



## **HEALTH AND SAFETY PLAN**

For Ground Penetrating Radar At  
675 Cesar E. Chaves Avenue  
Pontiac, MI

9/27/2011

**Prepared by**  
Ground Penetrating Radar Technology (GPRT)  
2890 Carpenter Road  
Suite 1000  
Ann Arbor, MI 48108  
1-734-780-6849



## 1.0 QUICK REFERENCE - EMERGENCY INFORMATION

Report all emergencies and incidents to the Project Manager, Mike Chabot. **Do not endanger your own life. Assess the situation before taking action.**

### 1.1 Contaminants of Concern

This vacant property reportedly contained former UST's. The UST's contained waste oil and were installed in the early fifties and removed in 1989. Hayley and Aldrich is requiring GPRT to determine the location of any UST's on the property.

### 1.2 Levels of Personal Protection

The level of personal protection equipment (PPE) anticipated during this project is a modified Level D. If site conditions warrant, Level D PPE can be used. Based on the field air monitoring results, it may be necessary to upgrade to Level C. The requirements of the proposed levels are presented below.

	Modified	Level D	Level D	Level C
1. Coveralls or similar work clothes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2. Hard sole work shoe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. Chemical resistant boots or shoes with steel toe and shank	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. Hard hat	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5. Safety glasses or chemical splash goggles	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6. Tyvek suit (uncoated)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7. Gloves				
a. Leather or cloth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Chemically resistant outer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c. Inner (latex)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Inner (blue nitrile) N-dex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8. Chemically resistant outer boots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Hearing protection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10. Respirator				
Half-face	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
North Respirator cartridges				
Organic vapors } OV + P100 must be used together	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P100 } or the Defender cartridge is req'd	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Defender Cartridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

*Note: If using 1/2 mask respirator, employee must wear either the Defender cartridge or if that is not available, the organic vapor cartridge with P100 (piggy back cartridges).*



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### 1.3 Emergency Phone Numbers

Ambulance	911
Fire	911
Police	911
Hospital	(248)-857-7200 Doctors Hospital Of Michigan 461 West Huron Pontiac, MI

### 1.4 Ground Penetrating Radar Technology Information

Project Manager:	Mike Cabot	Phone No.:	Cell – 734-780-6849
Site Address:	2890 Carpenter Road, Ste 1000 Ann Arbor, Michigan 48108		

Client Contact:	Derek Kaiding Haley & Aldrich	Phone No.:	Office - 313-348-5630
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## 3.0 PREFACE

This Health and Safety Plan (“Plan”) was written to ensure the safety of Ground Penetrating Radar Technology project personnel and the community surrounding the site while work is performed at the site. This Plan contains specific health and safety procedures required by the Occupational Safety and Health Administration (OSHA) under the regulation titled “*Hazardous Waste Operations and Emergency Response*,” in 29 CFR 1926.65.

This Plan applies to all project personnel, including GPRT staff, contractors and subcontractors hired to conduct work under GPRT. ***All project personnel must read this Plan then sign the Compliance Agreement and Acknowledgement below to acknowledge that he or she understands and agrees to abide by the provisions of this Plan.*** Failure to sign the Compliance Agreement and Acknowledgment or to comply with the Plan’s provisions will result in the person being denied authorized access to the site.

This Health and Safety Plan will be modified or amended by the Project Manager in consultation with the Plan Author if site circumstances or conditions change beyond the scope of this plan.

This document cannot be interpreted as an exemption from all other OSHA regulations. All work must be conducted in a manner that complies with all OSHA regulations, including:

1926.20 – 1926.35:	General Safety and Health Provisions
1926.150 – 1926.155:	Fire Protection and Prevention
1926.200 – 1926.203:	Signs, Signals, and Barricades
1926.250 – 1926.252:	Material Handling, Storage, Use, and Disposal
1926.300 – 1926.354:	Tools, Hand and Power
1926.600 – 1926.606:	Motor Vehicles and Mechanized Equipment



1926.650 – 1926.652: Excavations  
1926.950 – 1926.960: Power Transmission and Distribution  
1926.1000 – 1926.1003: Rollover Protective Structures and Overhead Protection

OSHA 29 CFR 1900, 1910, and 1926, and other specifications, laws, regulations, and consensus standards incorporated by reference.

State Public Health and Safety Laws, rules, regulations, specifications for conducting work within State or incorporated by reference.

#### **4.0 COMPLIANCE AGREEMENT AND ACKNOWLEDGEMENT**

GPRT personnel have the authority to stop field activities at this site if any activity is not performed in accordance with the requirements of this Health and Safety Plan. By signature below,

1. I have reviewed this Health and Safety Plan, including the Appendices, and fully understand my responsibilities.
2. I am aware that basic health and safety information is available in this Health and Safety Plan.
3. I agree to abide by the provisions of this Health and Safety Plan.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name

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Signature

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Name

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Signature

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Company

\_\_\_\_\_  
Date



## 5.0 INTRODUCTION

Client has retained GPRT to provide specific ground penetrating radar services at 675 Cesar E Chaves Avenue, Pontiac, MI.

### 5.1 Site Information -

The subject property is a 32,468 square foot light industrial building.

### 5.2 Personnel Responsibilities

The Project Manager or his GPRT designee will oversee and supervise all work outlined in proposal 11-01-2890. Responsibilities include:

- Implementing and enforcing the Health and Safety Plan.
- Ensuring personnel have met training requirements of the Health and Safety Plan.
- Maintaining project records.
- Amending the Health and Safety Plan as site circumstances warrant.

GPRT Field Personnel shall:

- Comply with all requirements of this Health and Safety Plan.
- Notify the Project Manager of any incident, injury, illness, or pre-existing life-threatening allergy.
- Report unsafe conditions that may arise to the Project Manager.
- Comply with all OSHA regulations.

### 5.3 Description of Site Work

The following tasks will be performed:

- Perform ground-penetrating radar (GPR) and electromagnetic induction (EMI) investigations at a commercial building for purposes of locating former Underground Storage Tanks (USTs) which may have existed anywhere beneath the concrete floor of the building.
- Provide all labor, materials, and equipment to complete the work.
- GPR and EMI investigations to be performed during same one-time Site visit.



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## 6.0 HAZARD INFORMATION

### 6.2 Physical Hazards

The following physical hazards may be present:

- Heat exposure due to strenuous work in warm to hot and humid weather conditions.
- Cold exposure due to work in cool and windy weather conditions.
- Traffic hazards due to location of site tasks and presence of other vehicles.
- Slip, trip and fall hazards due to the terrain, equipment on the ground, mud, lack of planning, inattention to tasks, and the environment.
- Strain and sprain hazards from inappropriate lifting, twisting, bending, and reaching.
- Mechanical hazards due to equipment and vehicle operation.
- Skin damage due to unprotected skin contact with contaminated media.
- Fire and explosion hazards due to uncontrolled flammable solvent use.
- Noise exposure associated with the operation of equipment and vehicles.

## 7.0 GENERAL SAFETY PROCEDURES AND REQUIREMENTS

### 7.1 Excavation Hazards

When work involves Excavation, Trenching, and Drilling, the contractor shall provide a Competent Person on-site.

Trenches and excavations that are more than four (4) feet deep at the deepest point may not be entered until they are shored, sloped, or trenched in accordance with OSHA's trenching and shoring specifications and there is a Competent Person on-site. In addition, personnel that enter must be trained in confined space entry.

In addition, when any person is required to enter a trench or excavation that is deeper than four (4) feet, a ladder must be provided that extends at least three (3) feet above the top of the excavation. The greatest distance allowed from any worker to any ladder is twenty-five (25) feet. Ladders must be of standard design and in good condition. All provisions of the OSHA Excavation Standard must be complied with, including Confined Space Entry, air monitoring, and Lockout Tag-out requirements.

In addition, all trenches over five (5) feet deep in either hard, compact, or soft and unstable soil must be sloped, shored, sheeted, braced, or otherwise supported. Trenches less than five (5) feet deep must also be protected when hazardous ground movement may be expected.

Prior to excavation, verify that no underground utilities or structures are in the area that will be excavated. Contact your local utility marker service to have utility lines marked prior to all excavation, trenching and drilling operations. Refer to site drawings or customer interviews if on private property for utility locations. Hand dig three to five-feet down and five-feet each side of utility marker to avoid breaking utility lines.



Cordon off the area with cones, barrier tape, flags, barricades, or flagging tape to prevent unauthorized traffic and personnel from entering drilling, trenching and excavation areas. Highlight work area using prominent warning signs (cones, saw horses, barricades, signs) place 10-feet from excavation opening. Maintain zone definition along perimeter with yellow CAUTION tape.

Follow Confined Space Entry procedures specified by your employer when work involves entry into a trench or excavation that is 4-feet deep or more. Employer Confined Space Entry programs must meet or exceed OSHA's minimum regulatory requirements.

### **7.3 Unattended Overnight Excavations**

Use one of the following methods:

- Surround entire perimeter with plastic or cloth construction net fencing. Anchor fence to ground using steel posts driven into ground. Space posts no greater than eight-feet apart. Fence height must be at least four-feet high. Fence material must withstand a pressure of 200 pounds force against the top of the fence. Place fence 10-feet from excavation opening.
- Place eight-foot long barricades with flashing lights end to end with four-foot high construction net attached to the barricades.
- Use temporary curbing or concrete barriers with flashing signal lights or other effect warning signs.

### **7.4 Ladders**

Use personal fall protection for work involving a drop of 10 feet or more. Make sure ladder rungs are sturdy and free of cracks. Use ladders with secure safety feet. Pitch ladders at a 4:1 ratio. Secure ladder at the top or have another person at the bottom to help stabilize it. Do not use ladders for access to air stripper towers. Use non-conductive ladders near electrical wires.

### **7.5 Slip, Trip, and Fall Hazards**

Slip, trip, and fall hazards will be present due to open trenches, pits, holes, muddy, slippery or unstable surfaces, and equipment on the ground. While it is difficult to eliminate all slip, trip, and fall hazards, the risk of injury must be minimized by being alert to the condition of walking surfaces, use of sturdy footwear, and keeping walking areas as free of obstructions and debris as possible.

### **7.6 Noise Hazards**

The primary noise sources at the site come from excavating equipment, material handling equipment, and trucks. Earplugs or muffs will be worn within 25 feet of noisy operations. Wear hearing protection when operating equipment such as a drill rig, jackhammer, cut saw, air compressor, blower or other heavy equipment. Wear hearing protection whenever it is necessary to raise your voice above normal conversational speech to communicate.



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### **7.7 Lifting Hazards**

Use two people to lift heavy objects to avoid injury caused by lifting objects manually. Keep loads close to the body, and use leg muscles instead of back muscles to lift. Don't attempt to lift heavy or awkwardly shaped objects without assistance.

### **7.8 Weather Hazards**

Hot weather can cause physical discomfort, loss of efficiency, and injury. Heat illness may result from using protective clothing and equipment by decreasing the body's natural cooling process. During storms, rain may cause slippery surfaces and also weaken excavation walls, making the walls more susceptible to collapse. Lightning may accompany storms, creating an electrocution hazard during outdoor operations. Monitor weather conditions. Suspend work during electrical storms and take cover indoors or in a vehicle. Listen to local forecasts for warning about specific weather hazards.

### **7.9 Heat Exposure**

Increase water intake while working. Minimize or avoid alcohol intake the night before working in hot and humid weather. Increase the number of rest break, or rotate workers that perform heavy physical work in the sun. Take breaks in shaded or cool dry areas. Watch for signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Perform heavy work in the early morning or evening hours. Use ice vests when necessary. In the event of heat stroke, immediately bring the victim to a cool shaded area and initiate first aid procedures. Immediately summon emergency medical assistance.

### **7.10 Cold Exposure**

Wear thermal insulated clothing and multiple layers of clothing to increase the number of air pockets between the skin and outer garment. Minimize or avoid alcohol consumption. Take prescribed rest breaks in warm dry environments. Watch for signs and symptoms of hypothermia and frostbite. Perform work during the warmest part of the day in sunny weather with low wind. Use space heaters and heated devices when necessary. In the event of hypothermia or frostbite, immediately bring the victim to a warm dry location and initiate first aid procedures. Immediately summon emergency medical assistance.

### **7.11 Heavy Equipment and Machinery**

Operation of heavy equipment and machinery poses a hazard of collision to personnel. Other hazards include pinch points and weight associated with equipment, and objects falling from overhead. Maintain constant visual or verbal contact with the equipment operator. Never assume that the operator sees you. Make eye contact and use hand signals to inform the operator of your intent. Never walk directly behind or to the side of heavy equipment without the operator's knowledge.

To avoid electrocution hazards, do not operate equipment within 20 feet of overhead utility lines. Wear a hardhat and safety glasses at all times. Avoid loose-fitting clothing. Keep hands away from all moving parts, for example, augers. Test the emergency shut-off switch on all equipment and the drill rig daily.





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### **7.12 Fire Prevention**

Use only approved metal safety cans to transport and store flammable solvents. All gasoline and diesel engines that require refueling must be shut down and allowed to cool before refilling. Don't smoke when handling contaminated soils or during any work in which petroleum products, solvents, or other flammable liquids might be present.

Do not create open flames or sparks in areas containing petroleum products or flammable liquids. Keep flammable liquids in closed containers. Keep the site clean, and avoid accumulating combustible debris such as paper. Electrically bond and ground pumps, transfer vessels, tanks, drums, bailers and probes, when moving liquids. Electrically bond and ground vacuum trucks and the tanks they are emptying.

Do not splash fill containers with flammable liquids. Follow Hot Work Procedures when welding or performing other activities requiring an open flame. Isolate flammable and combustible materials from ignition sources. Ensure fire safety integrity of equipment installations.

### **7.13 Exposure to Chemically-Contaminated Soil, Water, and Work Chemicals**

Stand up-wind of contaminated soil and chemicals when possible. Minimize direct skin contact and contact time with contaminated media to prevent exposure by skin absorption. Wear prescribed gloves. Avoid walking through discolored areas, puddles, leaning on drums, or contacting anything that is likely to be contaminated, unless wearing the appropriate PPE. Do not eat, drink, smoke, or use personal toiletries in contaminated locations.

### **7.17 Electric Shock**

Use Lockout-Tagout Procedures and locks and tags. Release energy before actual installation or maintenance work. Keep personnel and equipment at least 10 feet away from all overhead power lines. Use a ground-fault circuit interrupter on every 50-foot length of extension cord. Use three-pronged plugs and extension cords. Contact your local underground utility-locating service. Follow NEC Code requirements for Electrical Installations in Hazardous Locations.