

**FINAL**  
**SITE SAFETY AND HEALTH PLAN**

**Environmental Measurements Laboratory  
Department of Homeland Security  
201 Varick Street  
New York, New York**

DHS 2006-001

*Prepared For:*

U.S. Army Sustainment Command  
1 Rock Island Arsenal  
Building 350, 5<sup>th</sup> Floor  
Rock Island, IL 61299-6000

*Prepared by:*



**CABRERA SERVICES**  
RADIOLOGICAL · ENVIRONMENTAL · REMEDIATION

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October 2007

**SITE SAFETY AND HEALTH PLAN  
Final Status Survey  
Environmental Measurements Laboratory  
Department of Homeland Security  
201 Varick Street  
New York, New York**

**SITE SAFETY AND HEALTH PLAN APPROVALS**

By their specific signature, the undersigned certify that this Site Safety and Health Plan is approved for use during the Final Status Survey activities at the Environmental Measurements Laboratory – Department of Homeland Security, New York.

\_\_\_\_\_  
USASC Project Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
DHS EML Radiation Safety Officer

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Date

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DHS EML Safety Officer

\_\_\_\_\_  
Date

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**Final Status Survey**  
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**Department of Homeland Security,**  
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By their specific signature, the undersigned certify that this Site Safety and Health Plan is approved for use by Cabrera Services, Inc. (Cabrera) during the Final Status Survey activities at the Environmental Measurements Laboratory – Department of Homeland Security, New York, NY.

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Cabrera Services – Vice President

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Date

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Cabrera Services - Project Manager

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Date

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## LIST OF ACRONYMS AND ABBREVIATIONS

μR/hr	microRoentgen per hour
°C	Degrees Centigrade
°F	Degrees Fahrenheit
ACGIH	American Conference of Governmental Hygienists
BBP	Bloodborne Pathogen
BNL	Brookhaven National Laboratory
C-14	Carbon-14
CFR	Code of Federal Regulations
CHP	Certified Health Physicist
CIH	Certified Industrial Hygienist
cm <sup>2</sup>	square centimeter
CPM	Counts per minute
CPR	Cardio-Pulmonary Resuscitation
CRZ	Contamination Reduction Zone
Cs-137	Cesium-137
CSP	Certified Safety Professional
CZ	Contamination Zone
DAC	Derived Air Concentration
dBA	Decibels A-weighted scale
DCGL	Derived Concentration Guideline Level
DHS	Department of Homeland Security
DOE	Department of Energy
DOT	U.S. Department of Transportation
dpm/100cm <sup>2</sup>	disintegrations per minute per 100 centimeters squared
ECP	Exposure Control Plan
EML	Environmental Measurements Laboratory
FSS	Final Status Survey
GFCI	Ground Fault Circuit Interrupter
H-3	Hydrogen-3 (Tritium)
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
HSA	Historical Site Assessment
HVAC	Heating ,Ventilating, and Air Conditioning
IDW	Investigative Derived Waste

LSC	Liquid Scintillation Counting
m	meter
m <sup>2</sup>	square meters
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MeV	mega electron volts
Mrem/yr	millirem per year
MSDS	Material Safety Data Sheet
Ni-63	Nickel 63
NRC	U.S. Nuclear Regulatory Commission
NYCDOH	New York City Department of Health
NVLAP	National Voluntary Laboratory Accreditation Program
PAPR	Powered Air Purifying Respirator
PCB	Polychlorinated Biphenyl
PE	Professional Engineer
PM	Project Manager
PPE	Personal Protective Equipment
Pu-238	Plutonium 238
Pu-239	Plutonium 239
OSHA	U.S. Occupational Safety and Health Administration
Ra-226	Radium 226
RAM	radioactive materials
RCRA	Resource Conservation Recovery Act
RCZ	Radiation Control Zone
ROC	Radionuclides of Concern
RSO	Radiation Safety Officer
RSP	Radiation Safety Program
RWP	Radiation Work Permit
SHM	Safety and Health Manager
SOP	Standard Operating Procedure
Sr-90	Strontium 90
SRSO	Site Radiation Safety Officer
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SZ	Support Zone
Tc-99	Technetium 99
TCLP	Toxicity Characteristic Leaching Procedure
TLD	Thermo luminescent Dosimeter
TM	Technical Manager



U-235	Uranium 235
VP	Vice President
WAC	Waste Acceptance Criteria
WBG	Wet-Bulb Globe Temperature

## **1.0 INTRODUCTION**

### **1.1 Purpose and Objectives**

The purpose of this *Site Safety and Health Plan (SSHP)* is to establish general safety and radiation protection procedures for Cabrera Services, Inc. (CABRERA) personnel, contractors, and government personnel involved in site work at the Department of Homeland Security (DHS) Environmental Measurements Laboratory (EML, hereafter referred to as the “Site”). Work at the Site involves potential exposure to radiological, chemical, and physical hazards. . CABRERA is contracted through the U.S. Army Sustainment Command, located in Rock Island, IL.

This SSHP establishes the work practices necessary to help ensure the safety and health of personnel assigned to the Site, the local community, and the environment during Site activities. The objective of this SSHP is to anticipate, identify, evaluate, and control hazards that may be encountered during work at the Site. This document is a working document and is subject to change based on review and the implementation of additional tasks. Site activities will be performed in accordance with this SSHP, CABRERA’s Radiation Safety Program (RSP) (CABRERA 2000a), U. S. Nuclear Regulatory Commission (NRC), Occupational Safety and Health Administration (OSHA), other applicable local and federal statutes and other applicable health and safety regulations. CABRERA Standard Operating Procedures (SOPs) that are referenced within this SSHP are radiological procedures from CABRERA’s Radiation Safety Program (RSP). A copy of CABRERA’s NRC radioactive materials license is provided as Appendix B. Health and Safety requirements applicable to this project are addressed in CABRERA’s Health and Safety Manual. The levels of personal protection and procedures specified in this plan are based on the best information available from reference documents and current Site data. The recommendations represent the minimum health and safety requirements to be observed by personnel engaged in this project. Unforeseeable site conditions may warrant a reassessment of the recommended protection levels and controls. Revision to the SSHP must have prior approval by the CABRERA Corporate Safety and Health Manager (SHM) and Corporate Radiation Safety Officer (RSO).

### **1.2 Background Information**

The EML facility was formerly operated by the Department of Energy (DOE) as an environmental radiochemistry laboratory, and now falls under the Department of Homeland Security. Currently, no handling of unsealed radioactive sources occurs within the facility. Upon completion of unrestricted release of the facility, EML intends to retain possession of sealed radioactive sources under NRC licensure.

EML is located in a GSA Building located in lower Manhattan, NY at 201 Varick Street. EML occupies the entire fifth floor of the facility, and small areas in the first floor and basement.

### **1.3 Summary of Recent Investigations**

#### **1.3.1 Brookhaven National Laboratory 2004 and 2005 Surveys**

Several areas of radiological contamination are known to exist on the fifth floor of the site from historical surveys. In Lab 516, 15,000 dpm/100 cm<sup>2</sup> fixed beta-gamma contamination is

known to exist inside a cabinet. In Lab 518, 1560 dpm/100 cm<sup>2</sup> of fixed alpha contamination is known on bench tops. In Lab 526, 70,000 dpm/100 cm<sup>2</sup> of fixed beta-gamma and 6,000 dpm/100 cm<sup>2</sup> fixed alpha contamination, as well as 52 dpm/100<sup>2</sup> of removable alpha contamination, is known to exist in drawers, cabinets, and on floors, and bench tops (Brookhaven, 2005).

In the EML area of the building basement, Radium contamination is known to exist on the floor and walls. The removable contamination in this area was encapsulated by the Environmental & Waste Management Services Division of Brookhaven National Laboratory in June of 2004 (Brookhaven, 2004).

### **1.3.2 BNL Hazardous Material Survey**

In addition to the Radiological surveys noted in section 1.3.1, BNL also surveyed sink traps for mercury and building surfaces for lead dust. Details regarding the non-radiological contaminants can be found in Section 3.3.2.

## **1.4 Summary of Tasks to be Performed**

CABRERA's overall approach for this effort is to review previous findings and conduct site activities to characterize previously surveyed areas so that the EML can be prepared for the Final Status Survey that will lead to the release of the Building. The following is a brief summary of the activities to be conducted during these. Additional details of Site activities are provided in Section 3.1.

<u>Task</u>	<u>Initial Level of Protection</u>
• Mobilization and demobilization;	Level D
• Characterization survey;	Level D
• Remediation activities;	Modified Level D or Level C
• Decontamination of equipment;	Modified Level D or Level C
• Final Status Survey, and;	Level D or Modified Level D
• Management of investigation derived waste (IDW).	Modified Level D or Level C

All necessary precautions will be taken during performance of these activities to prevent cross contamination and dispersion of activity as well as to maintain health and safety of project personnel, laboratory personnel, and protection of the local community, and environment.

Following review and approval of the Final Status Survey Plan, a team of three radiation technicians, a site supervisor, and the Project Health Physicist will mobilize to the site to implement a characterization survey and limited decontamination of known impacted areas, as well as surveys of laboratory rooms believed to be releasable. The survey will be designed such that data collected will support release for unrestricted use for those areas with limited or no contamination. The survey will include direct measurements and sampling on elements of the floor drain system where applicable. For areas previously identified with removable contamination or for limited areas of fixed contamination, a limited decontamination effort (e.g., wipe down to remove removable contamination, limited scabbling of hard surfaces) will be undertaken to support decommissioning. These areas will be evaluated as Class I survey areas.

- Scabbling will be limited to a total area of 200 square feet and to a maximum of ½ inch deep.

### **1.5 General**

All operations and personnel having the potential for exposure to Site hazards are subject to the requirements of this *SSHP*. Work shall not be performed in a manner that conflicts with the intent of, or the inherent safety, health or environmental precautions expressed in this plan. Personnel violating health and safety procedures will be give verbal and/or written warnings. Continued violations will result in further disciplinary action by the individual's supervisor including dismissal from the site.

## **2.0 ORGANIZATION OF HEALTH AND SAFETY PERSONNEL**

### **2.1 Vice President**

The Vice President (VP), Mr. Len Johnson, is responsible for establishing and executing program administrative matters, program controls, program-related policy matters, and program levels of authority, responsibility, and communication. The VP is responsible for ensuring necessary project health and safety personnel have been assigned to the project team and that necessary health and safety documents, review and notification will be performed before the commencement of Site related activities.

### **2.2 Project Manager**

The Project Manager (PM), Mr. Greg Hisel, CHP, is responsible for evaluating the appropriateness and adequacy of the technical services provided for the project, and for developing the technical approaches and level of effort required to address each task. He is also responsible for the day-to-day conduct of work, including integration of input from supporting disciplines, EML, and subcontractors. He will work closely with the Project Technical Manager (TM) during implementation of the field program. Specific responsibilities of this role include:

- Initiating project activities.
- Directing project planning activities.
- Ensuring that qualified technical personnel are assigned to various tasks, including subcontractors.
- Identifying and fulfilling equipment and other resource requirements.
- Monitoring project activities to ensure compliance with established scopes, schedules, and budgets.
- Ensuring overall technical quality and consistency of project activities and deliverables.

### **2.3 Corporate Safety and Health Manager**

The SHM, Mr. Paul Schwartz, CIH, CSP, is responsible for the review and acceptance of all projects SSHPs. No project involving hazardous, toxic, or radioactive materials shall commence without his signed acceptance of the SSHP. Additionally, the SHM shall:

- Ensure that the SSHP complies with all Federal, State, and local health and safety requirements, modifying specific aspects of the SSHP as necessary to address field changes that may impact safety.
- Evaluate and authorize any changes to the SSHP.
- Implement and oversee CABRERA's corporate health and safety program.
- Ensure that the Site Safety and Health Officer (SSHO) is appropriately qualified and trained to implement the SSHP. Maintain communication with the SSSH to ensure proper implementation of the SSHP, and provide direction on any significant safety issues that arise in the field.
- Assist in the training of field personnel with respect to the identification and mitigation of site-specific hazards and the use of air monitoring instruments, personal

protective equipment (PPE), decontamination procedures, and emergency/spill response.

- Conduct periodic site health and safety inspections.

#### **2.4 Corporate Radiation Safety Officer**

The RSO, Mr. Hank Siegrist, CHP, PE, is responsible for the acceptance of the portion of this SSHP that addresses radioactive material and/or radiological contamination. Specifically, the RSO shall:

- Ensure that the SSHP complies with all Federal, State, and local requirements related to the handling and transportation of radioactive and/or radiologically contaminated materials.
- Implement and oversee CABRERA's RSP (CABRERA 2000a), which includes all issues involving licensed radioactive material.
- Ensure that the Site Radiation Safety Officer (SRSO) is appropriately qualified and trained to implement the portions of the SSHP related to radiation safety, and that communication is maintained with the SRSM to ensure proper implementation of the SSHP and provide direction on any significant radiation safety issues that arise in the field.
- Assist in the training of field personnel with respect to the identification and mitigation of site-specific radiation hazards and the use of radiation monitoring instruments, personal dosimetry, and contamination surveys.
- Conduct periodic site radiation safety inspections.

#### **2.5 Project Technical Manager**

The TM, Mr. Gregory Hisel, CHP, acts as the primary technical lead on the project. The TM is the project technical liaison to the VP and PM and serves as the SRSO for all field activities. The TM provides direct supervision of field staff ensuring that all personnel adhere to the requirements of this SSHP and oversees all data collection, manipulation, and reporting. The Site Safety and Health Officer (SSHO) will assume the duties of the TM in his absence. The TM shall have the following additional responsibilities:

- Assists the SHM in designing adequate implementation of the SSHP.
- Serve as onsite RSO.
- Coordinate with the PM and SHM in developing the SSHP for site-specific projects.
- Provide consultation to the PM on matters pertaining to radiation.
- Ensuring compliance with all applicable regulations concerning the handling and transportation of radioactive material.
- Provide radiation training to all onsite personnel who may be exposed to ionizing radiation.

#### **2.6 Site Safety and Health Officer**

The SSSH acts as the liaison between the TM and SHM. The SSSH will assume the duties of the TM in his absence and shall have the following additional responsibilities:

- Coordinate with the SHM and the TM for field implementation of the SSHP.

- Conduct the daily safety toolbox meeting.
- Providing consultation to the TM.
- Maintain communication with the SHM.
- Assisting TM in training of site personnel in the site-specific hazards, specifically in the areas of interpretation of air monitoring instruments/results, identification and remediation of hazards, personal protective equipment (PPE) levels, decontamination, and emergency/spill response.
- Conduct project health and safety inspections, as required.

### **2.7 Other Project Personnel**

Each site person is ultimately responsible for his or her own health and safety while working on this project, taking all reasonable precautions to prevent injury to themselves and to their fellow employees and being alert to potentially harmful situations are primary responsibilities. Site personnel shall be responsible for:

- Performing only tasks that they can do safely and in which they have been trained.
- Notify the SSHO of special medical conditions (i.e., allergies, contact lenses, etc.).
- Notify the SSHO of prescription and/or non-prescription medication the worker may be taking that might cause drowsiness, anxiety or other unfavorable affects.
- Preventing spillage and splashing of materials to the greatest extent possible.
- Practicing good housekeeping by keeping the work area neat, clean, and orderly.
- Immediately reporting all injuries to the SSHO.
- Complying with the SSHP and all health and safety recommendations and precautions, properly using the PPE as determined by this SSHP and/or the SSHO.

### **2.8 Contact Information**

Contact information for key CABRERA personnel is located in Appendix C.

### 3.0 HAZARD ASSESSMENT

Potential exposure to radiological contaminants is expected to be minimal. The protection required for hazardous material will often protect against radiological contaminants. All hazards will need to be evaluated prior to making a final determination of required levels of PPE. The hazards review should consider the level of contamination (hazardous and radiological), the environment in the work area, and the type of work being performed. The RSO, with concurrence of the SRSO and PM, will make final determination of radiological controls and levels of PPE prior to start of site preparation and survey activities. Since higher levels of PPE can create or increase the heat stress of site workers, the extent of protective clothing required should be limited to the minimum required to protect against potential hazards.

#### 3.1 Tasks to be Performed

- Task 1. Mobilization: This task will include setting up the administrative work areas; mobilizing equipment; staging project personnel; and familiarizing project personnel with the site, work, and the requirements of the work.
- Task 2 Perform Radiation Survey Measurements:

##### 3.1.1 Class 1

###### Floors, Lower Walls (< 2 meters [m]) and Fixtures

Perform a 100% beta scan survey of surfaces. Collect fixed-point measurements at systematic locations using a triangular grid pattern. Floor areas limited to 100 square meters (m<sup>2</sup>), where practical. Collect additional fixed-point measurements at biased locations using scan described in 3.10.1 or professional judgment.

###### Upper Walls (> 2m) and Ceilings

Perform a minimum 25% scan survey on walls above 2m and 10% scan survey on accessible ceiling surfaces. Collect fixed-point measurements at biased locations using professional judgment.

##### 3.1.2 Class 2

###### Floors, Lower Walls (< 2m and Fixtures

Perform a minimum 25% scan survey of surfaces. Collect fixed-point measurements at systematic locations using a triangular grid pattern. Floor area limit of 1,000 m<sup>2</sup> applied. Collect additional fixed-point measurements at biased locations using professional judgment.

###### Upper Walls and Ceilings

Perform a minimum 10% scan on walls above 2m and accessible ceiling surfaces. Collect fixed-point measurements at biased locations using scanning procedures described in Section 3.10.1 of the FSS Plan or professional judgment.

##### 3.1.3 Class 3

###### All Surfaces and Fixtures

Perform a minimum 10% scan survey of all surfaces. Collect fixed-point measurements at biased locations using professional judgment. No floor area size limit enforced.



- Task 3 Perform Liquid Scintillation Analysis (may be required during future tasks, but not during the initial phase of this project): Liquid Scintillation Counting (LSC) involves the use of a desktop instrument where the radiolabeled analyte is uniformly distributed in a liquid chemical medium capable of converting the kinetic energy of nuclear emissions into light energy. The chemical is often referred to as a “cocktail” and is not particularly hazardous. A material safety data sheet (MSDS) for this material is located in Appendix D.
- Task 4. Decontamination of Equipment: This task consists of the decontamination and survey of any equipment that may have been contaminated as a result of the radiological investigation activities.
- Task 5. Management of IDW: This task consists of handling and packaging of all bulk IDW that is generated beyond collected samples. Anticipated IDW includes, used PPE, consumable sampling equipment, and decontamination fluids. Solid and liquid wastes will be packaged into separate drums for onsite storage and future disposition. All drums will be sealed, appropriately labeled, and staged in an approved holding area until shipment.
- Task 6. Demobilization: This task will include removing all temporary equipment from the Site, staging IDW drums, and returning the site to its original condition.

### **3.2 Activity Hazard Analyses**

Appendix E addresses the principle steps, potential hazards, controls, equipment, inspection, and training requirements associated with each site-specific task. If surveys indicate actual radiological conditions are different than expected, then additional controls will be implemented. Inspection and training requirements are hereby included by reference from the CABRERA *Health and Safety Manual* (CABRERA 2005a). Health and safety equipment, such as monitoring instruments and PPE, are further discussed in Sections 4.5 and 8.0, respectively, of this *SSHP*.

### **3.3 Radiological and Chemical Hazards**

#### **3.3.1 Radiological Contaminants of Concern**

Operational radiological safety surveys have been performed routinely during the use of the facility for radiochemistry. A comprehensive survey of the analytical laboratories was performed by Brookhaven National Laboratories, report dated October 3, 2005. Common good laboratory practices were used to remove and dispose of contamination as it was generated or discovered. Based on the historical information available, the following is a list of radionuclides with any significant likelihood of remaining at the site. Radionuclides specifically denoted as being at the facility are listed. However, the potential exists for all other nuclides with Atomic Numbers up to 92 to have been historically present at the site in radioanalytic samples. Short half-life isotopes which are not likely to be present at the site in significant activity at the present time are not included in the list.

**Table 3-1. Radionuclides of Concern**

Nuclide	Name	Half-Life	Principal Emissions	Source of Radionuclide
Ni-63	Nickel-63	100.1 yr	0.067 mega electron volts (MeV) beta	Radioanalytic Sample
Ra-226	Radium-226	1600 yr	4.785 MeV alpha 0.168 MeV beta 0.186 MeV gamma	Radioanalytic Sample
Cs-137	Cesium-137	30.17 yr	0.511 MeV beta 0.662 MeV gamma (from Ba-137m)	Radioanalytic Sample
Sr-90	Strontium-90	28.6 yr	0.196 MeV beta 0.935 MeV beta (from Y-90)	Radioanalytic Sample
Tc-99	Technetium-99	21.3E4 yr	0.293 MeV beta	Radioanalytic Sample
Th-232	Thorium 232	1.4E10 yr	4.010 MeV alpha (most abundant)	Radioanalytic Sample
U-235	Uranium-235	7.04E8 yr	4.396 MeV alpha (most abundant) 0.014 MeV beta (most abundant) 0.186 MeV gamma (most abundant)	Radioanalytic Sample
U-238	Uranium-238	4.47E9 yr	4.196 MeV alpha (most abundant) 0.029 MeV beta (most abundant)	Radioanalytic Sample
Pu-238	Plutonium-238	87.75 yr	5.499 MeV alpha (most abundant) 0.021 MeV beta (most abundant)	Radioanalytic Sample
Pu-239	Plutonium-239	2.41E4 yr	5.155 MeV alpha (most abundant) 0.029 MeV beta (most abundant)	Radioanalytic Sample

### 3.3.2 Non- Radiological Contaminants of Concern

As noted in section 1.3.2, BNL conducted a hazardous materials survey of EML (BNL, September 2005). Using a mercury vapor detector, sink traps were surveyed for the presence of mercury vapor. Because many of the traps contained water, it was believed that mercury vapor may have been suppressed resulting in false positive readings. Mercury vapor was detected within some of the drains but apparently there was nothing detectable in normal breathing zone areas. Lead dust wipe samples were collected and detectable lead was found in a number of samples.

Asbestos containing materials are also present in the Laboratory Building in the form of floor tiles and mastic. A qualified asbestos abatement contractor must be available if the floor tiles and mastic have to be removed in a way that could cause asbestos fibers to become airborne.

Project personnel will be made aware of the presence of the aforementioned non-radiological hazards. Personnel conducting characterization activities are unlikely to be exposed to any of these hazards. In the event remediation activities could disturb building materials identified as containing these potential hazards, controls and/or personal protective equipment will be used to prevent exposure and minimize the generation of airborne contamination.

### 3.4 Physical Hazard Identification

Physical hazards are a primary safety concern during this project. These hazards include those associated with the use of operation and use of power tools and lifting/transport machinery, use of hand tools, general lifting, slips, trips, and falls.

### 3.4.1 Hand Tools

Only tools that are in good condition shall be used. Defective tools and improper use of tools contribute to accidents. The following safe practices shall be observed when using hand tools:

- Use tools in the manner for which they were designed;
- Be sure of footing before using any tool;
- Do not use tools that have split handles, mushroom heads, worn jaws, or other defects;
- Do not use makeshift tools or other improper tools; and
- Use spark proof tools where there are explosive vapors, gases, or residue.

### 3.5 Material Handling

Proper lifting techniques will be used such as keeping straight back, lifting with legs; personnel will avoid twisting back, will use mechanical equipment, or get help from others.

### 3.6 Electrical Hazards

All portable electrical equipment used on project sites must be double insulated or grounded and connected through a ground fault circuit interrupter (GFCI). Conductive materials must be kept clear of energized power lines. Isolate equipment from energy sources. The following distances must be observed:

**Table 3-2. Minimum Voltage-Safe Distances**

<b>Voltage</b>	<b>Distance</b>
0 to 50 kV	10 feet
51 to 200 kV	15 feet
201 to 300 kV	20 feet
301 to 500 kV	25 feet
501 to 750 kV	35 feet
751 to 1,000 kV	45 feet

kilovolts=kV

Lockout/tagout procedures must be utilized in areas where contact with live electrical equipment is possible. Treat all de-energized electrical equipment as if it were energized until lockout/tagout and ground procedures (where appropriate) have been implemented (see HSM-004, Cabrera Services, Lockout/Tagout, 2002).

### 3.7 Fall Hazards

All work will be conducted under 29 CFR 1926 Sub Part M Fall Protection requirements. Some work may require personnel to work over six feet. Personnel shall utilize 100% fall protection whenever they are six feet or more above the next lower level with an unprotected side or edge. Use of body belts, even for positioning, is strictly prohibited. Only full body harnesses will be utilized (see HSM-012, Cabrera Services, Fall Protection, 2001).

### ***3.7.1 Slips, Trips, Falls***

Work areas shall be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Good housekeeping must be maintained at all times and any scrap materials, debris, and field equipment must be placed in locations that do not pose a tripping or egress hazard.

### ***3.7.2 Elevated Work Platforms***

Only authorized, trained personnel will be permitted to operate an elevating work platform. The equipment shall be inspected prior to use and records of such inspections must be maintained on site. Any equipment found to be deficient from the manufacturer's specifications must be taken out of service until it can be brought into operable condition.

## **3.8 Ladders**

### ***3.8.1 Loads***

- Self-supporting (foldout) and non-self-supporting (leaning) portable ladders must be able to support at least four times the maximum intended load, except extra-heavy-duty metal or plastic ladders, which must be able to sustain 3.3 times the maximum intended load.

### ***3.8.2 Angle***

- Non-self-supporting ladders, which must lean against a wall or other support, are to be positioned at such an angle that the horizontal distance from the top support to the foot of the ladder is about 1/4 the working length of the ladder.
- In the case of job-made wooden ladders, that angle should equal about 1/8 the working length. This minimizes the strain of the load on ladder joints that may not be as strong as on commercially manufactured ladders.

### ***3.8.3 Rungs***

- Ladder rungs, cleats, or steps must be parallel, level, and uniformly spaced when the ladder is in position for use. Rungs must be spaced between 10 and 14 inches apart.
- For extension trestle ladders, the spacing must be 8-18 inches for the base, and 6-12 inches on the extension section.
- Rungs must be so shaped that an employee's foot cannot slide off, and must be skid-resistant.

### ***3.8.4 Slipping***

- Ladders are to be kept free of oil, grease, wet paint, and other slipping hazards.
- Wood ladders must not be coated with any opaque covering, except identification or warning labels on one face only of a side rail.

### **3.8.5 Other Requirements**

- Foldout or stepladders must have a metal spreader or locking device to hold the front and back sections in an open position when in use.
- When two or more ladders are used to reach a work area, they must be offset with a landing or platform between the ladders.
- The area around the top and bottom of ladder must be kept clear.
- Ladders must not be tied or fastened together to provide longer sections, unless they are specifically designed for such use.
- Never use a ladder for any purpose other than the one for which it was designed.

### **3.9 Confined Spaces**

A confined space is defined as a space large enough and so configured that an employee can bodily enter and perform assigned work, has limited means for entry and exit, and is not designed for human occupancy. Confined space work may pose hazards such as chemical exposures, flammable/explosive atmospheres, electrocution, oxygen deficiency, excessive heat, and other significant hazards created by the nature of the work space (i.e., entrapment). Only authorized, trained personnel shall participate in confined space entries. Supervisors, attendants, and entrants must have written documentation of training prior to performing permit-required confined space entries.

All confined spaces are initially considered permit required. Under certain conditions, a space may be reclassified as a non-permit space provided the SSHO approves the reclassification and the space meets the non-permit space criteria (see HSM-003, Cabrera Services, Confined Space Entry, 2003).

### **3.10 Use of Scabbler**

Only authorized personnel will be permitted to operate the scabbler. Operators must be familiar with the equipment and have read the manufacturer's operating instructions prior to use. The equipment must be inspected and determined to be in safe operating condition and equipped with required guards. The following operating guidelines must be followed:

- Eye and hearing protection must be worn at all times when the machine is in use
- Appropriate PPE includes steel toe safety shoes, padded gloves, non-fogging safety goggles or face shield, and full-face respirator if necessary (see Section 8.0)
- Maintain safe operating distance from other personnel

#### **3.10.1 Heat Stress**

Since work will be performed in an indoor environment heat stress is not likely to be a problem. However, depending on work activity and use of PPE, heat stress should be considered and addressed. In the event the SSHO determines heat stress to be of concern, a training session on the signs and symptoms of heat stress will be conducted. Workers will be encouraged to observe themselves and others for signs of heat stress. In addition, experience has shown that the following work/rest regimen (see Table below) is appropriate for field workers performing various degrees of work while wearing Level D (no protective clothing). Values are given in degrees Celsius (°C) Wet Bulb Globe Temperature (WBGT).

Heat stress is the combination of both environmental and physical work factors that contribute to the total heat load imposed on the body. Environmental factors that contribute to heat stress include air temperature, radiant heat exchange, air movement, and humidity.

The body's response to heat stress is reflected in the degree of symptoms. When the stress is excessive for the exposed individual, a feeling of discomfort or distress may result and a heat-related disorder may ensue. The severity of the response will depend not only on the magnitude of the prevailing stress, but also on the age, physical fitness, degree of acclimatization, and dehydration of the worker.

Heat stress is a general term used to describe one or more of the following heat-related disabilities and illnesses:

Heat Cramps - a condition characterized by painful, intermittent spasms of the voluntary muscles following hard physical work in a hot environment. Cramps usually occur after heavy sweating and often begin at the end of a work shift.

Heat Exhaustion - a condition characterized by profuse sweating, weakness, rapid pulse, dizziness, nausea, and headache. The skin is cool and sometimes pale and clammy with sweat. Body temperature is normal or subnormal. Nausea, vomiting, and unconsciousness may occur.

Heat Stroke - a condition in which sweating is diminished or absent. The skin is hot, dry, and flushed. Increased body temperature, if uncontrolled, may lead to delirium, convulsions, coma, and even death. **Medical attention is needed immediately.**

Resting frequently in a cool area and consuming large quantities of fresh, potable water can prevent heat stress. Dilute electrolytic beverages, such as Gatorade<sup>®</sup>, may be used as a secondary source of fluid replacement. If heat exhaustion symptoms are observed, the person will be required to rest in a shaded area and consume liquids. If symptoms are widespread or observed frequently, an appropriate work/rest period will be instituted. This will involve limiting the work/rest regimen so that after one minute of rest, a person's heart rate does not exceed 110 beats per minute.

If the heart rate is higher than 110 beats per minute after 1 minute of rest, the next work period will be shortened by 33%, while the length of the rest period stays the same. Resting heart rates will be established prior to the start of onsite activities when ambient temperatures exceed 70°F and workers are wearing impervious clothing or when temperatures exceed 85°F. A suggested work-rest regimen is outlined in Table 3-3, and definitions of the various categories of work demand are presented in Table 3-4.

If symptoms of heat stroke are observed, the victim will be cooled immediately and emergency medical services will be called. Workers will not hesitate to seek medical attention if heat stroke is suspected. One or more of the following additional mitigative measures may also be implemented:

- Provide a cool environment in the work vicinity.
- Use ice vests while in PPE to provide cooling to the worker.
- Reschedule work for cooler times of the day (night or early morning).

**Table 3-3: Screening Criteria for Heat Stress Exposure**

Work Demand	ACCLIMATIZED EMPLOYEES				NON-ACCLIMATIZED EMPLOYEES			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
100% Work	85.1°F 29.5°C	82.1°F 27.8°C	78.8°F 26°C	NO WORK	81.5°F 27.5°C	77°F 25°C	72.5°F 22.5°C	NO WORK
75% Work 25% Rest	86.9°F 30.5°C	83.3°F 28.5°C	81.5°F 27.5°C	NO WORK	84.2°F 29°C	79.7°F 26.5°C	76.1°F 24.5°C	NO WORK
50% Work 50% Rest	88.7°F 31.5°C	85.1°F 29.5°C	83.3°F 28.5°C	81.5°F 27.5°C	86°F 30°C	82.4°F 28°C	79.7°F 26.5°C	77°F 25°C
25% Work 75% Rest	90.5°F 32.5°C	87.8°F 31°C	86°F 30°C	85.1°F 29.5°C	87.8°F 31°C	84.2°F 29°C	82.4°F 28°C	79.7°F 26.5°C

WGBT values expressed in °F and °C

Source: American Conference of Governmental Industrial Hygienists (ACGIH 2000)

**Table 3-4: Work Demand Activities**

Categories	Example Activities
Resting	Sitting quietly
	Sitting with moderate arm movement
Light	Sitting with moderate arm movement
	Standing with light work at machine or bench while using arms
	Using table saw
Moderate	Standing with light or moderate work at machine or bench and some walking
	Scrubbing in a standing position
	Walking about with moderate lifting or pushing
Heavy	Walking on level at 6 Km/hr (3.7 m/hr) carrying 3 Kg (6.6 lbs.) weight load
	Carpenter sawing by hand
	Shoveling dry sand
	Heavy assembly work on a non-continuous basis
Very Heavy	Intermittent heavy lifting with pushing or pulling (e.g., pick and shovel work)
	Shoveling wet sand

(ACGIH 2000)

## **4.0 RADIATION SAFETY PROGRAM**

The CABRERA RSP (CABRERA 2000a) will be implemented to protect worker health and safety during remedial support activities. The RSO ensures that contamination control activities are effective, samples and areas are not cross-contaminated, workers and the environment are protected, and that activities comply with radiological procedures in the RSP. It also ensures that worker doses are maintained as low as reasonably achievable (ALARA) in accordance with CABRERA SOP *AP-005: ALARA* (CABRERA 2000b). This will require methods to identify and prevent the release of potentially contaminated items from radiologically controlled areas. Methods and programs used to protect the workers, Site visitors and the environment are discussed in the following sections.

### **4.1 Radiation Work Permits**

The Radiation Work Permit (RWP) serves as a tool in protecting workers from the radiation hazards per CABRERA SOP, AP-012, *Radiation Work Permits* (CABRERA 2000c). In this permit, the levels of PPE will be detailed per CABRERA SOP, AP-010, *Personal Protective Equipment* (CABRERA 2000d), as well as the levels of radioactive materials expected and other pertinent information.

### **4.2 Radiation Surveys and Monitoring**

#### **4.2.1 Survey Methods**

Contamination surveys, which include removable contamination (i.e., wipe) and total radioactivity (i.e., direct measurement) surveys on equipment and other potentially contaminated items originating from radiological control areas, will be performed per CABRERA SOP, OP-001, *Radiological Surveys* (CABRERA 2005b).

#### **4.2.2 Survey Documentation**

Original copies of field data, field records, analytical data, training records, and other project-specific documentation will be retained in the CABRERA East Hartford Office in accordance with CABRERA SOP, AP-001, *Record Retention* (CABRERA 2000e).

### **4.3 Applicable Regulatory Criteria and Release Limits**

Regulatory authority for release of the site has not yet been finalized as of the writing of this report.

The NRC screening values represent surface concentrations of individual radionuclides that would be deemed in compliance with the 25 millirem/year unrestricted release dose limit in 10 CFR 20.1402 (NRC, 2003b).

Personnel contamination limits listed in Table 4-1 will be implemented for FSS efforts.



**Table 4-1. Radioactive Material and Personnel Contamination Limits**

Agency / Reference	Alpha		Beta/Gamma	
	Total (dpm/100cm <sup>2</sup> )	Removable (dpm/100cm <sup>2</sup> )	Total (dpm/100cm <sup>2</sup> )	Removable (dpm/100cm <sup>2</sup> )
NYCDOH §175.03 - Release of Materials or Facilities	2,500 (Max) 500 (Avg) <sup>1</sup>	100	0.2 mR/hr <sup>2</sup>	1,000
Skin, Personal Clothing	20	ND <sup>3</sup>	0.1	ND <sup>3</sup>
NRC 10 CFR 20.1402	Total dose to the public after decommissioning of not more than 25 mrem/yr			

Notes: 1. Averaged over 1 m<sup>2</sup> 2. Measured at 1 cm from the surface 3. ND = Not Detected

#### 4.4 Decontamination

##### 4.4.1 Equipment Contamination Surveys

Contamination surveys will be accomplished using direct frisk and loose contamination (smear) survey methods. The direct frisking method is performed using calibrated and daily source checked instrumentation capable of detecting alpha and beta-gamma radiations. The loose contamination survey method employs a contamination collection smear that removes loose contamination over approximately 100 cm<sup>2</sup> surface area of potentially contaminated surfaces. The smear samples, in turn, are analyzed in a calibrated field laboratory instrument. Equipment contamination surveys will be performed in compliance with CABRERA, OP-001, Radiological Surveys, rev. 1.

##### 4.4.2 Contamination Controls

Contamination controls provided during sample collection activities will include physical barriers such as rope boundaries along with standard ingress/egress points. Equipment and tools potentially contaminated by sample collection activities will be controlled until release criteria have been met.

##### 4.4.3 Survey Forms

Survey forms will be used to record the results of fixed/loose contamination surveys associated with equipment and tools used during sample collection activities.

Completed survey forms will be forwarded to the SRPO or field supervision (PM, TM, or RSO) for data validation.

##### 4.4.4 Equipment Decontamination Protocols

Sample collection equipment will be decontaminated prior to deployment to minimize cross-contamination. Decontamination procedures can be found in CABRERA, OP-018, Decontamination of Equipment and Tools, rev. 0 and will meet the criteria presented in section 4.3.

#### ***4.4.5 Applicability of Surveys***

At a minimum, direct and loose surveys will be performed under the following conditions.

- All sampling equipment in an RCZ will be surveyed prior to leaving the site.
- All material brought into a RCZ will be surveyed prior to being removed from the zone or bagged and disposed of as Investigative Derived Waste (IDW).
- To ensure that samples sent to off-site laboratory do not have surface contamination in excess of allowable limits, sample containers will be surveyed prior to placement in containers for shipment to off-site laboratories, and the exterior of sample containers will be surveyed prior to shipment to off-site laboratories.

Additional surveys will be performed at the direction of the RSO.

### **4.5 Personal Monitoring**

#### ***4.5.1 External Radiation Dosimetry***

CABRERA will issue a TLD to each of the site personnel to provide a permanent record of the individual's occupational radiation exposure. These TLDs will be supplied and evaluated by an approved vendor participating in the National Voluntary Laboratory Accreditation Program (NVLAP). Personnel assigned to the project will be issued a TLD to be worn at all times on the project site, and shall immediately notify the SRSO in the event of misplacement or loss.

#### ***4.5.2 Internal Dose Monitoring***

The contamination levels are not expected to cause any internal dose that would necessitate internal dose assessment. Therefore, no internal dose monitoring is required.

#### ***4.5.3 Air Monitoring Plan***

Even though relatively low radioactivity are expected to be encountered during this effort, it will be the responsibility of the SRSO, in consultation with the RSO, to determine whether to implement air monitoring to measure and document airborne radioactivity in accordance with *CABRERA SOP OP-002: Air Sampling and Analysis*. Air monitoring will be performed in areas where there is a potential for airborne contaminants, including cutting, grinding, scabbling, and related activities. Personnel air sampling will be conducted to document the workers exposure, and perimeter air monitoring will be conducted to document ambient conditions during the evaluation process.

## **5.0 PROJECT SITE CONTROLS**

Survey and sample collection activities performed in radiological posted areas shall be performed using radiation work permits as per CABRERA SOP, AP-012, *Radiation Work Permits* (CABRERA 2000c). Posted radiologically controlled areas shall be controlled through the use of CZs, Contamination Reduction Zones, and Support Zones, as described below.

### **5.1 General Site Access**

General access to the Site is controlled through facility's on-site security.

### **5.2 Radiologically Controlled Areas**

Access to potentially radiologically controlled areas is controlled via EML's normal control of radiation areas. Access control of areas under investigation/decontamination will be controlled through the use of caution/radiological tape or rope.

#### **5.2.1 Contamination Zone**

A CZ shall be designated and delineated for areas that have the possibility of exposing contaminated material to personnel or the surrounding environment. As such, they may be considered potentially contaminated areas. Gross equipment decontamination area(s) shall require visible delineation and posting as a CZ.

#### **5.2.2 Contamination Reduction Zone**

Contamination Reduction Zones (CRZs) shall be established between CZs and any non-contaminated areas. Personnel and equipment that exit a CZ shall do so through the CRZ. Equipment decontamination may be performed in a CZ, but personnel and final equipment decontamination shall be located in the CRZ. The CRZ shall contain the equipment necessary for personnel decontamination, and may be equipped with designated "step-off areas" if decontamination procedures warrant. Site areas surrounding CZs shall be administered as CRZs.

#### **5.2.3 Radiologically Controlled Area Entry and Exit**

When exiting a CZ, personnel and equipment must pass through the CRZ. Potentially contaminated PPE shall be removed in the CRZ. Decontamination shall be performed prior to exiting the CRZ if contamination is detected above the limits in section 4.3.

### **5.3 Support Zones**

Support Zones (SZs) are uncontrolled "clean" areas throughout the Site. SZs encompass both the overall support infrastructure (i.e., Site office, restrooms, etc.) as well as smaller, task-specific SZs that may be established adjacent to CRZs. The latter may consist of break areas, equipment and PPE staging areas, and engineering control support centers. PPE shall not normally be required in exterior areas of a SZ.

If personnel are performing work in PPE in a CZ, a minimum of one person will be in the SZ at all times. This person will have access to communications with the TM and SSHO (e.g., cellular phone or two-way radio).

### **5.4 Site Postings**

Site postings shall delineate the project work areas, and at a minimum, the site control boundary shall be posted, *Caution Authorized Personnel Only*. Radiological postings shall be

in accordance with 10 CFR 20.1902 (NRC 2005b).

### **5.5 Asbestos Abatement**

All asbestos abatement work, including but not necessarily limited to elements described below, shall be performed by a licensed asbestos abatement subcontractor. The asbestos abatement contractor must conduct a site visit in order to be awarded a contract.

- submit all State and Federal permits;
- submit to CABRERA a work plan for approval prior to performing the work describing how the asbestos abatement work will be accomplished;
- submit to CABRERA prior to performing the work all training certificates and proof of medical clearances;
- submit all waste shipment manifests in accordance with applicable Federal, State, and local regulations. A final copy of the manifest documenting disposal shall be submitted to CABRERA; and
- submit to CABRERA all personal air sample analytical results at the completion of the project or a Negative Exposure Assessment for the work procedures used to complete the work (i.e. removal of asbestos-containing materials).

## **6.0 TRAINING**

This section contains a discussion of the training requirements for personnel performing work on this project.

### **6.1 Basic OSHA Training**

All field workers shall have 24- or 40-hour HAZWOPER training in accordance with 29 CFR 1910.120 (OSHA 2005a), and at least three days of documented field experience under the direct supervision of a trained experienced supervisor. Onsite management personnel (field supervisor) must have an additional 8 hours of specialized supervisory training. All workers must have an annual refresher (8 hours) if initial training is over 1 year old. Copies of training certificates should be readily available for review. Where there is potential exposure to contaminants with specific OSHA training requirement such as asbestos, lead, or arsenic, documentation of training shall be required.

### **6.2 Site-Specific Health and Safety Training**

Site-specific health and safety training, as required by applicable sections of 29 CFR 1910.120 and 1926.65 (OSHA 2005a), shall be completed prior to field activities for all project personnel and site visitors. The designated SSHO will review the SSHP, work plan, and other associated responsibilities with other field team members and afford them the opportunity to ask any questions. A record of this training will be maintained by the SSHO. The TM shall review the work plan with the project team and assign specific responsibilities, ensuring that all project personnel understand the importance of adhering to the health and safety requirements presented in this SSHP during project implementation. The form provided in Appendix A will be used to acknowledge receipt of this training and signed by all project field personnel.

### **6.3 Radiation Worker Training**

All field personnel assigned to this project must complete the CABRERA site-specific radiation worker training or equivalent as determined by the RSO and administered by the TM. A score of 80% must be achieved for successful completion of the course.

### **6.4 Hearing Conservation Training**

Powered equipment generally will produce sound levels greater than 85 DeciBels Adjusted (dBA). Hearing protection shall be required where exposure may occur for several hours during the day. For individuals with documented threshold shifts, use of hearing protection is mandatory whenever powered equipment or other devices are used which produce sound levels over 85 dBA.

### **6.5 Respiratory Protection Training**

In accordance with 29 CFR 1910.134 (OSHA 2005b), all Site personnel required to use respiratory protection devices shall receive equipment-specific training. This training covers the use, limitations, inspection, maintenance, and cleaning of respiratory protection devices required under this *SSHP*. Unless air monitoring results indicate the need for respiratory protection, it will not be required. Optional use of respiratory protection shall be at the discretion of the TM in consultation with the SHM/RSO. The SSHO shall ensure that all affected personnel are medically cleared, appropriately trained, and fit-tested to use a respirator.

## **6.6 First Aid and CPR Training**

At least one employee will be certified in First Aid and cardiopulmonary resuscitation (CPR). The training shall be equivalent to that provided by the American Red Cross. This individual will be onsite at all times during which project activities are in progress.

## **6.7 Blood Borne Pathogen Training**

Any person who has received first aid and/or CPR, and who may need to provide emergency service to an injured/unconscious co-worker shall have received awareness level training in controlling exposures to Blood Borne Pathogens (BBPs). This training shall consist of the following:

- Review of the (BBP) standards;
- Requirements of the Exposure Control Plan (ECP);
- Description of the risks of exposure and how BBP are transmitted;
- Methods of protection against exposure and procedures for decontamination; and
- Post-exposure procedures.

## **6.8 Hazard Communication**

This SSHP discusses the methods used to comply with the OSHA Hazard Communication Standard (HCS) 29 CFR 1910.1200 (OSHA 2005c). In order to comply with this CFR, the following shall apply to all commercial products containing hazardous substances brought onsite:

- Any hazardous materials brought onsite shall comply with the requirements of the CABRERA Hazard Communication Program (CABRERA 2002). This program shall be made available to all site personnel.
- All containers not supplied with adequate hazard labeling shall have a hazard communication label affixed to the container displaying the health and physical hazards of the material.
- Employees working with hazardous substances shall be trained in accordance with the requirements of 29 CFR 1910.1200.
- An inventory of all hazardous substances used onsite will be maintained.
- Personnel, including contractors, using hazardous substances shall be informed of the hazards and the location of appropriate MSDS.

## **6.9 Asbestos Awareness**

CABRERA employees will not be involved in any asbestos abatement activities. Asbestos abatement is the responsibility of a licensed asbestos abatement contractor. However, CABRERA employees must be aware of the hazards associated with asbestos exposure and procedures necessary to ensure their safety. An asbestos awareness training session will be required for any CABRERA employee who may have to work in proximity to asbestos abatement activities or may have to enter asbestos abatement controlled areas (no abatement activities will be permitted while CABRERA employees are performing radiation surveys in asbestos abatement area).



## **7.0 MEDICAL SURVEILLANCE**

The purpose of the medical surveillance program is to ensure suitable job placement of employees, to monitor potential health effects of hazards encountered in the work place, and to maintain and promote good health through preventative measures.

### **7.1 Medical Support Functions**

In compliance with 29 CFR 1910.120 (f) (OSHA 2005a), medical surveillance is required for all personnel who will be involved in Site activities. The TM or designee will ensure that project personnel are medically cleared for the anticipated duties. Documents that should be made available are the employee's most recent medical clearance and respirator clearance forms. The purpose of the medical surveillance program is to ensure suitable job placement of employees, to monitor potential health effects of hazards encountered in the work place, and to maintain and promote good health through preventative measures. All personnel assigned to work on the site, shall provide documentation to the SSHO demonstrating compliance with the medical surveillance requirements of 29 CFR 1910.120.



## **8.0 PERSONAL PROTECTIVE EQUIPMENT**

In accordance with 29 CFR 1910, Subpart I (OSHA 2005d) all PPE will be provided, used and maintained in a sanitary and reliable condition. All PPE will be of construction, design, and material to provide employees protection against known or anticipated hazards. PPE will be selected which properly and appropriately fits the employee. All personnel shall be provided with training on the selection, use, and limitations of PPE in accordance with the standard. Any concerns regarding the use of appropriate PPE will be brought to the attention of the SHM. The SSHO is responsible for ensuring that necessary PPE is available onsite.

All personnel performing operations onsite shall be required to use the appropriate level of protection. The SSHO will make the final determination for PPE levels based on encountered Site conditions and activities.

### **8.1 Construction Attire**

Construction attire shall be worn as directed by the SSHO at all times at this Site. Construction attire consists of:

- Coveralls or sleeved shirts (minimum 4-inch long) and long pants, unless otherwise directed by the SSHO.
- Safety boots with steel toes.
- Hardhat.
- Safety glasses with attached side shields.
- Leather work gloves.
- Hearing protection worn during equipment operations, if necessary.

### **8.2 Level D Protection**

Level D protection shall be required for all work activities within the controlled areas for chemical or radiological contamination. It is not anticipated that there will be any airborne contaminants, but to ensure that the level of protection is appropriate, air monitoring will be performed as directed by the RSO of SSHO to evaluate the need for upgrading PPE. Level D protection is as follows and may include modifications as deemed necessary by the SSHO:

- Construction Attire (see Section 8.1)
- Chemical-resistant coveralls such as Tyvek<sup>®</sup>.
- Outer nitrile gloves at a minimum for all hazardous or potentially hazardous material handling activities. Inner latex surgical gloves are recommended where practical.
- Rubber overboots or equal.

### **8.3 Level C Protection**

Level C protection shall be worn when activities are being performed that could generate airborne contamination or when air-monitoring results show levels that exceed those specified in Section 4.5.3. Level C protection consists of Level D attire with the addition of:

- Full-face powered air-purifying respirator (PAPR) equipped with high efficiency particulate air (HEPA) P-100 canisters or cartridges.

## **9.0 RADIOACTIVE WASTE MANAGEMENT PROGRAM**

### **9.1 General Waste Management**

Waste may be classified as non-investigative waste or investigation derived waste (IDW). Non-investigative waste, such as litter and household garbage, will be collected on an as-needed basis to maintain each site in a clean and orderly manner. Acceptable interim containers will be sealed boxes or plastic garbage bags.

### **9.2 Handling of Investigation Derived Waste**

#### ***9.2.1 Packaging of IDW Materials***

IDW will be properly containerized at the site. Depending on the constituents of concern special marking may be required. Acceptable containers will be sealed, U.S. Department of Transportation (DOT)-approved 7A-certified steel 55-gallon drums with lids. Other types of containers (e.g., B-25 boxes) may be necessary depending on the extent of remediation necessary. Each container will be properly labeled with site identification, matrix, constituents of concern, and other pertinent information for handling.

#### ***9.2.2 Waste Profiling***

The waste will be properly characterized in accordance with all applicable regulations and waste acceptance criteria (WAC) of the disposal facility.

Prior to shipment of material, waste characterization is required by the volume reduction/disposal facility for proper acceptance. If the characterization is known based on previously identified waste streams, then additional sampling may not be necessary. Waste characterization typically includes the following:

- Evaluate Radiological Characteristics
  - Isotopes
  - Activity Concentration
  - Weighted Average per Container
- Laboratory Certification Information
- Generator Signature

#### ***9.2.3 Material Loading and Off-Site Transport***

- Waste transportation and disposal are not included in this SSHP.

#### ***9.2.4 IDW Disposal***

- IDW transportation and disposal are not included in this SSHP.

#### ***9.2.5 Solid Radioactive Waste Estimate***

Not known at this time.

#### ***9.2.6 Liquid Radioactive Waste***

Not known at this time.

## **10.0 GENERAL SITE SAFETY PROCEDURES**

### **10.1 General**

Hazards due to normal site activities can be reduced by using common sense and by following safe practices. The following practices are expressly forbidden:

- Running and horseplay;
- Smoking, eating, drinking, applying cosmetics, or chewing gum or tobacco within any potentially contaminated area;
- Ignition of flammable materials in the work zone without the proper Hot-Work Permit. Equipment will be bonded, grounded, and explosion resistant, as appropriate; and
- Performance of tasks in the restricted area individually (i.e. working alone).

Hazard assessment is a continuous process; personnel must be aware of their surroundings and constantly aware of the chemical and physical hazards that are or may potentially be present. The number of personnel in the SZ or CZ shall be the minimum number necessary to perform work tasks in a safe and efficient manner. The use of the Buddy System is mandatory for CZ work. Team members will be familiar with the physical characteristics of each site including site access and the location of communication devices and safety equipment.

### **10.2 Sanitation**

Project sanitation needs shall be addressed by way of on-site toilets in the SZ. Fresh water shall be brought in for personnel consumption.

### **10.3 Buddy System**

All work activities shall be accomplished utilizing the buddy system. No one will be allowed to enter the work zones alone. Personnel shall keep in visual and/or radio contact with each other at all times.

### **10.4 First Aid**

A 16-unit first aid kit shall be maintained at the Site, along with an eye wash station capable of providing 15 minutes of eye flushing. All injuries shall be reported immediately to the SSHO. Any employee who becomes ill resulting from possible exposure to site hazards shall notify the SSHO or TM, who will make immediate arrangements for medical consultation.

### **10.5 Daily Safety Meetings**

The SSHO shall conduct daily safety meetings, with the assistance of the TM, to review the day's work plan, associated activities, and any anticipated hazards. Names and topics will be documented and maintained on file. This daily orientation shall be required for all individuals scheduled to work that day. Copies of daily safety tailgate forms will be made available to EML safety and project staff as requested. An example daily safety meeting form is contained in Appendix F.

## **11.0 EMERGENCY RESPONSE PROCEDURES AND EQUIPMENT**

The purpose of this section is to address potential emergency situations and to provide guidelines for emergency response procedures. If, during the performance of this project, the presence of potentially hazardous conditions is evident in a particular area, personnel shall leave the area and immediately notify the appropriate emergency response personnel.

### **11.1 Emergency Recognition and Prevention**

The types of potential emergencies that may occur on this project include:

- Physical injuries to site personnel such as sprains, broken bones, severe lacerations;
- Exposure to site contaminants or hazardous materials; and
- Electrical fires.

### **11.2 Emergency Equipment**

To facilitate timely emergency response, the following emergency equipment shall be available and maintained in a location known and accessible to all personnel onsite:

- 16-unit First Aid kit,
- Eye wash, and
- 2-way radios and/or cellular telephones.

### **11.3 Emergency Procedures**

All site personnel shall review the provided emergency notification numbers. Emergency plans and evacuation procedures shall be reviewed with all personnel prior to commencement of Site activities.

### **11.4 First Aid and Medical Treatment Procedures**

In the event of an emergency, personnel who have been trained and certified in First Aid may administer general onsite treatment. If medical treatment is required, the SSHO or other personnel familiar with the incident and site contaminants must accompany the victim to the hospital. General treatment procedures include:

- Remove the injured or exposed person(s) from immediate danger.
- Assess the nature and extent of the injury.
- Report any accident to the SSHO immediately.
- Render first aid and decontaminate affected personnel, if necessary.
- Call an ambulance for transport to local hospital immediately.
- Evacuate other personnel onsite to a safe place if necessary, until the SSHO determines that it is safe for work to resume.

### **11.5 Emergency Alert Procedures**

If conditions in or around the work area pose imminent danger during the performance of this project, personnel shall leave the area and immediately notify the appropriate emergency response personnel. Emergency response numbers are provided in Appendix C and shall be posted at each site telephone. All project personnel shall review the emergency notification numbers, as well as the emergency plans and evacuation procedures prior to commencement

of site activities. This list, along with a street map showing the routes to local hospitals and directions (Appendix C) shall be provided in the onsite copy of this *SSHP*.

## **12.0 RECORDKEEPING**

Each employee working onsite is responsible for providing the following record keeping information. These records will be maintained at the CABRERA East Hartford Office and become part of the project file.

- Signed Statement of SSHP Acknowledgment (See Appendix A for sample form).
- Personnel training certificates for:
  - 24-hr or 40-hr HAZWOPER training,
  - Current 8-hr HAZWOPER refresher,
  - CABRERA Radworker training,
  - First Aid/CPR training (if applicable), and
  - BBP Training (if applicable).
- Medical approval forms for site work and respirator clearance.

The following documents will also be incorporated into the project file:

- Accident Investigation Reports - In case of an accident or employee injury onsite, a written accident report will be completed and forwarded to the SSHO within 48 hours.
- Revisions to the SSHP - The SSHO, in consultation with the SHM, will document recommended changes to the SSHP. Revisions approved by the SHM and the VP will become part of the SSHP and will be distributed to all essential personnel.

### 13.0 REFERENCES

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## **APPENDIX A: STATEMENT OF ACKNOWLEDGEMENT**

## STATEMENT OF ACKNOWLEDGEMENT

### SITE SAFETY AND HEALTH PLAN for Environmental Measurements Laboratory 201 Varick Street New York, NY

1.0	INTRODUCTION.....	_____
2.0	ORGANIZATION OF HEALTH AND SAFETY PERSONNEL.....	_____
3.0	HAZARD ASSESSMENT.....	_____
4.0	RADIATION SAFETY PROGRAM.....	_____
5.0	PROJECT SITE CONTROLS.....	_____
6.0	TRAINING.....	_____
7.0	MEDICAL SURVEILLANCE.....	_____
8.0	PERSONAL PROTECTIVE EQUIPMENT.....	_____
9.0	RADIOACTIVE WASTE MANAGEMENT PROGRAM.....	_____
10.0	GENERAL SITE SAFETY PROCEDURES.....	_____
11.0	EMERGENCY RESPONSE PROCEDURES AND EQUIPMENT.....	_____
12.0	RECORDKEEPING.....	_____
13.0	REFERENCES.....	_____

I have read the "Site Safety and Health Plan for the "Environmental Measurements Laboratory Characterization and Final Status Survey" outlined above and understand the material presented.

PRINTED NAME: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

**APPENDIX B: COPIES OF APPLICABLE RADIOACTIVE  
MATERIALS LICENSES**

**Cabrera Services, Inc. NRC Decommissioning License**

**(Copy not included in Draft)**

## **APPENDIX C: EMERGENCY INFORMATION**

**Site Contacts and Emergency Telephone Numbers**

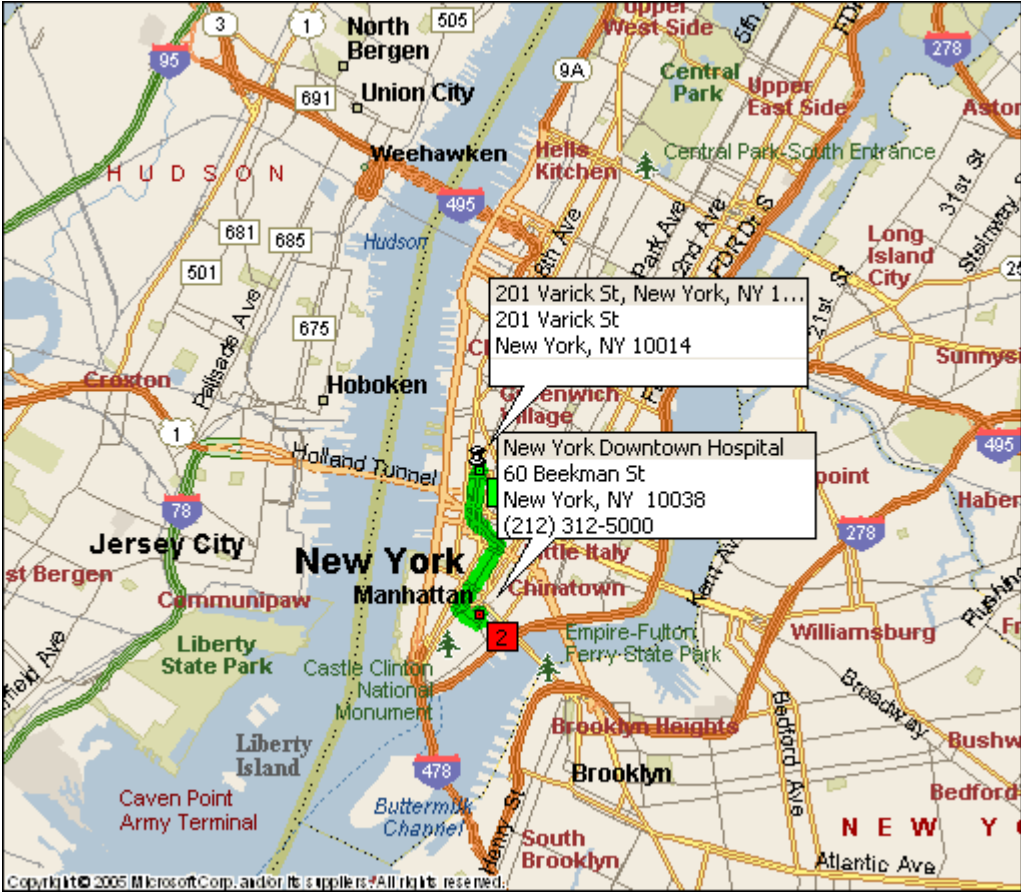
**Map and Route to Local Hospital**

**Directions to Local Hospital**

<b>SITE CONTACTS &amp; EMERGENCY TELEPHONE NUMBERS</b>			
<b>EML Local Emergency Assistance Services (Oncall 24-Hours a Day)</b>			
<b>EMERGENCY TYPE</b>	<b>AGENCY</b>	<b>EMERGENCY NUMBER</b>	<b>SECONDARY NUMBER</b>
Fire	Fire Department	911	-
Spill	Fire Department	911	-
Injury		911	
Security		911	
<b>CABRERA Personnel</b>			
<b>TITLE</b>	<b>NAME</b>	<b>OFFICE NUMBER</b>	<b>CELL NUMBER</b>
Vice President	Len Johnson	(860) 569-0095	
Project Manager	Greg Hisel, CHP	(845) 956-0095	(518) 755-7465
TM	Greg Hisel, CHP	(845) 956-0095	(914) 489-6128
Corporate RSO	Hank Siegrist, CHP	(860) 569-0095	(860) 416-0196
Corporate HSO	Paul Schwartz, CIH, CSP	(860) 569-0095	(860) 463-8595
SSHO	Michele Driscol		(973) 985-9525
Personnel with First Aid/CPR Training	Greg Bright	-	(781) 264-4445
	Michele Driscol	-	(973) 985-9525

MAP OF EML SITE IN RELATION TO NYU DOWNTOWN HOSPITAL

Figure 13-1



# DIRECTIONS FROM EML TO NYU DOWNTOWN HOSPITAL

Figure 13-2



	<b>Directions</b>	<b>Miles</b>
	Depart 201 Varick St, New York, NY	<b>0.4</b>
	Bear LEFT (South-East) onto Canal St	<b>0.3</b>
	Turn RIGHT (South-West) onto Broadway	<b>0.7</b>
	Turn LEFT (South-East) onto Ann St	<b>0.2</b>
	Turn LEFT (North-East) onto Gold St, then immediately turn LEFT (North-West) onto Beekman St	<b>0.1</b>
	Turn RIGHT (North) onto Local road(s)	<b>0.0</b>



## **APPENDIX D: CHEMICAL INFORMATION**

**TBD**

## **APPENDIX E: ACTIVITY HAZARD ANALYSES**

**Task: Mobilization/Demobilization**

Task	Hazards	Hazard Control
Mobilization, site preparations, establishing sample locations, demobilization.	<i>Physical Hazards:</i> Slip, trips, falls, tools, terrain, or vegetation; uneven walking surfaces.	The work area shall be visually inspected. Personnel shall enter muddy areas cautiously. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct initial walkovers in groups of two at a minimum.
	Inclement Weather, Heat/Cold Stress.	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids shall be available to workers. Work rest periods shall be established according to the ACGIH and the National Institute for Occupational Safety and Health (NIOSH) guidelines.
	Traffic.	Work areas shall be clearly barricaded and appropriate signs shall be displayed. Traffic shall be rerouted as necessary. Personnel working near roadways or directing traffic shall wear high visibility vests.
	Strains and sprains from manually lifting and moving.	Proper lifting techniques shall be used such as keeping back straight and lifting with legs. Personnel shall avoid twisting their back, shall use mechanical equipment, or get help from others. The work area shall be visually inspected.
	Fire.	Flammable liquids shall be stored in safety containers and flammable storage cabinets. Properly rated fire extinguishers shall be placed in onsite vehicles, within the contamination reduction zone, and within office trailer.
	Hands or fingers caught between objects; abrasions and lacerations.	Personnel shall be made aware of the hazard and asked to carefully coordinate the handling and placement of heavy objects. Materials and objects being handled shall be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact.
	Moving mechanical parts from heavy equipment operations.	Personnel shall wear work gloves and avoid placing hands between objects. Personnel shall be made aware of the hazard and shall coordinate carefully during handling equipment operations. Guards shall be kept in place during operation. A safe distance shall be maintained from moving mechanical parts.
	Hand tools, manual and power.	Tools shall be inspected prior to use. Damaged tools shall be tagged out-of-service until repair can be performed by a qualified person. Tools shall be used properly and for their intended purpose.
	Foot Injury.	Safety shoes/boots meeting ANSI specifications are required. Muddy areas must be entered with care as buried objects may pose tripping and/or puncture hazards.

**Task: Mobilization/Demobilization (continued)**

Task	Hazards	Hazard Control
Mobilization, site preparations, establishing sample locations, demobilization.	Housekeeping.	Materials shall be stored to prevent intrusion into the work areas. Work areas shall be kept organized and, if present ice, snow, and mud shall be cleared from steps to reduce slip hazards.
	Striking and being struck by operating equipment, loads, falling objects, and pinch points.	Workers shall stay out of the swing area of all equipment and from under loads. No personnel shall ride on the equipment unless seats are provided. Workers exposed to traffic hazards shall wear traffic/reflector vests.
	<i>Electric Hazards.</i>	Generators shall be grounded unless self-grounded. Extension cords shall be properly rated for intended use.
		Prior to any intrusive activity, authorities shall be contacted for permits.
		Elevated parts of machinery, ladders, and antennas shall be kept at least 10 ft from overhead electric lines.
	Qualified electricians shall make all electrical installations. A lockout/tagout program shall be implemented (CABRERA 2005a).	
	<i>Radiation Hazards.</i>	Personnel shall be briefed on area radiation levels. When required, personnel shall wear appropriate dosimetry; personnel and equipment shall be checked for contamination.
	<i>Chemical Hazards:</i> No chemical contaminants are anticipated.	No intrusive activities will be allowed during this activity; therefore, the risk level of exposure to site contaminants during this activity is low. Level D PPE shall be worn to prevent dermal contact
<i>Biological Hazards:</i> Poisonous plants, insects, snakes.	Personnel shall review recognition of poisonous plants, insects, or snakes typical of this area and use appropriate measures as required. Personnel shall adhere to CABRERA Blood Borne Pathogens Exposure Control Program (CABRERA 2005a).	

**Task: Perform Radiation Survey Measurements**

Task	Hazards	Hazard Control
Surveying the site with radiation detection equipment.	<i>Physical Hazards:</i> Slip, trips, falls, tools, terrain, or vegetation; uneven walking surfaces.	The work area shall be visually inspected. Personnel shall enter clean spills immediately. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct initial walkovers in groups of two at a minimum.
	Heat/Cold Stress.	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids shall be available to workers. Work rest periods shall be established according to the ACGIH and the NIOSH guidelines.
	Foot Injury.	Safety shoes/boots meeting ANSI specifications are required. Muddy areas must be entered with care as buried objects may pose tripping and/or puncture hazards.
	Housekeeping.	Materials shall be stored to prevent intrusion into the work areas. Work areas shall be kept organized and, if present ice, snow, and mud shall be cleared from steps to reduce slip hazards.
	Ergonomic injury.	Personnel shall use the backpack to distribute weight evenly. Personnel shall take breaks, as necessary. Personnel shall apply proper lifting techniques, or get help when lifting heavy equipment of supplies.
	<i>Radiological Hazards.</i>	Level D protection shall be required for all work activities within the controlled areas for radiological contamination. Airborne contaminants are not expected, but air monitoring shall be performed to evaluate the need for upgrading PPE. Level C protection shall be worn when air-monitoring results show levels that exceed 10% of Derived Air Concentration (DAC) for alpha and beta emitting radionuclides. The additional Level C protection shall include a full-face PAPR equipped with HEPA P-100 canisters or cartridges.
	<i>Chemical Hazards:</i> .	Personnel will be made aware of locations that contain asbestos, lead, or mercury and what measures must be taken to avoid disturbance of the material.

**Task: Collecting Samples from Interior Structures**

Task	Hazards	Hazard Control
Collection of surface and structural samples from the building.	<i>Physical Hazards:</i> Slip, trips, falls, tools, terrain, or vegetation; uneven walking surfaces.	The work area shall be visually inspected. Personnel shall enter clean spills immediately. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct initial walkovers in groups of two at a minimum.
	<i>Chemical Hazards—Possible lead in paint</i>	Metal surfaces may have been painted with lead-based paint. No cutting, sanding, or grinding of painted surfaces until determination of paint is made
	Heat/Cold Stress.	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids shall be available to workers. Work rest periods shall be established according to the ACGIH and the NIOSH guidelines.
	Traffic.	Work areas shall be clearly barricaded and appropriate signs shall be displayed. Personal traffic shall be rerouted as necessary and kept out of controlled areas. .
	Working at elevations	If it becomes necessary to sample or inspect areas above ground or floor level, fall protection must be employed anytime work is performed at elevations greater than six feet.
	Electric Hazards.	Generators will be grounded unless self-grounded. Extension cords will be properly rated for intended use. Qualified electricians will make all electrical installations. A lockout/tagout program will be used for equipment maintenance.
	Housekeeping.	Materials shall be stored to prevent intrusion into the work areas. Work areas shall be kept organized and, if present ice, snow, and mud shall be cleared from steps to reduce slip hazards.
	Strains and sprains from manually lifting and moving.	Proper lifting techniques will be used such as keeping straight back, lifting with legs; personnel will avoid twisting back, will use mechanical equipment, or get help from others
	<i>Radiological Hazards.</i>	Level D protection shall be required for all work activities within the controlled areas for radiological contamination. Airborne contaminants are not expected, but air monitoring shall be performed to evaluate the need for upgrading PPE. Level C protection shall be worn when air-monitoring results show levels that exceed those specified in Section 4.5.3. The additional Level C protection shall include a full-face PAPR equipped with HEPA P-100 canisters or cartridges.
Hands or fingers caught between objects; abrasions and lacerations. Puncture wounds from stepping on sharp objects	Personnel shall be made aware of the hazard and asked to coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects. Appropriate footwear shall be worn.	

Task	Hazards	Hazard Control
Scabbling Structural Members or metal plate surfaces	<b>Chemical Hazards</b> —Possible lead in paint	Metal surfaces may have been painted with lead-based paint. No cutting, sanding, or grinding of painted surfaces until determination of paint is made.
	<b>Physical Hazards</b> —Slip, trips, falls, tools, terrain, or vegetation; uneven walking surfaces; weather hazards, such as ice, snow, and poor visibility.	The work area shall be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained.
	<b>Radiation Hazards -</b>	Personnel trained in accordance to site radiation protection requirements.
	Working at elevations	If it becomes necessary to scabble areas above ground or floor level, fall protection must be employed anytime work is performed at elevations greater than six feet.
	Noise	Use of hearing protection by operators and personnel in the vicinity is required during this procedure. Sound levels from this operation will likely exceed 90 dBA in proximate locations of this operation..
	Inclement Weather, Heat/Cold Stress.	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids will be available to workers. Work rest periods will be established according to ACGIH and NIOSH guidelines.
	Electric Hazards.	Generators will be grounded unless self-grounded. Extension cords will be properly rated for intended use. Prior to any intrusive activity, authorities will be contacted for permits. Elevated parts of machinery, ladders, and antennas will be kept at least 10 ft from overhead electric lines. Qualified electricians will make all electrical installations. A lockout/tagout program will be used for equipment maintenance.
	Vibration	If excessive vibration occurs, use of work gloves designed to absorb vibration will be provided.
Housekeeping	Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized and ice, snow, and mud will be cleared from steps to reduce slip hazards.	

**Task: Decontamination of Equipment**

Task	Hazards	Hazard Control
Decontamination of materials and equipment.	<i>Physical Hazards:</i> Slip, trips, falls, tools, terrain, or vegetation; uneven walking surfaces.	The work area shall be visually inspected. Personnel shall enter muddy areas cautiously. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct initial walkovers in groups of two at a minimum.
	Inclement Weather, Heat/Cold Stress.	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids shall be available to workers. Work rest periods shall be established according to the ACGIH and the NIOSH guidelines.
	Moving mechanical parts from heavy equipment operations.	Personnel shall be made aware of the hazard and shall coordinate carefully during equipment handling operations. Guards shall be kept in place during operation. A safe distance shall be maintained from moving mechanical parts. Appropriate PPE shall be used.
	Strains and sprains from manually lifting and moving.	Proper lifting techniques shall be used such as keeping back straight and lifting with legs. Personnel shall avoid twisting their back, shall use mechanical equipment, or get help from others. The work area shall be visually inspected.
	Noise during the operation of heavy equipment.	A hearing conservation program (CABRERA 2005a) shall be established. High noise areas shall be identified. Hearing protection shall be provided as appropriate.
	Hands or fingers caught between objects; abrasions and lacerations.	Personnel shall be made aware of the hazard and shall carefully coordinate the handling and placement of heavy objects. Materials and objects being handled shall be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects.
	Pressure washing equipment.	Personnel shall be informed of the hazards associated with the operation of pressure washers, including: water under pressure and steam. Personnel shall wear appropriate PPE, including splash protection.
	Fire.	Flammable liquids shall be stored in safety containers. Propane cylinders shall be stored in secured areas outside. Properly rated fire extinguishers shall be placed near fuel storage areas, within site vehicles and the site trailer.
Housekeeping.	Materials shall be stored to prevent intrusion into the work areas. Work areas shall be kept organized and, if present ice, snow, and mud shall be cleared from steps to reduce slip hazards.	



**Task: Decontamination of Equipment (continued)**

Task	Hazards	Hazard Control
Decontamination of materials and equipment.	<i>Radiation Hazards:</i> Potential contact with, ingestion of, or inhalation of radioactive particulates during decontamination activities.	Scrubbing, power washing, or spraying off equipment may result in transfer of radioactive material onto workers' hands, or may generate airborne contamination. Workers shall wear personal monitoring dosimetry. Workers shall use methods that are least likely to disperse contamination and will wear PPE as necessary.
	<i>Chemical Hazards:</i> No chemical contaminants are anticipated.	No action necessary.

**Task: Management of IDW**

Task	Hazards	Hazard Control
Management of IDW.	<i>Physical Hazards:</i> Slip, trips, falls, tools, terrain, or vegetation; uneven walking surfaces.	The work area shall be visually inspected. Personnel shall enter muddy areas cautiously. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct initial walkovers in groups of two at a minimum.
	Inclement Weather, Heat/Cold Stress.	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids shall be available to workers. Work rest periods shall be established according to the ACGIH and the NIOSH guidelines.
	Moving mechanical parts from heavy equipment operations.	Personnel shall be made aware of the hazard and shall coordinate carefully during equipment handling operations. Guards shall be kept in place during operation. A safe distance shall be maintained from moving mechanical parts.
		Appropriate PPE shall be used.
	Strains and sprains from manually lifting and moving.	Proper lifting techniques shall be used such as keeping back straight and lifting with legs. Personnel shall avoid twisting their back, shall use mechanical equipment, or get help from others. The work area shall be visually inspected.
	Hands or fingers caught between objects; abrasions and lacerations.	Personnel shall be made aware of the hazard and shall carefully coordinate the handling and placement of heavy objects. Materials and objects being handled shall be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact.
		Personnel shall wear work gloves and avoid placing hands between objects.
	Housekeeping.	Materials shall be stored to prevent intrusion into the work areas. Work areas shall be kept organized and, if present ice, snow, and mud shall be cleared from steps to reduce slip hazards.
<i>Radiation Hazards:</i> Initial steps of the process involve the handling of exposed soil borings and decon water could present opportunity for direct exposure or transfer of contamination.	Initial PPE assigned for sampling activities will include coveralls, boot covers, gloves, and dosimetry. Sealed drums may be handled in construction attire with dosimetry. IDW drums will have liners installed prior to use. IDW containers leaving the CZ will be surveyed to ensure radiological contamination levels do not exceed those in Table 4-1.	
<i>Chemical Hazards:</i> No chemical contaminants are anticipated.	No action necessary.	

**APPENDIX F: DAILY SAFETY MEETING FORM**



Daily Safety Toolbox Meeting			
Project Name:		Project Number:	
Location:		Date/Time:	
General Scope of Work:			
Emergency Telephone Numbers			
Police:		Fire:	Ambulance:
Other (UXO, Facility, etc.):			
Name:		Phone #:	
Name:		Phone #:	
Name:		Phone #:	
Name:		Phone #:	
Day's Work Tasks			
Task 1:		Task 2:	
Task 3:		Task 4:	
Task 5:		Task 6:	
Training Requirements:			
Safety and Health Information			
Job Safety Analysis Completed for this Work?		Yes	No
RWP Permit:		Yes	No RWP # _____
Confined Space Permit:		Yes	No # _____
Radiation Hazards:			
Chemical Hazards (including marking tape, decon agents, etc.):			
Physical Hazards:			
Work Control Methods (JHA, Work Plan, monitoring, etc.):			
PPE:			
Special Equipment (Generators, ISOCS, Backhoes, etc.):			
Types of Communication:			
Special Topics:			

