SITE-SPECIFIC HEALTH & SAFETY PLAN

Former Alexander Schmigel Site
Hoosick Falls, NY

Mactec Project No.
3410060481

Prepared for:

Honeywell Inc.

Prepared by:

Mactec Engineering and Consulting, Inc.
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August 2010

SITE-SPECIFIC HEALTH &SAFETY PLAN (HASP)

for the

Project Name: Former Alexander Schmigel Site
Project Location: Hoosick Falls, NY
Project No.: 3410060481

This HASP, which must be kept on site, addresses the health and safety hazards of each task for this project, including the requirements and procedures for worker protection (per 29 CFR 1910.120 and the Mactec ES&H Program 2.9.A - Hazardous Waste Operations and Emergency Response (HAZWOPER) Program). The Site Health and Safety Officer (SHSO) can change or amend this document only with agreement from the Location Health and Safety Representative (LHSR) and the Division Environmental Health and Safety Manager (DEHSM). The SHSO must initial any change made to the HASP at the relevant section and document the amendment date below.

Prepared by:	Chris Hortert	Mactec Managing Office:	Pittsburgh
Approved by:	**Cindy Sundquist**		
	DEHSM		Date
	Michael Bender		
	LHSR		Date
	Greg Oslosky		
	Field Lead/SHSO		Date
	Rob Crowley		
	Project Manager		Date
Date(s) of			
Amendment(s):			

All site workers shall read this HASP. A pre-entry briefing, conducted by the SHSO, shall be held prior to initiation of this project and prior to any new personnel entering the site. Items to be covered during the briefing can be found on the Site Safety Orientation form (Appendix G). All applicable sections of this HASP shall be reviewed during this briefing. The SHSO shall review the information covered in the pre-entry briefing meeting with any worker not in attendance at the initial meeting prior to commencing work. Brief meetings will be held at the beginning of each work day to discuss important safety and health issues concerning tasks performed on that day and will be documented on the Daily Safety Meeting checklist (Appendix H). After reading the HASP and attending a pre-entry briefing, workers shall sign the following acknowledgment statement:

Mactec Field Team Review: I acknowledge that I have read the requirements of this HASP, and agree to abide by the procedures and limitations specified herein. I also acknowledge that I have been given an opportunity to have my questions regarding the HASP and its requirements answered prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during on-site activities.

NAME	DATE	NAME	DATE

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1.0 SITE DESCRIPTION

The Alexander Schmigel Site (Site) is located on the north side of State Route 67, at 5079 State Route 67, in Hoosick Falls, New York, Postal Zip Code 12090. Figure 1 shows the location of the Site on a US Geological Survey 7.5-minute topographic map, and Figure 2 shows a plan view of the Site layout. The Site consists of a former gravel pit that was reportedly filled with miscellaneous scrap, refuse, and demolition debris between 1977 and 1995. The former Site owner indicated that drums and drum contents were disposed of at the Site over an approximate 2-week period in 1977. The accounts of the number of drums and dimensions of the disposal area have varied, with the number of drums ranging from "very few" to between 100 and 200, and the area ranging from 20 feet by 20 feet (400 square feet [SF]) to 0.23 acres (10,000 SF). The reported depth of the fill and waste material ranges from 9 to 12 feet deep.

Numerous investigative activities have taken place on the Site between 1986 and 2007. Groundwater monitoring wells were installed in 1986, and soil, groundwater and surface water samples were collected. In 1987, a magnetometer survey was conducted and test pits were excavated. The 1987 test pits identified one full drum and two empty, crushed drums. Additional groundwater samples were collected between 1989 and 1994, and again between 1999 and 2003. Limited surface water sampling was conducted in 1989, and residential wells located near the Site were sampled in 1986 and 1994. In 2007, a supplemental Remedial Investigation (RI) was conducted that included the excavation of 14 test pits, installation of three additional groundwater monitoring wells, completion of a Site survey and collection of two rounds of groundwater samples from all of the Site wells.

Test pits excavated in the supplemental RI at the Site identified two drums that contained waste material, and a number of empty, crushed drums. These drums were found to be commingled with the miscellaneous debris, scrap, and fill materials that were used to backfill the former gravel pit. The drums that contained waste were sampled, and one of the two was found to be characteristically hazardous for lead. The other full drum contained non-hazardous waste.

Based on the findings of the RI, an area less than 2,000 SF of the Site area may contain buried drums and is the area of the proposed excavation (Figure 2). The sampling conducted during the RI indicated that four subsurface soil samples contained concentrations of acetone that exceed the New York State Department of Environmental Conservation (NYSDEC) Part 375 Unrestricted Use – Residential Soil Cleanup Objectives (SCOs), and that one subsurface soil sample collected contained a concentration of lead that exceeds the characteristic hazardous waste limit value. The sample with a concentration of lead above the characteristic hazardous waste limit value and three of the four samples with concentrations of acetone above the SCOs are located within the proposed excavation area. It should be noted that the exceedance of acetone from the fourth sample location was the analytical result from a duplicate sample, and that the analytical result from the original sample did not show an exceedance of this compound.

It has been determined that excavation and off-site disposal is the most cost-effective means of managing the identified wastes. The excavation area is estimated to contain wastes to a depth of approximately nine feet for a maximum total in-place estimated volume of 665 cubic yards (CY); although the actual volume is likely less because the depth is shallower at the periphery of the waste area. At the completion of the excavation, the area will be backfilled to grade with clean soil.

Figure 1: Site Location Map

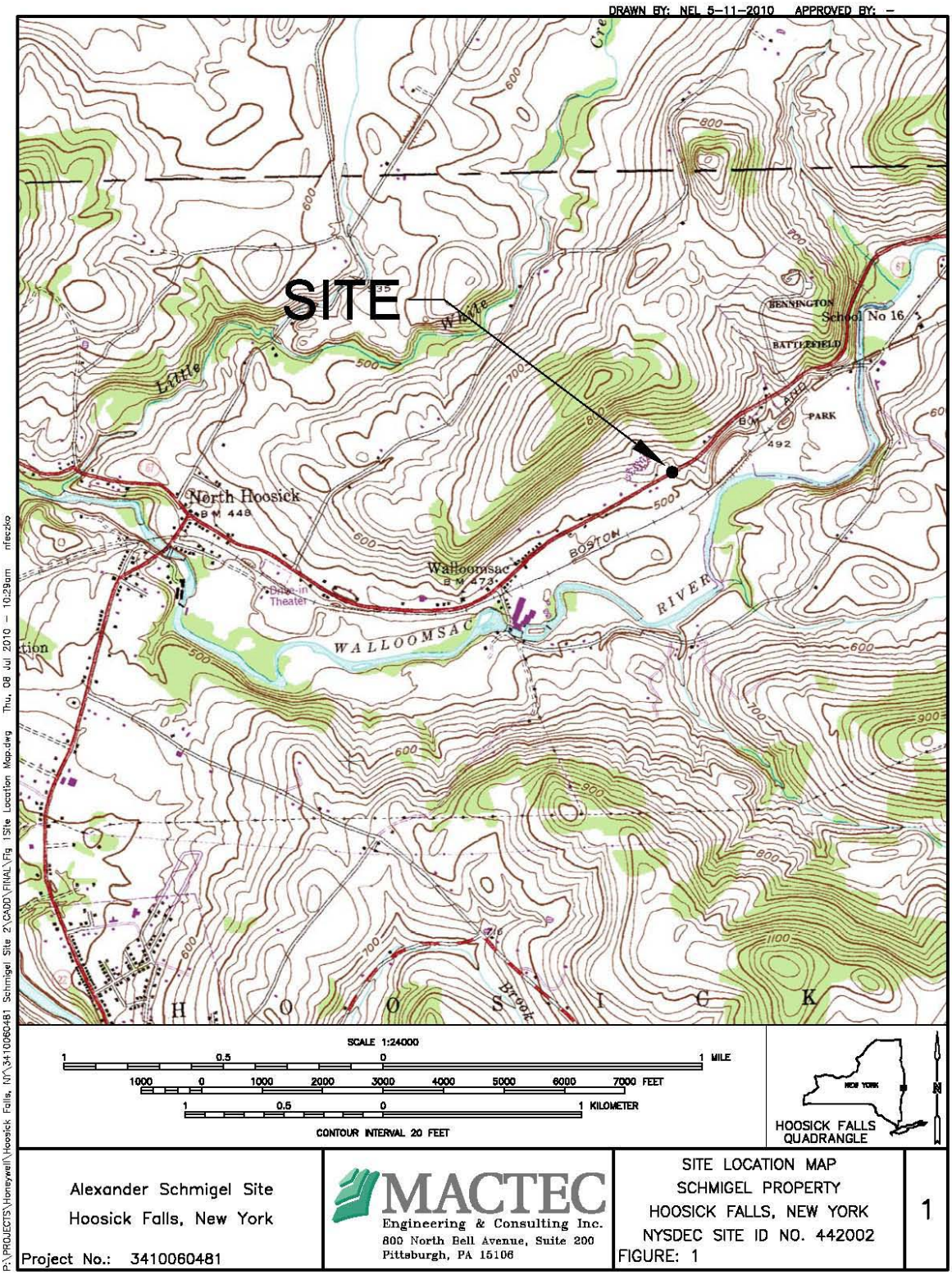
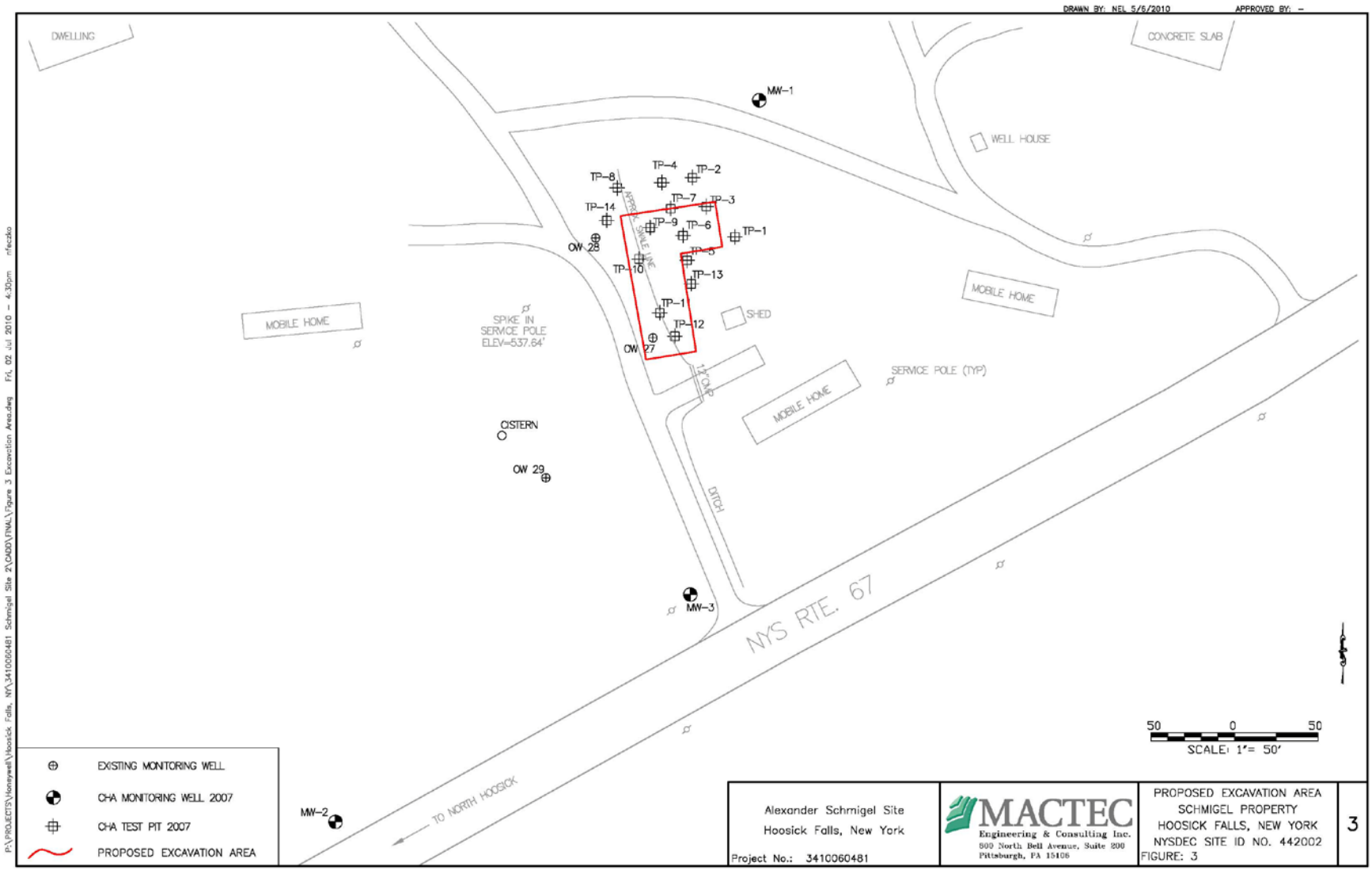


Figure 2: Site Plan and Proposed Excavation Area



The following tasks are to be performed at the site (check the box if task is to be performed by Mactec employees):

Mactec?	**Tasks**	**Initial Level of PPE**
☒	▪ 1 – Have soil samples analyzed from backfill material	D
☒	▪ 2 - Mobilization	D
☒	▪ 3 - Locate and mark excavation area	D
☒	▪ 4 - Locate and setup decontamination and staging areas	D
☒	▪ 5 - Direct excavation activities in marked excavation area	D
☒	▪ 6 - Perform air monitoring during activities	D
☒	▪ 7 - Direct placement of encountered drums in roll off boxes or in over pack and place in staging area	D
☒	▪ 8 - Direct staging of excavated soil and wastes in roll off boxes or in staging area	D
☒	▪ 9 - Screen base and perimeter of excavation area with PID	D
☒	▪ 10 - Collect soil samples from base (if possible) and perimeter of excavation area	D
☒	▪ 11 - Direct backfill placement in excavation area	D
☒	▪ 12 - Collect soil samples from staged soil	D
☒	▪ 13 - Direct load out of excavated soil	D
	▪	
	▪	

Expected start date: October 1, 2010

Expected duration of project: Up to ten days, spread over one calendar month

Expected average number of workers on site per day: 4-5

2.0 KEY PERSONNEL AND HEALTH AND SAFETY RESPONSIBILITIES

Table 2-1 describes health and safety responsibilities for key project personnel.

TABLE 2-1
KEY PERSONNEL HEALTH AND SAFETY RESPONSIBILITIES

DIVISION ENVIRONMENTAL HEALTH AND SAFETY MANAGER	LOCATION HEALTH & SAFETY REPRESENTATIVE (PITTSBURGH)	SITE HEALTH & SAFETY OFFICER (SHSO)	FIELD LEAD (FL)	PROJECT PERSONNEL
• Implement appropriate corporate health and safety policies, or environmental projects • Approve HASP and Amendments • Authorize the cessation of work at the site if necessary • Maintain exposure monitoring records • Notify Corporate ES&H Manager in the event of an emergency situation • Verify that corrective actions recommended on Incident Analysis Forms have been implemented	• Approve HASP and Amendments • Authorize the cessation of work at the site if necessary • Confirm that prior to a hazardous waste site visit, site personnel meet the proper medical requirements and have the health and safety training to qualify them to perform their assigned tasks. • Identify all site personnel with special medical conditions. • Notify SHSO of personnel with medical conditions that may be of concern during site work.	• Approve HASP and Amendments • Authorize the cessation of work at the site if necessary • See that personnel receive this plan, are aware of its provisions, and are aware of the potential hazards associated with site operations • Implement project HASP; report to the Project Manager for action if any deviations from the anticipated conditions exist • Conduct pre-entry briefing and tailgate safety meetings. Document tailgate safety meetings (Appendix H) • Verify that all monitoring equipment and personal protective equipment is operating correctly according to manufacturer's instructions and such equipment is utilized by on-site personnel. • Ensure that monitoring equipment is properly calibrated and that the calibration results are recorded. • Conduct daily inspections of jobsite using the Daily Site Safety and Health Checklist (Appendix I) • Implement site emergency and follow-up procedures if necessary	• Authorize the cessation of work at the site if necessary • Ensure that personnel are instructed in safe work practices, and are familiar with emergency procedures, and these actions are documented • Ensure that appropriate monitoring and personal protective equipment is available • Monitor the Field Logbooks to ensure the health and safety work practices are employed • Coordinate with SHSO so that emergency response procedures are implemented • Ensure corrective actions recommended on Incident Analysis Forms are implemented	• Authorize the cessation of unsafe tasks if necessary • Read, be familiar with and abide by this HASP • Notify the LHSR and SHSO of any special medical conditions (e.g., allergies) • Immediately report any accidents and/or unsafe conditions to the SHSO • No individual shall go on site where he/she does not have the required safety training

3.0 WORKER TRAINING

Upon designation of a specific project team, Table 3-1 will be completed to summarize the training experience of the project team with respect to 29 CFR 1910.120(e), 29 CFR 1910.38, and 29 CFR 1910.1200 and Mactec ES&H Programs and Procedures: ESH 2.9.A – Hazardous Waste Operations and Emergency Response Program and ESH 2.9.E – Hazard Communication Program.

TABLE 3-1

TRAINING/MEDICAL SURVEILLANCE/RESPIRATORY PROTECTION RECORDS

Names of Field Team Members:					
	Required	Greg Oslosky Field Lead /SHSO	Chris Hortert	Rob Crowley Project Manager	
		Dates	Dates	Dates	Dates
Medical Surveillance	X	05/06/2010	09/08/2009		
Site-Specific Medical Testing:_____					
40-Hour Initial	X	06/01/2005		09/16/1988	
8-Hour Supervisor [1]		01/26/2007		05/03/1991	
8-Hour Refresher	X	05/11/2009	09/10/2010	05/09/2007	
First Aid/CPR [2]	X		01/30/2009	01/30/2009	
Respirator Fit Test [3]	X	05/22/2010	05/13/2008		
Respirator Brand [3]		3M	MSA		
Hazard Communication					
Confined Space Entry [3]				03/29/1994	
Fall Protection [3]					
Client Required [3]					
DOT Training [4]	X	04/09/2009	04/09/2009	04/09/2009	

[1] Required if acting as FL or SHSO
[2] At least one worker must be trained in First Aid/CPR and have received Bloodborne Pathogen training.
[3] If Applicable
[4] Required if signing manifests or shipping hazardous materials.

4.0 MEDICAL SURVEILLANCE

Upon designation of a specific project team, Table 3-1 will be completed to indicate the workers who participate in the company's Medical Surveillance Program (Mactec ESH 2.13.1) [29 CFR 1910.120(f)]. All workers who could potentially be exposed to concentrations of contaminants above the OSHA Permissible Exposure Limits (PELs) for 30 days per year or more must be included in the Medical Surveillance Program. Any site specific medical surveillance conducted for site workers will also be listed on the table.

5.0 SITE CONTROL

Site control procedures, as required by 29 CFR 1910.120(d) and Mactec ESH 2.9.A - Hazardous Waste Operations and Emergency Response Program, will be implemented before the start of site tasks to control worker exposures to contaminants.

5.1 WORK ZONES

Work Zones will be determined and delineated at the site by the SHSO. At this time it is anticipated that the work zones will be defined relative to the location of the work activity. The Exclusion Zone is considered the area within 10-feet of the excavation. The Contamination Reduction Zone is considered to be the area within 20-feet of the excavation. The decontamination zone is considered to be located upwind of the work area. Work zones will be maintained through the use of:

☒ Warning Tape

☒ Visual Observations

5.2 BUDDY SYSTEM

When required by contract or when conditions exist that could be dangerous to life and health, a buddy system shall be implemented.

Yes	No	
☐	☒	Buddy System required

5.3 SITE ACCESS

Access to the site will be controlled using the following method(s):

☒ Sign in/sign out log ☐ Guard

☐ Identification badges ☐ Other: _____

5.4 GENERAL SAFE WORK PRACTICES

General safe work practices to be implemented during work activities are included in Table 5-1.

TABLE 5-1

GENERAL SAFE WORK PRACTICES

- Minimize contact with excavated or contaminated materials. Plan work areas, decontamination areas, and procedures accordingly. Do not place equipment or drums on the ground (use plastic sheeting). Do not sit on drums or other materials. Do not sit or kneel on the ground in the Exclusion Zone or CRZ. Avoid standing in or walking through puddles or stained soil.
- Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed. Use of illegal drugs and alcohol are prohibited.
- Practice good housekeeping. Keep everything orderly and out of potentially harmful situations.
- In an unknown situation, always assume the worst conditions.
- Be observant of your immediate surroundings and the surroundings of others. It is a team effort to notice and warn of impending dangerous situations. Withdrawal from a hazardous situation to reassess procedures is the preferred course of action.
- Conflicting situations may arise concerning safety requirements and working conditions and must be addressed and resolved rapidly by the SHSO and PC to relieve any motivations or pressures to circumvent established safety policies.
- Unauthorized breaches of specified safety protocol will not be allowed. Workers unwilling or unable to comply with the established procedures will be discharged.

6.0 HAZARD ANALYSIS

6.1 CONTAMINANTS OF CONCERN

Pertinent site information (e.g. records of chemicals used, records of disposal) and previous sampling data (e.g. groundwater, soil, sediment) have been reviewed to determine the contaminants of concern for this project. The known or suspected contaminants for the site are:

- Acetone
- Lead

Appendix A contains Contaminant Fact Sheets for each of these.

Health hazards shall be evaluated using air monitoring equipment (Section 7.0) and controlled by implementing personal protective equipment (Section 8.0).

6.2 JOB HAZARD ANALYSIS

Job Hazard Analyses have been conducted for each task associated with this project in compliance with the Mactec ESH 2.9.1 – Risk Assessment and Job Hazard Analysis Procedure and are found in Appendix B.

Activity Specific JHAs:

☒	Mobilization/Demobilization and Site Preparation
☒	Field Work – General
☒	Mark Excavations
☒	Excavations and Backfilling
☒	Soil Sampling
☒	Soil Staging
☒	Overpack and Load Drums
☒	Soil Load Out
☒	Decontamination

Hazard Specific JHAs:

☒	Insect Stings and Bites
☒	Handling Compressed Gas Cylinders
☒	Air Monitoring

7.0 AIR MONITORING

NOTE: Section 6.1 lists the known and suspected contaminants of concern at the site. Table 7-1 lists the air monitoring action levels.

Air monitoring shall be conducted during activities that disturb soil and during drum handling and sampling activities. Air monitoring will be conducted continuously if there is indication that exposures may have risen above permissible exposure limits (PELs) or published exposure levels or if there is a possibility that explosive atmospheres could develop. Situations where consideration should be given to the possibility that the atmosphere could exceed a PEL or the explosive limits 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., excavation, drum handling, etc.)
- When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or ruptured drum)

If sustained PID readings exceed 25 ppm after corrective measures have been employed, work will be stopped, the area evacuated, and the Site Health and Safety Officer notified. If work is stopped due to elevated levels of organic vapors, then consideration will be given to proceeding with engineering controls. In the event that a PPE upgrade will be required to continue the work, the LSHR and the Project Manager will be consulted prior to continuing the work.

All monitoring equipment will be calibrated before each day of use. Results will be documented daily in the Field Logbook.

Skin contact with soil, sediment, surface water and groundwater should be avoided.

Table 7-1
Air Monitoring Action Levels

VOC Levels[1,2,3]	**Time Period**	**Action**	**Level of PPE Required to Continue**
≤ 5 ppm	15-minute period	Continued monitoring.	Level D / Modified Level D
>5 ppm	15-minute period	Work activities temporarily halted, continued monitoring. If levels decrease to below 5 ppm, work activities resume with continued monitoring.	Level D / Modified Level D
>5 ppm - <25 ppm	>15 minutes	Work activities halted, source of vapors identified, corrective actions taken, and continued monitoring. If levels decrease to below 5 ppm, work activities resume with continued monitoring.	Level D / Modified Level D
>25 ppm	At anytime	Stop work, evacuate area and notify SHSO	
Particulate Levels[1,24]	**Time Period**	**Action**	**Level of PPE Required to Continue**
≤ 100 μg/m^3	15-minute period	Continued monitoring.	Level D / Modified Level D
> 100 μg/m^3 or if airborne dust is observed leaving work area	15-minute period	Dust suppression techniques employed, work will continue with continued monitoring.	Level D / Modified Level D
>150 μg/m^3	After implementation of dust suppression techniques	Work activities halted, corrective actions taken, and continued monitoring. If levels decrease to below 150 μg/m^3, work activities resume with continued monitoring.	Level D / Modified Level D

[1] Two locations, one downwind perimeter and one upwind perimeter of work area, breathing zone (i.e., 4 to 5 feet above ground level)
[2] Levels are values above background levels (e.g., 5 ppm = 5 ppm above background level)
[3] Will be collected continuously with a photoionization detector capable of measuring less than 5 ppm
[4] Will be collected continuously with a meter capable of measuring particulate matter smaller than 10 microns (PM-10)

8.0 PERSONAL PROTECTIVE EQUIPMENT

The initial level of protection required for each task is provided in Section 1.0 and Table 8-1. The individual PPE required for each task is listed in the JHAs. Table 8-1 summarizes the PPE required for all tasks to be conducted by Mactec workers. The level of PPE used each day shall be documented in the field logbook. When using PPE, workers must adhere to the company's Personal Protective Equipment Program (ESH Program 2.9.D) and OSHA regulations (29 CFR 1910.120[g] and 29 CFR 1910 Subpart I).

If respirators are worn, workers must adhere to the company's Respiratory Protection Program (ESH Program 2.9.C) and OSHA regulations (29 CFR 1910.134). Table 3-1 provides a record of the site workers' last annual respirator fit test. Beards (e.g., facial hair interfering with the respirator seal) are not allowed when respirators are worn.

Table 8-1
PPE and Monitoring Requirements Summary

Initial Level of PPE *				
☐ Level D	☒ Modified Level D	☐ Level C	☐ Level B	☐ Level A

Standard PPE						
☒ Hard Hat	☒ Safety shoes	☒ Safety glasses	☐ Boot Covers[1]	☐ Rubber Boots	☐ Aprons	☒ High Visibility Vest

Eye and Face Protection				
☐ Welding glasses	☐ Welding helmet	☐ Face shield	☐ Chemical goggles	☐ Welding screens

Hearing Protection			
☒ Ear plugs[2]	☒ Ear Muffs[2]	☐ Ear plugs and muffs	☐ Other _____

Respiratory Protection					
☐ None	☒ Upgrade Only	☐ Full Face APR	☐ Half Face APR	Cart. Type:	☐ PAPR
☐ Airline respirator	☐ SCBA	☐ Dust mask	☐ _____		

Protective Clothing			
☐ Tyvek® coveralls	☐ Poly-coated Tyvek®	☐ Saranex® Coveralls	☐ Fully encapsulating suit
☐ Cotton coveralls	☐ Modesty Clothing	☐ Fire resistant clothing	☐ Other _____

Hand Protection				
☐ None	☐ Cotton gloves	☒ Leather gloves	☐ Cut-resistant gloves	☐ Glove liners
Outer Gloves				
☒ Nitrile	☐ Viton®	☐ Butyl	☐ Neoprene	☐ Other _____
Inner Gloves				
☐ Nitrile	☐ Vinyl	☐ Latex	☐ Other _____	

Monitoring Requirements				
☐ Oxygen	☐ Flammable gases/vapors	☐ Toxic Gas/vapors	☐ Hydrogen Sulfide	Carbon Monoxide
☐ Asbestos	☐ Full time IH coverage	☐ Part time IH coverage	☐ Be, Hg, Cr, Pb	
☐ Metals Specify: _____				
☒ Organic Vapors Specify: VOCs (Acetone)				
☐ None	☐ TLD required	☐ CAM	☐ Radon	
☐ Full time RCT coverage	☐ Part time RCT coverage	☐ Radioactive air particulates	☐ Other _____	
☐ Other _		☒ Other : Particulates		

[1] Boot covers may be required for excavation work.
[2] Required for tasks using heavy equipment or with excessive noise.

9.0 DECONTAMINATION

PPE shall be decontaminated as per 29 CFR 1910.120(k) and Mactec ESH 2.9.A. The decontamination equipment and solution required for each task are provided in Appendix C. The decontamination procedures are described in the JHA – Decontamination, included in Appendix B.

Reusable safety gear will be washed with soap and water prior to reuse or removal from the work zone. Sampling tools, etc. will be decontaminated as described in the W*ork Plan*, or as directed by the SHSO. The disposition of decontamination fluids, disposable safety gear, and safety gear that cannot be decontaminated will be disposed of as investigative derived waste (IDW) and will be the responsibility of Honeywell Inc.

10.0 EMERGENCY RESPONSE

The following emergency response information is provided as per 29 CFR 1910.120(j), Mactec ESH 2.9.A – Hazardous Waste Operations an Emergency Response Program.

10.1 HOSPITAL ROUTE MAP

A Hospital Route Map is included as Figure 3.

10.2 EMERGENCY CONTACTS

A list of contacts and telephone numbers for the applicable local off-site emergency responders is provided in Table 10-1. The nature of the site work and contaminants of concern should be reviewed and the ability of off-site responders to respond to reasonably anticipated emergencies should be confirmed. If there are any concerns with off-site responsibilities they should be contacted directly.

10.3 EMERGENCY RESPONSE EQUIPMENT

The following emergency response equipment is required for this project and shall be readily available.

- ☒ Field First Aid Kit
- ☒ Fire Extinguisher
  - ☐ Type A (Combustible materials)
  - ☐ Type B (Flammable liquids and gases)
  - ☐ Type C (Doesn't conduct electricity – to be used on electrical equipment)
  - ☒ Type ABC
- ☒ Eyewash (Note: 15 minutes of free-flowing fresh water)
- ☐ SCBA
- ☐ Shower
- ☐ Other:

Figure 3: Hospital Route

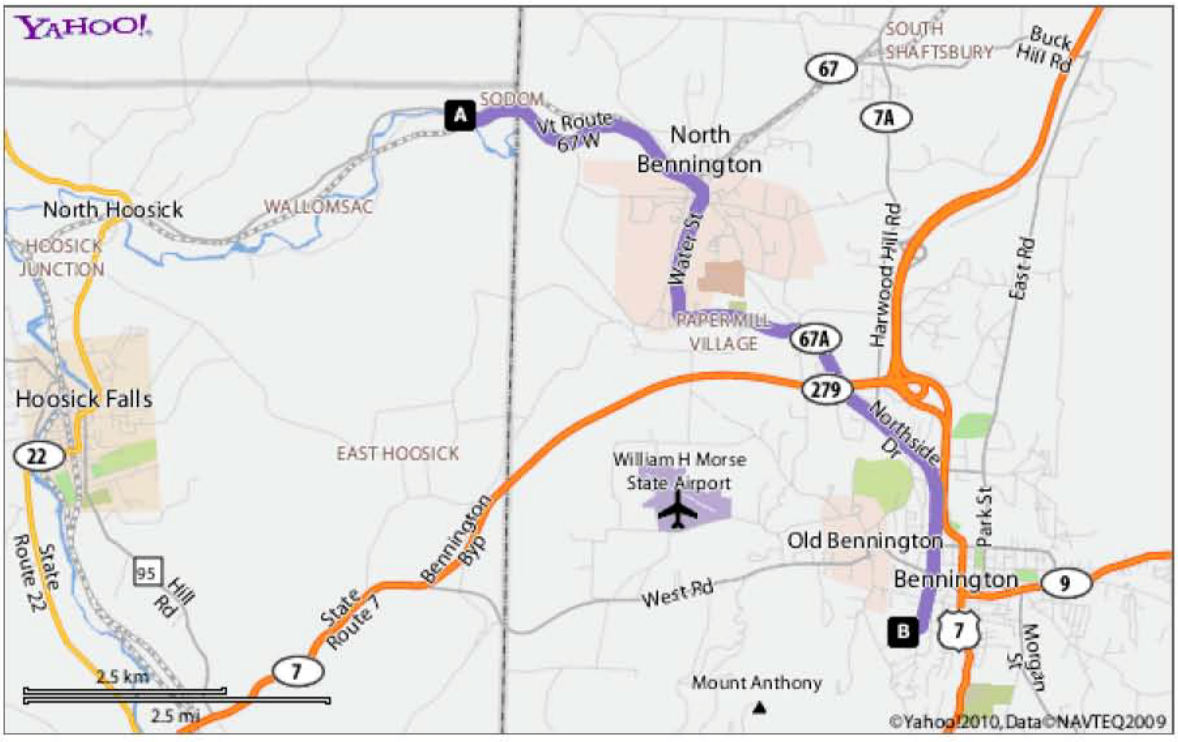
Directions to 100 Hospital Dr, Bennington, VT 05201-5004

YAHOO!

Total Time: 20 mins, Total Distance: 8.15 mi

		Distance
A	1. **Start at 5451 RT-67, HOOSICK FALLS going toward VT-67**	go **0.52** mi
	2. Continue on **VT-67**	go **2.01** mi
	3. Turn R on **VT-67A**	go **4.98** mi
	4. Continue on **DEWEY ST**	go **0.47** mi
	5. Turn R on **HOSPITAL DR**	go **0.17** mi
B	6. **Arrive at 100 HOSPITAL DR, BENNINGTON, on the** R	

Time: 20 mins, Distance: 8.15 mi



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

TABLE 10-1

EMERGENCY CONTACTS

NAME	TELEPHONE NUMBERS		DATE OF PRE-EMERGENCY NOTIFICATION (if applicable)
Fire Department:	911		
Hospital:	800-543-1624 or 911		
Police Department:	911		
Project Manager: Rob Crowley	Office: 412-279-6661	Cell: 724-747-2866 Home: 724-228-6319	
Division ES&H Manager: Cindy Sundquist	Office: 207-828-3309	Cell: 207-650-7593 Home: 207-892-4402	
LHSR: Michael Bender	Office: 412-279-6661	Cell: 330-881-1734	
SHSO: Greg Oslosky	Office: 412-279-6661	Cell: 561-214-1396	
Client Contact: Rich Galloway	Office: 973-455-4640	Cell: 973-610-2316	
NYSDEC (if applicable): James Moras, P.E.	Office: 518-402-9814		
OTHER: Ambulance	911		

10.4 COMMUNICATIONS

On-site communications will be conducted through the use of:

- ☒ Verbal
- ☒ Two-way radio
- ☒ Cellular telephone
- ☒ Hand signals
  - Hand gripping throat ---------- Out of air, can't breathe
  - Grip partner's wrist or both hands around waist ---------- Leave area immediately
  - Hands on top of head ---------- Need assistance
  - Thumbs up ---------- OK, I am all right, I understand
  - Thumbs down ---------- No, negative
- ☐ Horn
- ☐ Siren
- ☐ Other: _____

Off-site communications will be conducted through the use of:

- ☒ Cellular phone
- ☐ Pay phone - location: _____
- ☐ Other: _____

10.5 EMERGENCY RESPONSE PROCEDURES

In the event that an on-site emergency develops, the procedures outlined in Table 10-2 are to be followed immediately.

Within 24 hours after any emergency response, the Incident Analysis Forms provided in Appendix D shall be completed and returned to the Division ES&H Manager, who will forward a copy to the Corporate ES&H Manager and General Counsel.

TABLE 10-2

EMERGENCY PROCEDURES

- The SHSO (or alternate) should be immediately notified via the on-Site communication system.
- The SHSO assumes control of the emergency response.
- If applicable, the SHSO shall notify off-site emergency responders (e.g. fire department, hospital, police department, etc.) and shall inform response team as to the nature and location of the emergency on-Site.
- If applicable, the SHSO evacuates the Site. Site workers should move to predetermined evacuation point (intersection of Route 67 and access road to Site - See Figure 2: Site Plan).
- For small fires, flames should be extinguished using the fire extinguisher. Large fires should be handled by the local fire department.
- If chemicals are accidentally spilled or splashed into eyes or on skin, use eyewash and/or shower.
- An injured worker shall be decontaminated appropriately.
- In an unknown situation or if responding to toxic gas emergencies, appropriate PPE, including SCBAs, should be donned.
- If a worker is injured, first aid shall be administered by certified first aid provider.
- Before continuing operations after an emergency involving toxic gases the SHSO shall don a SCBA and utilize appropriate air monitoring equipment to verify that the Site is safe.
- The SHSO notifies the Project Manager and client contact of the emergency. The SHSO shall then contact the Division ES&H Manager who will then contact the Corporate Safety Officer.
- After the response, the SHSO shall follow-up with the required company reporting procedures, including the Incident Analysis Forms (Appendix D).

11.0 CONFINED SPACE ENTRY

Yes	No	
☐	☒	The task(s) for this project involve confined space entry.

If yes, see applicable JHA in Appendix B.

12.0 SPILL CONTAINMENT

Yes	No	
☒	☐	The task(s) for this project involves drum/tank/container sampling, excavation, transportation, etc.

If yes, see Appendix J for spill containment procedures. Refer to Mactec ESH Procedure 2.14.3 – Spill Containment for further information.

13.0 HAZARD COMMUNICATION

The following procedures shall be followed for all chemicals brought on site (e.g., decontamination solution, sample preservatives, etc.): Chemical containers (primary and secondary) shall be correctly and clearly labeled with the name of the chemical and the hazard(s) associated with that chemical (e.g. flammable, corrosive, etc.).

- Workers have received training on the hazards of these chemicals as indicated in Table 3-1.
- A Material Safety Data Sheet for each chemical listed below is included in Appendix E.
    - Acetone
    - Lead

When chemicals are used on site, workers must adhere to the company's Hazard Communications Program (ESH Program 2.9.E) and the OSHA regulation (29 CFR 1910.1200).

14.0 RECORD KEEPING

At the end of the project, the following items shall be maintained in the project file:

- ☒ HASP
- ☒ Incident Analysis Forms (if applicable)
- ☒ SHSO Summary (Appendix F)
- ☒ Completed daily checklists and field notes

APPENDIX A

CONTAMINANT FACT SHEETS

CONTAMINANT FACT SHEET

Chemical Name:
ACETONE
CAS Number: 67-64-1
Synonyms:
Dimethyl ketone, ketone propane,
2-Propanone

HEALTH HAZARD DATA

Color: colorless

Physical State: Solid
Liquid X
Gas X

Odor: Sweet, fragrant

Odor Threshold: 3.6-653 ppm

Vapor Density: 2.37 g/L

Ionization Potential (IP): 9.69

IDLH: 2500

Carcinogen: OSHA
IARC
NTP
ACGIH
NIOSH

Skin absorbable: yes __ no _X_
Skin corrosive: yes __ no _X_

Signs/Symptoms of Acute Exposure:
Eye, nose, and throat irritant, headaches
dizziness, CNS depresent

Source	TWA (units)	STEL (units)	C (units)
OSHA PEL	1000 ppm		
ACGIH TLVs	500 ppm	750 ppm	
NIOSH RELs	250 ppm		

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level
PID	Micro tip 10.6 eV	Isobutylene 100 ppm	0.85	212
PID	HNu w/ 10.2 eV	Isobutylene Span 9.8 / 100 ppm	0.42	105
FID	Century OVA	Methane	0.6	150

Checked by: Emmet F. Curtis Date: 10/30/03

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:
Suits
Gloves Butyl Rubber, Teflon
Boots

Service Limit Concentration (ppm) 1000

MUC 1/2 Mask APR(ppm)=TWA x 10= 1000
MUC Full-Face APR(ppm)=TWA x 50= 1000

FIRE/REACTIVITY DATA

Flash Point: 0º F

LEL/UEL: 2.5/12.8%

Fire Extinguishing Media:
Dry Chemical X Foam ___
Water Spray ___ CO_2 X

Incompatibilities:
Oxidizers, acids

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminants exists. Professional judgment and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

CONTAMINANT FACT SHEET

Chemical Name:
Lead
CAS Number: 7439-92-1
Synonyms:
Lead Metal, Plumbum

HEALTH HAZARD DATA

Color: Gray

Physical State: Solid X
Liquid
Gas

Odor: NA

Odor Threshold NA

Vapor Density: NA

Ionization Potential (IP): NA

IDLH: 100 mg/m3

Carcinogen: OSHA
IARC X
NTP
ACGIH X
NIOSH

Skin absorbable: NO

Skin corrosive: NO

Signs/Symptoms of Acute Exposure:
Weak, insomnia, facial pallor, anorexia, low weight, constipation, abdominal pain, anemia, paralysis, (wrist and ankle), kidney disease, eye irritant, hypotension

Source	TWA (units)	STEL (units)	C (units)
OSHA PELs	0.05 mg/m3		
ACGIH TLVs	0.05 mg/m3		
NIOSH RELs	0.05 mg/m3		

AIR MONITORING

Type	Brand/Model No.	Calibrations Method/Media	Relative Resonse or Conversion Factor	Meter Specific Action Level
Dust Meter ***Action Limit based on soil concentration. Contact C. Sundquist for action limits	Any		N/A	***

Checked by: Nicole Feczko Date: 7/12/10

PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:
Suits Uncoated Tyveks
Polycoated Tyveks

Gloves Any Chemical resistant Gloves

Boots Any Chemical resistant Boots

Service Limit Concentration (ppm): NA

MUC 1/2 Mask APR = TWA x 10 = ***0.25 mg/m3

MUC Full-Face APR = TWA x *50 = ***0.25 mg/m3

*If quantitative fit testing is conducted, otherwise, use protection factor of 10

***Action limit will be based on soil concentrations. Contact C. Sundquist for action limits

FIRE/REACTIVITY DATA

Flash Point: NA

LEL/UEL: NA

Fire Extinguishing Media:

Dry Chemical Foam

Water Spray CO_2

Incompatibilities:
Strong Oxidizers, hydrogen peroxide, acid

JOB HAZARD ANALYSIS FORMS

APPENDIX B

JOB HAZARD ANALYSIS PER TASK(S)

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Mobilization/Demobilization and Site Preparation **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection

*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Prepare for Site Visit	1A) N/A	1A) Prior to leaving for site ▪ Obtain and review HASP prior to site visit, if possible ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots) ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment) ▪ If respiratory protection is required/potentially required, ensure that training and fit-testing has occurred within the past year ▪ Familiarize yourself with route to the site ▪ First aid kits shall be available at the work site and on each transport vehicle ▪ Check weather forecast. Pack appropriate clothing and other items (e.g., sunscreen) for anticipated weather conditions ▪ Verify that subsurface utilities have been identified
	1B) Vehicle defects	1B) Inspect company owned/leased vehicle for defects such as: ▪ Flat tires ▪ Windshield wipers worn or torn ▪ Oil puddles under vehicle ▪ Headlights, brake lights, turn signals not working
	1C) Insufficient emergency equipment, unsecured loads	1C) Insufficient emergency equipment, unsecured loads ▪ Ensure vehicle has first aid kit and that all medications are current (if first aid kits are not provided at the site) ▪ Ensure vehicle is equpped with warning flashers and/or flares and that the warning flashers work ▪ Cell phones are recommended to call for help in the event of an emergency ▪ Vehicles carrying tools must have a safety cage in place. All tools must be properly secured ▪ Vehicles must be equipped with chocks if the vehicle is to be left running, unattended. ▪ Ensure sufficient gasoline is in the tank

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Mobilization/Demobilization and Site Preparation **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
2. Operating vehicles – general	2A) Collisions, unsafe driving conditions	2A) Drive Defensively! ▪ Seat belts must be used at all times when operating any vehicle on company business. ▪ Drive at safe speed for road conditions ▪ Maintain adequate following distance ▪ Pull over and stop if you have to look at a map ▪ Try to park so that you don't have to back up to leave. ▪ If backing in required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary
3. Driving to the jobsite	3A) Dusty, winding, narrow roads	3A) Dusty, winding, narrow roads ▪ Drive confidently and defensively at all times. ▪ Go slow around corners, occasionally clearing the windshield.
	3B) Rocky or one-lane roads	3B) Rocky or one-lane roads ▪ Stay clear of gullies and trenches, drive slowly over rocks. ▪ Yield right-of-way to oncoming vehicles---find a safe place to pull over.
	3C) Stormy weather, near confused tourists	3C) Stormy weather, near confused tourists ▪ Inquire about conditions before leaving the office. ▪ Be aware of oncoming storms. ▪ Drive to avoid accident situations created by the mistakes of others.
	3D) When angry or irritated	3D) When angry or irritated ▪ Attitude adjustment; change the subject or work out the problem before driving the vehicle. Let someone else drive.
	3E) Turning around on narrow roads	3E) Turning around on narrow roads ▪ Safely turn out with as much room as possible. ▪ Know what is ahead and behind the vehicle. ▪ Use a backer if available.
	3F) Sick or medicated	3F) Sick or medicated ▪ Let others on the crew know you do not feel well. ▪ Let someone else drive.
	3G) On wet or slimy roads	3G) On wet or slimy roads ▪ Drive slow and safe, wear seatbelts.
	3H) Animals on road	3H) Animals on road ▪ Drive slowly, watch for other animals nearby. ▪ Be alert for animals darting out of wooded areas
4. Gain permission to enter site	4A) Hostile landowner, livestock, pets	4A) Hostile landowner, livestock, pets ▪ Talk to land owner, be courteous and diplomatic ▪ Ensure all animals have been secured away from work area

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Mobilization/Demobilization and Site Preparation **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
5. Mobilization/ Demobilization of Equipment and Supplies	5A) Struck by Heavy Equipment/Vehicles	5A) Struck by heavy equipment ▪ Be aware of heavy equipment operations. ▪ Keep out of the swing radius of heavy equipment. ▪ Ground personnel in the vicinity of heavy equipment operations will be within the view of the operator at all times ▪ Employees shall wear a high visibility vest or T-shirt (reflective vest required if working at night). ▪ Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation.
	5B) Struck by Equipment/Supplies	5B) Struck by Equipment/Supplies ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's work space, give a verbal warning so they know you are there.
	5C) Overexertion Unloading/Loading Supplies	5C) Overexertion Unloading/Loading Supplies ▪ Train workers on proper body mechanics, do not bend or twist at the waist while exerting force or lifting. ▪ Tightly secure all loads to the truck bed to avoid load shifting while in transit.
	5D) Caught in/on/between	5D) Caught in/on/between ▪ Do not place yourself between two vehicles or between a vehicle and a fixed object.
	5E) Slip/Trip/Fall	5E) 1E). Slip/Trip/Fall ▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas. ▪ Drivers will maintain 3 point contact when mounting/dismounting vehicles/equipment. ▪ Drivers will check surface before stepping, not jumping down.
	5F) Vehicle accident	5F) Vehicle accident ▪ Employees should follow MACTEC vehicle operation policy and be aware of all stationary and mobile vehicles.
6. Site Preparation	6A) Slip/Trip/Fall	6A) Slip/Trip/Fall ▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas
	6B) Set up Decontamination and Staging Areas	▪ Monitor breathing zone if appropriate (see HASP) ▪ For Decontamination Area, removal of PPE will be performed by the following tasks in the listed order: o Gross boot wash and rinse and removal o Outer glove removal o Suit removal o Respirator removal (if worn). o Inner glove removal ▪ Contaminated PPE is to be placed in the appropriate, provided receptacles. ▪ Employees will wash hands, face, and any other exposed areas with soap and water. ▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials.

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Mobilization/Demobilization and Site Preparation **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
7. Installation of soil erosion and sediment controls	7A) Overexertion	7A) Overexertion ▪ Workers will be trained in the proper method of placing erosion controls. ▪ Do not bend and twist at the waist while lifting or exerting force.
	7B) Struck by Equipment/Supplies	7C) Struck by Equipment/Supplies ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's work space, give a verbal warning so they know you are there.
8. Driving back from the jobsite	8A) See hazards listed under item #3	8A) See safe work practices under item #3

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Field Work - General **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: hard hat, steel-toed boots, safety glasses
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Prepare for site visit	1A) See JHA for Mobilization/ Demobilization and Site Preparation	See JHA for Mobilization/ Demobilization and Site Preparation
2. Traveling to the site by vehicle	2B) See JHA for Mobilization/ Demobilization and Site Preparation	See JHA for Mobilization/ Demobilization and Site Preparation
3. Initial Arrival - Assess Site Conditions	3A) Communication with subcontractor and other site personnel	▪ Develop communication methods (agree on hand signals, warning alarms) ▪ Log all workers and visitor on and off the site ▪ Let other crewmembers know when you see a hazard ▪ Avoid working near known hazards ▪ Always know the whereabouts of fellow crewmembers ▪ Carry a radio and spare batteries or cell phone ▪ Hold and document Safety tailgate meetings ▪ Establish work zones, decontamination and staging areas, evacuation routes and rally locations
4. Walking and working in the field	4A) Falling down, twisted ankles and knees, poor footing	Always watch your footing ▪ Horseplay is strictly prohibited ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Wear laced boots with a minimum 8" high upper and non-skid Vibram-type soles for ankle support and traction.
	4B) Falling objects	Protect head agains falling objects. ▪ Wear your hardhat for protection from falling limbs and pinecones, and from tools and equipment carried by other crewmembers. ▪ Stay out of the woods during extremely high winds.
	4C) Chemical/Toxicological Hazards	Chemical/Toxicological Hazards ▪ See HASP for appropriate level of PPE ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read MSDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants ▪ Ensure that all containers are properly labelled ▪ Decon thoroughly prior to consumption of food, beverage or tobacco
	4D) Damage to eyes	Protect eyes: ▪ Watch where you walk, ecpecially around trees and brush with limbs sticking out. ▪ Exercise caution when clearing limbs from tree trunks. Advise wearing eye protection. ▪ Ultraviolet light from the sun can be damaging to the eyes; look for sunglasses that specify significant protection from UV-A and UV-B radiation. If safety glasses require, use one's with tinted lenses
	4E) Insect bites and stings	See JHA for Insect Stings and Bites
	4F) Ticks and infected mosquitos	See JHA for Insect Stings and Bites

Job Title: Field Work - General **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	4G) Vermin, leaches, animal borne disease / Wild animals	▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present ▪ Wear long sleeve shirt, full length pants, and appropriate footwear ▪ Be aware of your surroundings ▪ Avoid high grass areas if possible ▪ Do not put hand/arm into/under an area that you cannot see into/under clearly ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers ▪ Avoid phyisical contact with wild animals ▪ Do not threaten and/or corner animals ▪ Make noise to get the animal to retreat ▪ Stay in or return to vehicle/equipment if in danger
	4H) Contact with poisonous plants or the oil from those plants:	See JHA for Poisonous Plants
	4I) Back Injuries	▪ Site personnel will be instructed on proper lifting techniques. ▪ Mechanical devices should be used to reduce manual handling of materials. ▪ Split heavy loads in to smaller loads ▪ Team lifting should be utilized if mechanical devices are not available. ▪ Make sure that path is clear prior to lift.
	4J) Shoveling	▪ Select the proper shovel for the task. A long handled, flat bladed shovel is recommend for loose material ▪ Inspect the handle for splinters and/or cracks ▪ Ensure that the blade is securely attached to the handle ▪ Never be more than 15 inches from the material you are shoveling ▪ Stand with your feet about hip width for balance and keep the shovel close to your body. ▪ Bend from the knees and tighten your stomach muscles as you lift. ▪ Avoid twisting movements. If you need to move the snow to one side reposition your feet to face the direction the snow will be going. ▪ Avoid lifting large shoveling too much at once. When lifting heavy material, pick up less to reduce the weight lifted. ▪ Pace yourself to avoid getting out of breath and becoming fatigued. ▪ Be alert for signs of stress such as pain, numbness, burning and tingling. Stop immediately if you feel any of these symptoms.
	4K) Slips/Trips/Falls	▪ Maintain work areas safe and orderly; unloading areas should be on even terrain; mark or repair possible tripping hazards. ▪ Site SHSO inspect the entire work area to identify and mark hazards. ▪ Maintain three points of contact when climbing ladders or onto/off of equipment
	4L) Overhead Hazards	▪ All overhead hazards will be identified prior to commencing work operations. ▪ Personnel are required to wear hard hats that meet ANSI Standard Z89.1. ▪ All ground personnel will stay clear of suspended loads. ▪ All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. ▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.) ▪ Re-locate work so it is not close to power lines ▪ Avoid storing materials under overhead power lines

Job Title: Field Work - General **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	4M) Dropped Objects	▪ Steel toe boots meeting ANSI Standard Z41 will be worn.
	4N) Noise	▪ Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); all equipment will be equipped with manufacturer's required mufflers. Hearing protection shall be worn by all personnel working in or near heavy equipment.
	4O) Eye Injuries	▪ Eye Injuries ▪ Safety glasses meeting ANSI Standard Z87 will be worn.
	4P) Heavy Equipment (overhead hazards, spills, struck by or against)	▪ Heavy Equipment ▪ All operators will be trained and qualified to operate equipment ▪ Equipment will have seat belts. ▪ Operators will wear seat belts when operating equipment. ▪ Do not operate equipment on grades that exceed manufacturer's recommendations. ▪ Equipment will have guards, canopies or grills to protect from flying objects. ▪ Ground personnel will stay clear of all suspended loads. ▪ Personnel are prohibited from riding on the buckets, or elsewhere on the equipment except for designated seats with proper seat belts or lifts specifically designed to carry workers. ▪ Ground personnel will wear high visibility vests ▪ Spill and absorbent materials will be readily available. ▪ Drip pans, polyethylene sheeting or other means will be used for secondary containment. ▪ Ground personnel will stay out of the swing radius of excavators. ▪ Eye contact with operators will be made before approaching equipment. ▪ Operator will acknowledge eye contact by removing his hands from the controls. ▪ Equipment will not be approached on blind sides. ▪ All equipment will be equipped with backup alarms and use spotters when significant physical movement of equipment occurs on-site, (i.e., other than in place excavation or truck loading). ▪ Inspect rigging prior to each use.
	4Q) Struck by vehicle/equipment	▪ Struck by vehicle/equipment ▪ Be aware of heavy equipment operations. ▪ Keep out of the swing radius of heavy equipment. ▪ Ground personnel in the vicinity of vehicles or heavy equipment operations will be within the view of the operator at all times. ▪ Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation. ▪ Drivers will keep workers on foot in their vision at all times, if you lose sight of someone, Stop! ▪ Spotters will be used when backing up trucks and heavy equipment and when moving equipment. ▪ High visibility vests will be worn when workers are exposed to vehicular traffic at the site or on public roads.
	4R) Struck/cut by tools	▪ Struck/cut by tools ▪ Cut resistant work gloves will be worn when dealing with sharp objects. ▪ All hand and power tools will be maintained in safe condition. ▪ Do not drop or throw tools. Tools shall be placed on the ground or worksurface or handed to another employee in a safe manner. ▪ Guards will be kept in place while using hand and power tools.

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Field Work - General **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	4S) Caught in/on/between	▪ Caught in/on/between ▪ Workers will not position themselves between equipment and a stationary object. ▪ Workers will not wear long hair down (place in pony-tail and tuck into shirt) or jewelry if working with tools/machinery.
	4T) Contact with Electricity/Lightning	▪ Contact with Electricity/Lightning ▪ All electrical tools and equipment will be equipped with GFCI. ▪ Electrical extension cords will be of the “Hard” or “Extra Hard” service type. ▪ All extension cords shall have a three-blade grounding plug. ▪ Personnel shall not use extension cords with damaged outer covers, exposed inner wires, or splices. ▪ Electrical cords shall not be laid across roads where vehicular traffic may damage the cord without appropriate guarding. ▪ All electrical work will be conducted by a licensed electrician. ▪ All equipment will be locked out and tagged out and rendered in a zero energy state prior to commencing any operation that may expose workers to electrical, mechanical, hydraulic, etc. hazards. ▪ All utilities will be marked prior to excavation activities. ▪ All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.) ▪ The SHSO shall halt outdoor site operations whenever lightning is visible, outdoor work will not resume until 30 minutes after the last sighting of lightning.
	4U) Equipment failure	▪ Equipment failure ▪ All equipment will be inspected before use. If any safety problems are noted, the equipment should be tagged and removed from service until repaired or replaced.
	4V) Hand & power tool usage.	▪ Hand & power tool usage ▪ Daily inspections will be performed. ▪ Ensure guards are in place and are in good condition. ▪ Remove broken or damaged tools from service. ▪ Use the tool for its intended purpose. ▪ Use in accordance with manufacturers instructions. ▪ No tampering with electrical equipment is allowed (e.g., splicing cords, cutting the grounding prong off plug, etc.) ▪ See JHA for Power Tool Use - Electrical and Power Tool Use - Gasoline
	4W) Fire Protection	▪ Fire Protection ▪ Ensure that adequate number and type of fire extinguishers are present at the site ▪ Inspect fire extinguishers on a monthly basis – document ▪ All employees who are expected to use fire extinguishers will have received training on an annual basis. ▪ Obey no-smoking policy ▪ Open fires are prohibited ▪ Maintain good housekeeping. Keep rubbish and combustibles to a minimum. ▪ Keep flammable liquids in small containers with lids closed or a safety can. ▪ When dispensing flammable liquids, do in well vented area and bond and ground containers.
	4X) Confined Space Entry	▪ NA

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Field Work - General **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	4Y) Underground Utilities	▪ All utilities will be marked prior to excavation activities ▪ For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet ▪ Use lineman's gloves when locating underground power lines ▪ Work at adequate offsets from utility locations ▪ Immediately cease work if unknown utility markings are discovered.
	4Z) Dust - particulates	▪ Conduct air monitoring as described in HASP ▪ Employ dust suppression methods ▪ Stand upwind of point of dust generation ▪ Wear proper PPE
5. Environmental health considerations	5A) Heat Stress	▪ Take precautions to prevent heat stress ▪ Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load. ▪ Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action. ▪ NOTE: The severity of the effects of a given environmental heat stress is decreased by reducing the work load, increasing the frequency and/or duration of rest periods, and by introducing measures which will protect employees from hot environments. ▪ Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability). ▪ Allow approximately 2 weeks with progressive degrees of heat exposure and physical exertion for substantial acclimatization. ▪ Acclimatization is necessary regardless of an employee's physical condition (the better one's physical condition, the quicker the acclimatization). Tailor the work schedule to fit the climate, the physical condition of employees, and mission requirements. ▪ A reduction of work load markedly decreases total heat stress. ▪ Lessen work load and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization. ▪ Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement.
	5B) Wet Bulb Globe Temperature (WBGT) Index	▪ WBGT ▪ Curtail or suspend physical work when conditions are extremely severe (see attached Heat Stress Index). ▪ Compute a Wet Bulb Globe Temperature Index to determine the level of physical activity (take WBGT index measurements in a location that is similar or closely approximates the environment to which employees will be exposed). ▪ WBGT THRESHOLD VALUES FOR INSTITUTING PREVENTIVE MEASURES ▪ 80-90 degrees F — ▪ Fatigue possible with prolonged exposure and physical activity. ▪ 90-105 degrees F — ▪ Heat exhaustion and heat stroke possible with prolonged exposure and physical activity. ▪ 105-130 degrees F — ▪ Heat exhaustion and heat stroke are likely with prolonged heat exposure and physical activity.

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Field Work - General **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	5C) Cold Extremes	▪ Take precautions to prevent cold stress injuries ▪ Cover all exposed skin and be aware of frostbite. While cold air will not freeze the tissues of the lungs, slow down and use a mask or scarf to minimize the effect of cold air on air passages. ▪ Dress in layers with wicking garments (those that carry moisture away from the body – e.g., cotton) and a weatherproof slicker. A wool outer garment is recommended. ▪ Take layers off as you heat up; put them on as you cool down. ▪ Wear head protection that provides adequate insulation and protects the ears. ▪ Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia. ▪ Acclimate to the cold climate to minimize discomfort. ▪ Maintain adequate water/fluid intake to avoid dehydration.
	5D) Wind	▪ Effects of the wind ▪ Wind chill greatly affects heat loss (see attached Wind Chill Index). ▪ Avoid marking in old, defective timber, especially hardwoods, during periods of high winds due to snag hazards.
	5E) Thunderstorms	▪ Thunderstorms ▪ Monitor weather channels to determine if electrical storms are forecast. ▪ Plan ahead and identify safe locations to be in the event of a storm. (e.g., sturdy building, vehicle, etc.) ▪ Suspend all field work at the first sound of thunder. You should be in a safe place when the time between the lightning and thunder is less than 30 seconds. ▪ Only return to work 30 minutes after the after the last strike or sound of thunder
	5F) Sun	▪ Keep body protected ▪ Wear sunscreen, wide brimmed hat or hardhat. ▪ Schedule work for cool part of day. ▪ Take breaks in the shade.

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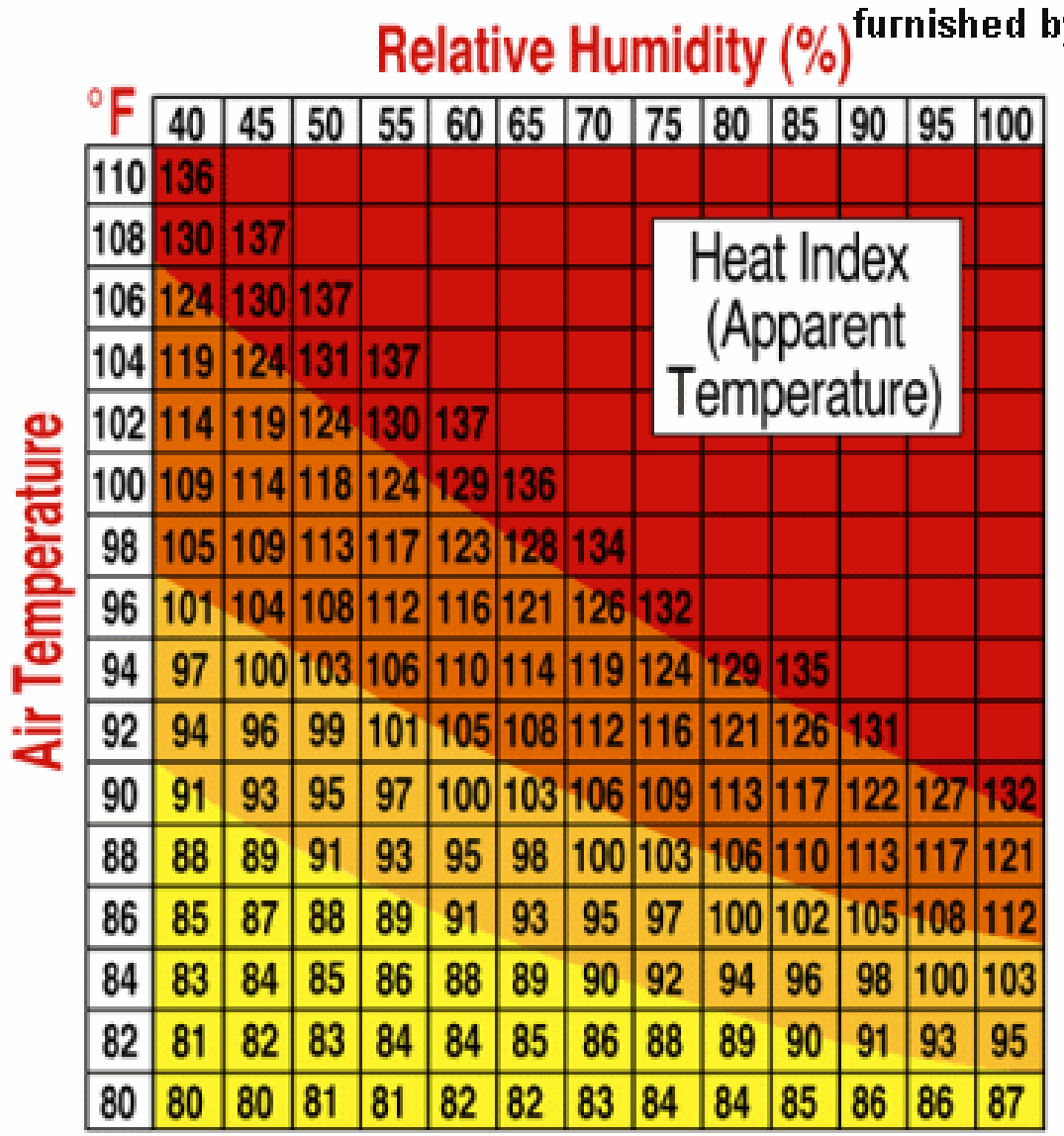
JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Field Work - General **Date of Analysis:** 7/13/10

furnished by National Weather Service Gray, ME



With Prolonged Exposure and/or Physical Activity

Extreme Danger
Heat stroke or sunstroke highly likely
Danger
Sunstroke, muscle cramps, and/or heat exhaustion likely
Extreme Caution
Sunstroke, muscle cramps, and/or heat exhaustion possible
Caution
Fatigue possible

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Field Work - General **Date of Analysis:** 7/13/10

Wind Chill Chart

Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times 30 minutes 10 minutes 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title: Insect Stings and Bites **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: Long sleeved shirt and pants, light colored clothing
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Traveling/working in areas with potential Tick Bites –Example outdoor wooded areas or fields.	1. Lyme Disease, Rocky Mountain Spotted Fever, etc.	1A) Spray clothing with insect repellant as a barrier. 1B) Wear light colored clothing that fits tightly at the wrists, ankles, and waist. 1C) Each outer garment should overlap the one above it. 1D) Cover trouser legs with high socks or boots. 1E) Tuck in shirt tails. 1F) Search the body on a regular basis, especially hair and clothing; ticks generally do not attach for the first couple of hours. 1G) If a tick becomes attached, pull it by grasping it as close as possible to the point of attachment and pull straight out with gentle pressure. Wash skin with soap and water then cleanse with rubbing alcohol. Place the tick in an empty container for later identification, if the victim should have a reaction. Record dates of exposure and removal. 1H) Do not try to remove the tick by burning with a match or covering it with chemical agents. 1I) If you can not remove the tick, or the head detaches, seek propmt medical help. 1J) Watch for warning signs of illness: a large red spot on the bite area; fever, chills, headache, joint and muscle ache, significant fatigue, and facial paralysis are reactions that may appear within two weeks of the attack. Symptoms specific to Lyme disease include: confusion, short-term memory loss, and disorientation.
2. Working/traveling in areas with potential bee and wasp stings-Example wooded areas and fields	2. Allergic reactions, painful stings	2A) Be alert to hives in brush or in hollow logs. Watch for insects travelling in and out of one location. 2B) If you or anyone you are working with is known to have allergic reactions to bee stings, tell the rest of the crew and your supervisor. Make sure you carry emergency medication with you at all times. 2C) Wear long sleeve shirts and trousers; tuck in shirt.. Bright colors and metal objects may attract bees. 2D) If you are stung, cold compresses may bring relief. 2E) If a stinger is left behind, scrape it off the skin. Do not use a tweezers as this squeezes the venom sack, worsening the injury. 2F) If the victim develops hives, asthmatic breathing, tissue swelling, or a drop in blood pressure, seek medical help immediately. Give victim antihistime, (Benadryl, chlo-amine tabs).
3. Traveling/working in areas of potential Mosquito Bites-Example- Woods, fields, near bodies of water and etc.	3. Skin irritation, encephalitis	3A) Wear long sleeves and trousers. 3B) Avoid heavy scents. 3C) Use insect repellants. If using DEET, do not apply directly to skin, apply to clothing only. 3D) Carry after-bite medication to reduce skin irritation.

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Poisonous Plants **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: Long sleeved shirt and pants, light colored clothing
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1) Mobilization	1A) See JHA Mobilization/ Demobilization and Site Preparation	1A) See JHA Mobilization/ Demobilization and Site Preparation
2) Preparation	2A) Training – Identifying Poisonous Plants	2A) Provide training on identifying the specific poisonous plants that could be present at the site
		
	2B) Poison Ivy 	2B) Poison Ivy: ▪ Grows everywhere in United States except Hawaii and Alaska. ▪ In the East, Midwest, and the South, it grows as a vine. ▪ In the Northern and Western United States, it grows as a shrub. ▪ Each leaf has three leaflets. ▪ Leaves are green in the summer and red in the fall. ▪ In the late summer and fall, white berries may grow from the stems.
	2C) Poison Oak 	2C) Poison Oak: ▪ Oak-like fuzzy leaves in clusters of three. ▪ It has two distinct kinds: ▪ Eastern poison oak (New Jersey to Texas) grows as a low shrub. ▪ Western poison oak (Pacific Coast) grows to six-foot-tall clumps or vines up to 30 feet long. ▪ It may have clusters of yellow berries.
	2D) Poison Sumac 	2D) Poison Sumac ▪ Grows in standing water in peat bogs in the Northeast and Midwest and in swampy areas in parts of the Southeast. ▪ Each leaf has clusters of seven to 13 smooth-edged leaflets. ▪ The plants can grow up to 15 feet tall. ▪ The leaves are orange in spring, green in summer and red, and orange or yellow in fall. ▪ There may be clumps of pale yellow or cream-colored berries.

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Poisonous Plants **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	2E) Giant Hogweed  Giant Hogweed  Giant Hogweed Flower (clusters may reach up to 2.5 feet across)  Giant Hogweed Flower Leaves  Giant Hogweed Stem - Thick stem with coarse hairs, Blistery dark purple splotches.	2E) Giant Hogweed ▪ Hogweed is a public health hazard. Its clear, watery sap has toxins that cause photo-dermatitis. Skin contact followed by exposure to sunlight produces painful, burning blisters that may develop into purplish or blackened scars. Contact with the eyes can cause temporary or permanent blindness. ▪ Since its introduction into North America, this plant has become established in rich moist soils along roadsides, stream banks and waste ground. In the eastern US, it is known to occur in Maine, New York, Pennsylvania, Connecticut, and now Massachusetts. ▪ A biennial or perennial herb growing 8 to 15 feet tall, giant hogweed usually has a taproot or occasionally fibrous root. The hollow stems are 2 to 4 inches in diameter with dark reddish-purple splotches and coarse white hairs. ▪ The deeply incised compound leaves grow up to 5 feet in width. Hairs on the underside of the leaf are stiff, dense and stubby. ▪ The large umbrella-shaped flower heads are up to 2 1/2 feet in diameter across a flat top with numerous small flowers produced in mid-May through July. ▪ Some plants die after flowering; others flower for several years. The plant produces flattened, 3/8 inch long, oval dry fruits that have a broadly rounded base and broad marginal ridges. Plants sprout in the early spring (or late winter in mild years) from the roots or from seed. ▪ Grows in standing water in peat bogs in the Northeast and Midwest and in swampy areas in parts of the Southeast. ▪ Each leaf has clusters of seven to 13 smooth-edged leaflets. ▪ The plants can grow up to 15 feet tall. ▪ The leaves are orange in spring, green in summer and red, and orange or yellow in fall. ▪ There may be clumps of pale yellow or cream-colored berries.

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Poisonous Plants **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
3A) Contact with poisonous plants	3A) Hand Contact	3A) Hand Contact ▪ Apply IvyX (or similar product) to hands, forearms and other potentially exposed parts of the body, prior to starting work in the morning and again right after lunch. ▪ Leather Gloves must be worn at all times when digging, screening or carrying field equipment. ▪ Leather gloves should be of sufficient length to cover the entire wrist and cuff of the shirt. ▪ Carefully remove gloves, without touching the exterior surface, when taking notes and prior to lunch or restroom breaks. ▪ Gloves that become worn should be replaced immediately. ▪ Do not scratch or rub the face or other exposed skin while wearing gloves. ▪ Workers will apply Tecnu (or similar product) to the hands and forearms immediately after removing their gloves, prior to lunch and again at the end of the day. Tecnu will help cleanse the urushiol oil from the skin before it can be absorbed. Sensitive individuals can also apply prior to showering in the evening.
	3B) Arm Contact	3B) Arm Contact ▪ Apply IvyX (or similar product) to hands, forearms and other potentially exposed parts of the body, prior to starting work in the morning and again right after lunch. ▪ Wear light weight, long sleeved shirts as the sleeves will provide a physical barrier between the skin and any urushiol oil encountered. Disposable gauntlets may we worn over arms to keep oil from clothing as well. ▪ Have the sleeves pulled down to the base of the hand, covering the forearm and wrist (all exposed skin). ▪ Workers will apply Tecnu (or similar product) to the hands and forearms immediately after removing their gloves, prior to lunch and again at the end of the day. Tecnu will help cleanse the urushiol oil from the skin before it can be absorbed. Sensitive individuals can also apply prior to showering in the evening.
	3C) Leg Contact	3C) Leg Contact ▪ Wear long pants and boots. ▪ Assume boots are contaminated with the urushiol oil and only handle with gloved hands.
4) Handling Contaminated Equipment and Clothing	4A) Exposure from Handling Contaminated Equipment	4A) Exposure from Handling Contaminated Equipment ▪ Do not handle any field equipment that may have come in contact with poison ivy/oak/sumac without gloves. ▪ Decontaminate all equipment at the end of each workday with a solution of water and dish soap. ▪ Scrub all surfaces of the screens and shovels with a brush. ▪ Rinse with cool water using a portable garden sprayer.

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Poisonous Plants **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	4B) Exposure from Handling Contaminated Clothing	4B) Exposure from Handling Contaminated Clothing ▪ Wash clothing potentially contaminated with urushiol oil prior to wearing again. ▪ Handle contaminated clothing with gloves as the oil can remain on environmental surfaces for up to 5 years.

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Mark Excavations **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Locate and Mark Excavation Area	1A) Slip/Trip/Fall	▪ Clear area of trip hazards; mark or barricade those that cannot be moved; ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil
	1B) Place Pin Flags or use Marking Paint	▪ With the use of a map locate the area to be marked and place a flag ▪ Do not bend or twist awkwardly ▪ Marking paint can also be used to designate boundary excavation lines ▪ Point marking paint directly at ground approximately 4 to 8 inches from ground surface
	1C) Chemical Exposures	▪ Avoid direct contact with potentially contaminated media ▪ Wear appropriate PPE if there is the potential for exposure to contaminated media ▪ Monitor air in breathing zone per the HASP.
	1D) Exposure to poisonous plants and insects	See JHA for Poisonous Plants See JHA for Insect Stings and Bites

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Excavation and Backfilling **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Identify location of underground utilities	1A) Encountering underground utility lines	See JHA for Field Work - General
2. Excavation of soils	2A) Underground utilities	▪ Work at adequate offsets from utility locations ▪ For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet ▪ Immediately cease work if unknown utility markings are discovered. ▪ Conform to utility clearances based on voltage of lines. For power lines of 50 KV or less stay at least 10 feet away. For power lines of > 50 KV, add an additional 0.4 inches per KV over 50 KV. Rule of thumb: Stay 10 feet away if power line known to be 50 KV or less. Stay 35 feet away for lines > 50 KV or if voltage is unknown.
	2B) Vapor/Dust Exposure	See JHA for Field Work - General
	2C) Heavy Equipment	See JHA for Field Work - General
	2D) Cave-ins	Excavation work must be conduct in accordance with OSHA 1926 Subpart P (650-652) Excavations including but not limited to: ▪ Designate a competent person to inspect, decide soil classification, proper sloping, the correct shoring, or sheeting for the excavation ▪ Walls and faces of trenches 5 feet or more deep, and all excavations in which employees may be exposed to danger from moving ground or cave-in shall be guarded by a shoring system, sloping of the ground, or some other equivalent means. ▪ Cordon-off the perimeter of the excavation to delineate cave-in hazard area. ▪ Construct diversion ditches or dikes to prevent surface water from entering excavation and provide good drainage of the areas surrounding the excavation. ▪ Collect ground water/rain water from excavation and dispose of properly ▪ Store spoils, materials and equipment at least 2 feet from the edge of the excavation; prevent excessive loading of the excavation face. ▪ Inspect excavations (when personnel entry is required) daily, any time conditions change and document the inspection.
	2E) Slips/Trips/Falls	▪ Provide sufficient egress (stairs, ladders, or ramps) when workers enter excavations over 4 feet in depth, and place these structures so that workers travel no more than 25 feet to reach ladders. Provide at least two means of exit for personnel working in excavations. ▪ Maintain minimum safe distance from the excavation and only approach the excavation on the short side.
	2F) Site Security	▪ Fill in excavation prior to leaving the site or provide barricades or fencing (able to withstand 200 lbs. of vertical pressure) to protect the excavation from the public and place warning signs on fence/barricade. ▪ Consider hiring a security guard ▪ If cover excavation with plywood or other material, ensure cover is labeled with the words “cover” or “hole.”
3). Backfilling of Soils	3A) Heavy Equipment	See JHA for Field Work - General
	3B) Cave-ins	▪ See 2D above.

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Handling Compressed Gas Cylinders **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: Steel toed boots
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Moving full gas cylinder to work area or to vehicle.	1A) Projectile hazard (if cylinder falls and neck shears off)	▪ Use cylinder cart to transport gas cylinders. ▪ Cylinders are to be secured to the cart ▪ Move gas cylinders only with the protective cap in place. ▪ Move gas cylinders in an upright position ▪ Do not allow cylinders to drop or strike against each other or against hard objects.
	1B) Back or muscle strain	▪ Avoid lifting cylinder. ▪ Use materials handling aid (e.g., cart, dolly, etc.) whenever possible ▪ If cylinder must be lifted, use proper lifting techniques (lift with legs, not back, don't reach or use a twisting motion). ▪ Obtain assistance in lifting large cylinders
	1C) Foot injury	▪ Wear steel toed boots
2. Transporting a gas cylinder in a vehicle.	2A) Asphyxiation and/or chemical exposure	▪ All gases can create an asphyxiation hazard. Some may also be toxic and/or flammable ▪ Ensure cylinder is NOT leaking (use soapy water to check), valve is tightly closed, regulator removed and cap is secured to cylinder. ▪ Gas cylinders should NOT be transported in the passenger compartment of a vehicle. Cylinders should be transported in a pickup bed, or trailer. ▪ Do not transport with incompatibles
	2B) Fire hazard	▪ Do not leave cylinders in vehicles – especially in extreme temperatures. ▪ Secure in vehicles – away from flammable/combustible materials and ignition sources. ▪ Ensure cylinder is NOT leaking (use soapy water to check), valve is tightly closed, regulator removed and cap is secured to cylinder.
	2C) Projectile hazard	▪ Secure cylinders tightly to vehicle. ▪ Do not allow cylinders to roll around loosely in vehicle
3. Securing a gas cylinder in the field	3A) Back or muscle strain.	▪ Use mechanical aid (e.g., cart) to move large cylinder, if possible. ▪ If lifting and manual handling is unavoidable, use proper lifting techniques. Protect your back from strain and twisting. ▪ Use two people to handle large cylinders
	3B) Projectile hazard	▪ Ensure tanks are secured tightly to wall of trailer, to a cart, or to a tree, post or other sturdy object, in an upright position. ▪ Do not lay cylinder on its side.
	3C) Fire hazard	▪ Store flammable gases away from combustible materials (wood, paper, dried grasses, etc.) ▪ Store away from ignition sources
	3D) Chemical exposure	▪ Ensure label on cylinder is legible ▪ Ensure valves are tightly closed when not in use ▪ Store away from incompatibles ▪ Review MSDS ▪ Wear PPE as identified in HASP.
4. Using gas cylinders	4A) Projectile hazard.	▪ Ensure cylinder is secured tightly before removing protective cap.
	4B) Cylinder may fall when changing cylinders.	▪ Ensure BOTH cylinders are secured tightly to the wall or the transport cart.
	4C) Leaking Cylinders	▪ Move all leaking cylinders outdoors, into a well ventilated area

	4D) High pressure gas release	▪ Use proper procedures to open and close a cylinder with a regulator attached: ▪ Open cylinder valves slowly and do not open valves all the way. ▪ Open so nozzle is facing away from person ▪ Open valves only by hand unless the cylinder is specifically designed to be opened with a hand tool (keep hand tool with cylinder)
5. Returning "empty" gas cylinder to vendor	5A) High pressure gas	▪ Replace protective cap on the empty gas cylinder before transporting to vendor.
	5B) Moving a heavy object	▪ Use proper lifting techniques. Protect your back from strain and twisting. ▪ Get aid when lifting heavy cylinders ▪ Use a cart, if possible, to transport cylinders

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Soil Sampling **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, nitrile gloves
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Prepare for Site Visit	1A) See JHA for Mobilization/ Demobilization and Site Preparation	See JHA for Mobilization/ Demobilization and Site Preparation
2. Carrying equipment to site location	2A) Back or muscle strain	▪ Use proper lifting techniques when lifting pumps or generators ▪ Use mechanical aids if available ▪ Use 2 person lift for heavy items
3. Calibrate monitoring equipment	3A) Exposure to calibration gases	▪ Review equipment manuals ▪ Calibrate in a clean, well ventilated area ▪ See JHA for Handling Compressed Gas Cylinders
4. Preparing sampling location	4A) Contact with poisonous plants or the oil from poisonous plants	See JHA for Poisonous Plants
	4B) Contact with biting insects (i.e., spiders, bees, etc.)	See JHA for Insect Stings and Bites
	4C) Exposure to hazardous inhalation and contact with hazardous substances (VOC contaminated soil); flammable atmospheres.	▪ Wear PPE as identified in HASP. ▪ Review hazardous properties of site contaminants with workers before sampling operations begin ▪ Monitor breathing zone air in accordance with HASP to determine levels of contaminants present. ▪ When decontaminating equipment wear additional eye/face protection over the safety glasses such as a face shield.
	4D) Back strain due to lifting or moving equipment to sampling locations	▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items. ▪ Use proper lifting techniques
	4E) Foot injuries from dropped equipment	▪ Be aware when moving objects, ensure you have a good grip when lifting and carrying objects. ▪ Do not carry more than you can handle safely ▪ Wear steel toed boots
5. Collecting soil samples	5A) Working around heavy equipment	See JHA for Field Work - General
	5B) Encountering underground or overhead utilities	See JHA for Field Work - General
	5C) Fire/Explosion/Contamination hazard from refueling generators	▪ Turn the generator off and let it cool down before refueling ▪ Segregate fuel and other hydrocarbons from samples to minimize contamination potential ▪ Transport fuels in approved safety containers. The use of containers other than those specifically designed to carry fuel is prohibited ▪ See JHA for Gasoline use

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Soil Sampling **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	5D) Electrocution	▪ A ground fault circuit interrupter (GFCI) device must protect all AC electrical circuits. ▪ Use only correctly grounded equipment. Never use three-pronged cords which have had the third prong broken off. ▪ Make sure that the electrical cords from generators and power tools are not allowed to be in contact with water ▪ Do not stand in wet areas while operating power equipment ▪ Always make sure all electrically-powered sampling equipment is in good repair. Report any problems so the equipment can be repaired or replaced. ▪ When unplugging a cord, pull on the plug rather than the cord. ▪ Never do repairs on electrical equipment unless you are both authorized and qualified to do so.
	5E) Exposure to contaminants	▪ Stand up wind when sampling ▪ Monitor breathing zone with appropriate equipment (see HASP) ▪ Wear chemical resistant PPE as identified in HASP ▪ See section 4C) under Safe Practices above
	5F) Exposure to preservatives	▪ Work in a well ventilated area, upwind of samples ▪ Wear chemical resistant PPE as identified in HASP ▪ Review MSDSs
	5G) Slips/trips/falls	▪ Ground can become wet/muddy ▪ Wear good slip resistant footwear
	5H) Lifting Injury	▪ Use proper lifting techniques when carrying quantities of samples ▪ Use proper ergonomics when hand digging for samples
	5I) Eye injury	▪ Wear eye protection when using picks or similar devices to loosen soil

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Soil Staging **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Soil Excavation	1A) Heavy Equipment Operation Oversight	▪ Establish hand signals with equipment operator ▪ Identify excavator swing radius and stay outside of swing area while excavator is running ▪ Maintain eye contact with equipment operator ▪ Avoid crush hazards such as the area between the excavator and roll off boxes or other large structures
	1B) Excessive Noise	▪ Wear hearing protection in accordance with the HASP
	1C) Slip/Trip/Fall	▪ Clear area of trip hazards; mark or barricade those that cannot be moved ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil
	1D) Chemical Exposures	▪ Avoid direct contact with potentially contaminated media ▪ Wear appropriate PPE as identified in JHA if there is the potential for exposure to contaminated media ▪ Monitor air in breathing zone per the HASP
	1E) Exposure to poisonous plants and insects	See JHA for Poisonous Plants See JHA for Insect Stings and Bites
2. Soil Staging	2A) Chemical Runoff	▪ Place soils onto plastic in a location that will not pond in the event of rainfall ▪ Cover soils on all sides with plastic to keep out rain

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Overpack and Load Drums **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Excavate soil around drums	1A) Heavy Equipment Operation Oversight	See JHA for Soil Staging
	1B) Excessive Noise	▪ Wear hearing protection in accordance with the HASP
	1C) Slip/Trip/Fall	▪ Clear area of trip hazards; mark or barricade those that cannot be moved ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil
	1D) Chemical Exposures	▪ Avoid direct contact with potentially contaminated media ▪ Wear appropriate PPE if there is the potential for exposure to contaminated media ▪ Monitor air in breathing zone per the HASP ▪ Any soil around drums will be placed on plastic and covered or put directly into roll off box
2. Inspect Drums prior to removal	2A) Leaking, bulging, unidentified drums	▪ Inspect drums prior to moving, if possible. Do not move any drum that is bulging or otherwise unsafe without using proper precautions (e.g., workers standing behind blast shield) ▪ Do not enter excavation unless excavation has been properly sloped or shored ▪ If the drum must be moved before inspection, minimize handling ▪ Unlabeled drums shall be considered to contain hazardous substances and handled accordingly until their contents is identified and labeled ▪ If drum cannot be moved without rupture, leakage, or spillage, then empty contents into sound container using a device suitable for the material being transferred ▪ If potential for flammable atmospheres being present, intrinsically safe and spark resistant equipment and tools shall be used
3. Overpack Drums if the drums are intact	3A) Remove Drum from Excavation	▪ Use extreme caution when removing drum from exaction. Watch out for holes and any leaking fluids ▪ Do not rip drum with teeth of excavator, make sure not to hit drum with bucket ▪ If using a strap, ensure that the drum and strap are capable of supporting the load. Straps shall be inspected prior to use
	3B) Place drum in Overpack container	▪ Keep hands free of pinch points ▪ Use care when putting drum into overpack to make sure that the metal does not tear creating a leak
	3C) Seal Overpack container	▪ Keep hands free of pinch points when sealing overpack container ▪ Make sure that the lid is sealed and secured properly
4. Load Drum carcasses into roll off boxes	4A) Remove Drum from Excavation	▪ Use extreme caution when removing drum from exaction & watch for leaking fluids ▪ If using a strap, ensure that the drum and strap are capable of supporting the load

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Overpack and Load Drums **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	4B) Place Drum into Roll Off Box	▪ Place drum carcass into roll off box gently to make sure there is no splashing of fluids or soil from the roll off box ▪ Make sure that the drum is properly being held with excavator so that it will not fall onto the ground ▪ Do not overfill roll off box so that it can be removed from site
5. Cover roll off box	5A) Place cover on roll off box	▪ After use of roll off box, cover with tarp or plastic

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JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Soil Load Out **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Soil Excavation	1A) Heavy Equipment Operation Oversight	See JHA for Soil Staging
	1B) Excessive Noise	▪ Wear hearing protection in accordance with the HASP
	1C) Slip/Trip/Fall	▪ Clear area of trip hazards; mark or barricade those that cannot be moved ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil
	1D) Chemical Exposures	▪ Avoid direct contact with potentially contaminated media ▪ Wear appropriate PPE as outlined in JHA if there is the potential for exposure to contaminated media ▪ Monitor air in breathing zone per the HASP
	1E) Exposure to poisonous plants and insects	See JHA for Poisonous Plants See JHA for Insect Stings and Bites
2. Soil Load Out	2A Soil Load Out	▪ Place soils into roll off box gently so soil or liquids do not come out of roll off box ▪ Keep roll off box in close proximity so that soils will not fall out of bucket as it moves to the roll off box ▪ Cover roll off box to keep rainfall out ▪ Do not overfill roll off box so that it can be properly disposed

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Decontamination **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Establish Decontamination Station	1A) Materials Handling	▪ Use proper lifting techniques ▪ Use mechanical aids, if available, to move heavy items.
2. Decontamination / Steam cleaning.	2A) Struck by steam/hot water/pressure washing	▪ Workers not directly engaged in steam cleaning operations must stay clear. ▪ Workers using steam cleaning equipment must be trained on operation and safety devices/procedures using the owners/operators manual. ▪ Use face shield **and** safety glasses or goggles, if steam cleaning. ▪ Stay out of the splash/steam radius. ▪ Pressure washer must have dead man switch. ▪ Do not direct steam at anyone. ▪ Do not hold objects with your feet or hands. ▪ Ensure that direction of spray minimizes spread of contaminants of concern. ▪ Use shielding as necessary.
	2B) Exposure to contaminants	▪ Conduct air monitoring (see HASP). ▪ Wear proper PPE (see HASP). ▪ See MSDSs for hazards associated with the decon solutions used (if other than water alone us used).
	2C) Slips/Trips/Falls	▪ Be cautious as ground/plastic can become slippery ▪ Use boots or boot covers with good traction
3. Vehicle Decontamination	3A) Vehicle traffic in and out of the CRZ	▪ Always wear a hard hat, steel toe boots, and a high visibility vest (unless Tyveks are used and are high visibility). ▪ Vehicle drivers are not to exit the vehicle in the CRZ. ▪ Identify an individual to communicate with vehicle drivers and maintain order ▪ Trucks will be lined with plastic and kept out of direct contact with any contaminated materials during loading. Wear PPE when removing plastic lining from truck beds. ▪ If not in the vehicle, obtain eye contact with the driver, so he is aware of your presence and location in the CRZ. ▪ If you are driving the vehicle, be aware of personnel in the CRZ and maintain communication with the identified personnel.
	3B) Exposure to contaminants	▪ Use safety glasses or goggles, Polycoated Tyvek (if level of contamination poses dermal hazard or to keep work clothes dry), high visibility vest (if high visibility Tyveks are not used) hard hats, steel toe boots, and gloves while cleaning contaminated materials. ▪ Do not doff PPE until decontamination of the vehicle is complete and a decontamination certificate has been issued by the HSO. ▪ Conduct air monitoring (see HASP). ▪ See MSDSs for hazards associated with the decon solutions (if other than water alone is used).
	3C) Slips/Trips/Falls	▪ Be cautious as ground/plastic can become slippery ▪ Use boots or boot covers with good traction
4. Equipment and Sample Decontamination	4A) Chemical exposure when handling contaminated sample jars and equipment	▪ Wear PPE as outlined in the HASP. ▪ Refer to MSDS for specific hazards associated with decon solutions ▪ Monitor breathing zone for contaminants ▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.) if appropriate (see HASP)

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Decontamination **Date of Analysis:** 7/13/10

Key Work Steps	Hazards/Potential Hazards	Safe Practices
	4B) Materials Handling related injuries	▪ Use proper lifting techniques when lifting heavy equipment ▪ Use two person lift for heavy coolers
5. Personal Decontamination	4C) Exposure to contaminants	▪ Avoid bringing contaminated materials via shoes and clothing into the CRZ by examining such prior to exiting the EZ. ▪ Removal of PPE will be performed by the following tasks in the listed order: ▪ Gross boot wash and rinse and removal ▪ Outer glove removal ▪ Suit removal ▪ Respirator removal (if worn). ▪ Inner glove removal ▪ Contaminated PPE is to be placed in the appropriate, provided receptacles. ▪ Respirators will be removed and decontaminated at a specified location within the CRZ by a designated technician, then placed in storage bag. ▪ Employees will wash hands, face, and any other exposed areas with soap and water. ▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials. ▪ See MSDSs for hazards associated with the decontamination solutions used. ▪ Decon solutions will be disposed of according to the work plan.

MACTEC

JOB HAZARD ANALYSIS – HASP FORMAT

Job Title Air Monitoring **Date of Analysis:** 7/13/10

Minimum Recommended PPE*: High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

Key Work Steps	Hazards/Potential Hazards	Safe Practices
1. Work preparation	1A) N/A	▪ Charge pumps ▪ Receive site specific training, if required ▪ Calibrate pumps
2. Lifting and carrying various items	2A) Strains (overexertion)	▪ Determine whether item is too heavy or bulky for one person to carry; get help ▪ Make two trips if necessary ▪ Use proper lifting techniques
	2B) Falls	▪ Always be able to see where you are going and what might be an obstacle in your path
3. Place pumps in work zone for area samples	3A) Slips, trips, falls	▪ Wear proper footwear for site conditions ▪ Watch placement of feet ▪ Do not use furniture as stepladders to reach high places, use a step stool or step ladder ▪ Position area pumps and pump stands out of walking area and from blocking doorways, if possible. Use warning barriers and tape for awareness.
	3B) Strain (overexertion)	▪ Take care when carrying equipment (pumps, tripod or other item to be used to position pump at breathing zone level) ▪ Get help or make two trips if required
4. Start pumps and record time. Periodically monitor pumps to ensure operating correctly.	4A) Slips, trips, falls	▪ Wear proper footwear for site conditions ▪ Watch placement of feet ▪ Do not use furniture as stepladders to reach high places, use a stepstool or stepladder
5. Using various chemicals, such as charcoal, dessicant, etc.	5A) Contact with materials that causes irritation, allergic response, or skin problems	▪ Read and follow all instructions regarding proper use ▪ If allergic reaction or irritation occurs, report to supervisor so chemical can be replaced with safer material ▪ Keep MSDS sheets on hand ▪ Wear proper eyewear, masks, and gloves when using certain chemicals
	5B) Spills	▪ Have clean-up plan for spills ▪ Keep water on hand for rinsing off skin

APPENDIX C

DECONTAMINATION PROCEDURES & EQUIPMENT PER TASK(S)

APPENDIX C1

DECONTAMINATION PROCEDURES & EQUIPMENT

Task(s) ____All Tasks_____
Decontamination Solution: Detergent and Water

LEVEL D		
Station 1:	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2:	Outer Boots, and Gloves Wash and Rinse (if worn)	Scrub outer boots, and outer gloves decon solution or detergent water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal (if worn)	Remove outer boots and gloves. Deposit in plastic bag.
Station 4:	Inner glove removal	Remove inner gloves and place in plastic bag.
Station 5:	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

APPENDIX C2

DECONTAMINATION PROCEDURES & EQUIPMENT

Task(s) _____
Decontamination Solution: Detergent and Water

MODIFIED LEVEL D & LEVEL C		
Station 1:	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4: (Level C only)	Canister or Mask Change	If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty.
Station 5:	Boot, Gloves and Outer Garment Removal	Boots, chemical resistant splash suit, and inner gloves are removed and deposited in separate containers lined with plastic.
Station 6: (Level C only)	Face Piece Removal	Facepiece is removed. Avoid touching face with fingers. Facepiece is deposited on plastic sheet.
Station 7:	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

APPENDIX C3

DECONTAMINATION PROCEDURES AND EQUIPMENT

Task(s) _____
Decontamination Solution: Detergent and Water

LEVEL B		
Station 1:	Equipment Drop	Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Tank Change	If worker leaves exclusion zone to change air tank, this is the last step in the decontamination procedure. Worker's air tank is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty.
Station 5:	SCBA Backpack, Boot, Gloves and Outer Garment Removal	SCBA backpack is removed and placed on plastic sheets. Boots, chemical resistant splash suit, and inner gloves are removed and deposited in separate containers lined with plastic.
Station 6:	Face Piece Removal	SCBA facepiece is removed. Avoid touching face with fingers. Facepiece is deposited on plastic sheet.
Station 7:	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

APPENDIX D

INCIDENT ANALYSIS FORMS

Check one
Initial Report: ☐
Update: ☐
Final Report: ☐

INCIDENT ANALYSIS REPORT

Category C: ☐
Category B: ☐
Category A: ☐

Attorney-Client Work Product Prepared in Anticipation of Litigation

Local Office ID Number: _ Division ES&H Manager Tracking Number: _____

Report Date: _____

Section 1 – General Information

Incident Date: _____

Employee Name: _____ Sex: ☐ M ☐ F Time of incident: _____

Job Title: _____ Hire Date: _____ Time employee began work: _____

Department: _____ Project Manager: _____ Client: _____

Office where employee works from: _____ Immediate Supervisor: _____ Hours employee worked during last 7 days: ____ hr

Location where incident occurred: _____ Is this a Company controlled work site: ☐ Yes ☐ No

Section 2 – Incident Type (mark all that apply)

A. Type of incident being reported:

☐ Near Miss ☐ First-aid Case ☐ Medical Treatment ☐ Hospitalization Required ☐ Fatality

☐ Day Away Case ☐ Restricted/Transfer Case ☐ Environmental Release ☐ Regulatory Inspection ☐ Notice of Violation

☐ Vehicle Incident ☐ Other (please describe): _____

B. If an **injury or illness** - describe the part of the body that was affected and how it was affected:

C. If an **environmental release** - describe the quantity and name and CAS# of material released into the environment:

D. If an **inspection by a regulatory agency** - what agency, who were the inspectors, and supply inspector contact information:

Section 3 – Incident Description (Attach and number additional pages, as needed, to ensure all details related to the incident are captured.)

A. List the names of all persons involved in the incident, and employer information:

B. List the names of any witnesses, their employer, and a local/company telephone number or address:

C. What was the employee(s) doing just prior to the incident?

D. What happened?

E. What object or substance directly harmed the employee?

F. List any damaged equipment or property (other than motor vehicles) model and serial number **and** estimated costs to repair/replace damaged equipment or property, if applicable:

Section 4 - Incident Analysis

A. Was a Job Hazard Analysis (JHA) completed for the work being performed? YES ☐ NO ☐ Who prepared the JHA?

B. When and who was the last safety officer (i.e. LHSR, supervisor, Division ES&H Manager, etc.) at your work site?

C. When and what safety training **directly related** to the incident has the person(s) involved had?

Section 5 - Incident Investigation Results

#	**Causal Factors** (Attach and number any additional pages as needed to completely address this section)
1	
2	
3	
4	
5	

(The below items represent major root cause categories which have been determined to be Less Than Adequate (LTA). A more detailed determination of the root cause will be facilitated, if needed, by your Division's ES&H Manager.)

1. Equipment Reliability Program Implementation
2. Administrative / Management Systems
3. Immediate Supervision
4. Training
5. Human Factors Engineering
6. Communications
7. Personal Performance

Root Cause#	**Corrective Actions to be taken** (Attach additional pages as needed to completely address this section)	**Responsible Person**	**Proposed Completion Date**	**Closed on Date**	**Verified by and Date Verified**

Section 6 – Approvals

Incident investigated by (signatures):	
Employee(s): Date:	Employee's Supervisor: Date:

LHSR/Project/Office Manager:	Date:	Division ES&H Manager:	Date:

VEHICLE INCIDENT REPORT

Revision 1

Attorney-Client Work Product Prepared in Anticipation of Litigation

(Review instructions on page 12 prior to completing this form)

Section 1 - General Information

Time incident occurred: _____ ☐ AM ☐ PM | ☐ Dark ☐ Light | Road Condition: ☐ Dry ☐ Wet | Date of incident: _____

Were police summoned to scene? ☐ Yes ☐ No Police Department and Location: _____

Report #: _____ Officer's Name and Badge Number: _____

Section 2 - Company Driver and Vehicle

Driver's name: _____ D/L # _____ State: _____

Driver's home office address: _____ Driver's Phone # _____

Company Vehicle # _____ Year _____ Model _____ License # _____ State _____

Company car? ☐ Yes ☐ No Owned by employee? ☐ Yes ☐ No

Leased/rented from _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Damage to vehicle: _____

Injuries to employee(s): _____

Injuries to others: _____

Vehicle was being used for: Company business ☐ Yes ☐ No Personal business ☐ Yes ☐ No

Towed: ☐ Yes ☐ No By Whom: _____ To Where: _____

Section 3 - Other Driver and Vehicle Information

Driver's Name: _____ D/L # _____ State _____

Current Address _____ City _____ State _____

Telephone Home: _____ Work: _____ Cell: _____

Reg. Owner's Name: _____ Address: _____ City: _____ State: ____
(verify registration document)

The Other Vehicle: Make _____ Model _____ Year _____ License # _____ State ____

Insurance company name: _____ Address: _____ Phone # _____

Policy No. _____ Contact Person _____ Phone # _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Damage: (*Make note of pre-existing damage and take pictures if possible.* ***Attach additional pages as needed****)*

Injuries to other driver/passengers:

Section 4 – Approvals (signatures required)

Form completed by: _____ Signature: _____ Date: _____

Please Print/Type

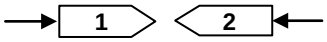
Things to Do First In The Event Of a Motor Vehicle Incident

1. Most important: **STOP**.
2. **Call 911 if there are injuries.**
3. Call for an officer if the incident occurred on public property (streets, highways or roads). Disputes often arise between the parties involved as to who was at fault; therefore, a police report is important. If an officer is unable to attend the scene of the accident, a counter police report may be filed at most stations. Insurance companies rely on police reports to determine liability.
4. Complete the Incident Investigation Report and the Vehicle Incident Report forms. It is important that both these forms are completed in detail. Include a diagram of the incident on the back of the report. Incomplete information may lead to delays in processing associated claims and in helping to prevent this type of incident from occurring again.
5. Express no opinion as to who was at fault. This is for the insurance companies to determine.
6. Give only information that is required by the authorities or as directed by Mactec contractual requirements.
7. Sign only those statements required by the authorities or as directed by Mactec contractual requirements. Do not sign away your rights or the company's rights.
8. If you are injured or think you were injured, tell your supervisor and see a physician. Your supervisor will notify Mactec's Worker's Compensation insurance carrier, your Division's ES&H Manager and the Corporate Director of ES&H by phone, email or fax. For additional instructions on what to do, go to Mactec's ES&H website on the intranet at:
   http://intranet.Mactec.com/EnvSafetyHealth/HealthSafety_Claims_Reporting.htm
9. Your supervisor will forward both completed incident reports immediately to your Division's ES&H Manager.

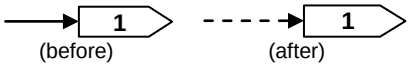
MACTEC, Inc.

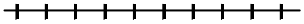
Vehicle Crash Diagram

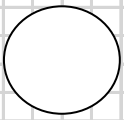
Instructions:

1. Number each vehicle and show directions 

2. Use a solid line to show path before incident and use a dotted line to show path after incient



3. Show pedestrian/non-motorist by: 
4. Show railroad by: 
5. Indicate north by arrow as: 
6. Show street or highway names or numbers
7. Show signs, signals, warning and traffic controls.



Prepared by: _____ Date: _____

APPENDIX E

MATERIAL SAFETY DATA SHEETS

NOTE:

The Material Safety Data Sheets that apply to these activities are provided as separate documents and are with this HASP in the field support vehicle.

APPENDIX F

SHSO SUMMARY

APPENDIX F

SHSO SUMMARY

To be completed by SHSO following completion of each phase of field work.

During the work covered by this Site Specific Health and Safety Plan, there were:

(check one)

____ No violations of the Safety Plan provisions and no incidents involving injury, illness or personnel contamination.

____ The following violations of the Safety plan provisions or incidents involving injury, illness or personnel contamination occurred. (Provide details of type of violation or incident, who was involved, circumstances, and first aid or medical treatment required.)

_____

_____

_____

_____

If violation or incident occurred, describe corrective actions taken to prevent reoccurrence.

_____

_____

_____

_____

Project/Task Name: _____

Project/Task Number: _____

Dates in Field: _____

Signature: _____

(SHSO)

Date: _____

APPENDIX G

SITE SAFETY ORIENTATION FORM

SITE SAFETY ORIENTATION

Project: Excavation Activities Site: Former Alexander Schmigel Site

Project Number: 3410060481 Date: _____

All applicable items listed below are to be reviewed on the first day of site activities and when new workers arrive on site. Training provider, please initial each item covered in the training, or note "NA" as applicable.

General Supervisor: ..... _____

Site Health and Safety Supervisor (SHSS): ..... _____

Employees' direct supervisor:..... _____

Location of HASP and MSDS on site:..... _____

HazCom labeling system if different from Local Operation: ..... NA

Site-specific medical surveillance requirements:..... NA

Site control measures (location of exclusion zone, etc.):..... NA

Safety and health hazards on site:..... _____

The Level of Protection and specific PPE to be used: ..... _____

Work practices to be used on site to minimize exposure:..... _____

Decontamination procedures: ..... _____

How to effectively use site/task engineering controls: ..... _____

Applicable elements of the site emergency response plan:..... _____

Any other site-specific health and safety related requirements: ..... _____

Participating employees must print and sign their name in the spaces provided below:

_____ _____

_____ _____

_____ _____

_____ _____

APPENDIX H

DAILY TAILGATE SAFETY MEETING CHECKLIST

Mactec Engineering And Consulting, Inc.

DAILY TAILGATE SAFETY MEETING CHECKLIST

Project:		Site:	
Date:		Location:	
To be reviewed on the first day of site activities and when new workers arrive on site:			
Alternate for Health & Safety:			
Location of on-site HASP:			
Site training requirements:	See HASP		
Specific medical surveillance requirements:	See HASP		

Agenda: *During the project, one or more of the agenda items could be selected for the required daily site training.*		**Check-off: Date**				
		___	___	___	___	___
1.	Planned work for this day (discuss)	☐	☐	☐	☐	☐
2.	Physical hazards and controls (discuss/review)	☐	☐	☐	☐	☐
3.	Chemical hazards and controls (discuss/review)	☐	☐	☐	☐	☐
4.	Biological hazards and controls (discuss/review)	☐	☐	☐	☐	☐
5.	Personal protective equipment Modified D	☐	☐	☐	☐	☐
6.	Personal protective equipment required per the hazard assessment:	☐	☐	☐	☐	☐
	SPECIFY TYPE					
	Protective coveralls					
	Safety glasses/goggles — ANSI approved					
	Hard hat — ANSI approved					
	Foot protection — Safety toe boots & overboots					
	Work gloves					
	Chemical gloves — Neoproene outer, nitrile inner					
	Hearing protection					
	Other					
7.	Review inspection, decontamination, and maintenance procedures and the limitations of the above stated PPE.	☐	☐	☐	☐	☐
8.	Decontamination procedure (discuss/review)	☐	☐	☐	☐	☐
9.	Exclusion zone maintained	☐	☐	☐	☐	☐
10.	Site emergency response plan (discuss/review)	☐	☐	☐	☐	☐
11.	Signs and symptoms of overexposure to chemicals anticipated on site	☐	☐	☐	☐	☐
12.	General health and safety rules	☐	☐	☐	☐	☐
13.	Specific health and safety requirements relating to site activities including: (discuss/review)	☐	☐	☐	☐	☐
14.	Drilling/boring	☐	☐	☐	☐	☐
15.	UST	☐	☐	☐	☐	☐
16.	Excavations	☐	☐	☐	☐	☐
17.	Heavy equipment	☐	☐	☐	☐	☐
18.	Slips, trips, and falls	☐	☐	☐	☐	☐
19.	Lockout/tagout	☐	☐	☐	☐	☐
20.	Working in temperature extremes	☐	☐	☐	☐	☐
21.	Rain or other weather advisories	☐	☐	☐	☐	☐
22.	Other health & safety issues (discuss/note)	☐	☐	☐	☐	☐

Mactec Engineering And Consulting, Inc.

DAILY TAILGATE SAFETY MEETING CHECKLIST

I have participated in the daily safety meeting discussing the topics indicated on the reverse and fully understand my responsibility for complying with all health and safety requirements. I have had the opportunity to have my questions on site health and safety issues and procedures answered.

Employee Name	Employee Signature	Date

Name and Signature of person conducting training

Date

APPENDIX I

DAILY HEALTH AND SAFETY CHECKLIST

MACTEC, Inc.

DAILY SITE SAFETY AND HEALTH CHECKLIST

Site: _____

Project Number: _____ **Project Manager:** _____

Prepared by: _____

Names of Mactec employee's onsite: _____

Y	N	N/A		Comments
Inspect Initial Start up of the project, when tasks change or new workers come to the site.				
☐	☐	☐	1. Are emergency phone numbers posted?	
☐	☐	☐	2. Are directions to the nearest emergency medical care posted?	
☐	☐	☐	3. Is there a SSHP at the site?	
☐	☐	☐	a. Is it current?	
☐	☐	☐	b. Does it address all know/suspected hazards?	
☐	☐	☐	c. Is it approved?	
☐	☐	☐	4. Have applicable workers received 40-hour initial training? (24-hours training for contractors is acceptable)	
☐	☐	☐	5. Have all applicable workers received refresher training within the past year?	
☐	☐	☐	6. Are all applicable workers in the medical monitoring program?	
☐	☐	☐	a. Are they current in their physicals?	
☐	☐	☐	7. Is there a charged fire extinguisher on-site?	
☐	☐	☐	8. Is there an eyewash on-site?	
☐	☐	☐	a. Solution not expired?	
☐	☐	☐	9. Is there a first aid kit on-site?	
☐	☐	☐	a. Adequately stocked?	
☐	☐	☐	b. Include bloodborne Pathogen equipment?	
The following questions should be evaluated each day:				
☐	☐	☐	10. Do visitors sign the visitor's log acknowledging that they understand:	
☐	☐	☐	a. General site information?	
☐	☐	☐	b. Operations?	
☐	☐	☐	c. Specific hazards?	
☐	☐	☐	d. Required safety procedures and requirements?	
☐	☐	☐	11. Is there at least one person on site at all times current in their first aid/CPR training?	

Y	N	N/A		Comments
☐	☐	☐	12. Are Tailgate Safety Meetings taking place?	
☐	☐	☐	a. Are names of attendees and subject matter documented?	
☐	☐	☐	13. Are all PPE identified in the HASP being worn by site workers?	
☐	☐	☐	14. Are ear plugs/muffs worn when noise makes conversation difficult at a distance of 2 feet?	
☐	☐	☐	15. Are gloves and protective clothing worn when there is a danger of chemical exposure?	
☐	☐	☐	16. Are appropriate air monitoring instruments being used?	
☐	☐	☐	a. Are air monitoring instruments properly calibrated?	
☐	☐	☐	17. Are approved respirators worn when needed?	
☐	☐	☐	a. Are the cartridges appropriate for the hazards at the site?	
☐	☐	☐	b. Are cartridges changed daily, unless specified otherwise in the SHSO?	
☐	☐	☐	18. Are compressed gas cylinders at the site?	
☐	☐	☐	a. If yes, are the caps kept on the cylinder when not in use?	
☐	☐	☐	b. Are compressed gas cylinders stored and transported in such a manner as to prevent it from being damaged?	
☐	☐	☐	19. Do employees who drive on company business have current operators licenses?	
☐	☐	☐	20. Do all employees wear their seat belts?	
☐	☐	☐	21. Are trucks and trailers secured from movement during loading and unloading operations?	
☐	☐	☐	22. Are Mactec vehicles (including rentals and personal vehicles) parked in a safe manner?	
☐	☐	☐	23. Are traffic cones set up if needed?	
☐	☐	☐	24. Is the drill rig parked in a safe manner?	
☐	☐	☐	a. Is there a minimum of 10 feet between power lines and the mast?	
☐	☐	☐	25. Is the location of electrical power lines and other utilities determined before digging or drilling?	
☐	☐	☐	26. Is there a wind indicator showing wind direction on-site?	
☐	☐	☐	27. Are exits in building/trailers kept free of obstruction?	

Y	N	N/A		Comments
☐	☐	☐	28. Are all work areas properly illuminated?	
☐	☐	☐	29. Are tools and equipment used by employees in good condition?	
☐	☐	☐	30. Are all ladders in good condition and secured when in use?	
☐	☐	☐	31. Are all electrically operated tools grounded?	
☐	☐	☐	32. Are exposed wiring and cords not frayed or deteriorated?	
☐	☐	☐	33. Do extension cords have a grounding conductor?	
☐	☐	☐	34. Is there a means to minimize heat or cold stress on-site?	
☐	☐	☐	35. Are breaks taken as required?	
☐	☐	☐	36. Are meals eaten only in areas free from toxic materials?	
☐	☐	☐	37. Are there confined spaces at the site?	
☐	☐	☐	a. If yes, will Mactec employees be entering the space?	
☐	☐	☐	b. Is a permit being used?	
☐	☐	☐	c. Is the permit completely filled out and approved prior to entry?	
☐	☐	☐	d. Are confined spaces thoroughly emptied of the hazardous substances prior to entry?	
☐	☐	☐	e. Is ventilation provided prior to entry?	
☐	☐	☐	f. Is air within the confined space tested for oxygen deficiency, explosive concentrations, and toxic substances in that order?	
☐	☐	☐	g. Is the air in the space tested frequently?	
☐	☐	☐	h. Is approved respiratory equipment required in the confined space if the air cannot be made acceptable?	
☐	☐	☐	i. Is there an assigned safety standby outside the confined space?	
☐	☐	☐	j. Is the safety standby trained and equipped to handle emergencies?	
☐	☐	☐	k. Is the entry being done in compliance with the Mactec Permit Required Confined Space Program?	

APPENDIX J

SPILL CONTAINMENT PLAN

APPENDIX J - SPILL CONTROL PROCEDURES

Intact Drums

Drums that are recovered from the excavation intact will be visually inspected for damage. If the drum is found to be in good condition with no obvious holes or deterioration, it will be placed into an 85-gallon salvage drum for off-Site disposal. Such drums will be maintained in a secure area, inside the salvage drum, until shipped off-Site for disposal. The drums will be opened and the contents evaluated and sampled. The state of the material (i.e. solid or liquid) in the drum will be noted and a representative sample collected for waste characterization. The drum will be resealed and the salvage drum will be sealed and marked. A unique number will be assigned to and marked on each salvage drum for later identification. Mactec will keep an inventory of all of the drums staged on-Site pending disposal. The inventory will cross reference the drum numbers, the material description and the sample numbers assigned to the samples.

Damaged Drums

Drums that are in poor condition (those that have had their integrity compromised by corrosion, physical damage or have otherwise leaked) will be removed from the excavations and placed directly into a roll-off box for off-Site disposal. Drums found in a damaged or deteriorated condition will be sampled along with the soil in the roll off box in accordance with the sampling procedures in Section 4.1.