

Date of Report: October 9, 2007

**BURNED-AREA REPORT**  
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds
- ☐ 2. Accomplishment Report
- ☐ 3. No Treatment Recommendation

**B. Type of Action**

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
- ☐ 2. Interim Report #\_\_\_\_.
  - ☐ Updating the initial funding request based on more accurate site data or design analysis
  - ☐ Status of accomplishments to date
- ☐ 3. Final Report (Following completion of work)

**PART II - BURNED-AREA DESCRIPTION<sup>1</sup>**

- |  |  |
|--|--|
| <b>A. Fire Name:</b> Rombo Mt Fire   | <b>B. Fire Number:</b> MT-BRF-005130     |
| <b>C. State:</b> MT  | <b>D. County:</b> Ravalli                |
| <b>E. Region:</b> R1   | <b>F. Forest:</b> Bitterroot             |
| <b>G. Districts:</b> West Fork & Sula  | <b>H. Fire Incident Job Code:</b> P1DUN5 |
| <b>I. Date Fire Started:</b> 8/2/2007  | <b>J. Date Fire Contained:</b> 9/15/2007 |
| <b>K. Suppression Cost:</b> \$7.8 million  |  |
| <b>L. Fire Suppression Damages Repaired with Suppression Funds</b>   |  |
| 1. <b>Fireline waterbarred (miles):</b> 8 miles dozer (plus 8.5 reopened road miles treated as needed), 14 miles hand line repaired.   |  |
| 2. <b>Fireline seeded (miles):</b> Seeding started 9/25, scheduled to finish by 10/15/07. All dozer and safety zones to be seeded, along with selected hand lines (approximately 2 miles).   |  |
| 3. <b>Other (identify):</b> Seeding for ICP (Llama pasture), and equipment unloading on Pvt land, Multiple drop points and safety areas on Forest, including 12-acre safety zone scheduled for aerial seed 1 <sup>st</sup> week October. |  |

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<sup>1</sup> Fire and severity acres calculated from 9/11 satellite image and perimeter. Rombo Mt. fire expanded its area by up to 2,000 acres in backcountry areas after that date.

**M. Watershed Number:** Fire burned parts of 6<sup>th</sup>-level watersheds 170102050104, 170102050106, 170102050107, 170102050301, 170102050303, 170102050505, 170102050506

**N. Total Acres Burned:**

**[29,075 ] NFS Acres [ ] Other Federal [ ] State [ ] Private**

**O. Vegetation Types:** Ponderosa Pine/Doug Fir/Beargrass, Mixed Conifer (Doug Fir/Lodgepole Pine/huckleberry), Lodgepole/Beargrass/Huckleberry, Subalpine Fir/Beargrass, Whitebark Pine/Subalpine Fir/Beargrass, Subalpine bunchgrass communities.

**P. Dominant Soils:** coarse textured ranging from coarse sandy loams to loamy coarse sands

**Q. Geologic Types:** Bitterroot Mountain Range, Glaciated landscape, Decomposed Granite, Idaho Batholith, Belt Series Metamorphics

**R. Miles of Stream Channels:** All watersheds are within 4<sup>th</sup>-level watershed 17010205. Miles shown are within fire perimeter.

6 <sup>th</sup> -level Watershed	Stream Miles
0104	4.5
0106	2.6
0107	14.9
0301	7.9
0303	59.9
0505	41.0
0506	2.6

**S. Transportation System**

**Trails:** 33.8 miles      **Roads:** 39.3 miles within fire perimeter

### **PART III - WATERSHED CONDITION**

**A. Burn Severity (acres):**

**Unburned:** 6,055 acres (21%) **Low:** 6,671 acres (23%) **Moderate:** 9,788 acres (34%) **High:** 6,561 acres (23%).

**B. Water-Repellent Soil (acres):** approx. 11,455 acres (all of high severity, 50% of moderate severity acres = 39% of area within fire perimeter).

**C. Soil Erosion Hazard Rating (acres):** 6,671 (**low**) 9,788 (**moderate**) 6,561 (**high**)

**D. Erosion Potential:** 15.4 tons/acre<sup>2</sup> (Normal precip, 29.8 t/ac for 5yr RI precip year)

**E. Sediment Potential:** 8.64 tons/acre<sup>3</sup> (5,530 cubic yards / square mile, assumes 1T/cu yd)

<sup>2</sup> Results derived from Disturbed WEPP. Modeled high intensity fire in the uplands and riparian, sandy loam soil, 30-50% slope, 10% ground cover, 30% rock, and Stevensville modified climate. This is a worse case analysis.

**PART IV - HYDROLOGIC DESIGN FACTORS**

<b>A. Estimated Vegetative Recovery Period, (years):</b>	3-5 years
<b>B. Design Chance of Success, (percent):</b>	75%
<b>C. Equivalent Design Recurrence Interval, (years):</b>	10 years
<b>D. Design Storm Duration, (hours):</b>	6 hours
<b>E. Design Storm Magnitude, (inches):</b>	1.4 inches
<b>F. Design Flow, (cubic feet / second/ square mile):</b>	Varies with watershed
<b>G. Estimated Reduction in Infiltration, (percent):</b>	25 %
<b>H. Adjusted Design Flow, (cfs per square mile):</b>	Varies with watershed

Post-fire flows were modeled using the NRCS Peak discharge analysis tool for pre and post-fire conditions. Output is in stormflow rates (cfs), which includes only the flow component that is attributable to the storm itself: in forested watersheds, stormflow from short precipitation events is often negligible. For 5 and 10 year precipitation events in burned watersheds, stormflow varies with the percentage and severity of burned area. "Adjusted" (post fire) flows in Rombo Mt. Fire watersheds ranged from 0 to 17 cfs additional flow, which is added to the flow already existing in the channel. Peak flows therefore depend on ambient flow plus stormflow. Peak flows in Rombo Mt Fire watersheds varied but did not overtop existing culverts in modeling exercises. Models such as this cannot address debris flows and floatable wood, which can cause culvert plugging and overtopping. Several treatment recommendations are based on the probability of this kind of event, rather than the potential for "typical" flood events.

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<sup>3</sup> Results derived from ERMiT. Modeled high intensity fire, sandy loam soil, 30% rock, 50% slope, and Stevensville modified climate. This is a worse case analysis.

## **PART V - SUMMARY OF ANALYSIS**

### **A. Describe Critical Values/Resources and Threats (narrative):**

Critical Values/Resources and threats: **No downstream threats to life from storm events were found in the Rombo Mountain Fire Area, however, the following threats were deemed significant:**

1. Road Crossings/infrastructure – post-fire hydrology will increase risk of damage at 8 different stream crossings, with subsequent sediment delivery to bull trout habitat previously affected by 2000 fires & debris flows;
2. Trail Prism infrastructure within High/Moderate Burn Severity – post-fire hydrology will increase risk of unacceptable erosion on 13 miles of trails.
3. Previously weed-free areas within High/moderate burn severity – loss of competing vegetation due to the fire will enable progressive migration of road & trail side weeds into new areas.

### **B. Emergency Treatment Objectives (narrative):**

1. Road Patrol – roads below burned areas were chosen based on potential for post-fire hydrology affecting crossings and road prisms. Treatment is founded on detecting problems early and initiating appropriate treatments.
2. Clean Culverts – Sites were chosen based on partially plugged culverts below burned drainages, where a substantial unburned buffer reduced plugging potential but increased flows were still possible.
3. Install Culverts – One site was chosen based on high burn severity and the Ranger District's desire to maintain administrative access beyond the crossing. The upgraded crossing will also get a diversion dip to improve probability of passing a debris flow.
4. Remove culverts - Sites were chosen based on high burn intensity of drainages above the roadways involved. Because of the probability of increased stream flows, culverts in these locations are at greater risk of being inadequate in size, or becoming plugged.
5. Stabilize Road Surface – One site, consisting of approximately 2 miles of Forest Road isolated by treatment #4, was chosen for this treatment because it would be inaccessible for maintenance and would be prone to surface erosion driven by post-fire hydrology.
6. Install Diversion Dips on Roads – FR49 has a stream crossing that will be potentially affected by the Rombo Mt. Fire and now needs the addition of a dip to assure that stream flows remain within the stream channel and are not diverted down the roadway. The dips will need riprap armor mostly on the outlet side of the roads, crushed aggregate on the newly reshaped roadway, and seeding of any newly disturbed ground not receiving aggregate or riprap.
7. Install Trail Waterbars - The waterbars are intended to prevent accelerated erosion by diverting, discharging, and dissipating runoff flowing down trail tread. This protects watersheds by lessening the force and concentration of water flowing downslope. Hazard trees threatening workers and fallen trees blocking access would also be cut.
8. Invasive Species
  - a. Weed Treatment would treat weeds along trail and road corridors that provide routes that invasive weed species could use to expand into the severely burned areas. New invaders and previously weed-free areas would be targeted.
  - b. Weed Monitoring would track populations of invasive species for management purposes. Target areas for weed treatments would be identified and mapped. Monitoring will be focused on detecting new weed infestations within the fire perimeter. Monitor known and high potential infestation sites for noxious weed species in the burned area and determine need and extent of control treatment to be implemented. Monitor weed treatments results to ensure objectives are being

met. During 2008, monitor spread of weeds into the burn area and any control treatments for effectiveness. Accurately map any new populations using GPS. Establish photo plots for documentation as needed.

**C. Probability of Completing Treatment Prior to Damaging Storm or Event:**

**Land NA Channel NA Roads/Trails 95% Protection/Safety 95%**

**D. Probability of Treatment Success**

	Years after Treatment		
	1	3	5
<b>Land</b>	NA	NA	NA
Noxious weed treatment	80	85	85
Noxious weed monitoring	85	NA	NA
<b>Channel</b>	NA	NA	NA
<b>Roads/Trails</b>			
Road Patrol	65	80	95
Clean Culverts	90	90	95
Remove Culverts, install diversion dips	90	90	95
Install Culvert	90	90	95
Trail waterbars	90	90	95
<b>Protection/Safety</b>			

**E. Cost of No-Action (Including Loss):** XXX

**F. Cost of Selected Alternative (Including Loss):** \$88,878

**G. Skills Represented on Burned-Area Survey Team:**

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range
<input checked="" type="checkbox"/> Forestry	<input type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS

**Team Leader:** Ed Snook

**Email:** esnook@fs.fed.us

**Phone:** 406.363.7103

**FAX:** XXX

<b>Specialty</b>	<b>Team Members</b>
Hydrologist	Greg Bevenger (SO, Shoshone NF)
Soil Scientist	Cole Mayn (SO, BNF)
Fisheries	Rob Brassfield (D-1, BNF)
Botany	Linda P. (SO, BNF)
GIS	Ruth Lewis, SO, BNF
Engineering/Roads	Jake Pintok (SO, BNF)
Heritage	Mary Williams (SO, BNF)
Fiscal Mgmt/Purchasing	Laurie Claar (SO, BNF), Tina Mainey(SO, BNF)
Recreation/Trails	Nick Hazelbaker (D4 BNF)
Invasive species, Range	Gil Gale (D3, BNF)

**H. Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

**Land Treatments:*****Noxious Weeds Control/Treatment*****Objective:**

The purpose of the treatment is to maintain ecosystem integrity within the Alan Mountain Inventoried Roadless Area, where few noxious weed populations exist. Without treatment knapweed and other new invaders may spread into the severely burned areas. By reducing the amount of weed seed along roads, dozer lines & trails in the area, native species will have an opportunity to take advantage of the post-fire nutrient flush without competition from noxious weeds.

**Methods:**

Treat fire access road areas with picloram (Tordon 22K) or clopyralid (Transline or Stinger) where there are known noxious weed populations. Selected sites include roadside spraying along FR49 and FR13411 where heavy canopy loss has increased the risk of knapweed (*Centaurea maculosa*) spreading down slope. Effects of herbicide treatments at the proposed rates using clopyralid or picloram are addressed in the Bitterroot National Forest Noxious Weed Environmental Assessment, and all implemented treatments would be consistent with this document.

**Channel Treatments:** None

**Road and Trail Treatments:**

***Storm Patrol***

Road systems within the Rombo Mt. Fire burned area on both National Forest are in generally good condition. Additional assessments for human safety are needed along trails and roads used and not used for fire suppression impacted by fire. Road inspections will be performed during fire rehabilitation on all road systems used for fire access to insure that road prisms and drainage diversion dips are properly in or out sloped for surface water drainage. Roads

traversing the burned area that were not used for suppression should also be patrolled to insure all ditches and drainage features are clear of debris to maintain proper road drainage

The existing road systems that lie within the Rombo Mt. Fire burned area have numerous stream crossings that have been affected by the fire. Culverts that are currently plugged or have catchments that are full or brushed in should be cleaned out to insure unobstructed flows. In the event of heavy rain or rain on snow events, road patrols will be sent out to inspect the road system stream and ditch relief crossings to identify and correct any potential problem areas before adverse resource impacts occur. The purpose of this work is to decrease the risk that ditch relief and road stream crossings fail resulting in culvert washouts as well as ditch and road surface water flows being diverted down roadways causing washouts. **Storm patrols will be mobilized immediately upon receiving heavy rain or rain on snow events. This funding would be used only if the burned area receives heavy rain or rain on snow events.**

### ***Clean Culverts***

#### Objective:

Two culverts on perennial streams are at risk of overtopping due to reduced flow capacity related to plugged outlets. Removing debris from the outlets would let culverts function as designed and restore flow capacity.

#### Methods:

Culvert outlets would be cleaned by hand crew using hand tools.

### ***Install Corrugated Metal Pipe***

#### Objective:

The purpose of the treatment is to reduce the risk that stream flows will overtop the road. Sites were chosen based on high burn intensity of drainages above the roadways involved. Because of the probability of increased stream flows culverts in these locations are at greater risk of being inadequate in size and could trigger or add to debris torrents.

#### Methods:

Excavate and replace larger culverts at (1) indicated site. Riprap will be placed at inlets or outlets to reduce risk of scour. Newly disturbed road surface will receive 4" thickness 1" minus compacted aggregate. Newly disturbed areas that do not receive aggregate or riprap will be seeded.

### ***Stabilize Road Surface***

#### Objective:

A portion of FR5731, within the fire perimeter, would be isolated from maintenance by removing 2 culverts (see below). This road surface is at risk for erosion from post-fire hydrology and would benefit from stabilizing treatments. Downstream occupied Bull Trout habitat, recently affected by 2000 fires, would benefit from reduced fine sediment off the road surface.

#### Methods:

The road surface would be de-compacted to approximately 2-6 inches, water-barred at drainages and at road grades, seeded, fertilized and mulched.

### ***Remove Culverts***

#### Objective

Five perennial and ephemeral stream/road crossings are at risk of failure due to post-fire hydrology and presence of floatable woody debris. Removing culverts and the associated road fills will prevent uncontrolled washouts at these sites and prevent up to 5 cubic yards of sediment per crossing from entering local streams.

### Methods

Methods for eliminating this risk include removing the road fill and culvert, and sloping back the road slopes to reduce sloughing during post-fire flood flows. Disturbed areas created by culvert removal would be seeded, fertilized and mulched.

## ***Install Diversion Dips on Roads***

### Objective

Two crossings on FR49 have a moderate to high risk of failure due to post-fire hydrology, and have high stream diversion potential should a crossing be overtopped. This road is deemed important access. The objective of diversion dips adjacent to these crossings is to prevent flood flows from running down the road if the culvert is plugged or overtopped. This is possible even with culvert upsizing, due to jamming of the culvert with woody debris or rock. Treatments would reduce the risk of large road-origin sediment contributions during post-fire thunderstorms.

### Methods

Methods for reducing this risk include installing diversion dips immediately below (2) stream crossings on Forest Roads 49. An armored drive-through dip and berm would be built immediately downhill of the crossing to divert overtopping flows back into the stream. The upper and lower fills would be rip-rapped at the dip location to prevent downcutting and loss of the structure.

## ***Install Water Bars - Trails***

### Objective

Approximately 13 miles of trail are expected to be at risk of deterioration from additional runoff and sediment from post-fire conditions. The threats are from upland slope erosion and flow being deposited on the trail. The trails were not designed for the increased flow that may occur from the fire. This may cause soil erosion on the trail surface and fill-slope. Failure of drainage culverts and water bars may cause stream capture onto trail surface area causing soil erosion, including loss of the trail by rilling and gullying. Affected trails include:

a. Piquett Divide 676 (.5 mi); b. Piquett Creek 675 (2); c. Drop Cr 248 (.5); d. Shook Mtn 601 (2.5); e. Little Boulder 55 (2); Wiles Peak 56 (2.5); Warm Spgs Creek 103 (1.3); Capri Lake 400 (.25); Shields Creek 673 (1). Total: 13 miles.

### Methods

Methods for reducing this risk include 300 water bars, which would be used to direct and divert flow to areas off the trail or to drainage ways. These treatments would reduce the risk of the trail washing out and transporting sediment to streams. Proactive treatment would be cheaper than remediation after damage.

**Protection/Safety Treatments:** None



**I. Monitoring Narrative:**

**(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)**

Monitoring will be focused on first year effectiveness of BAER treatments. The question to be answered is did the BAER treatments provide the needed protection and rehabilitation of the burned area.

**Noxious Weed Monitoring**

Monitor known and high potential infestation sites for noxious weed species in the burned area and determine need and extent of control treatment to be implemented. Monitor weed treatments results to ensure objectives are being met. During 2008, monitor effectiveness of the spraying and establishment of new weed populations. Accurately map new populations using GPS and GIS. Establish photo plots for documentation.

## Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #

			NFS Lands				Other Lands			All	
		Unit	# of		Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$		units	\$	Units	\$	\$
A. Land Treatments											
Weed spray	acres	58	30	\$1,740	\$0			\$0		\$0	\$1,740
				\$0	\$0			\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$1,740	\$0			\$0		\$0	\$1,740
B. Channel Treatments											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0			\$0		\$0	\$0
C. Road and Trails											
trail waterbar	miles	2338.4	13	\$30,399	\$0			\$0		\$0	\$30,399
Clean Culverts	pipes	420	2	\$841	\$0			\$0		\$0	\$841
Remove Culverts	pipes	984	5	\$4,920	\$0			\$0		\$0	\$4,920
Road Stabilization	miles	9064	2	\$18,128	\$0			\$0		\$0	\$18,128
armored diversion dips	dips	2227.5	2	\$4,455	\$0			\$0		\$0	\$4,455
Install CMPs	pipes	7,608	1	\$7,608	\$0			\$0		\$0	\$7,608
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0	\$0
<i>Subtotal Road &amp; Trails</i>				\$66,351	\$0			\$0		\$0	\$66,351
D. Protection/Safety											
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0	\$0
<i>Subtotal Structures</i>				\$0	\$0			\$0		\$0	\$0
E. BAER Evaluation											
team costs				\$11,578				\$0		\$0	\$0
<i>Insert new items above this line!</i>				---	\$0			\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$11,578	\$0			\$0		\$0	\$0
F. Monitoring											
road patrol	lump	1	2368	\$2,368	\$0			\$0		\$0	\$2,368
nox weed monitoring	acres	615	4.1	\$2,522	\$0			\$0		\$0	\$2,522
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$4,890	\$0			\$0		\$0	\$4,890
G. Totals				\$84,558	\$0			\$0		\$0	\$72,980
Previously approved											
Total for this request				\$84,558							

**PART VII - APPROVALS**

1. \_\_\_\_\_  
Forest Supervisor (signature) \_\_\_\_\_  
Date
  
2. \_\_\_\_\_  
Regional Forester (signature) \_\_\_\_\_  
Date