Reference 12 –

Project Health and Safety Plan

MJW TECHNICAL SERVICES, INC.

Health and Safety Plan

For the

Western New York Nuclear Service Center

In Follow Up to

Aerial gamma Radiation Survey

Conducted in 2014

Prepared For

New York State Energy and Research Development Authority

West Valley Site Management Program

9030-B Route 219 | West Valley, NY 14171

Prepared By

MJW Technical Services

243 Root St #100, Olean, NY 14760

HEALTH AND SAFETY PLAN APPROVAL

This Health and Safety Plan (HASP) was prepared for employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the physical, radiological and chemical hazards known or suspected to be present at the field sampling and surveying locations.

The activities to be conducted within the scope of this project are not subject to radiological controls. Work will not be conducted in areas controlled for the purpose of radiation protection. The activity in the samples will be at environmental levels. Handling such samples in the absence of radiological controls is routinely conducted by numerous unlicensed contractors, including the contractor that performs environmental monitoring on the retained premises in support of Department of Energy activities. Attachment B, *Radiation Safety* to this HASP is solely for the purpose of maintaining exposure As Low As Reasonably Achievable (ALARA).

By signing below, I acknowledge that I have reviewed and hereby approve the Health and Safety Plan (HASP) for soil sampling and radiological survey at field locations defined in this plan. This HASP has been written for the exclusive use of MJW Technical Services, Inc. employees. The plan is written for specified site conditions, dates, and personnel, and must be amended if these conditions change.

Approved by:

Louis Henry
Project Manager (PM)

4-15-15
Date

Jack Gerber
Project Safety Officer

10/13/15

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1.0 INTRODUCTION

This Project Health and Safety Plan (HASP) provides a general description of the levels of personal protection and safe operating guidelines expected of each MJW Companies employee associated with field sampling and survey services being conducted with the Field Sampling and Dose Assessment Plan (FSDP) in five general areas off of the Western New York Nuclear Service Center (WNYNSC) property, one confirmatory area located on the WNYNSC, and background area on the Cattaraugus Territory of the Seneca Nation of Indians.. Within the selected areas, specific parcels have been identified to be surveyed because they exhibit elevated radiation levels as determined by an aerial gamma radiation survey. This HASP also identifies physical and radiological hazards known to be associated with the activities to be conducted.

This HASP will be revised as necessary to address any additional activities or changes in site conditions which may occur during field operations. Once generated, each revision will be reviewed/acknowledged by field personnel prior to the start of applicable work activities.

1.1 GENERAL

The provisions of this HASP are mandatory for all employees engaged in fieldwork associated with field sampling and radiological survey activities. A copy of this HASP shall be maintained in the company or personal vehicle whenever sampling or surveying is being performed. In the event of a conflict between this HASP, and federal, state, and local regulations, MJW Companies employees shall follow the most stringent/protective requirements.

1.2 POLICY STATEMENT

It is the policy of MJWTS to provide a safe and healthy work environment for all of its employees. MJWTS considers no phase of operations or administration of greater importance than injury and illness prevention. Safety takes precedence over expediency or shortcuts. Every accident and every injury is avoidable. MJWTS will take every reasonable step to reduce the possibility of injury, illness, or accident.

The practices and procedures presented in this HASP and any supplemental documents associated with this HASP are binding on all employees while engaged in the subject work. Operational changes to this HASP and revisions that could affect the health or safety of personnel will not be made without prior approval of the Project Manager (PM) and the MJWTS Vice President of Environmental, Safety, Health, and Quality Assurance who also acts as the project Safety Officer (SO).

1.3 REFERENCES

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

- Title 29, Part 1910 of the Code of Federal Regulations (29 CFR 1910), *Occupational Safety and Health Standards.*

The requirements in this HASP also conform to MJWTS' Corporate Safety Program requirements as specified in MJWTS-ESH-001, *MJWTS Environmental, Safety and Health Manual.*

2.0 SITE INFORMATION AND SCOPE OF WORK

The survey team will perform soil sampling and radiological surveys at offsite areas as detailed in the NYSERDA approved Field Sampling and Dose Assessment Plan (FSDP). Deviations or changes from the FSDP that may potentially impact safety require that the Project Manager (PM) and Project Safety Officer (SO) review the changes against this HASP to ensure adequate protection of personnel.

2.1 SURVEY LOCATION INFORMATION

The aerial radiation survey was used to select five areas off the Center property that were identified as having elevated (i.e., above background) Cs-137. Section 1, Project Objectives of the FSDP defines the areas for further evaluation.

2.2 SCOPE OF WORK

MJWTS will conduct field sampling activities, coordinate soil sample analysis, and prepare dose assessments in accordance with the NYSERDA approved FSDP to further evaluate the offsite areas identified as having elevated Cs-137 in the 2014 Aerial Radiation Survey Report. Field sampling will involve loading of sampling and survey equipment into a vehicle, driving to the sampling locations, unloading and preparing the sampling and survey equipment for use, collecting soil samples and performing radiation surveys, transit between locations (including walking and use of motor vehicles and all-terrain vehicles), handling and storage of equipment and samples in the Bulk Storage Warehouse (BSW), dismantling equipment and loading into the vehicle, travel back to the BSW and/or MJWTS office, unloading the equipment, and preparing and shipping the soil samples for radiochemical analysis.

3.0 PROJECT HEALTH AND SAFETY ORGANIZATION

3.1 PROJECT MANAGER – LOU HENRY

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

3.2 SAFETY OFFICER – JACK GERBER

The Vice President of Environmental, Safety, Health, and Quality functions as the Project Safety Officer (SO) and will oversee health and safety for the project and provide any needed technical support. The SO is the first point-of-contact for all of the project's health and safety matters. Duties include the following:

- Preparing and approving this HASP and any required changes.
- Functioning as the Site Safety Officer (SO).
- Investigating any reported unsafe acts or conditions.
- Documenting accident/incident investigations.

3.3 FIELD SUPERVISOR – JULIE BROWN

The Field supervisor has the overall responsibility and authority to direct field activities according to the FSDP. The PM may act as the Field supervisor while on site and may delegate field supervision duties to other MJWTS personnel if multiple field teams are deployed.

3.4 SAMPLING AND SURVEY TECHNICIANS

Sampling and Survey Technicians are responsible for following the FSDP and instructions from the Field Supervisor or designee.

4.0 SAFETY PROGRAM

4.1 HAZWOPER QUALIFICATIONS

This work is not being performed at known hazardous waste sites and HAZWOPER qualification is not required.

4.2 PROJECT-SPECIFIC SAFETY TRAINING

All MJWTS personnel performing field activities will be briefed on the requirements of the FSDP, QAPP, project specific procedures, field guides, and this HASP prior to performing work.

4.3 HAZARD COMMUNICATION

No hazardous chemicals will be used or are expected to be encountered while implementing the FSDP. Should hazardous chemicals or suspect materials be encountered while performing field activities, work shall cease, employees shall exit the area, and the PM and SO notified for further instruction.

4.4 GENERAL SAFETY RULES

All site personnel shall adhere to this HASP during field operations. In addition, the housekeeping and personal hygiene requirements listed below will also be observed.

4.4.1 Housekeeping

During field activities, work areas will be continuously evaluated to determine if excess trash and debris may impact worker safety. If appropriate, mitigation steps will be implemented, such as relocating work activities to avoid obstructions or moving unnecessary debris. Debris and trash generated by MJWTS operations will be removed from the field and disposed of appropriately.

4.4.2 Smoking, Eating, or Drinking

Smoking is not permitted while performing this work. Eating and drinking are permitted when not performing field sampling involving direct contact with radiological materials. Consumption of alcoholic beverages is prohibited at all times.

4.4.3 Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply: An adequate supply of potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles.

Toilet Facilities: Because this work will be performed at offsite locations, only public toilet facilities, (e.g., gas station, the WVDP site, etc.) will be available for use with the exception of the BSW where portable facilities may be provided

Washing Facilities: Because this work will be performed at offsite locations, employees will be provided with disposable hand washing wipes. Portable washing facilities may be provided at the BSW.

4.4.4 Buddy System, Accountability, and Communications

All field personnel will use the buddy system when collecting soil samples or performing radiation surveys. Under no circumstances will any employee be present alone in the field. The minimum team complement when working in remote areas is three persons. When working in remote areas, the team will check in by cell phone to a designated individual, at a minimum frequency of every two hours. Safety equipment will include at least two cell phones, two GPS tracking units, and spare/auxiliary batteries. GPS way points will be established, starting at the vehicle location, and if the team becomes lost, the GPS units will guide the team back to the car. The team will enter the field only during daylight conditions, and will return to the vehicles at least one half hour before dusk.

4.4.5 Heat and Cold Stress

Heat and cold stress are not anticipated during the scheduled period for field work. However, to reduce the potential of developing heat/cold stress, employees shall be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress.

Heat stress could be a field site hazard, particularly for non-acclimated personnel. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress.

4.4.6 Solar Protection

To protect against exposure to solar radiation, MJWTS employees will observe the following requirements:

- Sunglass-type safety glasses will be available for use when working outdoors during daylight hours.
- MJWTS employees will utilize a commercial sunblock with a minimum solar protection factor (SPF) of 15.

4.4.7 Fall and Drowning Safety

The team will avoid walking near the edges of ridges and cliffs at all times. The team will not cross over streams wider than 24 inches.

When conducting automated GPS data acquisition, a member of the team will act as the safety person to the person operating the survey system. This team member will be watchful and warn the equipment operator about potential fall and slip hazards, as well as other physical hazards.

4.4.8 Severe Weather Safety

Weather conditions will be determined and verified periodically during field operations to evaluate the potential for severe weather, such as thunderstorms and lightning. Field operations will be terminated and employees will seek the nearest available shelter (typically vehicles) if severe weather approaches or occurs. Employees will not take shelter from lighting under trees or other tall features. Weather should be monitored more closely, when the team is relatively far from shelter. In the event of lightning, operations will be suspended for at least one hour after, or field operations will cease for the day, if additional lightning is expected. The team will not operate in low lying areas, when flash flood warnings are in effect.

4.4.9 Hunting Safety

The team will wear brightly colored vests if/when operating in areas where game hunting (bow, rifle, or shotgun) is in progress.

4.4.10 Radiation Safety

Radiation Safety for this project will be addressed though implementation of the Attachment B, Radiation Safety.

4.4.11 Stop Work Authority

All MJWTS employees have the right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions. Whenever the SO determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Should the supervisor be unable or unwilling to correct the unsafe conditions, the SO is authorized and required to stop work, which shall be immediately binding on all affected employees.

Upon issuing the stop work order, the SO shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the SO has concurred that workplace.

5.0 HAZARD ASSESSMENT

5.1 JOB HAZARD ANALYSIS (JSA)

Job Safety Analysis (JSA) is a technique used to identify hazards and hazard controls associated with a specific job function. JSAs focus on the relationship between the employees, the task, the resources required to complete the task, and the work environment. These variables must be evaluated to identify the potential hazards associated with the task. Once identified, steps can be taken to eliminate, reduce, or control the hazards to an acceptable risk level.

Attachment A provides the JSA for this scope of work.

5.1.1 Unanticipated Work Activities/Conditions

Operations in the field may require additional tasks not identified in Attachment A. Before performing any task not covered in this HASP, the JSA shall be reviewed, revised if necessary, and approved by the PM and SO.

5.2 ENVIRONMENTAL CONTAMINANT EXPOSURE HAZARDS

No chemical contaminants are expected to be encountered when implementing the FSDP. As noted above, if actual or suspect chemical contaminants are encountered, employees shall exit the area, notify the PM and SO, and not resume work until instructed to do so by the PM and SO.

5.3 PHYSICAL HAZARDS

The primary physical hazards associated with this work include potential accidents when driving motor vehicles and the ATV, slips, trips, and falls, heavy/awkward equipment and sample lifting, soil sampling (digging and operation of the 2" soil sampler), potential heat/cold stress, drowning, hunters in the vicinity, becoming lost, severe weather such as thunderstorms/lightning, contact with sharp objects, e.g., nails, contact with domestic and wild animals, interaction with public, and dehydration.

5.3.1 Operation of the 2" Soil Sampler

General Handling and Use Precautions

- The sampler should generally be handled using two hands, with caution, since the hammer can slide up and down on the shaft.
- The sampler is heavy and should be lifted carefully
- The cutting edge of the sample head is sharp and caution should be exercised to avoid cuts, and to avoid dropping the sample head when it is handled detached from the tool.
- When the tool is in operation all threaded connections should be snug. When threading the cylinder onto the cap wear gloves and be careful not to pinch skin in the threads

Operation of the Tool during Sample Collection

- The sampler should be operated by a single individual and all other personnel must stand clear during operation.
- Align the tool carefully and in contact with the ground, and ensure all hands and areas of the body are clear of strike path of the hammer before using the hammer to drive the tool downward.
- When driving the tool upwards the head and other body areas must be in a position to avoid being struck when the hammer is operated to ensure that the sampler will not strike the body if it suddenly dislodges and rises
- Use only the minimum force required when operating the hammer.

Removing Soil Plugs From the Sample Head and Cutting

- Disconnect the sample head from the extension/rod before removing soil plug
- If sample liner was used, gently slide the liner out of the sample head
- Push the soil plug out of the sample head or liner using a push rod or tool onto a level flat surface.
- If the soil plug is to be cut into sections (e.g. into 2" long sections) carefully use a putty knife or similar to carefully cut the sections. Do not use a folding knife of any kind.

5.4 BIOLOGICAL HAZARDS

Contact with animals, insects, and plants can cause injury and illness to personnel. Care must be taken to ensure that these types of injuries are avoided. Some examples of biological hazards include:

- Wild animals, such as snakes, raccoons, squirrels, and rats. These animals not only can bite and scratch, but can carry transmittable diseases (e.g., rabies). Avoid the animals whenever possible. If bitten, notify the Field Supervisor and go to Bertrand Chaffee Hospital in Springville for evaluation and treatment or other nearest medical facility.. The Field Supervisor shall notify the PM and SO.
- Insects such as mosquitoes, ticks, bees, and wasps. Mosquitoes can potentially carry and transmit the West Nile Virus or Eastern Equine Encephalitis (EEE). Ticks can transmit Lyme disease or Rocky Mountain Spotted Fever. Bees and wasps can sting by injecting a toxin or venom, which causes some individuals to experience anaphylactic shock (an extreme allergic reaction). Whenever you will enter areas that provide a habitat for insects (e.g., grass areas, woods), wear light-colored clothing, long pants and shirt, and spray exposed skin areas with a DEET-containing repellent. Keep away from high grass wherever possible. Keep your eyes and ears open for bee and wasp nests. If bitten by insects, see a doctor if there is any question of an allergic reaction.

Plants such as giant hog weed, poison ivy and poison oak can cause severe rashes on exposed skin. Be careful where you walk, wear long pants, and minimize touching exposed skin with your hands after walking through thickly vegetated areas until after you have thoroughly washed your hands with soap and water.

5.5 RADIOLOGICAL HAZARDS

The activities to be conducted within the scope of this project are not subject to radiological controls. Work will not be conducted in areas controlled for the purpose of radiation protection. The activity in the samples will be at environmental levels. Handling such samples in the absence of radiological controls is routinely conducted by numerous unlicensed contractors, including the contractor that performs environmental monitoring on the retained premises in support of Department of Energy activities. Attachment B to this HASP is solely for the purpose of maintaining exposure As Low As Reasonably Achievable (ALARA).

6.0 PERSONAL SAFETY

6.1 PERSONAL PROTECTIVE AND OTHER SAFETY EQUIPMENT

The purpose of personal protective equipment (PPE) is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. MJWT-ESH-001 lists the general requirements for selection and usage of PPE. Table 6-1 lists the minimum PPE required during field operations and additional PPE that may be necessary. The specific PPE requirements for each work task are specified in Attachment A.

By signing this HASP, you are agreeing that you have been properly trained in the use, limitations, care and maintenance of the protective equipment you will use at this project. If you have not received training on the proper use, care and limitations of the PPE required for this project, please see the PM/SO for the proper training prior to signing this HASP.

Table 6-1. Personal Protective Equipment

TYPE	MATERIAL	ADDITIONAL INFORMATION
Minimum PPE:		
Safety Vest	High-visibility	Must have reflective tape and be visible from all sides
Boots		Sturdy work shoe
Safety shoes/boots or toe toes/covers		When operating the 2" sampler
Safety Glasses		ANSI Approved
Hard Hat		ANSI Approved (high visibility preferred)
Clothing		Long pants
Work gloves		Leather or other material which minimizes potential for cuts Note – not required when not performing physical work, e.g., recording information
Cold Weather Gear	Hard Hat liner, hand warmers, and insulated gloves	
Hearing protection		When operating the 2" soil sampler.

6.2 Other Safety Equipment

Other safety equipment and supplies will include as appropriate:

- Emergency (space) blankets
- Emergency Rations and water
- Rain Gear (if rain expected)
- GPS Tracker (two)
- First Aid Kit
- Signal Whistles (one per person team)
- Cell phones (two per team)
- Spare/auxiliary batteries for cell phones and flashlights
- Flashlights (one per person)
- Personal strobes (one per person)
- Backpack or other sample transport device

7.0 EMERGENCY RESPONSE PLANNING

7.1 EMERGENCY ACTION PLAN

Although the potential for an emergency to occur is remote, an emergency action plan has been prepared for this project should such critical situations arise. The only significant type of emergency that may occur is physical injury or illness. The emergency action plan will be reviewed by all personnel prior to the start of field activities.

7.1.1 Emergency Response Coordinator

Lou Henry will function as the Emergency Response Coordinator (ERC) with Jack Gerber as his alternate.

7.1.2 Site-Specific Emergency Procedures

Table 7-1 provides a summary of potential emergencies, expected responses, and the muster location (assembly location).

Table 7-1. Emergency Planning

Emergency	Response	Muster Location
Vehicle accident	Do not move seriously injured. Call 911 and wait for emergency responders. Provide 1st aid (if trained) while waiting.	Stay in nearest, safe location.
Struck by vehicle or other large object	Same as above	Same as above.
Slip/Trip/Fall	If non-life threatening, immobilize and get assistance in returning to vehicle for transport to nearest medical facility for evaluation and treatment. If life-threatening, call 911 and wait for emergency responders. Provide 1st aid (if trained) while waiting.	
Animal/insect bite	If non-life threatening, go to nearest medical facility for evaluation and treatment. If life-threatening, call 911 and wait for emergency responders. Provide 1st aid (if trained) while waiting.	Vehicle

Emergency	Response	Muster Location
Poisonous plant exposure reaction	If non-life threatening, go to nearest medical facility for evaluation and treatment. If life-threatening, call 911 and wait for emergency responders. Provide 1st aid (if trained) while waiting	Vehicle
Lost or missing personnel	Don't separate from team members, attempt to use alternate GPS' to determine location; stay in one place; try using mobile phones to call for help; use signal whistles; if building is visible, go to building to seek assistance	Vehicle
Additional Information		
Communication Procedures	Mobile phones	

7.1.3 Accident/Incident Reporting

All accidents and incidents that occur on-site during any field activity will be promptly reported to the Field Supervisor, PM, and SO. Table 7-2 provides the names and numbers for all emergency contacts.

If any employee is injured and requires medical treatment, the SO will initiate a written accident/incident report.

Table 7-2. Emergency Contacts

Emergency Coordinators / Key Personnel			
Name	**Title**	**Office Number**	**Cellular Phone**
Lou Henry	Emergency Response Coordinator (ERC)	(716) 631-8291	(716) 913-4780
Jack Gerber	Safety Officer /Alternate (ERC)	(716) 372-5300	(716) 485-3225
Julie Brown	Field Supervisor	(716) 631-8291	(716) 479-3340
Organization / Agency			
Name			**Telephone Number**
Police Department			911
Fire Department			911
State Police			911

Ambulance Service *(EMT will determine appropriate hospital for treatment)*	911
Bertand Chaffee Hospital *(Use by site personnel is only for non-emergency cases)* ***224 East Main Street*** ***Springville, NY 14141***	(716)592-2871

PERSONNEL ACKNOWLEDGEMENT

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

Printed Name	Signature	Date

Attachment A – Project Specific Job Safety Analysis (JSA)

Job Safety Analysis – Environmental Sampling and Surveying		
Work Step	**Hazard**	**Control**
1. Stage sampling and surveying equipment	• Potential heavy lifting	• Proper lifting techniques • Supplemental lifting and/or carrying device, e.g., backpack, wagon, etc. and/or assistance
2. Travel to sampling/surveying location (motor vehicle and ATV)	• Vehicle issues • Traffic • Off-road/field conditions	• Full vehicle inspection, check fuel and fluids before use • Obey traffic rules • Training on safe operation of the ATV
3. Loading and Unloading and preparing sampling/surveying equipment for field use	• Potential heavy lifting • Potential to be struck by motor vehicle	• High Visibility vests and traffic cones Proper lifting techniques • Supplemental lifting assistance
4. Travel to specific sampling/surveying locations (foot)	• Uneven terrain • Potential poisonous plants • Potential for ticks and other biting/stinging insects • Low hanging branches • Hit by other vehicles	• Sturdy work shoes with appropriate treads • Long pants • Insect repellant • Work gloves • Hardhat and safety glasses • Buddy system • Safety vest

5. Obtain soil samples (digging/sampling equipment operation)	• Potential for hand and foot injuries
	• Potential for head/facial , injuries (2" sampler)
	• Potential for hearing damage (2" sampler)
	• Potential for interaction with domestic and/or wild animals, e.g., deer, bear, etc.
		• Sturdy work shoes
		• Safety glasses
		• Work gloves
		• Hard hat
		• Additionally, when operating the 2" Soil Sampler:
		  • Safety shoes, boots, or safety toes
		  • Hearing protection
		• Avoid contact with animals

6. Perform survey	Same as steps 4 and 5	Same as steps 4 and 5 (buddy watches person performing survey for hazards)
7. Travel to next sampling/surveying location (foot)	Same as step 4	Same as step 4
8. Complete sampling/surveying and return to vehicle	Same as steps 4 and 5	Same as steps 4 and 5
9. Load sampling/surveying	Same as step 1	Same as step 1

Job Safety Analysis – Environmental Sampling and Surveying		
Work Step	**Hazard**	**Control**
equipment in vehicle		
10. Return to office or BSW	Same as step 2	Same as step 2
11. Unload sampling/surveying equipment	Same as step 1	Same as step 1
12. Prepare soil samples for shipment to laboratory (bag, label, chain-of-custody, etc.)	Same as step 1	Same as step 1

Attachment B – Radiation Safety

Project Health and Safety Plan

Radiation Safety

Introduction

This Radiation Safety Attachment to the Project Health and Safety Plan addresses potential radiological hazards and radiological protection measures associated with the NYSERDA Project radiation survey and sample collection operations. The project will include walk over gamma radiation surveys, and the collection of environmental samples. Project activities will not be conducted in areas for which access is controlled for the purpose of radiation protection. (e.g. controlled areas)

Roles and Responsibilities

Project Radiation Safety Officer and CHP (RSO/CHP) (James Griffin) – the Project RSO/CHP bears overall responsibility for the radiological safety of all staff and the radiological protection of the environment.

Field Supervisor (Julie Brown) – in addition to her duties as otherwise specified in the HASP, the Field Supervisor bears day to day responsibility for ensuring that appropriate radiation monitoring and protection actions are taken in the field

Radiation Safety Equipment

The project radiation survey equipment utilized to conduct surveys will also serve to monitor for the purpose of radiation protection. This will include:

- Ludlum Scaler Rate Meter with 2" x 2" Nal detector
- Bicron Micro Rem meter

In addition a Ludlum Ratemeter with pancake GM probe will be available within the team vehicle.

Dosimetry

When working in non-controlled areas radiation dosimeters are not required

Applicable Radiation Protection Protocols

When working within the boundaries of the Retained Premises MJWTS and any applicable NYSERDA protocols and requirements as identified by NYSERDA will co-apply and the most restrictive requirements will govern. Absent NYSERDA requirements MJWTS protocols will apply.

Potential Radiological Hazards

Radiological hazards within licensed and controlled areas are well understood and addressed by site procedures and requirements.

Potential radiological hazards in unrestricted areas originate from low levels of natural and anthropogenic radioactivity in the ground and within the samples. It is not anticipated that any sample, or the samples in aggregate will constitute a licensed quantity of radioactive material. Radiation exposure may result from:

- Direct exposure from proximity to the environment and samples
- Dusts associated with the extraction or handling of samples
- Surface contamination resulting from the extraction or handling of samples

The following assumptions apply:

- It is not anticipated that removable or fixed surface contamination in excess of regulatory free-release levels will be encountered.
- It is not anticipated that airborne dusts in concentrations greater than 5% of Derived Air Concentrations on a time weighted basis will be encountered.
- It is not anticipated that the intake of elemental uranium in excess of NRC requirements can occur if rudimentary hygiene controls are implemented.

The follow mitigation steps will be taken to reduce exposures consistent with the ALARA Principle:

- Radiation readings will be taken before commencing the collection of a sample using the microRem meter or the 2"x2" Nal detector
- Gloves will be worn during sample excavation and handling actions
- The generation of soil dusts will be reduced as appropriate by lightly wetting sample holes with water from a spray bottle.
- Eating drinking and smoking are not allowed during sample excavation and handling activities
- Hands will be cleaned with disposable wipes, or washed after handling samples
- In the aggregate, samples will be stored in locations not continuously occupied.
- While conducting radiation survey operations any radiation levels inconsistent with background and minor soil contamination will be reported to the Project Manager/RSO. This would include
    - Greater than 100 micro Rem per hour
    - Greater than 200 KCPM with the 2"x2" Na I detector.
- If these levels are encountered work will immediately be stopped in the affected area. The source of activity will be further investigated. Approval of the Project Manager and the Project RSO will be obtained before resuming survey and sampling operations. This evaluation will be documented and shared with the NYSERDA RSO.