Appalachian National Scenic Trail	**1. WORK PROJECT/ACTIVITY** **Portable Electric Tools**	**2. LOCATION** **Trail Wide**	Includes work performed on lands of National Park Service, and various states' park and lands
JOB HAZARD ANALYSIS (JHA) **References-FSH 6709.11 and -12** **OSHA** **(Instructions on Reverse)**	**3. NAME(S) OF ANALYST(S)** **Keith Stegall, Facility Manager**	**4. Work Supervisor** **Various**	**5. DATE PREPARED** **2/11/2019**

Required Standards and General Notes:	
Required Personal Protective Equipment	Hearing protection, eye protection, gloves, long pants, appropriate shoes for task. As recommended by the manufacturer, and/or JHA for the overall task (tool transportation,hiking to workplace, etc).
Tools and Equipment	First aid kit, circular saw, drill/driver, sander, router, power hacksaw, grinder, power jigsaw, battery charger, generator, extension cords [electric tools in a shop in a separate JHA]
Available Training	Planning Projects Workshop, Manufacturer's information for individual motorized equipment,

7. TASKS/PROCEDURES	**8. HAZARDS, POTENTIAL HAZARDS / INJURY SOURCE**	**9. ABATEMENT ACTIONS OR PROCEDURES** **Engineering Controls * Substitution * Administrative Controls * PPE**
Pre-operation inspection.	Injury due to poor condition of tool.	• **Power Cord/Extension Cord/Outlet** – Ensure that cord is the proper gauge for the tool. Refer to owner's manual for specifications; If using outdoors, make sure that extension cord is fit for outdoors use; Make sure the cord is not frayed and in good shape; Do not use in wet conditions. • **Check On/Off Switch** – Do not use if On/Off switch does not kill the power to the tool. • **Check for missing/broken parts** – Ensure that all the tool components are in place and in working condition. • **Check guards** – Check to make sure safety guards are in place and in good working order before operating. • **Check nuts and bolts** – Make sure all nuts and bolts and other parts, as needed, are secure and tight. • **Worksite** – Inspect worksite and clear from clutter. Make sure there is good footing.
Loading/Unloading/Transporting Hand Tools By Vehicle	Lifting Heavy/ Awkward Loads	• Always make sure you are comfortable with the load you are lifting. • Whenever possible use two people when loading any items (especially heavy/ odd sized items). • Wear proper PPE at all times. • Do not twist and lift simultaneously. • Always move your feet while you move your body.

	Slips / Trips / Falls / Poor Footing	● Always make sure you are comfortable with the load you are lifting. ● If loading tools with others, workout communication strategy. ● Be aware of others around you. ● Wear proper PPE at all times.
	Traffic Injuries	● Make sure vehicle is parked as far from road as safely possible on a flat and hard surface. ● Always park the vehicle where it can be loaded easily and safely. ● Always wear proper PPE. ● Work zones need traffic controls identified by at least one of the following: signs, cones, barrels, or barriers. ● Controls should instruct drivers to follow paths away from where work is being done. ● If flaggers are necessary, signs must be in place to warn motorists of the flaggers ahead. ● High visibility clothing should be worn when dealing with traffic issues. This clothing must be able to be seen from at least 1,000 feet away and must be class 2 or 3
Transporting Hand Tools To Worksite By Hand	Injury To Self	● Carry tools on the downhill side of the Trail, with the sharp side pointed down so that if worker carrying it loses footing, the tool can easily be released or tossed aside rather than land landing atop worker. ● Do not carry tools on shoulder. ● Practice good body mechanics when lifting and carrying tools. Keep tools close to your body. ● Sheathe sharp edges of hand tools. ● Always make sure you are comfortable with the load you are carrying. ● Ensure you are traveling on solid footing. ● Wear proper PPE: gloves, boots.
	Injury To Others	● Maintain a safe following distance between workers - typically 10 ft. or more.. ● Ensure tools are completely inside of pack and appropriately sheathed, or hand-carry. ● Wear proper PPE: gloves, boots. ● When encountering the public, move to a safe distance and let them pass. Take care to keep tools out of range of passing visitor. ● Always make sure you are comfortable with the load you are carrying. ● Look before turning to ensure no one is within your tools swing range.

Setting up tool for use.	Shock / Electrocution	● If using a generator, never attach it directly to the electrical system of a structure (home, office, trailer, etc.) unless a qualified electrician has properly installed the generator with a transfer switch. ● If using a generator, always plug electrical appliances directly into it using the manufacturer's supplied cords or extension cords that are grounded (3-pronged). ● If using generator, keep it dry; do not use it in the rain or wet conditions. If needed, protect a generator with a canopy. Never manipulate a generator's electrical components if you are wet or standing in water. ● If using generator, make sure it is properly grounded and the grounding connections are tight. Consult the manufacturer's instructions for proper grounding methods. ● Ensure the cords are appropriately rated in watts or amps for the intended use. Do not use underrated cords—replace them with appropriately rated cords that use heavier gauge wires. ● Use ground fault circuit interrupters (GFCIs), especially where electrical equipment is used in or around wet or damp locations. ● Inspect the cords to make sure they are fully intact and not damaged, cut or abraded. Never use frayed or damaged extension cords. ● Check that the on/off switch is in the off position prior to plugging in.
	Equipment damage.	● Inspect equipment prior to use. ● Follow manufacturer recommended preventative and routine maintenance. ● Proper operating procedure should be followed. ● Use the correct tool and blade/bit for the job. Ensure blade/bit are sharp and in working order. ● Never carry a portable tool by the cord. ● Ensure cord is routed away from potential foot/vehicular traffic and the public. ● An electrical tool, wire, or connection that feels warm may indicate too much current in the circuit or equipment.
	Injury moving / lifting tools	● Use proper lifting/bending techniques. Lift with legs, not back. ● Use load-carrying device, and/or help if necessary. ● Wear appropriate footwear.
	Trip hazard	● Route cords to minimize trip hazards and to protect from insulation damage.
	Explosion	● Do not operate electric tools where flammable vapors or gases are present.

Operating Tools	Injuries from flying debris	● Wear eye protection, and gloves. ● Do not use cracked, bent, dull, or damaged blades or bits. ● Ensure guards are intact and functioning properly. ● Anchor any material being cut, ground, or drilled. ● Inspect motor-driven grinding stones regularly for cracks, ruts, or grooves. Keep stones properly dressed.
	Injuries from Noise	● Wear hearing protection rated for tool. ● Ensure other around the work site are wearing appropriate hearing protection or remain a safe distance from tool.
	Cuts / Punctures	● Wear appropriate gloves when operating electrical tools. ● Handle sharp bits and blades carefully. ● Always know were the cutting edge of the tool is. ● Do not wear loose-fitting clothing while operating, keep long hair tied up and out of the way. ● Cut away from your body, not towards it. ● Unplug tool when changing bits or accessories. ● Ensure guards are intact and functioning properly.
	Muscular Injuries	● Avoid using wrist in a bent, extended, or twisted position. ● Take breaks/switch with partner when necessary ● Use proper lifting/bending techniques. Lift with legs, not back. ● Use load-carrying device, and/or help if necessary.
	Unstable Ground / Footing	● Be aware of foot placement in relation to the tool. ● Wear appropriate footwear.
	Inhalation of Harmful Materials	● Use properly rated / certified dust mask or respirator when working on hazardous material. [refer to individual Safety Data Sheets and Problematic Materials JHA]
	Injury to others	● Ensure that others around you are aware of potential danger and are wearing eye protection and/or hearing protection if necessary.
Generators and electric tools	Injuries and noise from tools or generator.	● Position generators away from work areas. ● PPE should include hearing protection and eye protection. ● Use appropriate blades or bits for the material to reduce noise. ● Follow manufacturer's instructions.
Refueling generator	Fire hazard	● Keep sparks and open flames away when refueling generator; ● Avoid spilling gas by using funnel;. ● Allow gas spills to dry up before operating generator. ● Store fuel for the generator in an approved safety can. ● Use the type of fuel recommended in the instructions or on the label on the generator. ● Local laws may restrict the amount of fuel you may store, or the storage location. Ask your local fire department for additional information about local regulations.

		• Store the fuel outside of living areas in a locked shed or other protected area. Do not store it near a fuel-burning appliance, such as a natural gas water heater in a garage. • If the fuel is spilled or the container is not sealed properly, invisible vapors from the fuel can travel along the ground and can be ignited by the appliance's pilot light or by arcs from electric switches in the appliance.
	Inhalation of gases	• The primary hazards to avoid when using a generator are carbon monoxide (CO) poisoning from the toxic engine exhaust, electric shock or electrocution, and fire. Follow the directions supplied with the generator. Every year, people die in incidents related to portable generator use.
10. OFFICIAL SIGNATURE Carin Farley	**11. TITLE** Acting Chief Ranger	**12. DATE** 02-19-2019

Previous edition is obsolete **(over)**

JHA Instructions (References-FSH 6709.11 and .12)

The JHA shall identify the location of the work project or activity, the name of employee(s) involved in the process, the date(s) of acknowledgment, and the name of the appropriate line officer approving the JHA. The line officer 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, FSH 6709.11 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; establishing appropriate procedures and practices.**
- **d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills, and portable water pumps).**
- **e. A combination of the above.**

Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.

Blocks 11 and 12: Self-explanatory.

Emergency Evacuation Instructions (Reference FSH 6709.11)

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 worksite.

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 worksite (road name/number), identifiable ground/air landmarks.**
- **d. Radio frequencies.**
- **e. Contact person.**
- **f. Local hazards to ground vehicles or aviation.**
- **g. Weather conditions (wind speed & direction, visibility, temperature).**
- **h. Topography.**
- **i. Number of individuals to be transported.**
- **j. Estimated weight of individuals for air/water evacuation.**

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

JHA and Emergency Evacuation Procedures Acknowledgment

We, the undersigned work leader and crew members, acknowledge participation in the development of this JHA (as applicable) and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:

SIGNATURE	DATE	SIGNATURE	DATE