

JOB HAZARD ANALYSIS	1. JOB TITLE: Maintenance of Park Trails (General JHA)	2. DATE: 02/21/2019	<input checked="" type="checkbox"/> NEW <input type="checkbox"/> REVISED
INSTRUCTIONS ON REVERSE SIDE	3. TITLE OF WORKER(S): Spooky Beavers; PRWI Staff	4. NAME OF ORGANIZATION: PRWI/PATC	ANALYSIS BY: Kathy Kimmitz Mark Ellis
5. LOCATION: PRWI Trails	6. DEPARTMENT: Maintenance--Trails	10. SUPERVISOR:	REVIEWED BY: Spooky Beaver Crew
11: REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT: Hard hat, ear protection, eye protection, respirator (if needed), gloves, long pants, chaps, sturdy work boots, repellent, safety vests if working near roadways, first aid kit, radio/cell phone for communication			APPROVED BY: K Kimmitz/Mark Ellis

7. SEQUENCE OF BASIC JOB STEPS	8. POTENTIAL HAZARDS	9. RECOMMENDED ACTION OR PROCEDURE
Preparing for Trail Work	General—all hazards.	Crew leaders are responsible for ensuring each volunteer: - Understands that our most important achievement is for every employee to conclude each and every day without personal injury or damage to property. -Is provided adequate orientation, equipment and training as per their duties and responsibilities. -Participates in and supports an environment where all valid safety concerns can be raised and addressed, without fear of judgement or reprisal. -Travel to and from worksite: Maintain speed limit signs; wear seatbelts; Contact Visitor Services or LE when in park (when using chainsaw sign-out portable radio at VC). Stay alert for pot holes, etc. on park fire roads. -Opens gates with caution, to avoid pinched fingers.
	Injuries resulting from lack of PPE or training.	-Crew leaders are responsible for providing crewmembers/volunteers with adequate PPE and related training.
	Injuries or property damage resulting from lack of knowledge or communication.	-Crew leaders will conduct and document monthly safety meetings to discuss safety issues, projects, and other work related topics. -Crew leaders will also conduct, whenever appropriate, ‘tailgate’ safety and project orientation meetings with crews/volunteers to avoid miscommunication.
	Injuries or property damage resulting from lack of knowledge or communication.	-Good communication between crewmembers/volunteers should reinforce individual awareness of real and potential hazards. -Crewmembers/volunteers should be aware of their surroundings, the location of other crewmembers/volunteers and other trail users while performing trail work. -Each crewmember/volunteer should receive training on basic radio procedures, emergency response plans, and basic SAR operations -Crewmembers/volunteers should review a SDS for any product they are unfamiliar with.
	Injuries or property damage resulting from lack of equipment or training.	-Each crew will be provided at least one first-aid kit. -Crewmembers/volunteers should be familiar with its location and contents at all times. -Basic first aid/CPR training will be available for all crewmembers/volunteers.

	Injuries or property damage resulting from lack of preparation or hazard mitigation.	-Good project management should include consideration and implementation of any of the following: scheduling, logistics, season, trail closures, signage, reroutes, temporary trails/detours, flaggers, guards, lookouts, communications, relays, visibility, signals/hand signs, fatigue, location, elevation, visitor traffic patterns/volume, weather, and other factors.
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Preparing for Trail Work	Injuries resulting from being unprepared: deficient or insufficient personal equipment—brand new or aging boots, lack of adequate food, water, clothing, rain gear, first aid, sunscreen, maps, etc.	-Crew leaders will provide information on what is required and recommended to carry, as well as what employees can expect, what is expected in return, and other important information specific to PRWI
Project/work site safety considerations.	Injuries or property damage resulting from work site hazards such as weather, loose/unstable ground, snags, brush, insects, poisonous/hazardous plants and animals, swift water, cliffs/heights, edges, etc.	-Crew Leaders are responsible for planning, project development, and initial work site hazard analysis and mitigation. - Safety is everyone’s primary responsibility , and all crewmembers/volunteers should take an active role in hazard identification, analysis, and mitigation. - If at any point, a job is deemed unsafe, crewmembers/volunteers should feel entitled to stop until the appropriate PPE, engineering controls, equipment or conditions are available to make the job safe.
Performing Maintenance work: hiking, bending, shoveling, digging, grubbing, swinging, chopping, cutting, brushing, pushing, pulling, lifting, dragging, moving materials, etc.	Injuries from improper body mechanics, body positioning, etc.	-Each crewmember/volunteer will be provided training on the safe and proper use of tools. Proper techniques of stretching, lifting, bending, moving materials, tool use, securing good footing, the importance of good nutrition and hydration, etc., will be addressed. (PRWI safety officer can provided tailgates if needed)
	Muscle strains, pulls, and repetitive motion injuries.	-Each crewmember/volunteer will be given time on the job to properly stretch and warm-up before, during and after physical activity for a period of time deemed appropriate by the crew leader, or on-site supervisor. -Crewmembers/volunteers will be encouraged to switch hands often, and vary the types of activities performed to limit exposure to repetitive motion injuries. _Always lift with legs/not back.
Performing trail work: tool use and maintenance.	Injuries from tools or equipment.	-Each crewmember/volunteer will be provided training on the safe and proper use and maintenance of tools and equipment used in trail work. -The right tool for the job should always be used to decrease the chances of injury to an employee, or damage to a tool through improper use. -Logic dictates that if proper body mechanics are employed while using any tool, proper tool use should follow. -All tools should be inspected prior to use; tag and do not use any unsafe tools or deteriorating tools.
		-Tools and equipment, when not in use, should be kept in an orderly manner a safe distance away from the work area or the public. -Tools should never be leaned against trees or rocks, always laid down flat, and in such a way to minimize exposure to sharp edges. -All protective covers, scabbards, and shields should be in place whenever such tools are not actively being used.

		-When carrying tools keep the working end close to your body to avoid accidental injury to others. Hike at least 10 feet apart.
Performing trail work: tool use and maintenance.	Injuries from tools or equipment.	-Sharp edges should be positioned in such a way to minimize exposure to self and others. -Efforts should be made to avoid carrying tools above waist. Tools need to be carried securely, but also readily separable in case of a slip or fall. -Several lighter trips are better than struggling with one.
		-When loading tools on packs, all protective scabbards and covers should be in place. -Tools will be securely lashed to backpacks in such a way as to not pose an injury, tripping or safety hazard to the person carrying the tool(s) or anyone else on the trail.
		-Metal heads: burrs, mushrooms, etc. should be filed or ground down. -Edges should be sharp and covered when not in use.
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		-Wood handles should be free of cracks or splinters, and fit tightly, with no wiggle or play, in respective heads. -Handles should be replaced when they are loose, cracked, or damaged beyond repair.
Performing trail work: tool use and maintenance (rock bars).		
	Foot injuries.	-Crewmembers/volunteers need to maintain constant awareness of their feet in relation to objects being moved and avoid placing them under materials. Be on-lookout for exposed roots that could contribute to slips, trips and falls. Be alert to changes in terrain. Use extreme caution when working near streams/bodies of water (survey thoroughly prior to crossing streams). Wet conditions tend to be more slick. Worksites should be kept neat/tidy to avoid tripping hazards.
	Finger and/or hand injuries.	-It is recommended that crewmembers/volunteers use safe lifting techniques to minimize the potential for injuries to hands and back. Wear gloves. Utilize situational awareness and look-out for pinch points.
Performing trailwork: tool use and maintenance.	Injuries caused by shaping or splitting rock and swinging tools.	-Chisels and wedges should be frequently ground or filed so that no “mushroom” or burrs develop. -All crewmembers/volunteers in close proximity to shaping or splitting operations need to be in full PPE. -In case of a partial miss or deflection, crewmembers/volunteers need to give a 5 to 10 foot safety circle around anyone swinging a tool.
Performing trail work: rock work.	Cuts or scrapes, from rock and freshly cut edges.	-Freshly cut stone is extremely sharp; exercise caution while handling or moving this material. -Clear work area often to reduce the chance of tripping or falling.
Performing trail work: chainsaw use and maintenance	Injuries or property damage resulting from lack of skill, training, or supervision.	-Only authorized crewmembers/volunteers may operate power saws, under the approval and direction of crewleaders. Any chainsaw user must be trained IAW NPS Standards for chainsaw operation. Minimum of 2 persons must be present when utilizing chainsaw. Portable radio should be checked out from park VC when performing chainsaw work.
	Cuts, scrapes, burns, crushing or pinching injuries.	-Utilize situational awareness when utilizing chainsaw.

Performing trail work: moving materials.	Injuries from moving materials.	<ul style="list-style-type: none"> -Fill holes, build temporary structures, and explore options to maximize safety and efficiency in moving materials, especially on steep or loose slopes. -Clear the route of hazards and debris before moving materials. -Communication methods or jargon should be discussed and agreed upon prior to moving materials. Once trees are cut up, swampers should wait until clear communication/direction from sawyer is given to remove. -Instructions should come from one individual when working in teams of two or more.
	Loss of control, or injuries from moving materials: logs.	<ul style="list-style-type: none"> -Freshly peeled logs are extremely slippery and hard to control, especially on loose and steep slopes. Freshly peeled bark should be placed backside up to reduce risk of slipping. -Belay all large or questionable materials. -Clear a path, and post guards to minimize potential for injuries. -Use an adequate number of bodies when moving logs by hand (tongs). -Make sure all tongs have safely “bitten” into log and will not slip.
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	Environmental Hazards (working outdoors) (weather, ticks, poisonous plants, animals, etc.)	Be alert for ticks, bees, snakes, etc. Conduct a daily tick check to ensure prompt removal of any ticks. Wear park approved repellents. Be alert to poisonous plants and wildlife. Stay hydrated. Take frequent breaks. Work should end if there are high winds, heavy rains, thunderstorms, hurricane/tornado watches or any other inclement weather that poses risk. Carry map/GPS if needed.
Footlog/ footbridge repair and reconstruction.	Overhead hazards, pinches, strains, swift water, etc.	-All appropriate PPE will be used during the repair or reconstruction of foot logs and footbridges, including waders and fall protection (if deemed essential).
	Injuries to visitors and/or trail users, due to bridge closures or repairs.	-Provide temporary access/crossing, while work takes place. Visible work ahead signs for alerting visitors. Safety vests if working near roadways (safety vests can be worn any time for visibility)
Reporting of injuries	All incidents/injuries must be reported promptly.	Contact park personnel (Law Enforcement/Park Supervisor) immediately (911 in case of imminent emergency). There are from that must accompany crewmembers/volunteers when seeking medical attention.

JSA Instructions

The JSA shall identify the location of the work project or activity, the name of employee(s) writing the JSA, the date(s) of development, and the name of the appropriate line officer approving it. The supervisor acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.

Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory

Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).

Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:

- a. Research past accidents/incidents.
- b. Research the Health and Safety Code or other appropriate literature.
- c. Discuss the work project/activity with participants
- d. Observe the work project/activity
- e. A combination of the above

Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:

- a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment and furniture.
- b. Substitution. For example, switching to high flash point, non-toxic solvents.
- c. Administrative Controls. For example, limiting exposure by reducing the work schedule.
- d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills, portable water pumps)
- e. A combination of the above.

Block 10: The JSA must be reviewed and approved by a supervisor.

Block 11: List all recommended and required PPE relevant for job/activity.

Emergency Evacuation Instructions

Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the work site.

Be prepared to provide the following information:

- a. Nature of the accident or injury (avoid using victim's name).
- b. Type of assistance needed, if any (ground, air or water evacuation).
- c. Location of accident or injury, best access route into the work site (road name/number), identifiable ground/air landmarks.
- d. Radio frequency(s).
- e. Contact person.
- f. Local hazards to ground vehicles or aviation.
- g. Weather conditions (wind speed & direction, visibility, temp).
- h. Topography.
- i. Number of person(s) to be transported
- j. Estimated weight of passengers for air/water evacuation.

The items listed above serve only as guidelines for the development of emergency evacuation procedures.

JSA and Emergency Evacuation Procedures Acknowledgement

As supervisor I acknowledge that the following employees have participated in the development of this JSA, accompanying evacuation procedures and have also been briefed on the provisions thereof:

Supervisor's Signature: