

**Cow Creek Fire CO-GMF-000235**

**Suppression Repair Plan**

**October 24, 2019**

**Ouray Ranger District**

**Grand Mesa, Uncompahgre, and Gunnison National Forests**

**Suppression Repair Goal**

The intent of suppression repair is to minimize erosion and loss of productivity, and restore trail and road function.

**Suppression Repair Objectives**

- 1) **Firefighter Safety:** Ensure all suppression repair work is done in a safe and efficient manner.
- 2) **Soils:** Avoid or minimize accelerated erosion to reduce sediment movement.
- 3) **Water Quality:** Minimize sediment delivery into streams and drainages to maintain water quality. Restore drainage patterns on road surfaces and ditches impacted by fire management actions, obliterate hand lines, restore stream crossing sites, and repair disturbed soil conditions from runoff dominated type of that of an infiltration dominated type.
- 4) **Invasive Weeds:** Minimize invasive weed spread along all constructed hand lines, helispots, and drop points to protect native vegetation.
- 5) **Travel/Access Management:** Re-establish roadway widths to pre-disturbance widths, replace damaged gates, berms, culverts, etc.
- 6) **Visuals:** Maintain visual quality along forest roads by maintaining. Disperse areas of heavy slash density that were created by suppression activities to surrounding uplands.
- 7) **Cleanup:** Remove suppression related material (debris, trash, signing) at facilities used by suppression personnel. Also, remove fire suppression related products including flagging.
- 8) **Prevent non-system trail development.** Scatter debris that will discourage the development of user created pedestrian, horse, bike, and motorcycle trails.

**General Guidelines**

- 1) Known specific sites in need of repair will be categorized by Division where applicable. The suppression repair Resource Advisor(s) will provide the Operations Section with recommended amendments to this plan for Incident Action Plan preparation. Resource Advisors will approve all suppression repair activities with Division Supervisors. Additional Forest/BLM resource specialists will be available to work with the personnel during implementation of the suppression repair.

- 2) Assessments will be ongoing, based on operations and events as they occur within the Cow Creek fire perimeter. Additional sites that are discovered in the field should be repaired and subsequently mapped.
- 3) Any materials used in repair efforts will be certified weed free (seed, straw etc.)
- 4) Ensure safety of personnel performing suppression repair work. On site analysis of the hazards should be discussed and addressed each day before work is begun.
- 5) Modifications of the repair activities outlined below can be made by the District Ranger or their representative.
- 6) Prioritize repair to ensure that sensitive soils, steep slopes, and stream crossings are stabilized before season ending weather prevents this necessary work.

### **Action Items to Meet Repair Objective**

**Handlines:** The intent is to restore compacted or displaced soils to a condition that will infiltrate precipitation.

- Pull berms into handline and restore line to blend with undisturbed soil contours.
- Berms, topsoil, and organic matter should be pulled back onto the hand line. Scatter limbs and tops to obliterate evidence of the line as much as practical.
- Water bar spacing should follow standard specifications below.
- Block off motorized access and where lines come into existing trails/roads, obliterate line by distributing slash at beginning and ending points for 200 ft. or distance of sight, whichever is less.
- Remove all trash, equipment and flagging.

### **Areas of Soil Disturbance/Drop Points/Helisports**

- Where topsoil has been removed, spread berm onto disturbed area, and recontour slopes to the original contour.
- Disperse accumulation of downed trees and brush evenly across opening.
- Where safety zones occur adjacent to open roads, block off motorized access.
- Break up topography to allow for water infiltration or drainage to areas that will not erode. In some of these areas that were also used for vehicle parking and soils are compacted; deeper scarification (4-12 inches) will be needed.
- Remove all trash, equipment and flagging.
- Use a combination of slash, rock and logs or buck and pole fence to establish an effective barrier to deter motorized use where applicable.

**Improved Roads:** Site specific plans and direction will be developed by an Agency Engineer or the Agency Resource Advisor. General guidelines:

- Remove berms. Reconstruct appropriate drainage off of road surface and clean ditches.
- Re-establish drainage at crossings.
- Repair/replace damaged culverts.
- Re-establish pre-fire road widths.
- Restore all drainage features (rolling dips, cross drains, belt tops, ditches, etc).
- Blade road surfaces for safety and to restore road and ditch shape with grader, water tender and roller, as appropriate.

### **Vegetation**

- Seed disturbed/compacted areas where necessary after consultation with Resource Advisor.

### **Restricted Roads**

- Reestablish ephemeral drainage at crossings.
- Previously obliterated/decommissioned roads that have been opened to facilitate suppression activities will be re-contoured to their original condition.
- Drainage features, i.e. culverts, rolling dips, cross-drains, belt tops, ditches, etc. will be restored.
- Reestablish pre-fire road widths.
- Previously "brushed in" roads will have debris pulled back onto the site (according to guidelines below). Barriers will be placed at entrance and road bed will be seeded.

### **Standard Specifications for Repair Efforts**

#### **Hand Lines**

Debris Pull back -Pull slash and woody debris back on sites after containment and after approval by Operations. A mixture of fine material (<3") and heavier material is desired. Woody debris guides are generally 13 to 17 tons per acre with an emphasis on leaving material larger than 6 inches diameter. Finer material will aid in the mitigation of rain drop impact and heavier material will provide for erosion mitigation. Larger material needs to have good ground contact to provide the benefit of erosion control. Photo fuel guides can be provided to help estimate loadings. In most cases, the desired large woody debris for productivity will be met by logs left for water bars. The water bars with logs/debris will be required on dozer lines with slopes greater than 30 to 50 percent or

where soil is very loose or powdered. Most dozer lines in this fire were loose or powdered. Slash should not exceed one foot in deep.

### Water bars

- Install water bars diagonal to fire line where natural drains occur. Use tree boles for water bars (similar to a trail water bars) and bury the log approximately 1/3 of its diameter. When possible use logs that are greater than 10" DBH and are long enough to span diagonally across the line. Ensure that each water bar has a direct outlet and drains effectively off of the dozer line into vegetation or rocks.
- If soil is loose, augment water bar with woody debris and/or rocks.
- Water bars on steeper slopes (>30 - 50% depending on how loose or powdery soil is) may be built from tree boles and spaced to specification described below. A small trench should be created uphill and behind the log. Outlets of water bars should be alternated to opposite sides of the line in a "herring bone pattern". Preferred size of logs is 6 to 8" and long enough to cover the width of the dozer line with the largest diameter downhill. If smaller size logs are used and/or soil is very loose and powdery, increase the number of water bars and include them on gentler slopes. If substrate is all or mostly rock, water bars should be placed below the rocky areas.
- Hand line water bars should be 8" deep and 12-18" high for the berm. On slopes > 30%, water bars should be installed angled down 20-30 degrees to the fall line.
- Install Water Bars as Identified Below:

Fire line Slope (%)	Maximum Spacing (feet)
0-20	150
21-40	75
41-60	50, or as specified by READ

Water bar spacing and location should also consider site-specific topography during installation.

**Invasive Weeds** - All equipment used for repair will be washed outside of fire perimeter prior to implementing repair actions.

PLAN PREPARED BY: Bryn Marah, GMUG National Forests, Resource Advisor.

APPROVED BY:



10/24/2019

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Cow Creek Incident Commander

Date

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GMUG National Forests, Agency Administrator

Date

