



SAFETY PLAN GENERAL ARCHEOLOGY FIELDWORK

The project work site is in the North Rim and South Rim Canyon areas working in remote locations and possibly near cliffs. Mode of transportation includes four-wheel drive vehicles and hiking off trail and on unmaintained trails. Duties include archeological documentation, site monitoring, site assessments, and site inventory. The tasks that accompany these duties are mapping, recording data and photographing sites and features. Numerous environmental, physical and technical based risks do exist while performing these duties and tasks. Environmental based risks include heat-related illnesses, cold weather considerations, lightning strikes, high winds, exposure to plants, animals, contact with deteriorating artifacts and uneven terrain, hiking hazards, fall hazards and flash flood risks. Physical based risks are hiking, carrying backpacks, prolonged sitting, standing or squatting. Technical based risks are general tool/equipment injury.

ENVIRONMENTAL BASED RISKS:

Heat Related Illnesses

Daily temperatures on the South Rim range from 50 degrees to 100 degrees Fahrenheit during the summer months. Hence, heat exhaustion, heat stroke and hyponatremia are significant threats.

Heat exhaustion is severe dehydration. Improper management of the condition may result in a life threatening illness, heat stroke, which is a significant increase in the body core temperature. Symptoms of heat exhaustion include dizziness, fatigue, nausea, headache, increased respiration and pulse rates and pale, clammy skin. The onset of heat stroke is indicated by change in the level of consciousness, increased body core temperature and inability to sweat. Both conditions result from improper hydration. If a worker appears disoriented or irritable, the worker should rest in a cool location with circulating air, and should continue to be monitored.

Hyponatremia is a decrease in blood saline concentration. Symptoms of hyponatremia mirror those of heat exhaustion. The condition results from inadequate replacement of electrolytes and the sodium cation.

Safe Job Procedure:

- Drink copious amounts of water
- Eat plenty of food and some salty snacks
- Sunscreen, sunglasses, hat, and long sleeved shirt and pants help alleviate heat-related illnesses.
- A large brimmed hat may obstruct your view so be aware of your surroundings.

- Take frequent rest breaks during activities
- If symptoms for heat exhaustion develop:
 - Aggressively cool the body
 - Have the patient rest in a cool location
 - Re-hydrate
 - Monitor person constantly
 - Contact a Ranger via radio
- If symptoms for heat stroke develop:
 - Contact a Ranger via radio
 - Keep the patient's head as wet and cold as possible
- If symptoms for hyponatremia develop:
 - Have the patient rest
 - Eat simple (easily digested) sodium rich foods
 - Contact a Ranger via radio

Cold Weather Considerations

Weather can change quickly and hypothermia is a risk factor.

Safe Job Procedure:

- Don't wear cotton clothing in cold weather
- Wear wool or polypropylene clothing
- Carry extra socks
- Carry rain gear

Lightning Strikes

Severe thunderstorms can be a daily occurrence during the late summer monsoon season. Lightning is a powerful electrical charge that can be fatal. Remember that if you are within 6 miles (30 seconds flash to bang) you are in a high danger zone. Refer to the attached Lightning Awareness fact sheet for additional information.

Safe Job Procedure:

- Seek an area where an individual can become uniform with their surroundings, such as in a clump of bushes
- If lightning strikes are nearby:
 - Seek shelter in vehicle if possible
 - Retreat to drainage, depression or low-lying area if more than 1/4 mile from vehicle
 - Avoid proximity spreading out at least 5 meters from other individuals
 - Crouch down placing feet together and hands over ears to minimize hearing damage
 - Do not lie flat on the ground
 - Separate tools and other metallic objects from all individuals

High Winds

High winds may or may not accompany thunderstorms and may become a potential threat.

Safe Job Procedure:

- Be aware of your surroundings looking out for potential threats
- Potential threats include snags, leaning trees, widow makers, or dense clusters of trees
- If high winds are reported stay out of the area

Exposure To Plants

Plants may include cactus, briars and any plants/trees that one could have allergies to.

Safe Job Procedure:

- Be aware of your surroundings looking out for potential threats
- Use tweezers and a comb to remove cactus spines if become imbedded in skin
- Have allergy medication available and take if needed

Exposure To Insects, Reptiles and Animals

Insects, reptiles and some animals may pose certain dangers. Other than the initial impact from the animal bite, there is concern about rabies. If a bite does occur, the location or direction of travel of the animal should be monitored. A Ranger or appropriate wildlife person may need to capture and test the animal for rabies.

Safe Job Procedure:

- Be aware of your surroundings looking out for potential threats
- Potential threats include ticks, bees, snakes, deer mice excrement (Hantavirus) and aggressive or rabid animals
- Carry allergy medication if needed
- Use insect repellent
- When working in tall brush and around rocky areas with crevices, be aware of placement of feet and hands
- Know defense strategies if approached by aggressive animals
- Know possible rabid animal behavior and appearance if approached
- If an individual is bitten or stung:
 - Stabilize the wound
 - Contact Ranger via radio

Contact With Deteriorating Artifacts

Deteriorating artifacts may be rusted cans, glass shards and any artifact with sharp or pointed edges may be a potential risk.

Safe Job Procedure:

- Be aware of your surroundings looking out for potential threats
- Handle artifacts safely by avoiding cuts and puncture wounds from these artifacts
- If an individual is injured by an artifact:
 - Stabilize the wound
 - Seek medical attention if needed

Uneven Terrain

Uneven terrain includes slopes, loose gravel, rock outcrops and dense foliage.

Safe Job Procedure:

- Be aware of your surroundings looking out for potential threats
- Wear shoes or boots with good traction

Fall Hazards

Some project work sites are located near cliffs. Potential risks associated with this hazard include working on uneven terrain, on wet surfaces, wearing a back pack and losing balance and tripping over tools/equipment.

Safe Job Procedure:

- Be aware of your surroundings looking out for potential threats
- Wear shoes and boots with good traction
- Make sure pack is secure when moving about
- Be aware of where tools/equipment is located

PHYSICAL BASED RISKS:

Access to most project areas requires hiking off trail and hiking on unmaintained trails and while carrying heavy packs with supplies and equipment. Duties may require prolonged sitting, standing or squatting. Muscle strain and sprains may be potential risks for injury.

Hiking Hazards

Terrain may be steep and rocky in the project work areas. Potential threats include environmental based risks.

Safe Job Procedure:

- Be aware of your surroundings looking out for potential threats
- Follow safe job procedure guidelines for heat-related illnesses
- Don't overload pack
- Make sure pack fits properly
- Wear proper footgear
- Take frequent rest breaks during activities
- Carry a first aid kit

TECHNICAL BASED RISKS:

General Tool/Equipment Injury

General tools/equipment used for General Archeological Survey include use of a four-wheel drive vehicle, GPS units, and hand held radios. General tools/equipment used for Wildfire Fighting may include the Pulaski, Mcleod, Combi-tool, shovel, and chainsaw.

Safe Job Procedure:

- Know your vehicle safety operating procedures
- Know tool operation safety procedures
- Carry extra batteries for equipment
- If using any chemicals have Materials Safety Data Sheet (MSDS) information available and Personal Protective Equipment for workers

Additional Standards

Project supervisor will always have an NPS radio on site, and all workers will receive instruction on how to use the radio in case of an emergency.

All workers should remain consistently aware of the surrounding landscape. In the project area there is not a high potential for rockfall, but workers should always remain aware of this as potential hazard

Grand Canyon National Park has emergency medical requirements for backcountry operations (Refer to attached SOP 8221-033). The SOP requires that at least one trained First Responder be on site (within 4 minute response time) for any work activity involving physical labor in the backcountry. A first aid kit must be on hand, and the kit must contain the minimum list of supplies listed in the SOP.

All project members will hike at a reasonable speed to avoid injuries on the trail.

See attached Standard Operating Procedures 8221-003 EMERGENCY MEDICAL REQUIREMENTS FOR BACKCOUNTRY OPERATIONS

See attached Standard Operating Procedures 8221-004 EMERGENCY COMMUNICATIONS FOR BACKCOUNTRY OPERATIONS

See attached JOB HAZARD ANALYSIS for Backcountry work, Hiking and Camping