local law enforcement will be notified.

If you see wild animals while driving, stay in your vehicle. Never get out for a photo or a closer look. Keep windows up and don't try to keep the animal from crossing a road with your vehicle. If you see a wild animal while on foot, never approach the animal. If the animal has not seen you, go back the way you came. Do NOT turn your back and run which could evoke their natural predator instinct. Instead, keep facing the animal and back away at a steady pace. Let it know you are human by talking in a low voice and waving your hands slowly. If you are near a car or building, get inside. In addition, in areas of higher risk (i.e., contacted officials have indicated that wild animals are a nuisance), employees may want to consider carrying "pepper spray".

If, while on the project site, and despite any precautions set forth, if an employee feels that their personal safety is at risk, they shall cease work, leave the work area and immediately report their concerns so that appropriate steps can be taken.

**B14 Working Alone and Working in Isolated Areas** - Site and Operations employees will assess the risk of working alone as outlined in Section 4 in this HASP. And whenever possible, will not work alone in isolated areas. If the isolated area involves hiking/walking into areas that are unmarked or if there is potential to become directionally disoriented (e.g., no trails, unmarked trails, forested or highly vegetated areas), employees will be trained on the use of a compass and trail/topography maps and if necessary, will take wilderness safety training. The employee will work with the Park/Wildlife service on what emergency planning if necessary (e.g., unexpected weather, animal attack, and search/rescue).

Communicating through cell phones or two-way radios will be utilized whenever possible. Employees will check-in at predetermined times throughout each workday and as the risk rating increases, employees will check-in more frequently. If employees do not call in to the Project Manager or designated representative, the team will attempt to be contacted. If contacting the employee is unsuccessful, the appropriate authorities will be notified. In addition, and especially if communication is not possible during the day, the planned start and estimated finish times for the day will be communicated, and employees will check in at the beginning and end of the workday.

If employees will be moving from isolated area to isolated area, there will be established beginning and ending locations, planned start and estimated finish times, and planned routes that will be followed throughout the day. Employees will not deviate from this schedule without first contacting the appropriate personnel. It may also be necessary to notify the client, law enforcement, or Park/Wildlife officials of these schedules.

Local authorities should be contacted about any hunting season that may be in session, and if it is possible that hunters may be present in the area in which Environmental Management Services of Iowa personnel will be working. If so, employees will wear brightly colored hardhats/hats and reflective vests, will not work before dusk, and work will end 30 minutes before dusk.

If this is not possible to complete work during day light hours, employees will wear appropriate reflective apparel and have appropriate lighting, such as portable lighting, flashlights, or headlamps as appropriate for the activity being conducted. Personal security will be assessed and measures taken as discussed above, if appropriate.

### **B15 Severe Weather**

Severe weather conditions include high winds, electrical storms, and heavy rain. At a minimum, all work outdoors will cease during these events. When lightning is spotted, site personnel should use the following steps to avoid injury:

- Workers should note the flash-boom ratio (i.e., count the seconds after the lightning was seen until the thunder was heard).
- By counting the seconds between seeing lightning and hearing thunder and dividing by 5, you can estimate your distance from the storm (in miles). If the storm is 6 miles (9.6 kilometers) away or less (30 seconds between when lightning was seen and thunder was heard) workers must stop work and take shelter.
- If the storm is more than 6 miles (9.6 kilometers) away (greater than 30 seconds between lightning and thunder), the site supervisor should monitor the storm and be prepared to cease work if the storm approaches an unsafe distance. Since storms can travel at varying speeds and the amount of time it takes to cease and secure operations will also vary, so prudent judgment should be exercised when storms are in the vicinity and/or developing (e.g., darkening skies, increasing wind speeds, etc).
- Workers should not stay in exposed areas (outdoors on the ground, on a roof, in an aerial lift, on a steel truss, on an ungrounded steel structure, in a golf cart, un-sided building, etc.) after lightning has been witnessed. All personnel must move to a safe location.
- Workers should wait 30 minutes from the last sight of lightning or sound of thunder before returning to work.
- Those required to travel from one building to another during the 30-minute wait time should do so only by enclosed vehicle.
- Once the 30-minute wait time period has elapsed and no additional lightning or thunder has been seen or heard, individuals may resume normal work.

**B16 Aboveground and Underground Utilities** - Various forms of underground and aboveground utility lines or pipes (carrying water, wastewater, gas, and or electricity) may be encountered during work activities. Every effort shall be made to locate and mark underground utilities prior to the start of intrusive work. At a minimum, Environmental Management Services of Iowa will conduct a historical site review to develop a plot plan with the most up to date utility information, contact the appropriate One Call service (where available), contract a private utility locating service (where available), and clear the critical zone around any intrusive location to 5 feet (1.3 m) in every direction.

Work involving machinery with high extensions (backhoes, etc.) will remain **at least** 10 feet (3.3 meters) from overhead power lines. As line voltage increases, your safe working distance will also increase. If overhead lines are present, call the utility company and find out what voltage is

on the lines so the safe working distance can be calculated, or stay at least 28 feet (9m) from cables supported on wooden poles, and 50 feet (15m) from cables supported on metal poles.

Should any operations cause equipment to come into contact with utility lines, the appropriate authority will be notified immediately, and an Incident Report will be completed. Work will be suspended until the appropriate actions for the particular situation can be taken.

**B17 Material Handling (Ergonomics)** - Proper lifting techniques such as keeping the back straight and legs bent, shall be utilized when lifting equipment. If the equipment cannot be lifted in this manner, it is too heavy to lift alone. Call other personnel or use a mechanical device for lifting.

**B18 Power Tools** - Power tools can be hazardous when improperly used since these types of tools use an energy source: Electric, liquid fuel, hydraulic, pneumatic, and powder-actuated. The following precautions will be taken by employees to prevent injury:

- Power tools will always be operated within their design limitations.
- Eye protection, gloves and safety footwear are recommended during operation.
- Store tools in an appropriate dry location when not in use.
- Work only in well illuminated locations.
- Tools will not be carried by the cord or hose.
- Cords or hoses will not be yanked to disconnect it from the receptacle.
- Cords and hoses will be kept away from heat, oils, and sharp edges or any other source that could result in damage.
- Tools will be disconnected when not in use, before servicing, and when changing accessories such as blades, bits, and cutters.
- Observers will be kept at a safe distance at all times from the work area.
- Tools will be maintained in a clean manner, and properly maintained in accordance with the manufacturer's guidelines.
- Ensure that proper shoes are worn and that the work area is kept clean to maintain proper footing and good balance.
- Ensure that proper apparel is worn. Loose clothing, ties, or jewelry can become caught in moving parts.
- Tools that are damaged will be removed from service immediately and tagged "Do Not Use".

**B19 Vehicle Use** – Work areas and site conditions must be considered when designating and selecting a vehicle for use. The vehicle shall be maintained in safe working order as required by the manufacturer. This would include a routine preventive maintenance schedule for servicing and checking of safety-related equipment. Special consideration should be taken when weather conditions reduce the safety and visibility while driving. Appropriate measures should be taken while driving during inclement weather including snow, icy, and/or wet conditions; high winds; hail, heavy rains; debris or other impairments to safe driving caused by natural weather.

**B20 Seasonal Hunting Hazards** – During recreational hunting seasons, field personnel will wear appropriate clothing, such as fluorescent orange Hi-Vis vests, so as to be visible to hunters and not blend in with the landscape. Field personnel should also use whistles, air horns and/or other means to make their presence known to hunters and wildlife alike. The schedule of the hunting season, if applicable, will be included as an addendum to this HASP in order to inform personnel of the type of game (e.g., deer, pheasant, duck, etc) that is being hunted and the type of weapon being used (e.g., bow & arrow, shot gun, single shot rifle, etc.). Be aware that even if “No Trespassing” and/or “No Hunting Allowed” signs are posted, trespassers and/or hunting may still be on site. At no point should field personnel or contractors confront trespassers.

**Appendix C**  
**First Aid Guidance**

### **D1 Purpose**

The purpose of this Appendix is to establish the minimum first aid supplies, equipment and actions to properly respond to injuries.

### **D2 Scope**

This program is applicable to all individuals while engaged in work at the project site.

### **D3 Responsibilities**

- It is the responsibility of the Health & Safety Coordinator to ensure that first aid kits are provided and maintained.
- All employees are responsible for using first aid materials in a safe and responsible manner.
- The Health & Safety Director is responsible for corresponding with the Red Cross or an equivalent to keep employee training levels current.

### **D4 Planning**

The Designated Site Supervisor will:

- Ensure that a minimum of one (1) employee, with a valid certificate, shall be present to render first aid at all times work is being performed if medical assistance is not available within 3-4 minutes.
- Ensure that provisions shall have been made prior to commencement of a project for prompt medical attention, including transportation, in case of serious injury.
- Ensure adequate first aid supplies and equipment are easily accessible when required.
- Ensure that in areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances to be used shall be conspicuously posted.

### **D5 Medical Response**

All minor first aid is to be self-rendered. Because of the risks presented by certain bloodborne pathogens, no one is allowed to tend the minor injuries of another.

First aid providers are readily available to assist injured workers. In the absence of an infirmary, clinic, or hospital in near proximity to the workplace, a person or persons shall be available and adequately trained to render first aid.

First aid providers are certified. A person who has a valid certificate in first-aid training from the American Red Cross or equivalent that can be verified by documentary evidence, shall be available at the worksite to render first aid.

Employees authorized to render first aid will always observe universal precautions. (Universal Precautions means that the aid giver treats all bodily fluids as if they were contaminated).

If 911 is not available refer to the list of posted phone numbers for prearranged medical response providers. All Impact7G, Inc. authorized first responders shall have a cell phone as a means of

communications; otherwise handheld radios or telephones shall be used as a means of communication.

### **D6 Supplies and Equipment**

First aid supplies are readily available. First aid supplies shall be easily accessible when required.

All first aid kits contain appropriate items determined to be adequate for the environment in which they are used and if on a construction site are stored in a weatherproof container with individual contents sealed from the manufacturer for each type of item.

First aid kits are inspected to ensure they are adequately stocked. The Health & Safety Coordinator should ensure the availability of adequate first aid supplies, and periodically reassess the demand for supplies and adjust their inventories. For longer duration projects, first aid kits shall be checked before being sent out to each job and at least weekly.

Emergency eyewashing equipment is readily available. Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities shall be provided within the work area.

### **D7 Transportation of Injured Employees**

Services are available to transport injured workers to a health care facility. Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service shall be provided.

Examples of serious injuries that result in the injured being transported to a medical provider are those resulting in severe blood loss, possible permanent disfigurement, head trauma, spinal injuries, internal injuries and loss of consciousness. Keep in mind that the needs and wellbeing of the injured are the first priority.

Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service shall be provided.

Choices to consider include: private automobile, company vehicle, helicopter, EMS vehicles including medi-vac helicopters, or any other transportation that can provide safe transportation to the hospital or doctor's office in order to provide medical attention to the injured in the quickest manner without any additional complications or injuries to the injured employee.

Transportation needs must be preplanned and coordinated with the transportation provider prior to an incident requiring such service.

### **D8 Training**

Volunteers or selected employees are trained by the American Red Cross or equivalent in CPR and first aid. Each of these trained and certified employees are equipped with protective gloves and other required supplies.



**Appendix D**  
**Emergency Information**

## Emergency Contact Information

**Site Name:** 211 & 213 East Broadway Street

**Specific Location:** 211 and 213 East Broadway Street, Stanwood, Iowa 52337

**Table 1. Emergency Response Telephone Roster**

Contact	Name	Office phone #	Mobile phone #
<b>Local Fire Department</b>	Stanwood Fire Department	563.942.3340	
<b>Local Hospital</b>	Jones Regional Medical Center	319.462.6131	
<b>Local Police</b>	Cedar County Sheriff's Office	563.886.2121	
<b>Environmental Management Services of Iowa Principal</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Project Manager</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Corporate Health &amp; Safety Director</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Designated Site Safety &amp; Health Officer (SSHO)</b>	Mark Hogan	563.583.0808	563.590.5467
<b>Environmental Management Services of Iowa Health &amp; Safety Coordinator</b>	Jeff Stahr	563.583.0808	563.599.3597
<b>Client Contact</b>	Dawn Danielson	563.690.5772	
<b>Contractor:</b>			
<b>(Other):</b>			

<b>Poison Control</b>		800-222-1222	
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**Potential Chemicals of Concern:**

*Potential contaminants that may be encountered during site operations include asbestos.  
Potential routes of exposure include inhalation of particulates.*

## **Route to Hospital:**

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**Hospital name:** *Jones Regional Medical Center*

**Hospital Address:** *1795 IA-64 E, Anamosa, Iowa 52205*

**Hospital Phone Number:** *1 + 319.462.6131*

**Work Site Name:** *211 & 213 East Broadway Street*

**Work Site Address:** *211 and 213 East Broadway Street, Stanwood, Iowa 52337*

### Description of Route to Hospital

*Describe Route to Hospital with Both Turn by Turn and Google maps:*

- *Head West on E Broadway Street toward N Elm Street (0.1 mi)*
- *Turning Right onto IA\_38 N/N Ash Street (12.5 mi)*
- *Turn left onto IA-64 W (7.5 mi)*
- *Turn Left*

*End: 1795 IA-64 E, Anamosa, Iowa 52205 (Destination will be straight ahead)*

Map Diagram 1: Route to Hospital From Drill Site (Enter Map)

