N00639.AR.002340
NSA MID SOUTH
5090.3a

SITE HEALTH AND SAFETY PLAN FOR AREA OF CONCERN 1 (AOC 1)AND UNEXPLODED ORDNANCE 1 (UXO 1) MILLINGTON SUPPACT TN

01/01/2013

RESOLUTION CONSULTANTS

SITE HEALTH AND SAFETY PLAN

AREA OF CONCERN 1
UXO 1
NAVAL AIR STATION MID-SOUTH
MILLINGTON, TENNESSEE

Revision: 0

Resolution Consultants Job Number:
0888812676

Prepared for:

Department of the Navy
Naval Facilities Engineering Command Midwest
201 Decatur Avenue, Building IA
Great Lakes, Illinois 60088

Prepared by:

Resolution Consultants
A Joint Venture of AECOM & EnSafe
1500 Wells Fargo Building
440 Monticello Avenue
Norfolk, Virginia 23510

Contract #: N62470-11-D-8013
CTO F271

January 2013

SITE HEALTH AND SAFETY PLAN

This Site Health and Safety Plan (HASP) was prepared for employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. While it is not possible to discover, evaluate, and protect in advance against all possible hazards that may be encountered during the completion of this project, adherence to the requirements of the HASP will significantly reduce the potential for occupational injury. By signing below, I acknowledge that I have reviewed and hereby approve the HASP for NSA Mid-South and Area of Concern (AOC) 1 and Unexploded Ordinance (UXO) 1. This HASP has been written for the exclusive use of Resolution Consultants, their employees, and subcontractors. The HASP is written for specified site conditions, dates, and personnel, and must be amended if these conditions change.

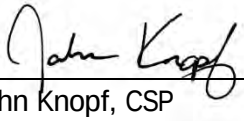
Prepared by:

October 3, 2012

Eric Allen
H&S Specialist
(901) 937-4281

Date

Concurrence by:



October 3, 2012

John Knopf, CSP
Resolution Consultants H&S Manager
(901) 372-7962

Date

October 3, 2012

Ben Brantley
CTO Manager
(901) 372-7962

Date

EXECUTIVE SUMMARY

The purpose of this Site Health and Safety Plan (HASP) is to address health and safety concerns related to Resolution Consultants managed activities at the project site. The document is intended to identify known potential hazards and facilitate communication and control measures to prevent injury or harm. Additionally, provisions to control the potential for environmental impact from these activities are included where applicable.

SUMMARY TABLE					
Resolution Consultants SOW		Resolution Consultants will be conducting well installation oversight, soil sampling, water sampling, well water level measurements, sediment and surface water sampling. A UXO technician will be onsite during all invasive activities at Unexploded Ordnance (UXO) 1/Area of Concern (AOC) 1.			
Tri-State Testing		Subcontractor will be drilling and constructing monitoring wells.			
PRIMARY PHYSICAL HAZARDS					
x	Underground Utilities	x	Slips, Trips/Walking Surface		
x	Overhead Utilities	x	Manual Lifting		
x	Drill Rig Operations				
CHEMCIAL HAZARDS, MONITORING, ACTION LEVELS					
COC		**MONITORING**		**ACTION LEVELS**	
Lead, Polycyclic Aromatic Hydrocarbons (PAHs)		N/A			

All staff is bound by the provisions of this HASP and are required to participate in a preliminary project safety meeting to familiarize them with the anticipated hazards and respective onsite controls. The discussion will cover the entire HASP subject matter, putting emphasis on critical elements of the Plan, such as the emergency response procedures, personal protective equipment, site control strategies, and monitoring requirements. In addition, daily tailgate safety meetings will be held to discuss the anticipated scope of work, required controls, identified new hazards and controls, incident reporting, the results of inspections, and any lessons learned, or concerns from the previous day.

Table of Contents

Figures

Tables

Attachments

Acronyms and Abbreviations

µg/l	Microgram per liter
ACGIH	American Conference of Governmental Industrial Hygienists
APP	Accident Prevention Plan
BEHP	Bis (2-ethylhexyl) phthalate
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COC	Chemical of Concern
COPC	Contaminant of Potential Concern
CRZ	Contaminant Reduction Zone
CSP	Certified Safety Professional
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DI	Deionized
EAP	Emergency Action Plan
EC	Emergency Coordinator
EMT	Emergency Medical Technician
EZ	Exclusion Zone
^{o}F	Degree Fahrenheit
FS	Feasibility Study
GFCI	Ground Fault Circuit Interrupter
HASP	Health and Safety Plan
H&S	Health and Safety
HAZWOPER	Hazardous Waste Operations and Emergency Response
IATA	International Air Transport Association
IDLH	Immediately Dangerous to Life or Health
IDW	Investigation-Derived Waste
Mg/kg	
MSDS	Material Safety Data Sheet

NAS	Naval Air Station
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbons
PEL	Permissible Exposure Limit
PM	Project Manager
PPE	Personal Protective Equipment
RC	Resolution Consultants
RI	Remedial Investigation
SH&E	Safety, Health, and Environmental
SOP	Standard Operating Procedure
SOW	Scope of Work
SS	Site Supervisor
SSHO	Site Safety Health Officer
SZ	Support Zone
TDG	Transport of Dangerous Goods
THA	Task Hazard Analysis
TLV	Threshold Limit Value
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
UV	Ultraviolet

1.0 INTRODUCTION

This project Health and Safety Plan (HASP) (including Attachments 1-8) provides a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted at the project site. This HASP also identifies chemical and physical hazards known to be associated with the Resolution Consultants managed activities addressed in this document.

A cross-reference table is provided in Attachment 1, which provides information concerning the corresponding elements between this HASP and the Accident Prevention Plan (APP) requirements of the United States Army Corps of Engineers (USACE) *Safety and Health Requirements Manual* (EM-385-1-1, 2008).

This HASP may be modified as necessary to address any additional activities or changes in site conditions, which may occur during field operations. All changes to the HASP must be approved by the Resolution Consultants Health and Safety Manager or designee in advance of the execution of respective work.

1.1 General

The provisions of this HASP are mandatory for all Resolution Consultants personnel (including both AECOM and EnSafe employees, as applicable) engaged in fieldwork associated with the environmental services being conducted at the subject site. For the purposes of this HASP, the term "Resolution Consultants" means an employee of any of the three firms. A copy of this HASP, any applicable HASP supplements shall be accessible onsite and available for review at all times. Recordkeeping will be maintained in accordance with this HASP and the applicable Standard Operating Procedures (SOPs). In the event of a conflict between this HASP, the SOPs, and federal, provincial, state, and local regulations, workers shall follow the most stringent/protective requirements. Concurrence with the provisions of this HASP is mandatory for all personnel at the site covered by this HASP and must be signed on the acknowledgement page (Section 11.0).

1.2 Project Policy Statement

Resolution Consultants is committed to protecting the health and safety of our employees and meeting our obligations with respect to the protection of others affected by our activities. We are also committed to protecting and preserving the natural environment and communities in which we operate. The safety of persons and property is of vital importance to the success of this project and accident prevention measures shall be taken toward the avoidance of needless waste

and loss. It shall be the policy of this project that all operations be conducted safely. Onsite supervisors are responsible for those they supervise by maintaining a safe and healthy working environment in their areas of responsibility, and by fairly and uniformly enforcing safety and health rules and requirements for all project personnel. Subcontractors shall comply with the requirements of this HASP, provisions contained within the contract document, and all applicable rules, requirements, and health and safety and environmental regulations. All practical measures shall be taken to promote safety and maintain a safe place to work. Contractors are wholly responsible for the prevention of accidents on work under their direction and shall be responsible for thorough safety and loss control programs and the execution of their own safety plans for the protection of workers.

1.3 References

This HASP conforms to the regulatory requirements and guidelines established in the following documents:

- Department of Labor. Occupational Safety and Health Administration. (2012). Title 29, Part 1910 of the Code of Federal Regulations (29 CFR 1910), Occupational Safety and Health Standards (with special attention to Section 120, Hazardous Waste Operations and Emergency Response). Washington D.C: US Government Printing Office.

- Department of Labor. Occupational Safety and Health Administration. (2012). Title 29, Part 1926 of the Code of Federal Regulations (29 CFR 1926), Safety and Health Regulations for Construction (Chapter XVII). Washington D.C: US Government Printing Office.

- National Institute for Occupational Safety and Health (NIOSH). Occupational Safety and Health Administration. U.S. Coast Guard (USCG). US Environmental Protection Agency (USEPA) (1985). Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (Publication No. 85-115).

- Department of the Navy. U.S. Army Corps of Engineers. (2008). Safety and Health Requirements Manual (Publication No. EM 385-1-1).

- Resolution Consultants, Programmatic Health and Safety Plan. (2012)

- National Wetland Inventory. (2012, September 6). U.S. Fish and Wildlife Service. Retrieved from: http://www.fws.gov/wetlands/Data/mapper.html.

- Critical Habitat Portal. (n.d.). U.S. Fish and Wildlife Service. Retrieve from: http://criticalhabitat.fws.gov.

2.0 SITE INFORMATION AND SCOPE OF WORK

Resolution Consultants will conduct environmental services at the project site. Work will be performed in accordance with the applicable Statement of Work (SOW) and associated Project Work Plan developed for the project site. Deviations from the listed SOW will require that the Resolution Consultants Health and Safety Manager or designee review and approve changes made to this HASP to ensure adequate protection of personnel and other property. All changes to this HASP must be documented in Attachment 2.

The following is a summary of relevant data concerning the project site, and the work procedures to be performed. The Project Work Plan prepared by Resolution Consultants as a companion document to this HASP provides more detail concerning both site history and planned work operations.

2.1 Site Information

This section provides a general description and historical information associated with the site.

2.1.1 General Description

UXO 1 and AOC 1 are both out-of-use firing ranges. UXO 1 is the former pistol range and the sampling area includes the berm at the end and sides of the range. AOC 1 is the former trap/skeet range. The two sites are being sampled for Lead and poly nuclear aromatic hydrocarbons (PAHs).

2.1.2 Site Background/History

Pistol Range — UXO 1

The former Pistol Range consists of approximately 0.5 acre from the firing line to the backstop soil-berm behind the former target areas and is near the southern border of the installation, east of Singleton Avenue, off the Perimeter Security Patrol Road. The Pistol Range was constructed after 1948 at the former location of a skeet range and was in use until 1994.

Property records indicate that the range, when active, consisted of a berm, shooting stations, targets, and an armory. The firing line maintained 16 firing positions with targets that were operated via a manual, mechanical cable system from behind the firing lines. This included five target lines, one each at 7 yards, 15 yards, 25 yards, 1,000 inches and 50 yards. A U-Shaped berm, approximately 10 to 15 feet tall and 500 feet long encompassed the area behind and on both sides of the target lines. Munitions use was limited to small arms ammunition,

including 0.22-caliber, 0.30-caliber, 9-mm, 0.38-caliber, and 0.45-caliber ammunition (Malcolm-Pirnie, 2005).

Trap/Skeet Ranges 1 and 2 — AOC 1

The former Trap/Skeet Ranges #1 and #2 consist of approximately 79 acres, near the southern border of the installation, east of Singleton Avenue, off the Perimeter Security Patrol Road, encompassing the former Pistol Range. The ranges were built around 1943, with Trap/Skeet Range #1 having an unrecorded closure date sometime after World War II and Trap/Skeet Range #2 closing in 2005. No environmental remedial efforts are documented for closure of the ranges.

Property records indicate that the trap/skeet ranges, when active, had a firing line, skeet office and armory, two clay pigeon storage buildings, an ammunition storage building, Instruction Building, and shooting stations and targets. Munitions use was limited to small arms ammunition, primarily 12- and 20-gauge shotgun shells.

2.1.3 Previous Investigations

Pistol Range — UXO 1

The previous Site Investigation (Tt, 2010) found lead in surface soil on the berm at concentrations that could present potential risks to human receptors. The exceedances of the project action level (PAL) for lead at the Pistol Range were noted in the front face, top, and backside of the berm, which are likely attributed to a combination of fired munitions, contaminant transport via surface water runoff, and the periodic reshaping of the berm. Contributions from activities at the Trap/Skeet Ranges #1 and #2, which surround the Pistol Range berm may have also contributed to the elevated lead levels in soil.

Trap/Skeet Ranges 1 and 2 — AOC 1

The previous investigation identified lead and PAHs primarily within the surface soil (0 to 1 feet bgs) with most exceedances occurring within the central part of the site, extending from the former firing stations to a distance of approximately 600 feet out. PAH contamination (evaluated as BaP equivalents) was identified overlapping with the lead-contaminated soil but limited to a maximum distance of approximately 150 feet from the former firing points. Soil in the northern and southern ends of the site was found not to exceed PALs with the exception of two instances where PAHs were identified at the northern end of the site that was speculated to be related to parking lot runoff rather than historical site activities.

Table 2-1 Previous Investigation Data		
Contaminants	**Soil (mg/kg)**	**Groundwater (ug/l)**
Lead	21,000	N/A
PAH's	19.3	N/A

Notes:
Mg/kg = Milligrams per kilogram
PAH = Polycyclic Aromatic Hydrocarbons

2.2 Scope of Work

There will be two sites under this scope of work. The first area is UXO 1 and the second is AOC 1. The tasks listed below are for the whole site and individual requirements will be covered in more depth in the Task Hazard Analysis.

2.2.1 Mobilization/Demobilization

Mobilization and demobilization represent limited pre and post-task activities. These activities include driving to and from the site; initial site preparations; and post-work activities. This activity does not represent any intrusive activities.

2.2.2 Site Preparation

Site preparation includes construction and maintenance of temporary access roads and construction area entrances, installation of silt fence around the perimeter of disturbance areas, and installation of berms to facilitate the use of existing drainage features and structures. Other pre-work activities, such as the stockpiling of backfill materials, utility mark-out and clearance, and the set-up of other work support related items are included as well. Other site preparation activities will include the verification of utility mark-outs and presence of the clear dig permits (onsite). All utility clearance shall be obtained by the authorizing authority for the subject site. If utility locations cannot be verified onsite by the public authority, then a private utility location contractor may need to be utilized to confirm/deny the presence of private underground utilities on the site. Typical lead time is three days and the permits are generally valid for 10 days. Consult the specific clearance dates associated with the permit obtained for the site.

2.2.3 Groundwater Sampling

This activity will include the collection of groundwater samples from existing monitoring well network, temporary Geo-probe points, or newly constructed monitoring wells.

Groundwater samples will be collected through low-flow sampling. The major activities involved with collecting groundwater samples from the site and surrounding properties include the following:

- Pre-sampling event notifications and approval
- Set-up for sampling activities
- Groundwater samples from monitoring wells
- Sample preparation and sample shipping
- Administrative activities

2.2.4 Surface Water Sampling

This activity will include the collection of samples from surface water from the berm at UXO 1. The major activities involved with collecting samples from the site and surrounding properties include the following:

- Pre-sampling event notifications and approval
- Set-up for sampling activities
- Samples are collected from a surface water body
- Sample prep and sample shipping
- Administrative activities

2.2.5 Soil and Sediment Sampling

Soil samples will be collected using hand augers and trenching methods to determine depths of contamination in the berm area of UXO1. The major activities involved with collecting samples from the site and surrounding properties include the following:

- Pre-sampling event notifications and approval
- Set-up for sampling activities
- Digging of a shallow trench
- Hand Augering
- Sample prep and sample shipping
- Administrative activities

Soil and sediment samples will be collected from AOC 1 using hand auger methods.

2.2.6 Temporary Boring and Well Installation Oversight

Resolution Consultants personnel will be performing oversight for the installation of temporary borings installed using a Geo-probe rig and/or monitoring wells using hollow-stem auger (HSA) methods. A drilling subcontractor will be utilized for the installation of monitoring wells to a predetermined depth utilizing a HSA drill rig. The major activities involved with installation of a monitoring well or a temporary boring are as follows:

- Pre-sampling event notifications and approval
- Set-up for boring/well installation
- Monitor air quality in the workers breathing zone
- Administrative activities

2.2.7 Investigative-Derived Waste (IDW) Management

IDW will be collected and categorized as non-hazardous or hazardous. Potentially hazardous IDW [purge water, and decontamination fluids, and soil cuttings (if any)] will be tested and disposed of within 90 calendar days of completing the field activities. Potentially hazardous IDW waste will be staged onsite, and then delivered to an IDW storage facility for processing. Non-hazardous IDW (normal trash) will be disposed of in a timely fashion in dumpsters on the base.

2.2.8 Equipment Decontamination

Pre-cleaned and dedicated sampling materials/equipment will be used to collect the soil, sediment, surface water, and groundwater samples for laboratory analysis. After the samples are collected, any disposable, or one-time use equipment (tubing, bladders) will be placed in a plastic bag for disposal per accordance with the paragraph above. Non-disposable sampling and drilling equipment that contacted the soil and/or groundwater will be decontaminated between each sampling location. Gross sediments and/or contamination will first be removed from the sampling and drilling equipment. The equipment will then be washed with DI water and Alconox detergent and then rinsed with DI water, methanol, etc.

2.2.9 Additional Work Operations

Operations at the site may require additional tasks not identified in this section or addressed in Attachment 3, Task Hazard Analysis (THA). A THA must be prepared, and approved by the Safety Professional before performing any task not covered in this HASP.

3.0 HAZARD ASSESSMENT (SAFETY)

3.1 Physical Hazards

The following physical hazards are anticipated to be present on the site. Additional hazards may be noted on the THAs developed for the individual tasks.

3.1.1 Slips, Trips, Falls, and Protruding Objects

A variety of conditions may exist that may result in injury from slips, trips, falls, and protruding objects. Slips and trips may occur as a result of wet, slippery, or uneven walking surfaces. To prevent injuries from slips and trips, always keep work areas clean; keep walkways free of objects and debris; and report/clean up liquid spills. Serious injuries may occur as a result of falls from elevated heights. Always wear fall protection while working at heights of 6 feet or greater above the next lower level. Protruding objects are any object that extends into the path of travel or working area that may cause injury when contacted by personnel. Always be aware of protruding objects, and when feasible, remove or label the protruding object with an appropriate warning.

Slippery, uneven footing and tripping hazards will likely be present at the site. Be vigilant, avoid puddles, and wear footwear with slip resistant soles.

Walk around, not over or on top of debris or trash piles. When carrying equipment, identify a path that is clear of any obstructions. It might be necessary to remove obstacles to create a smooth, unobstructed access point to the work areas onsite.

During the winter months, snow shovels and salt crystals should be kept onsite to keep work areas free of accumulated snow and ice. Furthermore, use sand or other aggregate material to help keep work surfaces from being slippery, especially where salt/calcium chloride cannot be used. In addition, make sure work boots have soles that provide good traction. When walking on ice is necessary, crampons or Yaktrax® should be used.

Maintaining a work environment that is free from accumulated debris is the key to preventing slip, trip, and fall hazards at construction sites. Essential elements of good housekeeping include:

- Orderly placement of materials, tools and equipment out of walkways
- Placing trash receptacles at appropriate locations for the disposal of miscellaneous rubbish
- Prompt removal and secure storage of items that are not needed to perform the immediate task at hand

3.1.2 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials. Additional information on the requirements of housekeeping can be found in *RC-307, Housekeeping, Worksite*.

3.1.3 Manual Lifting

Most materials associated with investigation and remedial activities are moved by hand. The human body is subject to severe damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process. Whenever possible, use mechanical assistance to lift or move materials and at a minimum, use at least two people to lift, or roll/lift with your arms as close to the body as possible. For additional requirements and guidance, refer to *5-308-Manual Lifting.*

3.1.4 Utilities

Various forms of underground/overhead utility lines or pipes may be encountered during site activities. Prior to the start of intrusive operations, utility clearance is mandated, as well as obtaining authorization from all concerned public utility department offices. If insufficient data is available to accurately determine the location of the utility lines, Resolution Consultants will hand clear to a depth of at least five feet below ground surface in the proposed areas of subsurface investigation. Should intrusive operations cause equipment to come into contact with utility lines, the SSHO and Resolution Consultants Health and Safety Manager or designee will be notified immediately. Work will be suspended until the applicable utility agency is contacted and the appropriate actions for the particular situations can be taken. The phone number for the applicable state agency is provided in the Emergency Contacts list found in Section 8. For additional requirements, refer to *5-417-Utilities Underground*.

Ensure drill rig operator and signal person are aware of overhead power lines when working around overhead power lines. Overhead power and utility lines may be present on, or adjacent to, the site

and represent a potential hazard during the mobilization/demobilization of equipment and supplies. Maintain a minimum of 15 feet between overhead power lines and the mast of the drill rig. Any deviation must be approved by the Resolution Consultants Health and Safety Manager or designee. Additional information on working adjacent to overhead power and utility lines can be found in *5-406-Electrical Lines, Overhead.*

3.1.5 Unexploded Ordnance

As with most military bases, the potential for encountering unexploded ordnance (UXO) exists and should be considered potential physical hazards. UXO are explosive or chemical munitions that were prepared for action, but did not activate. All UXO, including "practice" rounds, normally contain some form of explosive (spotting charges) and, if detonated, can cause serious harm/injury. They may be at ground surface, partially buried, or completely buried. Through time, UXO can blend into the surroundings. Whether whole or fragmented, all UXO present a potential hazard.

If any UXO items are observed, the following "3Rs" guidance should be observed:

Recognize — Before entering a suspected UXO contaminated area, receive briefing from local Explosive Ordnance Disposal (EOD) or safety personnel. Maintain heightened awareness during field activities.

Retreat — If encountered, immediately stop, and leave the area the same way you entered. If possible, mark location with flagging or caution tape. Do not use stakes, pins, or anything else intrusive into the ground surface.

Report — Note the location, route, landmarks, or any other features that would aid in relocating the UXO item encountered. Report this information to the site manager or area supervisor.

SAFETY WARNINGS

- **Do Not Approach —** If you see UXO, stop immediately.
- **Do Not Transmit —** If near UXO, do not use 2-way radios like walkie-talkies or citizens band.
- **Do Not Disturb —** Do not attempt to move the UXO or objects surrounding it.

- **Do Not Drop —** If a UXO item is mistakenly picked up, calmly and carefully lay it down.

- **Do Not Be Curious —** Do not investigate or examine. Follow the "3R's".

3.1.6 Lock-Out/Tag-Out Procedures

Lock-out/tag-out will not be implemented during this phase of work.

3.1.7 Heavy Equipment and Vehicle Operations

Heavy equipment and site vehicles can present serious hazards for site personnel. Blind spots, failure to yield, and other situations may cause heavy equipment/vehicles to come into contact with personnel. To reduce the possibility of contact between equipment/traffic and personnel, always adhere to the following:

- Personnel must wear a high visibility, reflective safety vest at all times when working near heavy equipment and/or other vehicle traffic.

- Personnel must always yield to equipment/vehicle traffic and stay as far as possible from all equipment/vehicle traffic. Always maintain eye contact with operators.

- When feasible, place barriers between work areas and equipment/vehicle traffic.

- Always ensure reverse warning alarms are working and louder than surrounding noise. Personnel must report inoperative reverse warning alarms.

- Ensure Daily Equipment Safety Inspections are being performed and documentation filed at the site.

3.1.8 Drilling Operations

Drilling operations presents their own set of hazards. Several basic precautions that should be taken include, but are not limited to, confirming locations of underground and overhead utilities, wearing of appropriate PPE and the avoidance of loose clothing or jewelry, staying clear of moving parts, and knowing the locations of emergency shut-off switches. Other operational safety precautions regarding moving the drilling equipment, raising and lowering the derrick (mast), and drilling can be found in *5-405-Drilling and Boring.*

3.1.9 Excavations and Trenches

Excavations and trenches present workers with a variety of hazards. If not properly sloped, shored, or boxed, trench walls may collapse and trap workers under the weight of the soil. Soil contaminants and other chemical hazards (e.g., carbon monoxide from equipment/vehicles) may result in a hazardous atmosphere. Buried utilities may exist where excavations/trenches will be placed. Always contact the local utility locator service prior to beginning excavations. Refer to *5-303-Excavation & Trenching* for additional requirements.

3.1.10 Working At Heights

No work from heights is expected during this phase of work.

3.1.11 Working On or Near the Water

Working on or near the water is not applicable during this phase of work. Should the scope of work change this section will be update to reflect that change.

3.1.12 Spill Prevention

Spill prevention is not applicable to this phase of work. Should the scope of work change this section will be update to reflect that change.

3.1.13 Noise Exposure Monitoring

When heavy equipment is in operation, it will be necessary to ensure that each exclusion zone fully encompasses all areas where hazardous noise levels are present (85 decibels on the A-weighted scale [dBA] or greater). If the sound pressure level exceeds 85 dBA at any location along the site perimeter, the exclusion zone boundary will then be adjusted to fully encompass this region. During this project, all personnel working inside the exclusion zone will be required to use hearing protection. Refer to *5-510-Hearing Conservation Program*, for additional information and requirements.

3.1.14 Traffic Control

No work tasks are anticipated in the right-of-way. Should task locations change the following traffic control measures will be followed.

During certain work tasks, the establishment of traffic control to adequately protect workers and the public may be required onsite. Site specific requirements will be determined by the site supervisor/SSHO on a case-by-case basis. Only approved traffic control devices per accordance

with the Manual of Uniform Traffic Control Devices (MUTCD) will be used on public road ways per accordance with the applicable State regulatory guidance.

General traffic control precautions include placing a work vehicle between your worksite and oncoming traffic whenever possible. Not only is it a large, visible warning sign, but also if an oncoming car should fail to yield or deviate, the parked vehicle rather than your body would absorb the first impact of a crash. Turn the vehicle wheels so that if it was struck, it would swing away from the worksite. When using cones or other devices to modify traffic flow, ensure use of the proper taper length and device spacing to provide adequate warning distance to on-coming motor vehicles. In addition, proper PPE is to be worn during traffic operations to include hardhat and high-visibility vests. Refer to *5-306-Highway and Road Work*, for additional requirements.

3.2 Biological Hazards

It is anticipated that numerous biological hazards will be present on the project site. Poisonous plants may be found along the tree lines, and adjacent to monitoring wells, along with ticks and other biting insects. Stinging insects, such as bees and wasps may build nests inside of monitoring wells or be within proximity of the work zone. Below is a discussion of the most common biological hazards found on project sites, and those anticipated on this jobsite.

3.2.1 Small Mammals

Working in the field either directly or indirectly with small mammals has inherent risks of injury or exposure to zoonotic diseases (infectious diseases that can be transmitted from animals to humans) that all field staff needs to protect themselves against. The risks are usually higher when there is direct contact with a wild animal, either through a break in the skin (blood), saliva, or excrement; however, there are also risks through air-borne diseases (e.g., Hantavirus). Should you encounter any small mammals please avoid contact with them.

3.2.2 Venomous Animals

Some animals have the ability to inject venom. These include: rattlesnakes, black widow spiders, and scorpions. These all have limited distributions, so in most areas you are unlikely to encounter them. Other spiders possess venom but they are not harmful to humans. Shrews have poisonous saliva but the chance of being envenomed by them is extremely unlikely unless they are handled.

If bitten by any of these animals, special care should be taken to treat the wound as it may lead to complications due to the toxin. Should you encounter any potentially venomous animals please avoid contact with them.

A bite from a venomous snake, which may inject varying degrees of toxic venom, is rarely fatal but should always be considered a medical emergency.

3.2.3 Poisonous Plants

Sensitivity to toxins generated by plants varies according to dosage and the ability of the victim to process the toxin; therefore, it is difficult to predict whether a reaction will occur, or how severe the reaction will be. Staff should be aware that there are a large number of plant life is capable of causing serious irritations and allergic reactions. Depending on the severity of the reaction, the outcome can result in severe scarring, blindness or even death.

Plants that field staff should recognize and take precautions to avoid include: Poison Sumac, Poison Ivy (terrestrial and climbing), Poison Oak, Giant Hogweed (or Giant Cow Parsnip), Wild Parsnip, Devil's Club, and Stinging Nettle. Many others are extremely poisonous to eat (e.g., Poison Hemlock, Water Parsnip) — do not eat any natural vegetation found on the jobsite.

A large number of plants are not harmful to touch but may contain poisonous berries or foliage that could cause serious complications or death if they are ingested. It goes without saying not to eat any berries or plants that you are not absolutely sure of their identity. Examples of common poisonous or irritating plant species, common to the United States, are shown in Table 3-1.

Care should be taken to avoid contact with poisonous vegetation by personnel who are allergic to the affects and those that are not.

Table 3-1
Hazardous Plant Identification Guide

Poison Ivy • Grows in West, Midwest, Texas, East • Several forms — vine, trailing shrub, or shrub • Three leaflets (can vary 3-9) • Leaves green in summer, red in fall • Yellow or green flowers • White berries	 
Poison Oak • Grows in the East (NJ to Texas), Pacific Coast • 6-foot tall shrubs or long vines • Oak-like leaves, clusters of three • Yellow berries	 

3.2.4 Insects

Insects for which precautionary measures should be taken include: mosquitoes (potential carriers of disease aside from dermatitis), black flies, wasps, bees, ticks, and fire ants.

Wasps and bees will cause a painful sting to anyone if they are harassed. They are of most concern for individuals with allergic reactions who can go into anaphylactic shock. Also instances where an individual is exposed to multiple stings can cause a serious health concern for anyone. These insects are most likely to sting when their hive or nest is threatened.

Ticks can be encountered when walking in tall grass or shrubs. They crawl up clothing searching for exposed skin where they will insert mouthparts to drink blood. The most serious concern is the possibility of contracting Lyme disease, which is spread by the Black-legged or Deer Tick. Occasionally a tick can cause Tick Paralysis if it is able to remain feeding for several days. Full recovery usually occurs shortly after the tick is removed.

The Fire Ant is spreading and often very abundant where it is established. It is very aggressive and commonly climbs up clothing and stings unprovoked when it comes into contact with skin. Painful irritations will persist for an hour or more.

Precautionary measures such as the use of insect repellant containing DEET should be utilized to help minimize the likelihood of bites.

3.3 Ultraviolet Hazards

Workers performing field work outdoors may be susceptible to sunburn if not properly protected with sunscreen or protective clothing and hats. Skin can burn in minutes when the ultraviolet (UV) Index is VERY HIGH. Protective measures, to include $\geq$30 SPF sunscreen and UVA/UVB protective clothing/safety glasses, are advisable year round.

3.4 Weather Hazards

The Site Safety Health Officer (SSHO) will be attentive to daily weather forecasts for the project area each morning. Predicted weather conditions of potential field impact are to be included in safety briefings and the Safety Work Assessment & Permit (SWAP) for that day. Weather changes should initiate a review and updates to the SWAP as necessary. Weather-related hazards will directly correlate to the type of weather involved. Hot, dry weather may cause greater dust emissions, particularly during intrusive activities. Rain may increase slip/trip hazards, particularly for ground workers.

Severe weather can occur with little warning. Employees will be vigilant for the potentials for storms, lightning, high winds, and flash flood events. Additionally, lightning strikes during electrical storms could also be a potential hazard. The following procedures will be implemented once thunder is heard or lightning spotted:

1) If thunder is heard, all site personnel are to be alert of any visible lightning flashes. The SSHO will observe the storm front and track the direction it is moving. The SSHO will continue to observe the storm front until it passes or until the prevailing direction is determined to be away from the site.

2) If lightning is observed, the SS or SSHO are to be notified. When the next lightning flash is observed, a “second” count shall be initiated from the time the lightning is observed until the thunder from the strike is heard.

3) The following action guidelines shall be implemented once the "second" count is ≤ 30 seconds:

   a) "second" count > 30, the SS or SSHO will continually observe the storm front. If the front is moving away, work will continue. If the front is moving towards the site, the SS will initially place workers on alert for potential evacuation.

   b) "second" count ≤ 30, the SS will issue the evacuation command and all workers are to report to the break/lunch trailer. Work can be re-initiated once the front has passed by and thunder has not been heard for 30 minutes.

4) If lightning is observed and the storm front is moving away from or around the site and is > 20 miles away, work will be permitted to continue. The location of the storm can be confirmed via internet access to a local weather website that has a Doppler radar tracking system.

3.5 Hazard Analysis

THAs have been completed for all tasks identified in the Scope of Work (Attachment 3):

- Mobilization/Demobilization
- Groundwater Monitoring Well Installation
- Groundwater Sampling
- Surface Water Sampling
- Soil/Sediment Sampling

As a result of unanticipated work activities or changing conditions, additional THAs may be required. All additional THAs will be reviewed and approved by the Resolution Consultants Health and Safety Manager or designee.

3.6 Task Specific SH&E Procedures

Personnel may be exposed to a variety of chemical, physical, and radiological hazards resulting from task or equipment-specific activities. The controls for many of these hazards are discussed in the Resolution Consultants SH&E SOPs. Copies of applicable SOPs are located in Attachment 4.

4.0 SH&E REQUIREMENTS (SAFETY)

4.1 HAZWOPER Qualifications

Personnel performing work at the job site must be qualified as HAZWOPER workers (unless otherwise noted in specific THAs or by the SSHO), and must meet the medical monitoring and training requirements specified in the Resolution Consultants' SH&E Standard Operating Procedures.

If site monitoring procedures indicate that a possible exposure has occurred above the OSHA permissible exposure limit (PEL), employees may be required to receive supplemental medical testing to document any symptoms that may be specific to the particular materials present.

A baseline lead screening (per 29 CFR 1910.1025) will be required for all employees prior to working onsite and an exit screening when an employee exits the site/project. If the project schedule exceeds 12 months, minimum of annual screening will be performed.

4.2 Site-Specific Safety Training

All Resolution Consultants personnel performing activities at the site will be trained in accordance with *5-003-SH&E Training.* All personnel are required to remain current in all of their required training and evaluate their need for additional training when there is a change in work. In addition to the general health and safety training programs, personnel will be required to complete any supplemental task specific training developed for the tasks to be performed. Administration and compliance with the requirements for additional task-specific training will be the responsibility of the project or lead manager. Any additional required training that is completed will be documented and tracked in the project files.

4.2.1 Competent Person Training Requirements

Work requiring a task specific competent person is not anticipated for this site. If new tasks are identified, the SSHO/site supervisor will assess the need for a competent person and be responsible for identifying the appropriate employee and area of competency. Designated competent person(s) for this project are shown in Table 4-1.

Table 4-1 Task-Specific Competent Persons		
Employee Name	**Organization**	**Area of Competency**
Corey Coleman	Resolution Consultants	SSHO/Site Supervisor/EC
Ben Brantley	Resolution Consultants	CTP Manager

Note:
The training requirements for competent persons are specified in the indicated SOPs and/or *5-202-Competent Person Designation*. By identifying an employee as a "competent person", that person has now been authorized to take prompt corrective measures to eliminate hazards.

4.3 Tailgate Meetings (SWAP)

Prior to the start of daily project activities, a tailgate meeting will be conducted by the SSHO. The meeting is to review the specific requirements of this HASP, applicable THA, and relevant risks and mitigative strategies for the planned scope of services. Attendance at the daily tailgate meeting is mandatory for all employees at the site covered by this HASP and must be documented on the SWAP form (Attachment 5). All safety training documentation is to be maintained in the project file by the SSHO.

4.4 Hazard Communication

Hazardous materials that may be encountered as existing onsite environmental or physical/health contaminants during the work activities are addressed in this HASP and their properties, hazards, and associated required controls will be communicated to all affected staff and subcontractors.

Any employee or organization (contractor or subcontractor) intending to bring any hazardous material onto this Resolution Consultants-controlled work site must first provide a copy of the item's Material Safety Data Sheet (MSDS) to the SSHO for review and filing (the SSHO will maintain copies of all MSDS onsite). MSDS may not be available for locally-obtained products, in which case some alternate form of product hazard documentation will be acceptable in accordance with the requirements of *5-507-Hazardous Materials Communication/WHMIS.*

All personnel shall be briefed on the hazards of any chemical product they use, and shall be aware of and have access to all MSDS. All containers onsite shall be properly labeled to indicate their contents. Labeling on any containers not intended for single-day, individual use shall contain additional information indicating potential health and safety hazards (flammability, reactivity, etc.) In addition, any specific spill response planning or notification requirements are the responsibility of the contractor controlling and managing the materials at the site.

Attachment 7 contains copies of MSDS for hazardous contaminants of concern and hazardous chemicals planned to be brought onsite at the time this HASP is prepared. This information will be updated as required during site operations.

4.5 Confined Space Entry

Confined space entry is not anticipated for this site. If confined spaces are identified, the SSHO/site supervisor will inform all employees of the location of confined spaces and prevent unauthorized entry. Confined space entry procedures and training requirements are listed in *5-301-Confined Spaces.*

4.6 Hazardous, Solid, or Municipal Waste

If hazardous, solid, and/or municipal wastes are generated during any phase of the project, the waste shall be accumulated, labeled, and disposed of in accordance with applicable federal, state, provincial, territorial and/or local regulations. Consult the Project Manager for further guidance.

4.7 General Safety Rules

All site personnel shall conduct themselves in a safe manner and maintain a working environment that is free of additional hazards, in adherence to *5-001-Safe Work Standards and Rules* and *5-307-Housekeeping, Worksite*.

4.7.1 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

4.7.2 Smoking, Eating, or Drinking

Smoking, eating, and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any Resolution Consultants site. Smoking, eating, or drinking must be in an approved area.

4.7.3 Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply: A water supply meeting the following requirements will be utilized:

Potable Water — An adequate supply of potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains. Where drinking fountains are not available, individual-use cups will be provided as well as adequate disposal containers. Staff sharing a potables cooler shall not introduce individually opened containers into the team cooler in an effort to minimize concerns for indirect contamination. Additionally, each potable cooler will be sealed to protect the water quality.

Potable water containers will be properly identified in order to distinguish them from non-potable water sources. All containers of potable water will be marked with a label stating:

Potable Water ONLY
Not Intended for Sample Storage

Non-Potable Water — Non-potable water may be used for hand washing and cleaning activities. Non-potable water will not be used for drinking purposes. All containers of non-potable water will be marked with a label stating:

Non-Potable Water
Not Intended for Drinking Water Consumption

Toilet Facilities: A minimum of one toilet will be provided for every 20 personnel onsite, with separate toilets maintained for each sex except where there are less than 5 total personnel onsite. For mobile crews where work activities and locations permit transportation to nearby toilet facilities onsite facilities are not required.

Washing Facilities: Employees will be provided washing facilities (e.g., waterless sanitizer, buckets with water and Alconox) at each work location. The use of water and hand soap (or similar substance) will be required by all employees following exit from the Exclusion Zone, prior to breaks, and at the end of daily work activities.

4.7.4 Buddy System

All field personnel will use the buddy system when working within any controlled work area. Personnel belonging to another organization onsite can serve as "buddies" for Resolution Consultants personnel. Under no circumstances will any employee be present alone in a controlled work area.

4.8 Stop Work Authority

All employees have the right and duty to stop work when conditions are unsafe and to assist in correcting these conditions as outlined in *5-002-Stop Work Authority*. Whenever the SSHO determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Should the supervisor be unable or unwilling to correct the unsafe conditions, the SSHO is authorized and required to stop work, which shall be immediately binding on all affected Resolution Consultants employees and subcontractors.

Upon issuing the stop work order, the SSHO shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the Resolution Consultants Health and Safety Manager or designee has concurred that workplace conditions meet acceptable safety standards.

4.9 Client Specific Safety Requirements

There are not currently and additional client specific safety requirements.

5.0 EXPOSURE MONITORING PROCEDURES (HEALTH)

5.1 Contaminant Exposure Hazards

The following is a discussion of the potential hazards presented to worker personnel during this project from onsite chemical and radiological hazards known, suspected, or anticipated to be present onsite.

Exposure symptoms and applicable first aid information for each suspected site contaminant identified in the Scope of Work are located in the following subsections.

5.1.1 Lead

The typical symptoms of lead do not appear until exposed to large quantities. Should the following symptoms arise you should seek immediate medical attention. The symptoms are common with many other illnesses, and the medical profession should be given all known potential chemical exposure data upon arrival at the medical care facility.

The following are symptoms of lead poisoning:

- Irritability
- Loss of appetite
- Headache
- High blood pressure
- Sluggishness
- Abdominal pain

5.1.2 Polycyclic Aromatic Hydrocarbons (PAHs)

Acute symptoms of PAH exposure are as follows:

- Headache
- Nausea
- Respiratory irritation
- Dermal irritation

Often the acute effects of PHAs stem from other chemicals; it is essential to provide medical personal a list of potential chemicals you have been exposed to. Chronic effects reported from occupational exposure to PAHs include but are not limited to:

- Chronic bronchitis
- Chronic cough irritation
- Bronchogenic cancer
- Dermatitis
- Cutaneous photosensitization
- Pilosebaceous reactions

The symptoms are common with many other illnesses, and the medical profession should be given all known potential chemical exposure data upon arrival at the medical care facility.

5.2 Real-Time Exposure Measurement

Monitoring shall be performed where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices, and PPE so that employees are not exposed to levels which exceed PELs, or published exposure levels if there are no PELs.

Air monitoring shall be used to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of employee protection needed onsite. Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over PELs or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows:

- When work begins on a different portion of the site
- When contaminants other than those previously identified are being handled
- When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling)
- When employees are handling leaking drums or containers or working in areas with obvious liquid contamination

Monitoring shall be performed within the work area onsite to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the

appropriate levels of PPE. Table 5-1 specifies the real-time monitoring equipment, which may be used for this project.

We do not anticipate the need to perform exposure monitoring due to the inherent nature of the contaminants of concern and their likely route into the body. If the conditions on the jobsite change so that exposure potential increases, the SSHO shall modify the SHSP and they will receive clearance on their anticipated air monitoring activities from the Resolution Consultants Health and Safety Manager or his designee.

Table 5-1
Monitoring Parameters and Equipment

Instrument	Manufacturer/Model*	Substances Detected
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Note:
*Or similar unit, as approved by the Resolution Consultants Health and Safety Manager or designee

5.2.1 Health and Safety Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions. The concentration level (above background level) and the ability of the PPE to protect against that specific contaminant determine each action level. The action levels are based on concentrations in the breathing zone.

If ambient levels are measured, which exceed the action levels in areas accessible to unprotected personnel, necessary control measures (barricades, warning signs, and mitigative actions to limit, etc.) must be implemented prior to commencing activities at the specific work area.

Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of SSHO or the Resolution Consultants Health and Safety Manager or designee.

Reasons to upgrade:

- Known or suspected presence of dermal hazards

- Occurrence or likely occurrence of gas, vapor, or dust emission

- Change in work task that will increase the exposure or potential exposure to hazardous materials

Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected
- Change in site conditions that decrease the potential hazard
- Change in work task that will reduce exposure to hazardous materials

5.2.2 Monitoring Procedures

The SSHO will assess the atmosphere for acceptable concentrations/levels using the prescribed hand-held direct read instrumentation prior to any personnel entering into the area, and continuously thereafter. The monitoring devices may then be assigned to individual personnel working within the EZ.

Table 5-2 will be updated with data should the needed sampling parameters change.

Table 5-2
Monitoring Procedures and Action Levels

Parameter	Location and Interval	Response Level (Meter Units/Ppm Above Background)	Response
N/A	N/A	N/A	N/A

5.2.2.1 Monitoring Equipment Calibration

All instruments used will be calibrated at the beginning and end of each work shift, in accordance with the manufacturer's recommendations. If the owner's manual is not available, the personnel operating the equipment will contact the applicable office representative, rental agency, or manufacturer for technical guidance for proper calibration. If equipment cannot be pre-calibrated to specifications, site operations requiring monitoring for worker exposure or offsite migration of contaminants will be postponed or temporarily ceased until this requirement is completed.

5.2.2.2 Personal Sampling

Should site activities warrant performing personal sampling (breathing zone) to better assess chemical exposures experienced by Resolution Consultants employees, the SSHO, under the direction of a Certified Industrial Hygienist (CIH), or Certified Safety Professional (CSP) will be responsible for specifying the monitoring required. Within five working days after the receipt of monitoring results, the CIH or CSP will notify each employee, in writing, of the results that represent that employee's exposure. Copies of air sampling results will be maintained in the SSHO project files.

If the site activities warrant, the subcontractor will ensure its employees' exposures are quantified via the use of appropriate sampling techniques. The subcontractor shall notify the employees sampled in accordance with health and safety regulations, and provide the results to the SSHO for use in determining the potential for other employees' exposure.

5.3 Heat and Cold Stress

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress.

5.3.1 Responding to Heat-Related Illness

Heat stress can be a significant field site hazard, particularly for non-acclimated personnel operating in a hot, humid setting. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim, and the prevention of heat stress casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress as outlined in *5-511-Heat Stress Prevention*.

The guidance below will be used in identifying and treating heat-related illness.

Table 5-3
Identification and Treatment of Heat-Related Illness

Type of Heat-Related Illness	Description	First Aid
Mild Heat Strain	The mildest form of heat-related illness. Victims exhibit irritability, lethargy, and significant sweating. The victim may complain of headache or nausea. This is the initial stage of overheating, and prompt action at this point may prevent more severe heat-related illness from occurring.	• Provide the victim with a work break during which he/she may relax, remove any excess protective clothing, and drink cool fluids. • If an air-conditioned spot is available, this is an ideal break location. • Once the victim shows improvement, he/she may resume working; however, the work pace should be moderated to prevent recurrence of the symptoms.
Heat Exhaustion	Usually begins with muscular weakness and cramping, dizziness, staggering gait, and nausea. The victim will have pale, clammy moist skin and may perspire profusely. The pulse is weak and fast and the victim may faint unless they lie down. The bowels may move involuntarily.	• Immediately remove the victim from the work area to a shady or cool area with good air circulation (*avoid drafts or sudden chilling*). • Remove all protective outerwear. • Call a physician. • Treat the victim for shock. (*Make the victim lie down, raise his or her feet 6–12 inches, and keep him/her cool by loosening all clothing*). • If the victim is conscious, it may be helpful to give him/ her sips of water. • Transport victim to a medical facility ASAP.
Heat Stroke	The most serious of heat illness, heat stroke represents the collapse of the body's cooling mechanisms. As a result, body temperature may rise to 104 degrees Fahrenheit or higher. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, nausea can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. Heat stroke can occur suddenly.	• Immediately evacuate the victim to a cool/shady area. • Remove all protective outerwear and as much personal clothing as decency permits. • Lay the victim on his/her back w/the feet slightly elevated. • Apply cold wet towels or ice bags to the head, armpits, and thighs. • Sponge off the bare skin with cool water. • The main objective is to cool without chilling the victim. • Give no stimulants or hot drinks. • Since heat stroke is a severe medical condition requiring professional medical attention, emergency medical help should be summoned immediately to provide onsite treatment of the victim and proper transport to a medical facility.

5.3.2 Responding to Cold-Related Illness

If work on this project is conducted in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Work will cease under unusually hazardous conditions (e.g., wind-chill less than 0°F, or wind-chill less than 10°F with precipitation). Systemic cold exposure is referred to as hypothermia. Localized cold exposure is generally labeled frostbite. Recognition of the symptoms of cold related illness will be discussed during the health and safety briefing conducted prior to the onset of site activities. Refer to the 2003 ACGIH TLV for Chemical Substances and Physical Agents for additional information on cold stress prevention, monitoring, and work-warming regimens. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress as outlined in *5-505-Cold Stress Prevention.*

5.3.2.1 Hypothermia

Hypothermia is a life-threatening condition in which the core body temperature falls below 95°F. Hypothermia can occur at temperatures above freezing, particularly when the skin or clothing becomes wet. During exposure to cold, maximum shivering occurs when the core temperature falls to 95°F. As hypothermia progresses, depression of the central nervous system becomes increasingly more severe. This accounts for the progressive signs and symptoms ranging from sluggishness and slurred speech to disorientation and eventually unconsciousness (see Table 5-4).

Table 5-4
Progressive Clinical Symptoms of Hypothermia

Core Temperature (°F)	Clinical Signs
95°	Maximum shivering
87° — 89°	Consciousness clouded; blood pressure becomes difficult to obtain; pupils dilated
84° — 86°	Progressive loss of consciousness; muscular rigidity; respiratory rate decreases
79°	Victim rarely conscious
70° — 72°	Maximum risk of ventricular fibrillation

The ability to sustain metabolic rate and to reduce skin blood flow is diminished by fatigue. Thus, fatigue increases the risk of severe hypothermia by decreasing metabolic heat. Additionally, because blood flow through the skin is reduced to conserve heat, the skin and underlying tissues become more susceptible to frostbite.

5.3.2.2 Frostbite

Frostbite is both the general and medical term given to areas of cold injury. Unlike hypothermia, frostbite rarely occurs unless environmental temperatures are less than freezing and usually less than 20°F. Frostbite injuries occur most commonly on the distal parts of the body (nose, earlobes, hands, and feet) that are subject to intense vasoconstriction. The three general categories of frostbite are:

— Frostnip — A whitened area of the skin, which is slightly burning or painful.

— Superficial frostbite — Waxy, white skin with a firm sensation but with some resiliency. Symptomatically feels “warm” to the victim with a notable cessation of pain.

— Deep frostbite — Tissue damage deeper than the skin, at times, down to the bone. The skin is cold, numb, and hard.

5.3.2.3 Preventing Cold Related Illness

The following are precautions that will be taken to prevent illness relating to cold stress:

- Educate worker to recognize the symptoms of frostbite and hypothermia.
- Ensure the availability of an enclosed, heated environment within the vehicles. The nearest heated environment will be the interior of the vehicles at the site.
- Ensure the availability of dry changes of clothes.
- Record temperature readings.
- Ensure the availability of warm beverages, preferably non-caffeinated.

5.3.2.4 Monitoring for Cold Exposure

Cold stress monitoring will be conducted in accordance with the ACGIH cold stress TLV. The TLV objective is to prevent the deep body core temperature from falling below 96.8°F and to prevent cold injury to body extremities. Temperature monitoring and recording will be initiated in the following situations:

- At the SSHO discretion when suspicion is based on changes in worker's performance or mental status.
- At worker's request.
- As a screening measure whenever any one worker on the site develops hypothermia.
- Any person developing moderate hypothermia (a core temperature of 92°F) cannot return to work for 48 hours.

6.0 ENVIRONMENTAL PROGRAM (ENVIRONMENT)

6.1 Environmental Compliance and Management

This project and the individual tasks will comply with all federal, state, provincial, and local environmental requirements.

6.1.1 Air Emissions

No air emission concerns are foreseen on the site. As such, no additional protective measures are required for the execution of the project.

6.1.2 Hazardous Waste Management

All investigation derived waste will be containerized in U.S. Department of Transportation approved steel open top drums. The drums will be labeled as investigation derived waste, along with the generation date, generator name, and contact phone number. Resolution Consultants will sample the drums for disposal parameters and assist NSA Mid-South in making arrangements for disposal within 90-days of generation. All manifests and waste profiles will be signed by NSA Mid-South.

6.1.3 Storm Water Pollution Prevention

No storm water pollution prevention concerns are foreseen on the site. As such, no additional protective measures are required for the execution of the project.

6.1.4 Wetlands Protection

No wetland protection concerns are foreseen on the site. Intrusion into wetland areas will be limited to personnel on foot, accessing surface water sampling points. As such, no additional protective measures are required for the execution of the project.

6.1.5 Critical Habitat Protection

No critical habitat protection concerns are foreseen on the site. Intrusion into critical areas will be limited to personnel on foot, accessing surface water sampling points. As such, no additional protective measures are required for the execution of the project.

6.1.6 Environmental Protection

No additional environmental protection concerns are foreseen on the site. Intrusion into environmentally sensitive areas will be limited to personnel on foot, accessing sampling points. As such, no additional protective measures are required for the execution of the project.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Personal Protective Equipment

The purpose of PPE is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. *5-208-Personal Protective Equipment Program* lists the general requirements for selection and usage of PPE. Table 7-1 lists the minimum PPE required during site operations and additional PPE that may be necessary. The specific PPE requirements for each work task are specified in the individual THAs. By signing this HASP the employee agrees having been trained in the use, limitations, care, and maintenance of the protective equipment to be used by the employee at this project. If training has not been provided, request same of the PM/SSHO for the proper training before signing.

Table 7-1
Personal Protective Equipment

Type	Material	Additional Information
Minimum PPE		
Safety Vest	ANSI Type II high-visibility	Must have reflective tape/be visible from all sides
Boots	Leather	ANSI approved safety toe
Safety Glasses	Clear or tinted	ANSI Approved; ≥ 98% UV protection
Hearing Protection	Ear plugs or muffs	Hearing protection will be worn according to manufacturer specifications.
Hard Hat		ANSI Approved; recommended wide-brim
Work Uniform		No shorts/cutoff jeans or sleeveless shirts
Additional PPE		
Hearing Protection	Ear plugs and/or muffs	In hazardous noise areas
Leather Gloves		If working with sharp objects or powered equipment.
Protective Chemical Gloves	Inner: Chemical resistant	Use during handling of all potentially impacted media.
Sunscreen	SPF 30 or higher	
Insect Repellant	DEET, Permethrin, etc.	Adhere to manufacturers application instructions and precautions
Biological Wipes or Wash	Ivy X Wipes or Technu	Post exposure wipes and wash for poison oak, ivy, sumac etc.

7.2 PPE Doffing and Donning (UTILIZATION) Information

The following information is to provide field personnel with helpful hints that, when applied, make donning and doffing of PPE a more safe and manageable task:

- Never cut disposable booties from your feet with basic utility knives. This has resulted in workers cutting through the booty and the underlying sturdy leather work boot, resulting in significant cuts to the legs/ankles. Use a pair of scissors or a package/letter opener (cut above and parallel with the work boot) to start a cut in the edge of the booty, then manually tear the material down to the sole of the booty for easy removal.

- When applying duct tape to PPE interfaces (wrist, lower leg, around respirator, etc.) and zippers, leave approximately one inch at the end of the tape to fold over onto itself. This will make it much easier to remove the tape by providing a small handle to grab while still wearing gloves. Without this fold, trying to pull up the tape end with multiple gloves on may be difficult and result in premature tearing of the PPE.

- Have a "buddy" check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation.

- Never perform personal decontamination with a pressure washer.

7.3 Decontamination

7.3.1 General Requirements

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials, etc.).

All personal decontamination activities shall be performed with an attendant (buddy) to provide assistance to personnel that are performing decontamination activities. Depending on specific site hazards, attendants may be required to wear a level of protection that is equal to the required level in the Exclusion Zone (EZ).

All persons and equipment entering the EZ shall be considered contaminated, and thus, must be properly decontaminated prior to entering the Support Zone (SZ).

Decontamination procedures may vary based onsite conditions and nature of the contaminant(s). If chemicals or decontamination solutions are used, care should be taken to minimize reactions

between the solutions and contaminated materials. In addition, personnel must assess the potential exposures created by the decontamination chemical(s) or solutions. The applicable Material Safety Data Sheet (MSDS) must be reviewed, implemented, and filed by personnel contacting the chemicals/solutions.

All contaminated PPE and decontamination materials shall be contained, stored, and disposed of in accordance with site-specific requirements determined by site management.

7.3.2 Decontamination Equipment

The equipment required to perform decontamination may vary based onsite-specific conditions and the nature of the contaminant(s). The following equipment is commonly used for decontamination purposes:

- Soft-bristle scrub brushes or long-handled brushes to remove contaminants
- Hoses, buckets of water, or garden sprayers for rinsing
- Large plastic/galvanized wash tubs or children's wading pools for washing and rinsing solutions
- Large plastic garbage cans or similar containers lined with plastic bags for the storage of contaminated clothing and equipment
- Metal or plastic cans or drums for the temporary storage of contaminated liquids
- Paper or cloth towels for drying protective clothing and equipment

7.3.3 Personal/Equipment Decontamination

All equipment leaving the EZ shall be considered contaminated and must be properly decontaminated to minimize the potential for exposure and offsite migration of impacted materials. Such equipment may include, but is not limited to: sampling tools, heavy equipment, vehicles, PPE, support devices (e.g., hoses, cylinders, etc.), and various handheld tools.

All employees performing equipment decontamination shall wear the appropriate PPE to protect against exposure to contaminated materials. The level of PPE may be equivalent to the level of PPE

required in the EZ. Other PPE may include splash protection, such as face-shields and splash suits, and knee protectors. Following equipment decontamination, employees may be required to follow the proper personal decontamination procedures above.

The PPE to be used onsite is considered disposable and will be removed and containerized in the CRZ during decontamination activities. Suits and booties will be removed first, and gloves last.

1. For Glove removal:

    - Grasp the cuff of the dominant hand and pull glove over the bulk of the hand, leaving the fingers inside the glove.

    - Use the dominant hand to grasp the cuff of the non-dominant hand and pull the glove completely off (inside-out) and place inside of the dominant hand glove.

    - Once removed, employee should only touch the inside material of the dominant hand glove.

    - Thoroughly wash hands.

2. Dry Decontamination:

    - Use a brush or similar to brush dirt and debris off of boots prior to leaving the site
    - Once clean either decontaminate brush or dispose of it accordingly

For larger equipment, a high-pressure washer may need to be used. Some contaminants require the use of a detergent or chemical solution and scrub brushes to ensure proper decontamination. Before heavy equipment and trucks are taken offsite, the SS and/or SSHO will visually inspect them for signs of contamination. If contamination is present, the equipment must be decontaminated.

For equipment, use the following steps for decontamination:

1. Remove majority of visible gross contamination in EZ
2. Wash equipment in decontamination solution with a scrub brush and/or power wash heavy equipment

3. Rinse equipment
4. Visually inspect for remaining contamination
5. Follow appropriate personal decontamination steps outlined above.

All decontaminated equipment shall be visually inspected for contamination prior to leaving the Contaminant Reduction Zone (CRZ). Signs of visible contamination may include an oily sheen, residue, or contaminated soils left on the equipment. All equipment with visible signs of contamination shall be discarded or re-decontaminated until clean. Depending on the nature of the contaminant, equipment may have to be analyzed using a wipe method or other means.

8.0 PROJECT HEALTH AND SAFETY ORGANIZATION

8.1 Project Manager [Ben Brantley]

The Project Manager (PM) has overall management authority and responsibility for all site operations, including safety. The PM will provide the site supervisor with work plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations.

8.2 Site Supervisor [Corey Coleman]

The site supervisor has the overall responsibility and authority to direct work operations at the job site according to the provided work plans. The PM may act as the site supervisor while onsite.

8.2.1 Responsibilities

The site supervisor is responsible to:

- Discuss deviations from the work plan with the SSHO and PM.
- Discuss safety issues with the PM, SSHO, and field personnel.
- Assist the SSHO with the development and implementation of corrective actions for site safety deficiencies.
- Assist the SSHO with the implementation of this HASP and ensuring compliance.
- Assist the SSHO with inspections of the site for compliance with this HASP and applicable SOPs.

8.2.2 Authority

The site supervisor has authority to:

- Verify that all operations are in compliance with the requirements of this HASP, and halt any activity that poses a potential hazard to personnel, property, or the environment.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the SSHO, the Resolution Consultants Health and Safety Manager or designee, and the PM.

8.2.3 Qualifications

In addition to being Hazardous Waste Operations and Emergency Response (HAZWOPER)-qualified (see Section 4.1), the Site Supervisor is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

8.3 Site Safety Health Officer [Corey Coleman]

8.3.1 Responsibilities

The SSHO is responsible to:

- Update the site-specific HASP to reflect changes in site conditions or the scope of work. HASP updates must be reviewed and approved by the Resolution Consultants Health and Safety Manager or designee. Updates must be documented using the Revision History in Attachment 2.

- Be aware of changes in Resolution Consultants' Safety Policies, Programmatic Health and Safety Plan (PSHP), or SOPs.

- Monitor the lost time incidence rate for this project and work toward improving it.

- Inspect the site for compliance with this HASP and the SOPs using the appropriate audit inspection checklist provided by the Resolution Consultants Health and Safety Manager or designee.

- Work with the site supervisor and PM to develop and implement corrective action plans to correct deficiencies discovered during site inspections. Deficiencies will be discussed with project management to determine appropriate corrective action(s).

- Contact the Resolution Consultants Health and Safety Manager or designee for technical advice regarding safety issues.

- Provide a means for employees to communicate safety issues to management in a discreet manner (e.g., suggestion box, etc.).

- Determine emergency evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation.

- Check that all site personnel and visitors have received the proper training and medical clearance prior to entering the site.

- Establish any necessary controlled work areas (as designated in this HASP or other safety documentation).

- Present tailgate safety meetings and maintain attendance logs and records.

- Discuss potential health and safety hazards with the Site Supervisor, the Resolution Consultants Health and Safety Manager or designee, and the PM.

- Select an alternate SSHO by name and inform him/her of their duties, in the event that the SSHO must leave or is absent from the site. The alternate SSHO must be approved by the PM.

8.3.2 Authority

The SSHO has authority to:

- Verify that all operations are in compliance with the requirements of this HASP.

- Issue a "Stop Work Order" under the conditions set forth in this HASP.

- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the Resolution Consultants Health and Safety Manager or designee and the PM.

8.3.3 Qualifications

In addition to being HAZWOPER-qualified, the SSHO is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

EnSafe is acting under the EM-385-1-1 requirements of an architectural and engineering firm. According to Section 28 the SSHO is to have 1 year of oversight experience involving clean-up operations.

8.4 Employees

8.4.1 Employee Responsibilities

Responsibilities of employees associated with this project include, but are not limited to:

- Understanding and abiding by the policies and procedures specified in the HASP and other applicable safety policies, and clarifying those areas where understanding is incomplete.
- Providing feedback to health and safety management relating to omissions and modifications in the HASP or other safety policies.
- Notifying the SSHO, in writing, of unsafe conditions and acts.

8.4.2 Employee Authority

The health and safety authority of each employee assigned to the site includes the following:

- The right to refuse to work and/or stop work authority when the employee feels that the work is unsafe (including subcontractors or team contractors), or where specified safety precautions are not adequate or fully understood.
- The right to refuse to work on any site or operation where the safety procedures specified in this HASP or other safety policies is not being followed.
- The right to contact the SSHO or the Resolution Consultants Health and Safety Manager or designee at any time to discuss potential concerns.
- The right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions

8.5 Resolution Consultants Health and Safety Manager [John Knopf, CSP]

The Health and Safety Manager is assigned to provide guidance and technical support for the project. Duties include the following:

- Approving this HASP and any required changes
- Approving the designated SSHO

- Reviewing all personal exposure monitoring results
- Investigating any reported unsafe acts or conditions

The Health and Safety Manager may designate another safety professional as the direct liaison for this project; if that is the case, he will remain available for any or all of the tasks listed here or elsewhere in this HASP in lieu of the designee.

8.6 Subcontractors

The requirements for subcontractor selection and subcontractor safety responsibilities are outlined in *5-213-Subcontractors*. Each Resolution Consultants subcontractor is responsible for assigning specific work tasks to their employees. Each subcontractor's management will provide qualified employees and allocate sufficient time, materials, and equipment to safely complete assigned tasks. In particular, each subcontractor is responsible for equipping its personnel with any required PPE and all required training.

Resolution Consultants considers each subcontractor to be an expert in all aspects of the work operations for which they are tasked to provide, and each subcontractor is responsible for compliance with the regulatory requirements that pertain to those services. Each subcontractor is expected to perform its operations in accordance with its own unique safety policies and procedures, to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to Resolution Consultants for review prior to the start of onsite activities, if required.

Hazards not listed in this HASP but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed to the Resolution Consultants PM or the Site Supervisor prior to beginning work operations. The Site Supervisor or authorized representative has the authority to halt any subcontractor operations, and to remove any subcontractor or subcontractor employee from the site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

8.7 Visitors

Authorized visitors (e.g., client representatives, regulators, Resolution Consultants management staff, etc.) requiring entry to any work location on the site will be briefed by the SS on the hazards present at that location. Visitors will be escorted at all times at the work location and will be

responsible for compliance with their employer's health and safety policies. In addition, this HASP specifies the minimum acceptable qualifications, training and PPE, which are required for entry to any controlled work area; visitors must comply with these requirements at all times.

8.7.1 Visitor Access

Visitors to any HAZWOPER controlled-work area must comply with the health and safety requirements of this HASP, and demonstrate an acceptable need for entry into the work area. All visitors desiring to enter any controlled work area must observe the following procedures:

1. A written confirmation must be received by Resolution Consultants documenting that each of the visitors has received the proper training and medical monitoring required by this HASP. Verbal confirmation can be considered acceptable provided such confirmation is made by an officer or other authorized representative of the visitor's organization.

2. Each visitor will be briefed on the hazards associated with the site activities being performed and acknowledge receipt of this briefing by signing the appropriate tailgate safety briefing form.

3. All visitors must be escorted by a Resolution Consultants employee.

If the site visitor requires entry to any EZ, but does not comply with the above requirements, all work activities within the EZ must be suspended. Until these requirements have been met, entry will not be permitted.

Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

9.0 SITE CONTROL

9.1 General

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. The degree of site control necessary depends on the site characteristics, site size, and the surrounding community.

Controlled work areas will be established at each work location, and if required, will be established directly prior to the work being conducted. Diagrams designating specific controlled work areas will be drawn on site maps, posted in the support vehicle or trailer and discussed during the daily safety meetings. If the site layout changes, the new areas and their potential hazards will be discussed immediately after the changes are made. General examples of zone layouts have been developed for drilling and earth moving activities (e.g., excavating, trenching, drilling) and are attached to this section.

9.2 Controlled Work Areas

Each HAZWOPER controlled work area will consist of the following three zones:

- Exclusion Zone: Contaminated work area.
- Contamination Reduction Zone: Decontamination area.
- Support Zone: Uncontaminated or "clean area" where personnel should not be exposed to hazardous conditions.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this HASP. The Exclusion Zone and the Contamination Reduction Zone are considered work areas. The Support Zone is accessible to the public (e.g., vendors, inspectors).

9.2.1 Exclusion Zone

The Exclusion Zone is the area where primary activities occur, such as sampling, remediation operations, installation of wells, cleanup work, etc. This area must be clearly marked with hazard tape, barricades or cones, or enclosed by fences or ropes. Only personnel involved in work activities, and meeting the requirements specified in the applicable THA and this HASP will be allowed in an Exclusion Zone. The extent of each area will be sufficient to ensure that personnel

located at/beyond its boundaries will not be affected in any substantial way by hazards associated with sample collection activities.

- **HSA Drilling**. Determine the mast height of the drill rig. This height will be cleared (minimum), if practical, in all directions from the bore-hole location and designated as the exclusion zone. The cleared area will be sufficient to accommodate movement of necessary equipment and the stockpiling of spoils piles. Vehicles and other hard barriers should be used where applicable to protect employees and public.

- **Hand Augering/GW Sampling**. A distance of 10 feet (minimum) will be cleared in all directions from the sampling location in order to accommodate additional sampling equipment. Vehicles and other hard barriers should be used where applicable to protect employees and public.

All personnel should be alert to prevent unauthorized, accidental entrance into controlled-access areas (the EZ and CRZ). If such an entry should occur, the trespasser should be immediately escorted outside the area, or all HAZWOPER-related work must cease. All personnel, equipment, and supplies that enter controlled-access areas must be decontaminated or containerized as waste prior to leaving (through the CRZ only).

9.2.2 Contamination Reduction Zone

The Contamination Reduction Zone is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked with hazard tape and access limited to personnel involved in decontamination.

9.2.3 Support Zone

The Support Zone is an uncontaminated zone where administrative and other support functions, such as first aid, equipment supply, emergency information, etc., are located. The Support Zone shall have minimal potential for significant exposure to contaminants (i.e., background levels).

Employees will establish a Support Zone (if necessary) at the site before the commencement of site activities. The Support Zone would also serve as the entry point for controlling site access.

9.3 Site Access Documentation

If implemented by the PM, all personnel entering the site shall complete the "Site Entry/Exit Log" located at the site trailer or primary site support vehicle.

9.4 Site Security

Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards
- Avoid the increased hazards from vandals or persons seeking to abandon other wastes on the site
- Prevent theft
- Avoid interference with safe working procedures

To maintain site security during working hours:

1. Maintain security in the Support Zone and at access control points.
2. Establish an identification system to identify authorized persons and limitations to their approved activities.
3. Assign responsibility for enforcing authority for entry and exit requirements.
4. When feasible, install fencing or other physical barrier around the site.
5. If the site is not fenced, post signs around the perimeter and whenever possible, use guards to patrol the perimeter. Guards must be fully apprised of the hazards involved and trained in emergency procedures.
6. Have the PM approve all visitors to the site. Make sure they have a valid purpose for entering the site. Have trained site personnel accompany visitors at all times and require them to wear the appropriate protective equipment.

To maintain site security during off-duty hours:

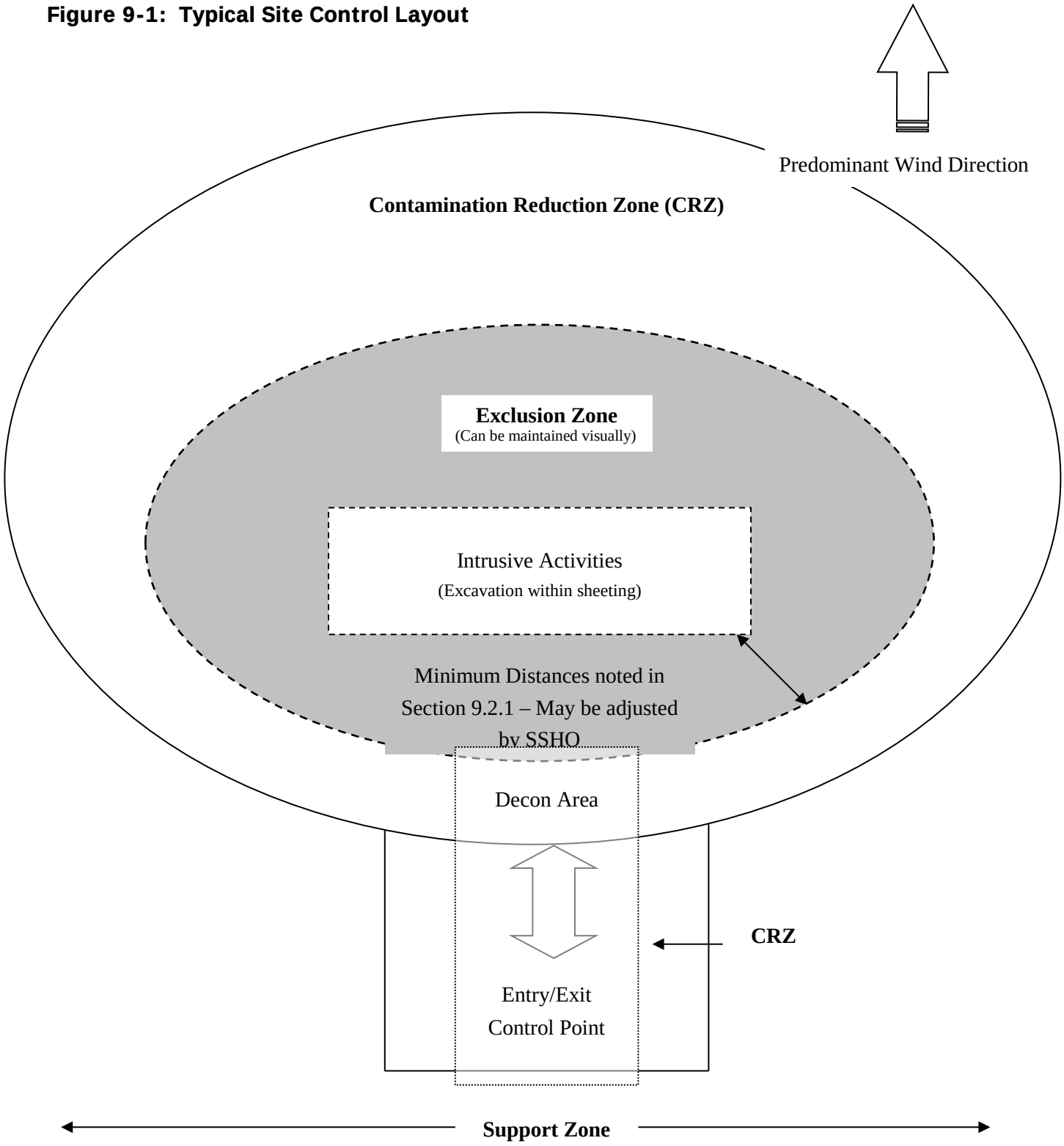
1. If necessary, assign trained, in-house technicians for site surveillance. They will be familiar with the site, the nature of the work, the site's hazards, and respiratory protection techniques.

2. If necessary, use security guards to patrol the site boundary. Such personnel may be less expensive than trained technicians, but will be more difficult to train in safety procedures and will be less confident in reacting to problems around hazardous substances.

3. Enlist public enforcement agencies, such as the local police department, if the site presents a significant risk to local health and safety.

4. Secure the equipment.

Figure 9-1: Typical Site Control Layout



10.0 EMERGENCY RESPONSE PLANNING

10.1 Emergency Action Plan

Although the potential for an emergency to occur is remote, an emergency action plan has been prepared for this project should such critical situations arise. The only significant type of onsite emergency that may occur is physical injury or illness to a member of the Resolution Consultants team. The Emergency Action Plan (EAP) will be reviewed by all personnel prior to the start of field activities. On long term sites, a test of the EAP will be performed within the first three (3) days of the project field operations. This test will be evaluated and documented in the project records.

Four major categories of emergencies could occur during site operations:

1. Illnesses and physical injuries (including injury-causing chemical exposure)
2. Catastrophic events (fire, explosion, earthquake, or chemical)
3. Workplace violence, bomb threat
4. Safety equipment problems

10.1.1 Emergency Coordinator

The duties of the Emergency Coordinator (EC) include:

- Implement the EAP based on the identified emergency condition
- Notify the appropriate project and SH&E Department personnel of the emergency (Table 10-1)
- Verify emergency evacuation routes and muster points are accessible
- Conduct routine EAP drills and evaluate compliance with the EAP

Table 10-1
Emergency Contacts

Emergency Coordinators/Key Personnel

Name	Title/Workstation	Telephone Number	Mobile Phone
Jim Heide	NSA Mid-South Director of Public Works	(901) 874-5367	
Ben Brantley	PM	(901) 937-4222	(901) 896-8457
Corey Coleman	SS/SSHO/EC	(901) 937-4434	(901) 482-3742
John Knopf	Resolution Consultants H&S Manager	(901) 372-7962	(901) 451-1464
Herold Hannah	AECOM Regional SH&E Manager	(412) 904-3606	(412) 303-1199
Sean Liddy	AECOM District SH&E Manager		(443) 553-1403
Russ Reynolds	AECOM District SH&E Manager	(864) 234-3042	(864) 906-7309
Incident Reporting	**AECOM Personnel**	**(800) 348-5046**	
	EnSafe Personnel	**Call John Knopf**	
Ann-Alyssa Hill	AECOM TDG/IATA Shipping Expert	(804) 515-8506	(804) 640-4815
Kevin Arick	EnSafe TDG/IATA Shipping Expert	(901) 372-7962	(901) 356-3525

Organization/Agency

Name	Telephone Number
Base Dispatch (Police)	(901) 874-7911 (901) 874-5533
Base Dispatch (Fire Department)	(901) 874-7911 (901) 874-5533
Ambulance Service ***(EMT will determine appropriate hospital for treatment)***	(901) 874-7911 (901) 874-5533
Emergency Hospital ***(Use by site personnel is only for emergency cases)***	
Methodist North Hospital 3960 New Covington Pike Memphis, TN 38128	(901) 516-5200
Emergency Hospital Route: See Figure 10-1	
Poison Control Center	(800) 222-1222
Pollution Emergency	(800) 292-4706
National Response Center	(800) 424-8802
Title 3 Hotline	(800) 424-9346

Public Utilities

Name	Telephone Number
Tennessee One Call	811 (800) 351-1111

10.1.2 Site-Specific Emergency Procedures

Prior to the start of site operations, the EC will complete Table 10-2 with any site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

Table 10-2
Emergency Planning

Emergency	Evacuation Route	Muster Location
Chemical Spill	• Upwind	• Site vehicles
Fire/Explosion	• Upwind	• Site vehicles
Tornado/Severe Weather	• Closest available tornado shelter	• Building # (TBD by SSHO)
Lightning	• Closest available shelter	• Vehicle/Site Trailer
Additional Information		
Communication Procedures	Direct verbal communications. Must be supplemented when voices cannot be clearly perceived above ambient noise levels and when a clear line-of-sight cannot be maintained by personnel. Personnel will bring a mobile phone to the site to ensure that communications with local emergency responders is maintained, when necessary.	
CPR/First Aid Trained Personnel	Corey Coleman	
Site-Specific Spill Response Procedures	Chemicals brought onsite will be limited to fuel for vehicles and small quantities of laboratory preservatives. In the event of a minor spill, sorbent material will be placed on the spill and then transferred to a container for disposal. Field personnel will immediately notify the PM who in turn will notify the CLEAN representative.	

10.1.3 Spill Containment Procedure

Work activities may involve the use of hazardous materials (e.g., fuels, solvents) or work involving drums or other containers. State specific spill reporting procedures have been included in Attachment 8. If anything beyond these procedures is required, a site specific spill reporting card/procedure must be developed for the site. Procedures outlined below will be used to prevent or contain spills:

- All hazardous material will be stored in appropriate containers
- Tops/lids will be placed back on containers after use
- Containers of hazardous materials will be stored appropriately away from moving equipment

At least one spill response kit, to include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material (e.g., speedy dri) shall be available at each work site (more as needed).

- All hazardous commodities in use (e.g., fuels) shall be properly labeled.
- Containers shall only be lifted using equipment specifically manufactured for that purpose.
- Drums/containers will be secured and handled in a manner which minimizes spillage and reduces the risk of musculoskeletal injuries.

10.1.4 Safety Accident/Incident Reporting

All accidents and incidents that occur onsite during any field activity will be promptly reported to the SSHO and the immediate supervisor.

If any Resolution Consultants employee is injured and requires medical treatment, the Site Supervisor will report the incident in accordance with Resolution Consultants' incident reporting procedures. A copy of the final Supervisor's Report of Incident will be provided to the Resolution Consultants Health and Safety Manager or designee before the end of the following shift.

If any employee of a subcontractor is injured, documentation of the incident will be accomplished in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the SSHO within 24 hours after the accident has occurred.

All accidents/incidents will be investigated. Copies of all subcontractor accident investigations will be provided to the SSHO within five (5) days of the accident/incident.

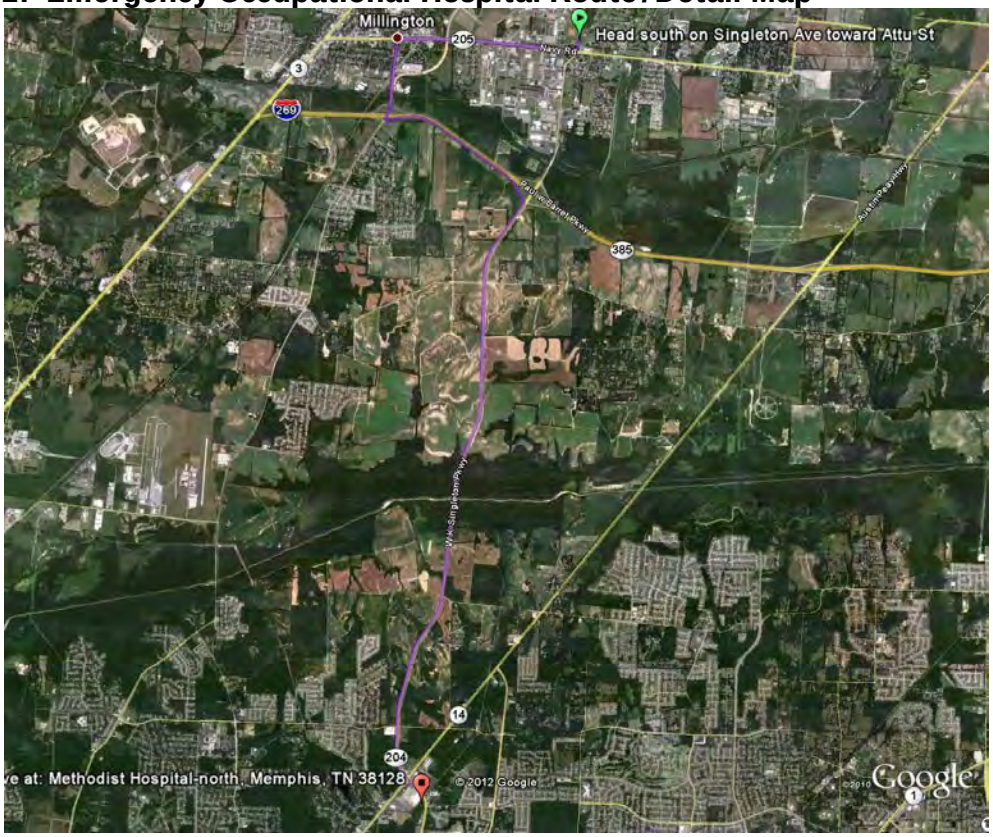
10.1.5 Environmental Spill/Release Reporting

All environmental spills or releases of hazardous materials (e.g., fuels, solvents, etc.), whether in excess of the Reportable Quantity or not, will be reported to the PM and Resolution Consultants Health and Safety Manager. In determining whether a spill or release must be reported to a regulatory agency, the Site Supervisor will assess the quantity of the spill or release and evaluate the reporting criteria against the state-specific reporting requirements, your applicable

regulatory permit, and/or client-specific reporting procedures. In order to support the Site Supervisor and expedite the decision to report to a state regulatory agency, state specific spill reporting procedures are included in Attachment 8. **If reporting to a US state or federal regulatory agency is required, Resolution Consultants has 15 minutes from the time of the spill/release to officially report it.**

EnSafe is not qualified to act as a spill response contractor. We act as notification only, in the event of a spill.

Figure 10-1: Emergency Occupational Hospital Route/Detail Map



Approximate time: 18 Minutes

Naval Support Activity Mid-South5722 Integrity Drive, Millington, TN 38054-5028

1. Head south toward Oriskany St
Restricted usage road
Go 0.2 mi

2. Turn left onto Oriskany St
Restricted usage road
Go 377 ft

3. Turn right onto Singleton Ave
Partial restricted usage road
About 2 mins
Go 0.8 mi

4. Continue onto TN-204 S/Singleton Pkwy

Go 0.3 mi

5. Turn left to merge onto I-269 S/TN-385 E
About 4 mins
Go 2.6 mi

6. Exit onto TN-14 S/Austin Peay Hwy toward Memphis
About 9 mins
Go 6.8 mi

7. Turn left onto New Covington Pike
Destination will be on the left
About 1 min
Go 0.2 mi
Total 10.9 mi

Methodist North Hospital3960 New Covington Pike, Memphis, TN 38128 — (901) 516-5200

11.0 PERSONNEL ACKNOWLEDGEMENT

By signing below, the undersigned acknowledges that he/she has read and reviewed the Resolution Consultants HASP for the project site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein.

Print Name	Signature	Organization	Date

Attachment 1
Cross Reference Table

The following cross-reference table provides information concerning the corresponding elements between the HASP for Site 41 and the accident prevention plan (APP) outline presented in Attachment 1 of the 2008 United States Army Corps of Engineers (USACE) Safety and Health Requirements Manual, EM-385-1-1. The format, content, procedures, and requirements in this HASP are directed solely to meet the onsite needs of Resolution Consultants' field workers and subcontractors who will be performing the work activities addressed in the HASP. Consequently, the document does not address any non site-specific safety performance requirements or programs, except to specify site/task-level site implementation in the work force. Nor does the HASP attempt to duplicate or reproduce any of Resolution Consultants' Corporate Safety, Health, and Environmental (SH&E) Program requirements, or information, except where specifying site-specific implementation needs. APP outline elements, which are not site specific, and are only addressed in Resolution Consultants' Corporate SH&E Program (rather than the HASP), are so indicated.

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
1. SIGNATURE SHEET.	An Approval page is located at the front of the HASP. The CTO manager and health and safety manager provide signed approval of the FINAL (not Draft) version of the HASP.
2. BACKGROUND INFORMATION. List the following:	
a. Contractor	HASP Cover and Section 1
b. Contract number	HASP Cover
c. Project name	HASP Cover
d. Brief project description, description of work to be performed, and location (map)	HASP Section 2. Map is presented in the Work Plan and will be available on the work site.
e. Contractor accident experience (provide information such as EMR, OSHA 200 Forms, corporate safety trend analyses)	This information is not site/project specific, and hence is not included as part of site-specific health and safety documents.
f. Listing of phases of work and hazardous activities requiring activity hazards analyses	HASP Section 2.2
3. STATEMENT OF SAFETY AND HEALTH POLICY.	HASP Section 1.2
4. RESPONSIBILITIES AND LINES OF AUTHORITIES.	
a. Identification and accountability of personnel responsible for safety – at both corporate and project level	HASP Section 8
b. Lines of authority	HASP Section 8
5. SUBCONTRACTORS AND SUPPLIERS. Provide the following:	
a. Identification of subcontractors and suppliers (if known)	Executive Summary
b. Means for controlling and coordinating subcontractors and suppliers	Resolution Consultants' Corporate SH&E documentation.
c. Safety responsibilities of subcontractors and suppliers	HASP Section 8.6

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
6. TRAINING.	
a. List subjects to be discussed with employees in safety indoctrination	HASP Section 4.3
b. List mandatory training and certifications, which are applicable to this project and any requirements for periodic retraining/recertification	HASP Section 4.2
c. Identify requirements for emergency response training	None required.
d. Outline requirements (who attends, when given, who will conduct etc.) for supervisory and employee safety meetings	HASP Section 4.3
7**. SAFETY AND HEALTH INSPECTIONS.**	
a. Who will conduct safety inspections, when inspections will be conducted, how the inspections will be recorded, deficiency tracking system, follow-up procedures, etc	Resolution Consultants' site audit policies are part of our Corporate SH&E Program documentation and so are not included this HASP.
b. Any external inspections/certifications which may be required	None required.
8. SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE.	
a. The company's written safety program goals, objectives, and accident experience goals for this contract should be provided	This information is part of Resolution Consultants' Corporate SH&E Program and are not included in this HASP.
b. A brief description of the company's safety incentive programs (if any) should be provided	Resolution Consultants' has no employee safety incentive program for the CLEAN Program.
c. Policies and procedures regarding noncompliance with safety requirements (to include disciplinary actions for violation of safety requirements) should be identified	Resolution Consultants policies regarding worker noncompliance are part of our Corporate SH&E Program documentation and are not included in this HASP.
d. Provide written company procedures for holding managers and supervisors accountable for safety	Resolution Consultants' policies regarding manager accountability for safety performance are part of our Corporate SH&E Program documentation and are not included in this HASP.
9. ACCIDENT REPORTING. The contractor shall identify who shall complete the following, how, and when:	
a. Exposure data (man-hours worked)	Not applicable.
b. Accident investigations, reports and logs	HASP Attachment 4, SOPs RC-004-PR, *Incident Reporting, and* RC-601-PR, *Recordkeeping*
c. Immediate notification of major accidents	HASP Section 10.1.4, Table 10-1.
10. MEDICAL SUPPORT. Outline on-site medical support and off-site medical arrangements.	HASP Section 10, Table 10-1.
11. PERSONAL PROTECTIVE EQUIPMENT. Outline procedures for conducting hazard assessments and written certifications for use of personal protective equipment.	Hazard assessment information is presented in HASP Section 3 and the Task Hazard Analyses presented in Attachment 3. PPE ensemble and equipment requirements are specified in Section 7 Task-specific PPE requirements are specified in the Task Hazard Analyses presented in Attachment 3.

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
12. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL (as applicable).	
a. Hazard communication program (01.B.04)	Resolution Consultants' Hazard Communication policies are part of our Corporate SH&E Program documentation. Additional details are presented in HASP Section 4.4
b. Emergency response plans:	
- procedures and tests (01.E.01)	HASP Section 9 and 10.
- spill plans (01.E.01, 06.A.02)	Not applicable.
- firefighting plan (01.E.01, 19.A.04)	Not applicable. Resolution Consultants' policy is to notify professional fire response agencies immediately in the event of fire. Resolution Consultants do not perform fire fighting activities.
- posting of emergency telephone numbers (01.E.04)	HASP Section 10
- wildfire prevention plan (09.K.01)	Not applicable.
- man overboard/abandon ship (19.A.04)	Not applicable.
c. Layout plans (04.A.01)	Not applicable.
d. Respiratory protection plan (05.E.01)	Not applicable.
e. Health hazard control program (06.A.02)	Task Hazard Analyses presented in Attachment 4.
f. Lead abatement plan (06.B.05 & specifications)	Not applicable.
g. Asbestos abatement plan (06.B.05 & specifications)	Not applicable.
h. Abrasive blasting (06.H.01)	Not applicable.
i. Confined space (06.I)	Not applicable.
j. Hazardous energy control plan (12.A.07)	Not applicable.
k. Critical lift procedures (16.C.17)	Not applicable.
l. Contingency plan for severe weather (19.A.03)	Not applicable.
m. Access and haul road plan (22.I.10)	Not applicable.
n. Demolition plan (engineering and asbestos surveys) (23.A.01)	Not applicable.
o. Emergency rescue (tunneling) (26.A.05)	Not applicable.
p. Underground construction fire prevention and protection plan (26.D.01)	Not applicable.
q. Compressed air plan (26.I.01)	Not applicable.
r. Formwork and shoring erection and removal plans (27.B.02)	Not applicable.
s. Lift slab plans (27.D.01)	Not applicable.

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
t. Blasting plan (29.A.01)	Not applicable.
u. Diving plan (30.A.13)	Not applicable.
v. Plan for prevention of alcohol and drug abuse (Defense Federal Acquisition Regulation Supplement Subpart 252.223.7004, Drug-Free Force)	Resolution Consultants' Drug and Alcohol Abuse policies are part of our Corporate Human Resources and SH&E Program documentation. These requirements are not included in this HASP.

Notes:

CLEAN = Comprehensive Long-Term Environmental Action Navy
CTO = contract task order
EMR = experience modification ratio
HASP = Health and Safety Plan
IDW = investigation derived waste
OSHA = Occupational Safety and Health Administration
PPE = personal protective equipment
SH&E = Safety, Health, and Environment
SOP = standard operating procedure
TBD = to be determined
USACE = United States Army Corps of Engineers

Attachment 2
HASP Revision Table

Site Health and Safety Plan
NSA Mid-South AOC1/UXO1
Revision History

Revision No.	Revision Date	Approved By (Initials)	Changes, Discussion
0			

Attachment 3
Task Hazard Analysis

Task Hazard Analysis (THA)

Activity/Work Task: **Groundwater Sampling, Monitoring Wells**	Overall Risk Assessment Code (RAC) (Use highest code)	**L**
Project Location: NSA Mid-South AOC1/UXO1	**Risk Assessment Code (RAC) Matrix**	
Project Number: 0888812676	**Severity** / **Probability**	
Date Prepared: 10/2/2012		
Prepared by (Name/Title): Eric Allen/ H&S Specialist		
Reviewed by (Name/Title): Ben Brantley/ Project Manager		
Notes: (Field Notes, Review Comments, etc.)		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
General Physical Hazards	• Slip/Trip/Fall • Cold/Heat Stress • Biological Hazards • Cuts/Scrapes/Bruises • Manual lifting	• Level D PPE required. • Maintain a clean and organized work area. • Watch your step and ensure proper footing. • Provide drinking water and first aid kit. • Wear appropriate clothing for weather conditions. • Assess work area for poisonous plants and animals and communicate observations to avoid them. • Wear appropriate work gloves for task • Maintain 3 points of contact wen climbing into vehicle • Use proper lifting techniques by bending and lifting with legs and not back, and do not over extend or twist (Do not lift over 49lb. without assistance)	**L**
	• Adverse Weather	• Be aware of changing weather condition and provide appropriate weather gear. • When work is halted due to inclement weather, personnel are to seek shelter in vehicles or building designated Shelter in Place (SIP)	
Establish work area around well and unload/set-up equipment	• Traffic in roadways and parking lots	• Use combination of vehicles, cones, traffic barriers and caution tape. • A traffic plan may be necessary depending on location.	**L**
	• Cuts/scrapes	• Wear leather gloves.	

Job Steps	Hazards	Controls	RAC
	• Stacking heights	• Avoid stacking equipment and boxes.	
Open well and take water level measurement.	• Cuts/scrapes • Biological Hazards • Exposure potential	• Wear leather gloves when un-bolting well lid • Look for spiders, scorpions, etc. in the well head. • Use ventilation procedures on each well, monitoring at well head and breathing zone. • Use respiratory protection, depending on measurements. • Wear nitrile gloves to remove plug and taking measurement.	**L**
Sample/develop purge using a bailer or pump Well will be purged prior to sampling.	• Exposure potential • Cuts/scrapes • Electrical • Manual lifting	• Wear nitrile gloves while taking flow rates • Monitor breathing zone continuously during sampling event. • Use respiratory protection, depending on measurements. • Ensure employees are properly trained in the use of the compressors, e.g., use correct contacts for 12 volt batteries and avoid arcing situations • Use proper lifting techniques and ergonomics awareness. • Use appropriate cutting devices for tubing boxes and proper tools for pump repairs/maintenance.	**L**
IDW handling	• Chemical Exposure • Manual lifting • Splash Hazard • Spills	• Wear modified level D PPE when necessary (Tyvek and face shields or dust masks) • Use respiratory protection, depending on measurements. • Have portable eyewash on site • Inspect Drums/Containers prior to use for integrity and contaminants • Pour water from buckets into drums/containers as soon as practicable. • Place used PPE and disposable sampling equipment in garbage bags to be disposed of properly.	**L**
Sample collection and packaging	• Chemical exposure potential	• Follow proper decontamination procedures	**L**
	• Cuts/Scrapes	• Inspect glassware for breakage and avoid sharp edges and wear gloves (nitrile and cut resistant leather or Kevlar)	
	• Manual lifting of equipment	• Use proper lifting techniques and do not over-extend	
Decontamination	• Chemical exposure potential • Cuts/Scrapes • Manual lifting of equipment	• Wear modified level D PPE when necessary (Tyvek and face shields or dust masks) • Have portable eyewash on site • Pour water from buckets into drums/containers as soon as practicable and lifting with legs.	**L**

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	Lead, PAHs
Applicable HASP Section(s):	5.0
Monitoring Instrument(s):	Will be added if air monitoring is required in change of scope or environment.

Additional Safety Considerations
1. Ensure all personnel have read the HASP 2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs BC). 3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path. 4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate THAs or SOPs. 5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle. 6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible. 7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting. 8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
5-305-Hand & Power Tools 5-308-Manual Lifting 5-313-Wildlife, Plants, Insects 5-508-Hazardous Materials and Sample Shipping 5-511-Heat Stress	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ANSI approved steel safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Nitrile Gloves • Leather work gloves • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle). Modified LEVEL D (biohazard avoidance) • Tyvek suit LEVEL C (upgrade per Air Monitoring Requirements) • APR with OV/P100 cartridges ; change cartridges daily

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Pump	Development to be performed by qualified person.	Equipment will be inspected prior to use. Any safety deficiencies detected will require cessation of sampling activities until appropriate repairs have been made.

Acknowledgement

All employees, subcontractors, and visitors must sign the Acknowledgement form, in this section, before conducting field activities at this site.

By signing this form, Resolution Consultants employees agree that:

- I have read this Task Hazard Analysis and I understand the requirements of the THA.
- I will conduct work at this site in accordance with the requirements of the THA.

By signing this form, subcontractors and visitors agree that:

- I have read and understood the potential hazards associated with the site.
- I will ensure compliance with my company's policies on health and safety.

Print Name & Company	Date	Signature

Task Hazard Analysis (THA)

Activity/Work Task: **Mobilization/ Demobilization**	Overall Risk Assessment Code (RAC) (Use highest code)	**L**
Project Location: NSA Mid-South AOC1/ UXO1	**Risk Assessment Code (RAC) Matrix**	
Project Number: 0888812676		
Date Prepared: 10/2/2012		
Prepared by (Name/Title): Eric Allen/ H&S Specialist		
Reviewed by (Name/Title): Ben Brantley/ Project Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)
Seat Belts are to be worn at all times while traveling in vehicles.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

Job Steps	Hazards	Controls	RAC
General Physical Hazards	• Slip/Trip/Fall • Cold/Heat Stress • Biological Hazards • Cuts/Scrapes/Bruises • Manual lifting	• Level D PPE required. • Maintain a clean and organized work area. • Watch your step and ensure proper footing. • Provide drinking water and first aid kit. • Wear appropriate clothing for weather conditions. • Assess work area for poisonous plants and animals and communicate observations to avoid them. • Wear appropriate work gloves for task • Maintain 3 points of contact when climbing into vehicle • Use proper lifting techniques by bending and lifting with legs and not back, and do not over extend or twist (Do not lift over 49lb. without assistance)	**L**
	• Adverse Weather	• Be aware of changing weather condition and provide appropriate weather gear. • When work is halted due to inclement weather, personnel are to seek shelter in vehicles or building designated Shelter in Place (SIP)	
Driving	• Communication • Accident Prevention	• Do not use cellular phones while operating vehicles of any kind. • Always wear seatbelt when traveling in the vehicle to and from the site	**L**

Additional Safety Considerations
1. Ensure all personnel have read the HASP 2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs BC). 3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path. 4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate THAs or SOPs. 5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle. 6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible. 7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting. 8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
5-308-Manual Lifting 5-313-Wildlife, Plants, Insects 5-308-Manual Lifting, Field	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ANSI approved steel safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Nitrile Gloves • Leather work gloves • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle). Modified LEVEL D (biohazard avoidance) • Tyvek suit LEVEL C (upgrade per Air Monitoring Requirements) •N/A

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
None	None	None

Acknowledgement

All employees, subcontractors, and visitors must sign the Acknowledgement form, in this section, before conducting field activities at this site.

By signing this form, Resolution Consultants employees agree that:

- I have read this Task Hazard Analysis and I understand the requirements of the THA.
- I will conduct work at this site in accordance with the requirements of the THA.

By signing this form, subcontractors and visitors agree that:

- I have read and understood the potential hazards associated with the site.
- I will ensure compliance with my company's policies on health and safety.

Print Name & Company	Date	Signature

Task Hazard Analysis (THA)

Activity/Work Task: **Soil Sampling**	Overall Risk Assessment Code (RAC) (Use highest code) **L**
Project Location: NSA Mid-South AOC1/ UXO1	
Project Number: 0888812676	
Date Prepared: 10/2/2012	
Prepared by (Name/Title): Eric Allen/ H&S Specialist	
Reviewed by (Name/Title): Ben Brantley/ H&S Specialist	
Notes: (Field Notes, Review Comments, etc.)	

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
General Physical Hazards	• Slip/Trip/Fall • Cold/Heat Stress • Biological Hazards • Cuts/Scrapes/Bruises • Manual lifting	• Level D PPE required. • Maintain a clean and organized work area. • Watch your step and ensure proper footing. • Provide drinking water and first aid kit. • Wear appropriate clothing for weather conditions. • Assess work area for poisonous plants and animals and communicate observations to avoid them. • Wear appropriate work gloves for task • Maintain 3 points of contact wen climbing into vehicle • Use proper lifting techniques by bending and lifting with legs and not back, and do not over extend or twist (Do not lift over 49lb. without assistance)	L
	• Adverse Weather	• Be aware of changing weather condition and provide appropriate weather gear. • When work is halted due to inclement weather, personnel are to seek shelter in vehicles or building designated Shelter in Place (SIP)	
Establish EZ and unload/set-up equipment	• Traffic in roadways and parking lots	• Use combination of vehicles, cones, traffic barriers and caution tape. • A traffic plan may be necessary depending on location.	L
	• Cuts/scrapes	• Wear leather gloves.	

Job Steps	Hazards	Controls	RAC
	• Struck by	• Exercise caution when moving auger extensions to avoid contact with other objects	
	• Stacking heights	• Avoid stacking equipment and boxes.	
IDW handling	• Chemical Exposure • Manual lifting • Splash Hazard • Spills	• Wear modified level D PPE when necessary (Tyvek and face shields or dust masks) • Use respiratory protection, depending on measurements. • Inspect Drums/Containers prior to use for integrity and contaminants • Pour water from buckets into drums/containers as soon as practicable. • Place used PPE and disposable sampling equipment in garbage bags to be disposed of properly.	**L**
Sample collection and packaging	• Chemical exposure potential	• Follow proper decontamination procedures	**L**
	• Cuts/Scrapes	• Inspect glassware for breakage and avoid sharp edges and wear gloves (nitrile and cut resistant leather or Kevlar)	
	• Manual lifting of equipment	• Use proper lifting techniques and do not over-extend	
Decontamination	• Chemical exposure potential • Cuts/Scrapes • Manual lifting of equipment	• Wear modified level D PPE when necessary (Tyvek and face shields or dust masks) • Have portable eyewash on site • Pour water from buckets into drums/containers as soon as practicable and lifting with legs.	**L**

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	**Lead, PAHs**
Applicable HASP Section(s):	**5.0**
Monitoring Instrument(s):	**N/A**

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs BC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate THAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes,

Additional Safety Considerations
stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
5-305-Hand & Power Tools 5-308-Manual Lifting 5-313-Wildlife, Plants, Insects 5-508-Hazardous Materials and Sample Shipping 5-509-Biological Hazards 5-511-Heat Stress 5-607-Manual Lifting	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ANSI approved steel safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Nitrile Gloves • Leather work gloves • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle). Modified LEVEL D (biohazard avoidance) • Tyvek suit LEVEL C (upgrade per Air Monitoring Requirements) • APR with OV/P100 cartridges ; change cartridges daily

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Hand auger or Stainless Steel Spoon	To be performed by qualified person.	Equipment will be inspected prior to use. Any safety deficiencies detected will require cessation of sampling activities until appropriate repairs have been made.

Acknowledgement

All employees, subcontractors, and visitors must sign the Acknowledgement form, in this section, before conducting field activities at this site.

By signing this form, Resolution Consultants employees agree that:

- I have read this Task Hazard Analysis and I understand the requirements of the THA.
- I will conduct work at this site in accordance with the requirements of the THA.

By signing this form, subcontractors and visitors agree that:

- I have read and understood the potential hazards associated with the site.
- I will ensure compliance with my company's policies on health and safety.

Print Name & Company	Date	Signature

Task Hazard Analysis (THA)

Activity/Work Task: **Well Installation Oversight**	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: NSA Mid-South AOC1/ UXO1	**Risk Assessment Code (RAC) Matrix**	
Project Number: 0888812676	**Severity** / **Probability**	
Date Prepared: 10/2/2012		
Prepared by (Name/Title): Eric Allen/ H&S Specialist		
Reviewed by (Name/Title): Ben Brantley/ Project Manager		
Notes: (Field Notes, Review Comments, etc.)		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:
_X_ Safety Glasses With Sideshields _X_ Steel-Toed Boots _X_ Hard Hat _X_ Nitrile Gloves ___ Leather Gloves _X_ Hearing Protection ___ Flame Retardant Clothing

Job Steps	Hazards	Controls	RAC
General Physical Hazards	• Slip/Trip/Fall • Cold/Heat Stress • Biological Hazards • Cuts/Scrapes/Bruises • Manual lifting	• Level D PPE required. • Maintain a clean and organized work area. • Watch your step and ensure proper footing. • Provide drinking water and first aid kit. • Wear appropriate clothing for weather conditions. • Assess work area for poisonous plants and animals and communicate observations to avoid them. • Wear appropriate work gloves for task • Use proper lifting techniques by bending and lifting with legs and not back, and do not over extend or twist (Do not lift over 49lb. without assistance)	**L**
	• Adverse Weather	• Be aware of changing weather condition and provide appropriate weather gear. • When work is halted due to inclement weather, personnel are to seek shelter in vehicles or building designated Shelter in Place (SIP)	

Job Steps	Hazards	Controls	RAC
Mobilization / Site Set Up	• Slips, Trips, Falls	• Clear trees, roots, weeds, limbs and other ground hazards from the drilling location. Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment, and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.	L

	• General equipment hazards
	  • Overhead and underground utilities
	  • Noise Hazard
	  • Pinch points/swing radius
	  • Chemical exposure potential
	  • Eye Injury
	  • Fire
		• All equipment will be properly secured during transport.
		• All vehicles and equipment will comply with DOT requirements.
		• Never move the DPT rig with the mast upright. Ensure the sampling site foundation is stable and as level as possible.
		• Use a ground guide along with a functioning back-up alarm during equipment backing.
		• Confirm Utility Locations
		• Inspect vehicles and equipment daily (Checklists provided in HASP)
		• Maintain clean and organized work area.
		• Wear appropriate clothing and PPE, (no loose clothing or jewelry)
		• Earplugs and/or ear muffs required in EZ
		• Position the drill rig and personnel up wind of drilling location
		• Monitoring breathing zone with PID and upgrade PPE as required.
		• Avoid creating splash hazards while drilling.
		• Keep a safe distance from drill rig.
		• Use hand signals, keep clear of moving equipment, and ensure eye contact with operator prior to approaching.
		• Have fire extinguisher on site.	

	• Contact with utilities	• Inspect for buried and overhead utilities in the vicinity of the drilling location. Clearance will be required, as stipulated in the HASP.	
	• Traffic in adjacent roadway	• Use combination of vehicles, cones, traffic barriers, and caution tape	
Boring Process	• Cuts	• Wear appropriate work gloves to prevent cuts, lacerations	M
	• Dermal Contact	• Wear appropriate protective clothing to avoid dermal or personal clothing contact with sampled material.	

Job Steps	Hazards	Controls	RAC
	• Slips, Trips, Falls	• Clear trees, roots, weeds, limbs and other ground hazards from the drilling location. Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.	
	• Volatile Organic Compounds (VOCs)	• If the results of previous surveys indicate the presence of VOCs in hazardous levels, rig operators should be prepared to protect both personnel and equipment from VOC inhalation and flammable atmospheres.	
Sample collection and packaging	• Chemical exposure potential	• Follow proper decontamination procedures	**L**
	• Cuts/Scrapes	• Inspect glassware for breakage and avoid sharp edges and wear gloves (nitrile and cut resistant leather or Kevlar)	
	• Manual lifting of equipment	• Use proper lifting techniques and do not over-extend	
Rig decontamination	• High pressure water • Splash Hazard	• Spray away from body • Wear full-face shield, gloves, rubber boots, and Tyvek or other suitable attire.	**L**

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	**Lead, PAHs**
Applicable HASP Section(s):	**Section 5.0**
Monitoring Instrument(s):	**N/A**

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs BC). Ensure equipment has a working kill switch and back-up alarms, and follow equipment inspection procedures.
3. Ensure underground utilities are verified with facility, marked, markings maintained, and operator aware of location
4. All equipment operators must be Competent Persons for the task/equipment being performed/operated.
5. All ground personnel must stay clear of equipment and make eye contact (and receive confirmation) with operator prior to approaching. Wear high visibility reflective vests and stay out of travel lanes and swing radius of heavy equipment.
6. Dust hazard are expected to be minimal due to saturated state of soils and regular precipitation. If visible emissions of dust observed, then dust suppression techniques will be implemented.
7. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
8. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate THAs or SOPs.
9. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
10. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.

Additional Safety Considerations
11. Conduct equipment inspection of all hoses and switches. Stay clear of running equipment. 12. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting. 13. Stay clear of moving rig, do not move rig with mast raised, do not drive on slopes greater than 30 degrees, avoid soft areas when moving rig and setting up, chock wheels. Use spotter when moving rig, check for overhead obstructions. 14. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc. 15. For equipment decontamination, triple rinse using distilled or deionized water and alconox for first rinse and distilled or deionized water for second and third rinses. Always clean materials between locations and at the site. Do not bring equipment back to the office without proper decontamination.

Additional Operational Safety Procedures	PPE
5-305-Hand & Power Tools 5-308-Manual Lifting 5-313-Wildlife, Plants, Insects 5-405-Drilling and Boring 5-406-Overhead Electrical Lines 5-417-Identifying Underground Utilities 5-508-Hazardous Materials and Sample Shipping 5-511-Heat Stress	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ANSI approved steel safety-toe boots or approved equivalent. • High visibility reflective traffic vest • Nitrile Gloves • Leather work gloves • Hearing protection required when around operating machines (85 dBA). • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle). Modified LEVEL D (biohazard avoidance) • Tyvek suit LEVEL C (upgrade per Air Monitoring Requirements) • APR with OV/P100 cartridges ; change cartridges daily

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Drill Rig	Drilling to be performed by competent person as certified by employer.	Equipment will be inspected daily by drill rig operator. Any safety deficiencies detected will require cessation of sampling activities until appropriate repairs have been made.

Acknowledgement

All employees, subcontractors, and visitors must sign the Acknowledgement form, in this section, before conducting field activities at this site.

By signing this form, Resolution Consultants employees agree that:

- I have read this Task Hazard Analysis and I understand the requirements of the THA.
- I will conduct work at this site in accordance with the requirements of the THA.

By signing this form, subcontractors and visitors agree that:

- I have read and understood the potential hazards associated with the site.
- I will ensure compliance with my company's policies on health and safety.

Print Name & Company	Date	Signature

Attachment 4
Resolution Consultants Safety
Standard Operating Procedures

5-208 Personal Protective Equipment Program

1.0 Purpose and Scope

1.1 Provide an effective Personal Protective Equipment (PPE) Program to protect Resolution employees from potential workplace safety and health hazards.

1.2 This procedure applies to all Resolution employees and operations.

1.3 The proper use of appropriate PPE, in combination with effective engineering and administrative controls, can provide Resolution employees with protection against potential workplace hazards and can reduce the potential for workplace injury and illness.

2.0 Terms and Definitions

2.1 **PPE**: Personal Protective Equipment

2.2 **ANSI:** American National Standards Institute

3.0 References

3.1 Occupational Safety and Health Administration (OSHA) PPE standard (29 CFR 1910.132) requires Resolution to assess workplace(s) to determine if hazards that necessitate the use of PPE exist in the workplace, and, if such hazards are present, to

3.1.1 Select the appropriate types of PPE and

3.1.2 Provide employees with training about the use and care of the selected PPE.

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Regional SH&E Professional

- Provide guidance to Project Managers, Field Task Managers, Supervisors, and field staff on the assessment of hazards and the selection of PPE.
- Provide training materials to Project Managers, Field Task Managers and Supervisors for employee training.

4.1.2 Project Managers (Field Task Managers, Supervisors)

- Conduct Hazard Assessments to identify hazards present and to specify PPE appropriate for those hazards.
- Determine which of your staff members will require employee-issued PPE.
- Approve the purchase of company-issued PPE.
- Verify that appropriate PPE is utilized by your employees when required or necessary.

4.1.3 Employee

- In accordance with your training and instructions, utilize appropriate PPE that has been issued to them when required or necessary.
- Inspect your PPE prior to use to confirm that it is functional, and maintain your PPE in a clean and functional condition.
- Follow instructions and manufacturers' guidance on the care, use, and storage of your PPE.
- Prior to using any type of PPE, confirm that it is in good shape, free of dirt and debris, and that you are familiar with its correct use. Always make sure PPE fits adequately to perform the use intended.
- Refrain from wearing PPE outside of the work area for which it is required if doing so would constitute a hazard.

4.2 Hazard Assessment for Office Locations

Office Hazard Analysis will be completed for applicable tasks as required in 29 CFR 1910.132 following the guidelines as specified in OSHA Pamphlet 3151-12R 2003 (Personal Protective Equipment),

4.3 Hazard Assessment for Off-Site Locations

4.3.1 HAZWOPER Locations

- Each Health and Safety Plan (HASP) that is prepared for waste site investigations/remediation includes a hazard assessment for each proposed field activity. Task-specific PPE requirements are listed in the HASP. Therefore, the HASP will serve as the certificate of hazard assessment for each project that involves off-site work activities that require the use of PPE.

4.3.2 All Other Off-Site Locations

- The Task Hazard Analysis will serve as the certificate of hazard assessment for projects that involves offsite work activities that require the use of PPE. The checklist will be reviewed with the entire field team prior to arriving at the site.

4.4 Training

4.4.1 Staff will receive adequate instruction on the correct use, limitations, and assigned maintenance duties for the equipment to be used. The following information, at a minimum, will be covered during PPE training:

- What PPE is required.
- When it is required.
- Why it is required.
- How to properly don, doff, adjust, and wear the PPE described.
- The limitations of the PPE, including its expected useful life.
- How to properly care for, maintain, and dispose of the PPE.

4.4.2 Field staff are responsible for confirming that they have reviewed the operation manual for the PPE before work commences.

4.4.3 All staff will receive an orientation to the hazards on the job site as well as initial Field Safety orientation that outlines appropriate PPE requirements.

4.4.4 Resolution Consultants employees who have participated in the 40-hour HAZWOPER training course are considered to have met the employee training requirements of the PPE standard. The training certificates that are issued as documentation of successful completion of the 40-hour HAZWOPER course will also serve as documentation of training as required by the PPE standard. Employees who have not participated in the HAZWOPER training will be provided PPE training specific to your assignment and/or location. The PPE Facts Sheets (attached) can serve as the basis for training.

4.5 Determining the Need for PPE

4.5.1 Using the Task Hazard Assessment or HASP, the need for the following types of PPE will be evaluated.

4.5.2 PPE will:

- Be selected and used in accordance with recognized standards and provide effective protection.
- Not in itself create a hazard to the wearer.
- Be compatible, so that one item of PPE does not make another item ineffective.
- Be maintained in good working order and in a sanitary condition.

4.5.3 Prior to entering any regulated work area, confirm that you have access to or are equipped with the following CSA-approved PPE, appropriate to the site hazards:

- Head Protection
- Eye & Face Protection
- Foot Protection
- Hi-Visibility Vests
- Hearing Protection

4.5.4 After the hazard assessments have been completed, the Project Manager will select the appropriate PPE for each job category or task, as necessary. The selected equipment will be indicated on the hazard assessment. PPE will be provided to each employee appropriate for the hazards present. All PPE selected and purchased by Resolution will meet or exceed the American National Standards Institute (ANSI) standards, Canadian Standards Association (CSA) standards, or other standards as dictated by provincial, territorial, or state legislation.

4.6 Eye and Face Protection

4.6.1 The OSHA standard requires that Resolution employees use appropriate eye and face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acid and caustic liquids, chemical gases or vapors, and injurious light radiation. The standard further requires that eye protection provide side protection when there is a hazard from flying objects.

4.7 Head Protection

4.7.1 Protective helmets (hard hats) are required when employees are working in areas where there is a potential for falling objects to cause injury to the head. When working near exposed electrical conductors that could contact the head, helmets designed to reduce electrical shock will be worn.

4.8 Foot Protection

4.8.1 Protective footwear is required when employees are working in areas where there is a danger of foot injuries from falling and rolling objects or from objects piercing the sole and where an employee's feet are exposed to electrical hazards.

4.9 Hand Protection

4.9.1 Appropriate hand protection is required when employee's hands are exposed to hazards such as those from skin absorption of harmful substances, severe cuts and lacerations, severe abrasions, punctures, chemical burns, thermal burns, or harmful temperature extremes.

4.9.2 Chemically Resistant Clothing

4.9.3 Chemically resistant clothing is required when there is significant potential for the employee to come in direct contact with the chemicals he/she is handling. Tasks that involve chemical handling will be evaluated for the potential of splashing or spilling.

4.9.4 High-Visibility Apparel

4.9.5 High-visibility apparel with reflective banding (ANSI Class II and III garment) is required for all field activities in close proximity to moving traffic and other modes of transportation (transit, airlines, marine, etc.), in proximity to heavy equipment operations, or whenever otherwise specified in a project HASP. Color of apparel (orange or lime) may be client/project-specific.

4.10 Personal Clothing

4.10.1 For personal safety on the job site, do not wear

- Loose or unsecured clothing or loose fitting cuffs.
- Greasy or oily clothing, gloves, or boots.
- Torn or ragged clothing.

4.10.2 Neck chains are hazardous and will be worn under clothing so that they do not hang out. Long hair will be tied back or otherwise confined.

4.10.3 Clothing made of synthetic fibres can be readily ignited and melted by electric flash or extreme heat sources. Cotton or wool fabrics are recommended for general use.

4.11 Specialized PPE

4.11.1 In addition to basic PPE, additional specialized PPE may be required to provide appropriate protection to the employee. Refer to applicable OH&S legislation and related Standard Operating Procedures for additional information on PPE requirements.

- Fall Protection: Only full body harnesses with shock-absorbing lanyards will be used for personal fall arrest.
- Respiratory Protection: Respiratory protection shall be selected based on the contaminant and concentration to which the employee will be exposed. Refer to*S3NA-519-PR-Repiratory Protection Program* and the task- or project-specific Baseline Hazard Assessments for specific requirements.
- Fire Resistant Clothing: Approved fire resistant outer clothing may be required at work locations with flammable or explosive materials or environments.
- Other Head Protection: Operators and passengers (if permitted) of all terrain vehicles and snowmobiles will wear approved helmets.
- Chemical Protective Clothing: Approved chemical protection appropriate to the hazard will be worn. Review applicable Material Safety Data Sheets (MSDSs) for appropriate PPE.
- Protection from Drowning: Employees being transported by boat are required to wear life jackets. Employees exposed to any other drowning hazards are required to wear personal flotation devices. Life jackets and personal flotation devices will have the proper regulatory approval.

4.12 PPE Supplies

4.12.1 Each Resolution office will maintain a supply of safety equipment including safety glasses, gloves, and chemically resistant clothing based on the nature of their field activities. The Office Manager or designee will be responsible for maintaining this inventory. PPE that is required for large field efforts will be ordered by the Project Manager or their designee.

4.12.2 At a minimum, the office will review its PPE program annually.

4.13 Obtaining Personalized Safety Gear

4.13.1 The OSHA standard in 29 CFR 1910 - Subpart I / 29 CFR 1926 requires that protective equipment, including PPE for eyes, face, head, and extremities, protective clothing, and respiratory devices, be provided to employees wherever necessary by reason of hazards.

4.13.2 Employees are not expected to provide their own general PPE. Although each Resolution office stocks and issues various general issue safety gear such as hard hats, plan safety glasses, disposable gloves and coveralls, fall protection, and hearing protection, certain personalized safety gear such as prescription safety glasses, safety-toed (capped) boots, and cotton coveralls will be ordered and sized specifically for the user.

4.13.3 Most PPE will be provided to the employee at no charge, with the exception of the above personalized safety equipment (safety glasses, safety toed boots, washable coveralls). A partial cost reimbursement to the employee may be made based on legacy company practice or project stipulations.

4.13.4 Prescription Safety Glasses

- As with all hazards, staff will be notified of their potential for injury and will be provided with the appropriate PPE. If wearing contact lenses poses a hazard to the worker's eyes during work, the worker will be advised of the hazards and the alternatives to wearing contact lenses.
- Eligibility

- Employees will wear safety glasses during activities that involve exposure to eye hazards such as flying particles, chemical splash, or certain types of radiation such as ultraviolet light from welding operations. Typically, the following types of field activities will require the use of safety glasses:
  - Site investigation or remediation and construction activities.
  - Stack monitoring and other types of air emissions monitoring.
  - Audits and assessments in industrial or manufacturing facilities.
  - Activities conducted within laboratories.
  - Activities at client facilities where safety glasses are required.
- Eligibility to obtain prescription safety glasses will be determined by the employee's supervisor based upon the guidance above.

- Procurement of Prescription Safety Glasses
  - Except for eye examinations, associated prescription eyewear costs will be paid by Resolution. The employee may be asked to pay an optician's dispensing fee, which may be submitted on an expense report for reimbursement. Because eye examinations are not covered, employees who have had recent eye examinations should contact the eye care professional in advance to determine their procedure for handling a current prescription.
  - Employees who are eligible will be allowed to order one pair of prescription safety glasses every other year from the selection of glasses offered by the program.
  - Contact the Regional SH&E Professional for guidance on the procurement of prescription safety glasses.

4.13.5 Safety Toed Boots/Shoes

- Eligibility
  - Employees will wear safety boots/shoes during activities that pose the potential for foot injury from dropped objects or penetrations through the sole. Typically, safety toed boots/shoes will be required for the same type of activities, with the exception of laboratory activities, for which safety glasses are required. In addition, work around all types of heavy equipment will typically require the use of safety shoes.
  - Eligibility to obtain safety shoes will be determined by the employee's supervisor based upon the guidance above.

- Procurement of Safety Shoes
  - Eligible employees will be allowed to purchase one pair of safety shoes every other year.
  - Employees who have been authorized to purchase safety shoes by their supervisor should consult the Regional SH&E Manager for obtaining for detailed instructions on how and where to purchase the equipment. The style chosen (i.e., boot or shoe) should be determined based upon the application. For example, low cut shoes may be appropriate for audits and assessments in light industry applications, while safety boots will be more appropriate for environmental remediation, construction, and heavy industry work with significant foot hazards. Before purchasing, the employee is required to verify that the safety boots or shoes meet the specifications above.
  - After the purchase, an employee expense report, including a dated receipt for the shoes, should be submitted for approval and reimbursement. Resolution will reimburse the employee up to a amount that is specified by the SH&E Department or Regional Operations management.

4.13.6 Reusable Coveralls

- Eligibility

- Reusable cotton (or some other washable fabric) coveralls may be made available to employees who regularly perform field work based on conditions. Coveralls can be worn over personal clothing to help protect and keep them clean.
- Eligibility to obtain washable coveralls will be determined by the employee's supervisor based upon the guidance above.

5.0 Records

None.

6.0 Attachments

None.

5-305- Hand and Power Tools

1.0 Purpose and Scope

1.1 This procedure provides Resolution Consultants' requirements for all manually-operated hand and power tools and equipment use, handling and storage.

1.2 Applies to all Resolution Consultants staff and field worksites.

2.0 Terms and Definitions

None.

3.0 References

3.1 5-305-Hand and Power Tools

3.2 5-410-Hazardous Energy Control

3.3 5-302-Electrical, General

3.4 5-208-Personal Protective Equipment Program

3.5 5-510-Hearing Conservation Program

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 **Project Manager (Field Task Manager, Supervisor)** Each Manager/Supervisor must ensure that all aspects of this procedure are followed and adhered to on all Resolution Consultants projects, sites and locations. If a specific tool is not included in this work instruction section of this SOP, appropriate guidelines shall be established prior to work associated with that equipment, including following manufacturer's recommendations.

4.1.2 **Regional SH&E Professionals** provides technical guidance and support as to this procedure.

4.1.3 **Employees** shall not work with any tool that they are not familiar with without first obtaining training associated with that equipment. In addition, employees must following manufacturer's recommendations for its use and must not modify the equipment without first obtaining authorization from the manufacturer**.**

4.2 Restrictions

4.2.1 No employee shall use any hand tool, unless they are familiar with the use and operation of the equipment or have received specific instruction on its use and operation.

4.2.2 All tools will be used in accordance with manufacturer's specifications.Personnel involved in the performance of certain activities will not be permitted to smoke, eat, drink, or use smokeless tobacco, except during breaks (e.g., HAZWOPER-controlled work areas).

4.3 Training

4.3.1 Instruction in the proper use, safe handling, and maintenance of tools will be provided to employees unfamiliar with the tool.

4.4 Personal Protective Equipment

4.4.1 Lockout devices (padlocks, multiple lock hasps, tags), gloves appropriate to the task, safety-toed boots, as required, hard hats and eye & face protection, as required.

4.5 **Inspections**

4.5.1 All tools must be inspected prior to each use. Any tool that is defective or has missing parts must not be used. Every broken or defective tool must be tagged or identified as such. Tagged tools will be returned to your supervisor for repair or replacement. Tagged tools will be immediately removed from service.

4.5.2 All tools must be inspected to manufacture's specifications according to tool rests and guard adjustment tolerances. All tools will be inspected to ascertain that all safety devices are present and functioning properly.

5.0 Records

None.

6.0 Attachments

None.

7.0 Records

None.

8.0 Attachments

None.

5-307 Housekeeping, Worksite

1.0 Purpose and Scope

1.1 This procedure provides Resolution Consultants' work practices as well as personal hygiene and work site sanitation standards for housekeeping.

1.2 Applies to all Resolution Consultants staff and field worksites.

2.0 Terms and Definitions

None.

3.0 References

None.

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 **Project Manager (Field Task Manager, Supervisor)** is responsible for the procedure's implementation and the details of addressing housekeeping policy within the construction/demolition worksite.

4.1.2 **SH&E Professionals** will monitor, assess, and report on project housekeeping when visiting locations.

4.1.3 Employees are responsible for reporting any areas of concern to the Site Supervisor for prompt resolution as well as for maintaining worksites that are free from debris, clutter, and slipping or tripping hazards.

4.2 Smoking, Eating, and Drinking

4.2.1 Eating and drinking will be permitted in designated areas at Resolution Consultant project sites and as specified on client sites. Smoking will be permitted only in areas designated in compliance with applicable local laws, regulations, legislation, and ordinances, by the Field Supervisior and situated in locations that are not in the immediate vicinity of activities associated with work site activities. Additionally, Field Supervisior will designate each smoking area giving primary consideration to those personnel who do not smoke.

4.2.2 Personnel involved in the performance of certain activities will not be permitted to smoke, eat, drink, or use smokeless tobacco, except during breaks (e.g., HAZWOPER-controlled work areas).

4.2.3 Site personnel will first wash hands and face after completing work activities and prior to eating or drinking.

4.3 Water Supply

4.3.1 Water supplies will be available for use on site and will comply with the following requirements:

4.3.2 Potable Water: An adequate supply of drinking water will be available for site personnel consumption. Potable water can be provided in the form of approved well or city water, bottled water, or drinking fountains. Where drinking fountains are not available, individual use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified and tape sealed in order to distinguish them from nonpotable water sources and protect the potable water integrity.

4.3.3 Nonpotable Water: Nonpotable water will not be used for drinking purposes. Nonpotable water may not be used for hand washing or other personal hygiene activities but may be used for other types of cleaning activities. All containers/supplies of nonpotable water used will be properly identified and labeled as such.

4.4 Toilet Facilities

4.4.1 Toilet facilities will be available for site personnel and visitors. Should subcontractor personnel be located on-site for extended periods, it may become necessary to obtain temporary toilet facilities.

Exceptions to this requirement will apply to mobile crews where work activities and locations permit transportation to nearby toilet facilities.

4.4.2 A minimum of one toilet will be provided for every 20 site personnel, with separate toilets maintained for each sex, except where there are less than five total personnel on site. For mobile crews where work activities and locations permit use of nearby toilet facilities (e.g., gas station, or rest stop), on-site facilities are not required.

4.4.3 Washing Facilities

4.4.4 Hand and Face: Site personnel will wash hands and face after completing work activities and prior to breaks, lunch, or completion of workday.

4.4.5 Personal Cleaning Supplies: Cleaning supplies at Resolution Consultant project sites will consist of soap, water, and disposable paper towels or items of equal use/application (e.g., anti-bacterial gels, wipes, etc.).

4.5 Clothing and Personal Protective Equipment (PPE)

4.5.1 All PPE will be kept clean at all times and maintained in accordance with the manufacturer's, Resolution Consultant's. and applicable regulatory, legislative, or provincial requirements.

4.5.2 General Work Areas

4.5.3 At all times work areas will be kept free of dirt and debris that may impact the safety of site personnel and visitors. All trash receptacles will be emptied regularly.

4.5.4 Break Areas and Lunchrooms

Site personnel will observe the following requirements when using break areas and lunchrooms at Resolution Consultant project sites:

4.5.5 All food and drink items will be properly stored when not in use.

4.5.6 Food items will not be stored in personal lockers for extended periods in order to prevent the potential for vermin infestation.

4.5.7 Perishable foods will be refrigerated whenever possible.

4.5.8 All waste food containers will be discarded in trash receptacles.

4.5.9 All tables, chairs, counters, sinks, and similar surfaces will be kept clean and free of dirt, waste food, and food containers at all times.

4.5.10 Refrigerators used to store food items will be maintained at 45 degrees Fahrenheit and emptied of all unclaimed food items weekly. Refrigerators used to store food will be labeled as such so that only food and drinks are stored within the refrigerator.

4.5.11 Routine cleaning of refrigerators will also be performed on a regular basis.

4.6 Vermin Control

4.6.1 Every enclosed workplace shall be constructed, equipped, and maintained, so far as reasonably practicable, to prevent the entrance or harborage of rodents, insects, and other vermin.

4.6.2 A continuing and effective extermination program shall be instituted where the presence of rodents, insects, or other vermin is detected.

4.7 General Housekeeping

4.7.1 All work areas shall be kept clean to the extent that the nature of the work allows.

4.7.2 Every work area shall be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage shall be maintained and platforms, mats, or other dry standing places shall be provided, where practicable, or appropriate waterproof footgear shall be provided.

4.7.3 Protruding objects or placement of materials on paths or foot traffic areas present a problem with regard to slips, trips, falls, and puncture wounds. Personnel will use a reasonable amount of effort to keep slip, trip, and fall hazards to a minimum.

4.7.4 Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal.

4.7.5 At no time will debris or trash be intermingled with waste PPE or contaminated materials.

4.7.6 Material and equipment must be placed, stacked, or stored in a stable and secure manner. Stacked material or containers must be stabilized as necessary by interlocking, strapping, or other effective means of restraint to protect the safety of workers.

4.7.7 An area in which material may be dropped, dumped, or spilled must be guarded to prevent inadvertent entry by workers or protected by adequate covers and guarding.

4.7.8 Floors, platforms, ramps, stairs, and walkways available for use by workers must be maintained in a state of good repair and kept free of slipping and tripping hazards. If such areas are taken out of service, the employer must take reasonable means for preventing entry or use.

4.7.9 Hazardous areas not intended to be accessible to workers must be secured by locked doors or equivalent means of security and must not be entered unless safe work procedures are developed and followed.

4.8 Worksite Offices and Trailers

Worksite offices and trailers will be maintained in accordance with *RC-103-Housekeeping, Office.*

5.0 Records

None.

6.0 Attachments

None.

5-308-Manual Lifting, Field

1.0 Purpose and Scope

1.1 This procedure provides the requirements for use when performing manual materials handling activities (e.g., lifting/handling of items or materials).

1.2 This procedure applies to all field staff for Resolution Consultants operations.

2.0 Terms and Definitions

2.1 **Manual Materials Handling:** Moving or handling things by lifting, lowering, pushing, pulling, carrying, holding, or restraining.

2.2 **Team Handling:** Team handling occurs when more than one person is involved during the lift.

3.0 References

3.1 OSHA Technical Manual: http://www.osha.gov/dts/osta/otm/otm_vii/otm_vii_1.html

3.3 National Safety Council: www.nsc.org

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 The **Project Manager** will effectively implement the procedure, providing resources as required, and providing direction on proper lifting/handling techniques.

4.1.2 The **Resolution Consultants Health and Safety Manager** will assist in identifying activities with a high potential for lifting/handling strains/injuries as well as the associated mitigation strategies and training on proper lifting/manual materials handling techniques.

4.1.3 **Employees** are responsible for reviewing and following *5-308- Manual Lifting Safe Work Practices*.

4.2 Mechanical Controls

4.2.1 Mechanical equipment or assistance such as dollies, carts, come-alongs, or rollers are preferable to be used whenever possible rather than the employee physically moving materials.

4.2.2 Mechanical assistance will be of proper size, have wheels sized for the terrain, and be designed to prevent pinching or undue stress on wrists.

4.2.3 Objects to be moved will be secured to prevent falling and properly balanced to prevent tipping.

4.3 Administrative Controls

4.4 When significant, sustained lifting work is required, it is desirable to rotate employees to spread the work load among several people and thereby avoid fatigue.

4.5 Rotation is not simply performing a different job but instead is performing a job that utilizes a completely different muscle group from the ones that have been overexerted.

5.0 Records

None.

6.0 Attachments

None.

5-313-Snakes

1.0 Hazard

1.1 **Snakes have the ability to inject venom.** A bite from a venomous snake, which may inject varying degrees of toxic venom, is rarely fatal but should always be considered a medical emergency.

2.0 Personal Protective Equipment

2.1 Long pants and shirts.

2.2 Heavy gloves if staff will be handling debris or be close to the ground.

2.3 Rubber boots, or boots that fully cover the foot (not sandals!) and preferably are at least 10” high.

2.4 Snake Chaps that cover at least the shin.

2.5 Personal first aid kit.

3.0 Restrictions

3.1 Staff must not work alone in areas where the risk of a snake encounter is high.

4.0 Training

4.1 Staff must be notified of the hazard before work commences.

5.0 Safe Work Practice

5.1 Staff working in areas known to be inhabited by venomous snakes should take extra precautions, be able to identify the local snake species, and understand the best practices for administering first aid.

5.2 Most snakes in Canada are non-venomous; and most snake bites are not fatal, only painful. Learning to identify snake species will assist you in responding appropriately to an encounter, and will assist medical professionals in determining if antivenin needs to be administered if anyone is bit.

5.3 Most snakes are non-aggressive and will only attack if immediately threatened.

5.4 **Prevention**

5.4.1 Before venturing out into the wilderness, familiarize yourself with the snakes in your area, both venomous and non-venomous species.

5.4.2 Learn which habitats the venomous species in your region are likely to be encountered in, and use caution when in those habitats.

5.4.3 Try as much as possible not to take a snake by surprise.

5.4.4 Stay on trails where possible, and watch where you place your hands and feet, especially when climbing or stepping over fences, large rocks, and logs, or when collecting firewood. Take care when overturning any objects on the ground when in snake country.

5.4.5 If you see a snake, give it as much room as possible. Most snakes have a strike distance that is only half the length of their body.

5.4.6 If you get very close to a rattlesnake, hold very still until it calms down and starts to move away. Then slowly move backwards until you are at least one snake-body length away.

5.5 **Treatment**

5.5.1 Venomous snakebites are rare, and they are rarely fatal to humans. Of the 8,000 snakebite victims in the United States each year, only about 10 to 15 die. In Canada the number of snake bites each year is very small. However, for any snakebite the best course of action is to get medical care as soon as possible.

5.5.2 Try to keep the snakebite victim still, as movement helps the venom spread through the body.

5.5.3 Keep the injured body part motionless and just below heart level.

5.5.4 Keep the victim warm, calm, and at rest, and transport him or her immediately to medical care.

5.5.5 Do not allow him to eat or drink anything.

5.5.6 If medical care is more than half an hour away, wrap a bandage a few inches above the bite, keeping it loose enough to enable blood flow (you should be able to fit a finger beneath it). Do not cut off blood flow with a tight tourniquet. Leave the bandage in place until reaching medical care.

5.5.7 If you have a snakebite kit, wash the bite, and place the kit's suction device over the bite. (Do not suck the poison out with your mouth.) Do not remove the suction device until you reach a medical facility.

5.5.8 Identify the snake that caused the bite to determine if it is venomous, and if antivenin needs to be administered. Do not waste time or endanger yourself trying to capture or kill it. Note the shape & color of the snake's head.

5.5.9 If you are alone and on foot, start walking slowly toward help, exerting the injured area as little as possible.

- Note that there are several species of snakes that superficially resemble rattlesnakes. Several species, including Bull, Milk, Fox, and Rat Snakes will even rattle their tails when startled.
- Massasauga Rattlesnake is recognized as a Threatened Species in Ontario and it is an offence to harass, , or destroy the habitat of this species.
- One scorpion species, the Northern Scorpion (*Paruroctonus boreus*) occurs in semi-arid areas of southern British Columbia, Alberta, and Saskatchewan. It carries a stinger on the end of its tail. The sting is painful but not life threatening unless there is an allergic reaction.

6.0 Species

6.1 Venomous Snakes in Canada

Eastern Massasauga Rattlesnake (*Sistrurus catenatus*) found around Wainfleet, Windsor, Bruce Penninsula and eastern Georgian Bay in Ontario.	 Eastern Massasauga Rattlesnake picture by Michael Redmer/Courtesy Lincoln Park Zoo
Northern Pacific Rattlesnake (*Crotalus viridis*) found primarily in Okanagan and Thompson River valleys of southern British Columbia.	

Prairie Rattlesnake (*Crotalus viridis*) found in south eastern Alberta, and south western Saskatchewan.	

6.2 Venomous snakes in the U.S.

Rattlesnake(*Crotalus cerastes)* found mostly concentrated in the southwestern United States, they extend north, east and south in diminishing numbers and varieties. Every contiguous state has one or more varieties of rattlesnake. The rattlesnake is found in many different biomes ranging from along the coast at sea level, the inland prairies and desert areas to the mountains at elevations of more than 10,000 feet. Species include: Sidewinder, Santa Catalina, Western, Mojave, Red Diamond, Western Diamond, Ridge Nosed, Eastern Diamondback, and Pigmy.	 Western Rattlesnake  Eastern Diamondback
Copperhead (*Agkistrodon contortrix*) is the most common venomous snake found in the eastern US. It can be found in the states of Texas, Oklahoma, Kansas, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee, Kentucky, Virginia, Illinois, Indiana, Ohio, Iowa, Pennsylvania, Maryland, New Jersey, Delaware, New York, Connecticut, and Massachusetts.	
Cottonmouths (water moccasins) (*Agkistrodon piscivorus)* found in the eastern United States from Virginia, south through the Florida peninsula and west to Arkansas, eastern and southern Oklahoma, and east and central Texas..	

Coral Snake (*Micrurus sp.)* found in the southern range of many temperate US states including North Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas, Kentucky, Arizona, and New Mexico.	 Eastern Coral Snake, *Micrurus fulvius*

7.0 References

7.1 *The Eastern Massasauga Rattlesnake Stewardship Guide. A resource and field guide for living with rattlesnakes in Ontario.* Sponsored by the Government of Canada, and distributed on behalf of the Toronto Zoo and the Eastern Massasauga Rattlesnake Recover Team.

7.2 http://www.rattlesnakes.us/

7.3 **http://drdavidson.ucsd.edu/Portals/0/snake/Crotalus.htm**

5-406 Electrical Lines, Overhead

1.0 Purpose and Scope

1.1 Provides the safe work requirements to be observed where overhead power lines are present on a job site.

1.2 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

2.1 Types of overhead lines:

2.1.1 Overhead power lines

2.1.2 Structural cable supports

2.1.3 Guy wires

2.1.4 Cable television / communication lines

3.0 References

None.

4.0 Procedure

4.1 An appropriate distance must be kept between equipment and overhead utility lines.

4.2 Employees must contact the power line operator before work is done or before equipment is operated within 15.25 metres (50 feet) of an energized overhead power line, in order to:

- determine the voltage of the power line, and
- establish the appropriate safe limit of approach distance as identified by provincial/territorial regulations.

4.3 The safe limit of approach distances do not apply to a load, equipment, or building that is transported under energized overhead power lines if the total height, including equipment transporting it, is less than 4.15 metres (13.5 feet).

4.4 **Employers** or **CTO Managers** must formally notify (using the Overhead Electrical Lines Acknowledgement form) all subcontractors or equipment operators of an energized overhead power line before work is done or equipment is operated in the vicinity of the power line at distances less than the safe limit of approach distances and obtain the operator's assistance in protecting workers involved.

4.5 Employees must not place earth or other material under or beside an overhead power line if doing so reduces the safe clearance to less than the safe limit of approach distances.

4.6 To maintain minimum safe clearances:

4.6.1 Install warning devices and signs (hang a sign from and mark all guy wires to warn traffic of low clearance; provide warning signage for all overhead services).

4.6.2 Install telescopic, nonconductive posts and flagging across right-of-way at the minimum allowable clearance as allowed by regulations for the line voltage.

4.6.3 Position signs or other devices to determine the “Danger Zone.”

4.6.4 Inform all on-site staff with the on-site clearances required.

4.6.5 Beware of atmospheric conditions, such as temperature, humidity, and wind, that may dictate more stringent safety procedures.

4.7 Operation of heavy equipment and cranes in areas with overhead power lines represents a significant hazard to all personnel on the job site. Accidental contact with an energized line or arcing between a

high power line and grounded equipment can cause electrocution of equipment operators or nearby ground personnel, and damage to power transmission and operating equipment. Although maintaining a safe distance from all energized lines is the preferred means for control of this hazard, site conditions may not always accommodate this. If work will (or may) occur within 50 feet of any energized line, the procedures outlined below will be observed.

4.8 Overhead power lines will be identified on each job site before the work commences. For each identified line, the Project Manager must determine whether it is energized (and the operating voltage for energized lines), and whether work operations will require that activities with heavy equipment (excavators, loaders, cranes, etc.) will occur within 50 feet (15.25 metres) of the line. Unless verified, it will be assumed that all lines are energized.

4.9 Safe working distance is the minimum distance that must be maintained between any energized electrical line and any part of the operating equipment to maintain adequate safety margins and is based on the line voltage of the power line. Figure 4-1 lists the line voltages in kilovolts and the Minimum Safe Work Distance in the United States and Figure 4-2 indicates the Nominal Phase to Phase voltage rating in kilovolts for Canada. The following safe working distance criteria will be applied for all Resolution Consultants operations:

Figure 4-1: United States Overhead Line Criteria

Line Voltage (Kilovolts)	Minimum Safe Working Distance
0 – 50	10 feet
>50 – 200	15 feet
>200 – 350	20 feet
>350 – 500	25 feet
>500 – 750	35 feet
>750 – 1,000	45 feet

Source: American National Standards Institute, Publication B30.5.

Figure 4-2: Canadian Overhead Line Criteria

Column 1	Column 2
Nominal phase-to-phase voltage rating	Minimum Distance
Over 425 to 12,000	3.0 metres
Over 12,000 to 22,000	3.0 metres
Over 22,000 to 50,000	3.0 metres
Over 50,000 to 90,000	4.5 metres
Over 90,000 to 120,000	4.5 metres
Over 120,000 to 150,000	6.0 metres
Over 150,000 to 250,000	6.0 metres
Over 250,000 to 300,000	7.5 metres
Over 300,000 to 350,000	7.5 metres
Over 350,000 to 400,000	9.0 metres

Source: Canada Occupational Health and Safety Regulations Electrical Safety- Subsection 8.5(6).

4.10 Under no circumstances will any object pass closer than 3 metres to any energised, uninsulated electrical line.

4.11 Formally notify all subcontractors of Overhead Power lines.

4.12 Acceptable Safety Procedures

4.12.1 Where any work task will not allow the minimum safe working distance to be maintained at all times, an alternate means of protection must be identified and approved by the SH&E Department. In order of preference, acceptable procedures are

- De-energize the power line(s)/lockout by local utility authorities
- Install insulated sleeves on power lines
- Assign line spotters to assist the equipment operator

4.12.2 De-energize Power Lines

Elimination of electrical power provides the most acceptable means of ensuring safety of personnel. While temporary site power lines are under the control of the site manager (and can be de-energized locally), electrical distribution and transmission lines can be de-energized only by the owner of the line (generally the local electrical utility). Therefore, de-energizing of a line requires advance coordination with the line owner; generally, at least one week advance notice should be provided.

4.12.3 Install Insulating Sleeves

Insulating sleeves can be placed over power lines to provide a contact and arcing barrier if work must occur closer to the power lines than the accepted safe work distance. Although not as desirable as line de-energizing, the use of these sleeves can provide an acceptable alternative where electrical lines are required to remain in service.

As with de-energizing of distribution and transmission lines, placement of insulating sleeves can be performed only by the line owner. This requires advance coordination with the line owner; generally, at least one week advance notice should be provided. To install the sleeves, representatives of the line owner will require access to the job site.

4.12.4 Assign Line Spotters

A line spotter is a person located at ground level who is assigned to observe equipment operations, with the specific duty of assisting the equipment operator to ensure that no part of the equipment gets too close to an energized, unprotected electrical line.

Persons assigned to act as line spotters must meet the following requirements:

- While acting as a line spotter, no other duties may be performed (e.g., the line spotter cannot also act as the load spotter during a lifting operations).
- The spotter will have a radio or other direct means of communicating with the equipment operator at all times.
- The spotter will be positioned at a right angle to the equipment operator's line of sight to maximize the sight angles between the personnel.

Under no circumstances will any portion of a piece of equipment pass closer than 10 feet to any energized, uninsulated electrical line.

4.13 Additional Safety Measures

4.13.1 The following additional safety measures can be implemented as needed when working around energized power lines:

- Provide equipment with proximity warning devices. These provide an audible alarm if any part of the equipment gets too close to a line.
- Install ground safety stops. These prevent vehicles from accidentally entering hazardous areas.
- Equip cranes with a boom-cage guard. This prevents the boom from becoming energized if an electrical line is contacted.
- Utilize insulated links and polypropylene tag lines. These prevent the transmission of electricity to loads or tag line handlers if an electrical line is contacted.

NOTE: These additional safeguards are intended as supplemental protection. Use of these measures is not permissible as a substitute for maintaining the safe working distance or implementation of the procedures in Section 4.1.

4.13.2 If an electrical power line is hit or an electrical arc occurs:

- All ground personnel must evacuate IMMEDIATELY to a distance of at least 50 feet (15.25 metres). DO NOT attempt to rescue any injured person until the line can be de-energized.
- The operator should remain in the cab until the line can be de-energized and should carefully try to extricate the equipment from the power line. This may not be possible where melting of insulator material or metal has occurred.
- Contact the line owner to report the line contact and request that the line be de-energized immediately.
- Once the line has been confirmed to be de-energized, the operator can safely evacuate the cab and rescue can commence for any injured personnel.
- Contact the SH&E Department to report the incident and implement any instructions provided.

If the operator must evacuate while the line is still energized (because of fire or other life-threatening condition) he/she should jump clear of the equipment (making sure to avoid touching the equipment and the ground simultaneously), and land upright and with feet together. Once on the ground, proceed in a direct line away from the equipment using a short, shuffling gait (feet touching, sliding each foot no more than 1 foot forward at a time) to minimize shock hazard from electrical energy being transmitted through the ground.

5.0 Records

None.

6.0 Attachments

None.

5-417 Utilities, Underground

1.0 Purpose and Scope

1.1 Establishes requirements to ensure that underground installations are identified properly before excavation work commences.

1.2 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

2.1 **Underground Utilities:** All utility systems located beneath grade level, including, but not limited to, gas, electrical, water, compressed air, sewage, signaling and communications, etc.

2.2 **Ground Disturbance (GD):** Any indentation, interruption, intrusion, excavation, construction, or other activity in the earth's surface as a result of work that results in the penetration of the ground.

3.0 References

3.1 American Public Works Association, Excavator's Damage Prevention Guide and One-Call System Directory International 1990-1991, Utility Location and Coordination Committee.

4.0 Procedure

4.1 Ground disturbance may be a conducted for a variety of purposes, including, but not limited to, exposing existing buried lines, soil sampling, remedial excavations, or installing monitoring wells or test pits.

4.2 Improper ground disturbance may impact a buried pipeline or utility line and cause a major release of a hazardous substance, flood, or electrocution. Serious injuries and significant property damage have resulted from insufficient/inadequate identification of underground installations during the course of ground disturbance work.

4.3 To control hazards associated with coming in contact with such installations, the American Public Works Association's (APWA) guidelines for the uniform identification of underground installations has been adopted.

4.4 **CTO Managers** are responsible for ensuring that all work, including the identification, location, and access to all underground utilities, is planned and performed in accordance with contract specifications and safety requirements.

4.4.1 The planning for associated work and avoidance of contacting underground utilities shall be part of the project safety planning in the HASP.

4.5 The **CTO Manager or Site Supervisor** is responsible for the execution of work in accordance with this and other associated Resolution Consultants SOPs, including:

- The review of the HASP.
- Verification that all steps have been taken to identify existing underground utilities in the area to be disturbed.

4.6 **Regional SH&E Professional** provides guidance as needed.

4.7 **Personal Protective Equipment**

- Long sleeved shirt and pants (coveralls/Nomex LILA for upstream oil and gas)
- Safety toe boots
- Hard hat
- High-visibility clothing
- Gloves

- Respirator with organic vapor/particulate filter cartridge (for use when the exposure exceeds the occupational exposure limit stated on the MSDS), as required
- Hydrogen Sulfide (H2S) Monitor (for areas with known or suspected H2S

4.8 Training

4.8.1 Staff shall successfully complete a Ground Disturbance training course.

4.8.2 Some clients may also have required client-based Ground Disturbance training.

4.9 Underground Utility Lines

4.9.1 To avoid injury from electrical and other utilities on site, utility lines shall be located and marked prior to conducting any drilling or digging on site. If available, refer to site drawings or client interviews for information pertaining to utilities on site.

4.9.2 Types of underground lines:

- Gas line
- Potable water line
- Raw water line
- Sewer line
- Power line
- Cable television/communication line
- Cathodic protection lines
- Grounding cable
- Process piping/flow line

4.9.3 Prior to conducting the ground disturbance, you shall locate all pipelines and utilities that pass within (30 m) of the work area. This is your search and control area. To do so, you need to do the following:

- Notify all pipeline and utility companies, and confirm that their notification requirements are fulfilled prior to conducting a ground disturbance.
- Identify pipelines, power lines, utilities, and irrigation canals in a 30-foot (9.1 m) zone of the work area with the owner of the utility.
- On private property, a properly trained and competent third party utility locator shall be used.
- Get approval for work within a right-of-way (ROW) or within 15 feet (4.6 m) of a line if there is no ROW.
- Prepare a site map identifying the search area, the ground disturbance area, and known underground utilities.
- Confirm that all pipelines, power lines, and utilities are marked.

4.9.4 Look for pipeline indicators:

- Look for warning signs where pipelines cross roads or water courses.
- Look for cut lines, wells, tanks, or valves that may indicate the presence of pipelines.
- Look for ground settling from previous work.
- Talk to nearby landowners and residents.
- Look for vegetation appearing “different” from the surrounding vegetation (e.g., greener, taller, shorter, or more brown than surrounding vegetation).

4.9.5 When you are working within a pipeline right-of-way, you shall get written approval from the pipeline owner prior to doing your work.

4.9.6 Call the pipeline owner at least two full working days before you dig so the pipeline can be located and marked.

4.9.7 Expose the pipeline by hand/hydrovac before digging within 15 feet (4.6 m) of the pipeline with machinery (no machinery comes may come within 2 feet [60 cm] of the pipeline) with the supervision of the owner or their representative, and call the owner at least one full day before you cover the exposed line.

4.9.8 During ground disturbance:

- All underground utilities shall be hand exposed or hydrovac'd within 3.3 feet (1 m) of a mark out or within the distance required by the owner of the utility before operating any mechanized equipment.
- Make arrangements for supervision ("a Signal Person") during hand exposure.
- If for any reason these hand excavations are temporarily filled in, mark them.
- Make arrangements for supervision ("a Signal Person") during any mechanical excavation within 5 m of the underground utility.
- Make arrangements for supervision ("a Signal Person") during backfilling of utilities.
- Cutting back and shoring of excavations shall be completed to ensure that there are no cave-ins (follow *SOP S3NA-303-PR Excavation and Trenching*).
- Do not damage utilities by shovels when hand exposing and picks should not be used.
- Remember that all workers have the right and responsibility to refuse to carry out any work or procedures that they feel are unsafe.
- If the ground disturbance is deeper than 3.3 feet (1 m), all crew members shall have appropriate training for excavations and trenches and shall be protected from cave-ins or sliding/rolling materials (follow *SOP S3NA-303-PR Excavation and Trenching*).
- Remember that incidents, injuries, and near misses shall be reported immediately.
- Review the site-specific emergency response plan.

4.9.9 If you hit an underground facility, stop the work immediately and notify the owner of the facility.

- The owner shall be informed of the location of the contact and the type of damage that resulted.
- If the facility is a pipeline, the company (client) shall immediately notify the required agencies and regulatory bodies of the location of the contact and the type of damage that resulted.
- The government agencies will require a written record and the company (client) should conduct an incident investigation into the causes and make recommendations for the future prevention of this incident.

4.10 Identification of Installations

4.10.1 Various forms of underground utility lines or pipes may be encountered during Resolution Consultants deployments to field sites. Damaged utilities, in particular, can present other hazards including asbestos, explosion, electric shock, scalding, etc., and they shall be avoided. The presence of damaged utilities at any work location shall be immediately brought to the attention of the site supervisor or other member of the Resolution Consultants site management team.

4.10.2 Guidance will be provided on the appropriate action to be taken, which could include suspension of work until the responsible utility agency is contacted and the hazard is either isolated or eliminated.

4.10.3 Extreme caution shall always be exercised when attempting to locate underground utilities. The location of utilities can be in some cases not consistent as shown on drawings, as indicated by the placement of surface signage, or as described by personnel. Coordination and planning of the job shall be required with the client or owner.

- Prior to digging and drilling operations, the client shall always be informed of the potential location(s) of underground utility systems.
- If a utility permit is required from the client or owner, it shall be secured.
- The client shall explain how the utility line may be identified—e.g., red concrete encasement.

- All underground installations shall be considered “live” and “operational” until the owner, client, or utility authority isolates any hazardous energy or deactivates the system and can demonstrate that condition.
- Where a line placement and depth is known or suspected and where there is potential for contact, hand digging, or hand auguring, instrumentation and other investigative techniques shall be used.

4.10.4 The One Call System Definition and Directory or its equivalent shall be used to prepare for excavation work in the event the identity of an underground installation(s) is unknown.

4.10.5 Line location documentation (or appropriate regional agency or company) provides a listing of companies that have registered buried facilities in the proposed work area. Some public utilities and private companies are not members of the One Call System. In order to give line operators sufficient time to respond to a request to locate, a minimum waiting period of 72 business hours is required prior to beginning work.

4.10.6 Once the underground installation has been identified, proper surface markings shall be made in accordance with the guidelines contained in this SOP or as contract-specified.

4.11 Surface Markings

4.11.1 Color-coded surface marks (paints or similar coatings) shall be used to indicate the type, location, and route of buried installations. Additionally, to increase visibility, color-coded vertical markers (temporary stakes or flags) shall supplement surface marks.

4.11.2 All marks and markers shall indicate the name, initials, or logo of the company that owns or operates the installation and the width of the installation if it is greater than two inches.

4.11.3 If the surface over the buried installation is to be removed, supplemental offset marking shall be used. Offset markings shall be on a uniform alignment and shall clearly indicate that the actual installation is a specific distance away.

4.12 Uniform Color-Coding

4.12.1 The colors and corresponding installation type are as follows unless otherwise contract-specified.

4.12.2 Red: Electric Power Lines, Cables, Conduit, and Lighting Cables

4.12.3 Yellow : Gas, Oil, Stream, Petroleum, or Gaseous Materials

4.12.4 Orange :Communication, Alarm or Signal Lines, Cables, or Conduit

4.12.5 Green: Sewers and Drain Lines

4.12.6 White : Proposed Ground Disturbance area

4.12.7 Pink: Temporary Survey Markings

4.12.8 Purple: Nonpotable Water

5.0 Records

5.1 The following records on the identification of and response to underground utilities will be maintained in the project files:

5.1.1 All information regarding the identification of underground installations (this information can also be transferred to the appropriate drawings and/or prints and shall be available on site).

5.1.2 Drawings and/or prints shall be maintained for the life of this project.

5.1.3 Identifying Underground Installations Checklist.

6.0 Attachments

None.

Attachment 5
Daily Safety Meeting Form (SWAP)

Resolution Consultants
Daily Safe Work Assessment & Permit (SWAP)

This form must be filled out daily prior to work in the field and reviewed with all project personnel in a daily safety brief. The SWAP is to be completed before each work day to continually assess and communicate project-related hazards. Please have all SWAPs initialed by the Project Manager or Supervisor after returning from the field and place all completed SWAPs in the project file.

Section 1: Project Information

Project/Client Name: _____ **SWAP Date/Time:** _____

Location of the Work: _____ **Project Number:** _____

SWAP Originator: _____ **Additional Personnel:** _____

Description of Work: _____

_____

Has a HASP been created for this job? ❑ **Yes** ❑ **No** **If Yes, has the HASP been reviewed prior to work?** ❑ **Yes** ❑ **No**

Section 2: Identify hazards associated with tasks and tools FOR THIS DAY:

Critical Safety Tasks are listed below: (If answered "Yes" please call H&S for additional guidance/checks)

	Yes	No		Yes	No
Performing work in Confined Spaces or Excavations - -	❑	❑	Use of Respiratory Protection- - - - - - - - - -	❑	❑
Hazardous Chemical Exposure- - - - - - - - - - - -	❑	❑	Involvement with Lockout/Tagout Activities - - -	❑	❑
Falls Greater than Six (6) Feet- - - - - - - - - - - -	❑	❑	Field Investigations (No Call Required) - - - - -	❑	❑

List each task that presents hazards and identify controls you will take to minimize risk. If No hazards were identified, write NONE in the first Task box. All additional project personnel involved must initial the bottom of each task identified below signifying that they have reviewed this information. Use back of SWAP as necessary for General Safety and Precautions, and to add additional hazards.

Following is a non-inclusive list of potential hazards.

- Chemicals (inhalation, dermal)
- Biologic Hazards (poison ivy, ants, snakes)
- Potentially unsafe area or neighborhood
- Sampling around heavy equipment (backhoe bucket, Vac. Truck, etc.)
- Working around high noise (> 85 dBA)
- Activities that require coring or drilling
- Drilling around underground utilities
- Work with equipment around power lines
- Slick, uneven walking/working surfaces
- Climbing ladders / scaffolds
- Using gas or propane powered equipment in enclosed areas
- Work in extreme heat (> 104^0F) or extreme cold (<30^0F)
- Working around heavy equipment / traffic
- Power tools (hammer drills, auger, etc.)
- Working with lifting / hoisting equipment
- Vehicular traffic, fork lifts, scissors lifts
- Inclement weather (lightning, high winds)
- Work with ergonomic hazards (lifting hazards, twisting, excessive repetitive)
- Working in proximity to deep water > 3ft
- Remote location w/ limited communication

Task: _____

Hazards: _____

Controls:

Task: _____

Hazards: _____

Controls:

Task: _____

Hazards: _____

Controls:

Task: _____

Hazards: _____

Controls:

Section 3: Chemical Hazards and PPE:

Chemical Hazards

	Yes	No		Yes	No
Radiation or Other Contamination - - - - - - - - -	❑	❑	Environmental Toxin - - - - - - - - - - - - - -	❑	❑
Flammable/Combustible Materials or Vapors (< 140^0 FP)	❑	❑	Reactive, Volatile or Explosive - - - - - - - - -	❑	❑
RCRA Hazardous Materials (listed or characteristic) - - -	❑	❑	Irritant or Sensitizer - - - - - - - - - - - - - -	❑	❑
Corrosive (pH >12.5 or < 2) - - - - - - - - - - - - - -	❑	❑	Oxidizer -	❑	❑
Poison, Target Organ Toxin - - - - - - - - - - - - - -	❑	❑	Teratogen or Mutagen - - - - - - - - - - - - - -	❑	❑
Biological (mold, poison oak-ivy-sumac, etc.) - - - - -	❑	❑	Carcinogen - - - - - - - - - - - - - - - - - - -	❑	❑

Routes of Exposure:

	Yes	No		Yes	No
Inhalation- -	❑	❑	Ingestion (poor hygiene and work practice) - - - -	❑	❑
Skin (dermal absorp.) or Mucus Membranes (eyes, etc.)	❑	❑	Injection (rare) - - - - - - - - - - - - - - - -	❑	❑

Personal Protective Equipment (PPE) FOR THIS DAY

Level of Protection:	❑ A ❑ B	❑ C	❑ D	
Respiratory Protection:	❑ None ❑ Full Face	❑ Half Face	Cartridge Type: _____	
Protective Clothing:	❑ Work Uniform	❑ Protective Suit: _____	❑ High-Visibility Vest/Shirt	
Gloves:	❑ Latex ❑ Nitrile	❑ Butyl ❑ PVC	❑ Neoprene ❑ Leather	❑Other: _____
Footwear:	❑ Steel-Toe Leather	❑ Steel-Toe Rubber	❑ Other: _____	
Eye/Face Protection:	❑ Safety Glasses	❑ Face Shield	❑ Chemical Goggles	
Head Protection:	❑ Hard Hat	❑ Bump Cap	❑ Other: _____	
Hearing Protection:	❑ Ear Plugs	❑ Muffs	❑ Combination (List) _____	

Section 4: Emergency Contact Information

Name:	**Name:**
Number(s):	**Number(s):**
Name:	**Name: Resolution Consultants Health and Safety – Steve Skipper**
Number(s):	**Number(s): 865-607-1082 (Cell)**

Section 5: SWAP Review and Certification (All crew members and affected subcontractors)

Printed Name	Signature

THE LOCATION WHERE THE WORK IS TO BE DONE HAS BEEN EXAMINED AND NECESSARY PRECAUTIONS TAKEN FOR THE WORK.
I certify that the above listed project has been evaluated for hazards, protective measures assigned and communicated with all personnel on the jobsite. Changes in scope of work or work conditions may require the modification of existing SWAP or creation of a new SWAP.

SWAP Completed By: Print | **SWAP Completed By: Sign** | **PM Review (Initials)**

Review with everyone on-site before the start of work, and return the completed form to your Project Manager to review and archive in the project file.

Contact H&S if you have any questions.

Attachment 6
Contractor Significant Incident Report

EnSafe Investigation Report

Select the report type: ___ near miss - ___ incident - ___ injury

1. Dates		
Of Near Miss/Incident/Injury	Investigation Started	Investigation Completed

2. Location	3. Time

4. EnSafe Employees		
Injured	Involved	Witnesses

5. Others		
Injured	Involved	Witnesses

6. Injured					
Name	Length of time with firm	EnSafe Employee Yes/no	Job Title or Occupation	How long assigned to job	Nature and Extent of Injury

7. Equipment/Tools/Vehicles Involved
Item:
Damage:
Ownership:

8. Description

Events leading up to:

Accident/Incident/Event/Illness:

Contributing Factors:

9. Cause

Immediate Cause:

Root Cause:

10. Policy, Work Rule, Regulation, Standard

Applicable:

Violations:

11. Recommendations
To Prevent Recurrence:
Additional Training:

12. Investigation Team			
Leader: Signature: Date:		Members:	

13. Review		
Reviewed by	Signature	Date
Comments:		

14. Corrective Action		
Action	Date	Signature
1		
2.		
3.		
4.		
5.		
6.		

S3NA-004-FM1
SUPERVISOR'S REPORT OF INCIDENT

AECOM

1. SEEK IMMEDIATE MEDICAL ATTENTION IF NECESSARY
2. EMPLOYEE MUST REPORT ALL INCIDENTS TO THEIR SUPERVISOR IMMEDIATELY.
3. REPORT THE INCIDENT TO THE APPROPRIATE INCIDENT REPORTING LINE. **(800) 348-5046**

ORGANIZATION INFORMATION

REGION: ☐ CAN-EAST ☐ CAN-CENTRAL ☐ CAN-WEST ☐ MID-ATLANTIC ☐ MIDWEST ☐ NORTHEAST ☐ South ☐ WEST ☐ Brazil

DISTRICT:

PROJECT NUMBER:

BUSINESS LINE: ☐ AECOM CORP ☐ GROUP SERVICES ☐ CONSTRUCTION SERVICES (CSG) ☐ ENERGY&POWER ☐ ENVIRONMENT ☐ PDD ☐ TRANSPORTATION ☐ WATER

CLIENT NAME:	**PROJECT NAME:**

ADMINISTRATIVE

EMPLOYEE NAME:	**EMPLOYEE NUMBER:**
WORK PHONE:	**CELL PHONE:**
EMPLOYEE STATUS ☐ FULL TIME ☐ PART TIME ☐ SUB ☐ TEMP AGENCY ☐ THIRD PARTY	**HOME OFFICE ADDRESS:**
	JOB TITLE:

DESCRIPTION OF EVENT

TYPE OF OCCURRENCE: ☐ INJURY/ILLNESS ☐ PROPERTY DAMAGE ☐ ENV DAMAGE/SPILL ☐ REGULATORY INSPECTION ☐ MOTOR VEHICLE ACCIDENT ☐ BOATING INCIDENT ☐ NOV/CITATION ☐ OTHER BE SPECIFIC

DATE OF INCIDENT:	**TIME OF INCIDENT:**
DATE REPORTED TO SUPERVISOR:	**TIME REPORTED TO SUPERVISOR:**
INCIDENT ADDRESS/LOCATION:	**CITY:**
STATE/PROVINCE/TERRITORY:	**ZIP/POSTAL CODE:**

WERE THERE ANY SUBCONTRACTORS, WITNESSES OR OTHER PERSONS INVOLVED: ☐ **YES** ☐ **NO**

IF YES, PLEASE PROVIDE DETAILS TO INCLUDE NAMES AND CONTACT INFORMATION

PERSONAL INJURY

TYPE OF INJURY: ☐ FIRST AID (TREATED ON-SITE) ☐ MEDICAL AID (TREATED BY PROFESSIONAL) ☐ FATALITY

DESCRIBE THE INJURY AND BODY PART AFFECTED: ***BE SPECIFIC STATEMENTS BELONG ON PAGE 2***

WAS A DOCTOR OR HOSPITAL VISITED? ☐ **YES** ☐ **NO**	**IF YES, WHEN:**
MEDICAL RECEIVED:	**DOCTOR/HOSPITAL NAME**:
PROVIDER ADDRESS:	**PHONE NUMBER:**

PROPERTY DAMAGE (COMPLETE FOR PROPERTY DAMAGE ONLY

TYPE OF DAMAGE: ☐ AECOM PROPERTY ☐ MOTOR VEHICLE (COMPLETE MVA REPORT PAGE 3) ☐ SPILL OR RELEASE OF A HAZARDOUS SUBSTANCE ☐ MAJOR STRUCTURAL FAILURE ☐ CLIENT, SUBCONTRACTOR, OTHER:

DESCRIBE THE SPECIFIC DAMAGE, STRUCTURAL FAILURE OR HAZARDOUS RELEASE:

RANK THE SEVERITY OF THE DAMAGE: ☐ MINOR ☐ SERIOUS ☐ MAJOR

S3NA-004-FM1
SUPERVISOR'S REPORT OF INCIDENT

WHERE CAN THE PROPERTY BE SEEN?	
PROPERTY OWNER NAME:	**CONTACT INFORMATION:**
IS THERE ANY POTENTIAL FOR CIVIL, CRIMINAL OR REGULATORY LIABILITY AGAINST AECOM OR AN EMPLOYEE? ☐ **YES** ☐ **NO** IF YES, DISCUSS WITH AECOM REGIONAL COUNSEL BEFORE PROCEEDING WITH ANY FURTHER REPORTING.	
INDICATE WHO HAS BEEN NOTIFIED OF THE EVENT (E.G., OWNER/OPERATOR, STATE (US) OR GOVERNING BODY OF LABOUR, ETC?	
What, when, where, why, how? Attached notes/diagrams as required and list any machinery or equipment involved.	
ON-SITE/CORRECTIVE ACTIONS	
INCIDENT IMMEDIATELY REPORTED ON-SITE TO:	
WHAT CORRECTIVE ACTIONS WERE IMMEDIATELY IMPLEMENTED ON-SITE?	
WHAT LONG-TERM OR PERMANENT CORRECTIVE ACTIONS ARE RECOMMENDED?	
ACKNOWLEDGEMENTS	
EMPLOYEE DESCRIPTION OF INCIDENT:	
What, when, where, why, how? Attached notes/diagrams as required and list any machinery or equipment involved	
EMPLOYEE PRINTED NAME AND PHONE	**SIGNATURE AND DATE**
SUPERVISOR REVIEW OF INCIDENT:	
SUPERVISORS PRINTED NAME AND PHONE	**SIGNATURE AND DATE**
MANAGER COMMENTS:	
MANAGER PRINTED NAME AND PHONE	**SIGNATURE AND DATE**
FOR REGIONAL SH&E MANAGER USE ONLY:	
NAME AND SIGNATURE:	**DATE:**
RECORDABILITY DETERMINATION ☐ FIRST AID ☐ RECORDABLE ☐ RECORDABILITY UNDETERMINED ☐ NON WORK ☐ PROPERTY DAMAGE ☐ GENERAL LIABILITY ☐ VANDALISM COMMENTS:	

ATTENTION:

THIS FORM MUST BE COMPLETED AND EMAILED TO SRI@AECOM.COM OR FORWARDED TO THE REGIONAL SH&E MANAGER WITHIN ONE (1) BUSINESS DAY FOLLOWING THE OCCURRENCE OF THE INCIDENT.

Submit Form

MOTOR VEHICLE ACCIDENT (MVA) REPORT

ONLY COMPLETE THIS PAGE FOR VEHICLE INCIDENTS

AECOM

ADMINISTRATIVE	
AECOM VEHICLE: ☐ FLEET ☐ RENTAL ☐ PERSONAL	JOB ACTIVITY AT TIME OF MVA:
DATE OF MVA: TIME OF MVA:	LOCATION OF MVA:
MANAGER:	NUMBER OF VEHICLES INVOLVED:

REMEMBER: **STAY CALM.**

Do not admit liability, agree to pay for any damage or sign any document except as required by law.

AECOM DRIVER INFORMATION		
DRIVER:	AECOM PASSENGERS:	OTHER PASSENGERS:
DRIVER'S LICENSE:	PROVINCE/STATE ISSUED:	EXPIRATION DATE:
INJURIES TO DRIVER:		
INJURIES TO PASSENGERS:		

AECOM VEHICLE INFORMATION		
YEAR:	MAKE:	MODEL:
SERIAL/VIN #:	LICENSE PLATE #:	REGISTRATION #:
OWNER:	INSURANCE COMPANY:	POLICY #:
COMMERICIAL MOTOR VEHICLE :	IF RENTED OR PERSONAL, CONTACT INFORMATION OF OWNER:	
RANK THE SEVERITY OF THE DAMAGE TO THE VEHICLE: ☐ 0 - $500 ☐ $500 - $1000 ☐ $1000 - $4000 ☐ >$4000		
DESCRIPTION OF DAMAGE TO THE BODY OF THE VEHICLE:		

OTHER DRIVER/VEHICLE INFORMATION		
YEAR:	MAKE:	MODEL:
SERIAL/VIN #	LICENSE PLATE #:	REGISTRATION #:
DRIVER'S NAME:	CONTACT INFO:	LICENSE #:
OWNER:	INSURANCE COMPANY:	POLICY #:
IF RENTED OR PERSONAL, CONTACT INFORMATION OF OWNER:		
DESCRIPTION OF DAMAGE TO THE BODY OF THE OTHER VEHICLE:		

ACCIDENT DESCRIPTION	
EXACT LOCATION OF MVA (HIGHWAY KM, INTERSECTION, EXACT ADDRESS, ETC.)?	
OTHER PROPERTY DAMAGED:	
DESCRIBE THE EVENTS LEADING UP TO AND THE INCIDENT (REPORT FACTS ONLY: SPEED OF VEHICLES, DIRECTION TRAVELING, WEATHER CONDITIONS, ETC. DO NOT GIVE OPINIONS REGARDING CAUSE OF ACCIDENT OR LOSS.):	
DID THE POLICE ATTEND THE SCENE: ☐ YES ☐ NO CITATION ISSUED: ☐ YES ☐ NO TO WHO:	
POLICE :	CONTACT INFO:
WITNESS:	CONTACT INFO:
WITNESS:	CONTACT INFO:

SUBMIT THIS MVA REPORT WITH A COMPLETED SUPERVISORS REPORT OF INCIDENT TO THE APPROPRIATE MANAGER	
HAS AN SUPERVISORS REPORT OF INCIDENT BEEN COMPLETED? ☐ YES ☐ NO	
COMPLETED BY:	SIGNATURE:

AECOM

Attachment 7
Material Safety Data Sheets

Attachment 8
State Spill Reporting Procedures