USDA-FOREST SERVICE FS-2500-8 (6/06)

Date of Report: May 8, 2014

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 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)

[X] 2. Interim Report # 2
[X] 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

A. Fire Name: Brown Mountain Fire

B. Fire Number: NC-NCF-140085

C. State: North Carolina

D. County: Burke & Caldwell

E. Region: 08

F. Forest: Pisgah National Forest

G. District: Grandfather Ranger District

H. Fire Incident Job Code: P8H2UV

I. Date Fire Started: April 3, 2014

J. Date Fire Contained: April 17, 2014

K. Suppression Cost: ~$65,000 (as of April 7, 2014)

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 0.05
2. Fireline seeded (miles): 0
3. Other (identify): Pulling the duff material back on the handline constructed downhill to Wilson Creek is planned.

M. Watershed Number: 030501010506 - Lower Johns River & 030501010504 – Lower Wilson Creek, Catawba River Basin

N. Total Acres Burned: 550
NFS Acres(X) Other Federal ( ) State ( ) Private (X)

O. Vegetation Types:
The vegetation types were determined based on previous field review by USFS personnel and NC Natural Heritage Program personnel, and modeled natural vegetation. All of the burned acres were at low elevations for the NC mountains ranging from 1200 feet on the western bank of Wilson Creek to 2500 feet on Brown

Mountain Ridge. The majority of the slopes are facing northeast to southeast. Metamorphosed granitic rock underlays the area with a few outcrops exposed.

As with most mountain landscapes, previous land use has impacted some of the vegetation (Figure 1). More recent affects include artificially regenerating white pine across approximately 75 acres, about 14% of the wildfire area, in 1982 and 1994. The later date was a treatment after the Carroll Creek wildfire. The last vegetation management project within the area was 20 years ago. The majority of the area, 75%, is dominated by forests greater than 80 years of age.

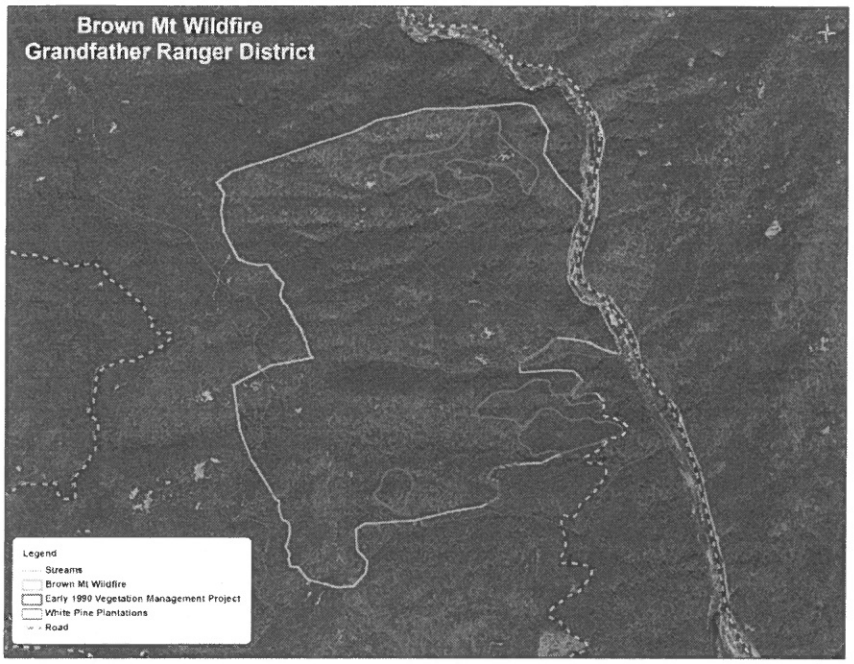


Figure 1. Leaf-off Imagery of Brown Mountain Wildfire with last vegetation management project within the 1980s and early 1990's.

Dry oak forest dominates the mid and upper slopes of the wildfire. Between 35-40% of the burn area is covered with dry oak forest. Varying amounts of chestnut oak (Quercus prinus), scarlet oak (Quercus coccinea), black oak (Quercus velutina), white oak (Quercus alba), red maple (Acer rubrum), blackgum (Nyssa sylvatica), and sourwood (Oxydendrum arboreum). Ericaceous shrubs dominate this xeric community, particularly since this area has not had any recent burns or wildfires. Mountain laurel (Kalmia latifiolia) is the dominant shrub with lesser amounts of flame azalea (Rhododendron calendulaceum), lowbush blueberry (Vaccinium pallidum) and huckleberry (Gaylussacia baccata). In the absence of fire the shrub thickets can be quite dense. Herbaceous diversity is sparse within the community. Pine-oak/heath forest is adjacent to the dry oak forest on the southeastern facing slopes in portions of the wildfire, occurring across about 20%. This habitat is dominated by pitch pine (Pinus rigida), with table mountain pine (Pinus pungens), or a mix with shortleaf pine (Pinus echinata) at the lowermost elevation within the wildfire perimeter. Shortleaf pine forest occurs at the lowermost slopes but is uncommon within the burn covering less than 5% of the area. These dry oak and yellow pine dominated areas received the highest intensity fire within the wildfire although it was generally low with only leaf litter consumption. The fire did not often burn off the shrub component.

Dry-mesic oak forest occurs across about 15% of the burn area. It is dominated by chestnut oak, red oak (Quercus rubra), white pine (Pinus strobus) and various hardwoods. Numerous heath shrubs occur in the understory, in particular huckleberry. A low intensity burn occurred across this habitat and had variable impacts across its shrub. Acidic cove forest dominates the stream side zones across about 20% of the burn area. It is dominated in the canopy by tulip poplar (Liriodendron tulipifera), Fraser magnolia (Magnolia fraseri), black birch (Betula lenta), eastern hemlock (Tsuga canadensis), cucumber tree (Magnolia acuminata), and red oak. Midstory shrub species include witch hazel (Hamamelis virginiana), sweet pepperbush (Clethra acuminata) and great laurel (Rhododendron maximum). Rhododendron maximum is by far the most common member of this layer in portions consisting of a 10-15 foot tall thicket. As such burn intensity within this community was minimal.

Mesic oak forest occurs within the more open portions of the concave slopes within the burn perimeter, covering up to 10%. This ecozone is dominated by white oak, red oak, and chestnut oak, with varying amount of red maple, pignut hickory (Carya glabra), red hickory (Carya ovalis), mockernut hickory (Carya tomemtosa), or tulip poplar. Shrub density is moderate with many deciduous species including buffalo-nut (Pyrularia pubera) and mountain holly (Ilex montana). Herb species are sparse with common herbaceous species including wood betony (Pedicularis canadensis), featherbells (Stenanthium gramineum, New York fern (Thelypteris

noveboracensis), squawroot (Conopholis americana), whorled loosestrife (Lysimachia quadrifolia), Coreopsis major, and cow-wheat (Melampyrum lineare).

Small rock outcrops up to 0.15 acres in size, consisting of a basic subtype of low elevation rocky summits, occur scattered, cover from 1-2% of the burn. The open areas are surrounded on the thin soils by shortleaf pine, pitch pine, and chestnut oak. One area was previously planted with white pine although the survival rate appears less than 50% based on aerial imagery. The basic subtype is dominated by Michaux's saxifrage and has some calciphile species including hairy lipfern (Cheilanthes lanosa), Allegheny stonecrop (Hylotelephinum telephoides), columbine (Aquilegia canadensis), and hoary mountain-mint (Pycnanthemum incanum). The intensity of the burn was minimal within this community given the non-continuous fine fuels.

Rare Species

One rare species is documented within the burn perimeter. Sweet pinesap (Monotropsis odorata) is a region 8 sensitive plant species. It occurs on the south central perimeter of the burn just upslope of an old road. The wildfire may have reduced the leaf litter surrounding this saprophytic plant, however it may also have consummed the above ground parts since the species emerges in late winter to early spring.

Periodic burns are a natural disturbance event across the Brown Mountain landscape. The pine dominated slopes as well as dry oak, and dry-mesic oak forests are fire adapted. Sweet pinesap is associated with dry oak and pine communities that benefit from the low to high intensity fire areas. Anecdotal information indicates this species is fire-adapted and if present within the burn perimeter will be enhanced by the wildfire. Given the relatively low intensity burn from the fire it is uncertain what affect will result to sweet pinesap, but it is not believed to be detrimental.

Non-Native Invasive Plants

Non-native invasive plant surveys have been conducted only along the road, FSR 4096, just south of the wildfire. Japanese stilt-grass (Microstegium vimineum) was the only species located along the road and within the surrounding forest. Given the low intensity of the wildfire and the lack of invasive non-native invasive plant species located in the area, the likelihood of the burn resulting in spread of invasive plant species is low. There are no recommendations to monitor this area for non-native invasive plant species as a result of the wildfire.

P. Dominant Soils: The following soils occur in the burned area:

- Ashe-Cleveland-Rock outcrop complex, 30 to 95 percent slopes, extremely bouldery
- Ashe-Chestnut complex, 15 to 30 percent slopes, very rocky
- Ashe-Chestnut complex, 30 to 50 percent slopes, very stoney;
- Ashe-Chestnut complex, 50 to 95 percent slopes, very rocky;
- Chestnut-Buladean complex, 8 to 15 percent slopes, rocky
- Chestnut-Buladean complex, 15 to 30 percent slopes, rocky
- Greenlee very cobbly sandy loam, 30 to 50 percent slopes, extremely bouldery;
- Greenlee-Tate complex, 30 to 50 percent slopes, extremely stony;
- Tate-Greenlee complex, 15 to 30 percent slopes, very stony

All soils have moderate to high infiltration rates with a "severe" to "very severe" water erosion hazard (NRCS Web Soil Survey). The potential for damage by fire for all soils is rated "low" by the NRCS. A reconnaissance of BAER needs determined very little disturbance to the forest duff layer due to the low residence time of the fire in one give area. Exceptions were observed only where logs burned and retained heat for a longer time resulting in a localized loss of the litter layer, but in most cases, the deeper organic layer remained intact.

Q. Geologic Types: The burned area is in the Brown Mountain Granite. The granite is faulted against Wilson Creek Gneiss and upper Precambrian sedimentary and volcanic rocks on the west and northwest; on the southeast it is bounded by the Linville Falls fault. The granite is medium to coarse grained, light colored, and homogeneous, composed of 35-40 percent quartz, 45-50 percent potassium feldspar, 10-15 percent plagioclase, and small amounts of biotite, muscovite, and epidote.

R. Miles of Stream Channels by Order or Class: Approximately 1.6 miles of mapped blue line streams exist in the assessment area, as well as many miles of unmapped first order and ephemeral streams.

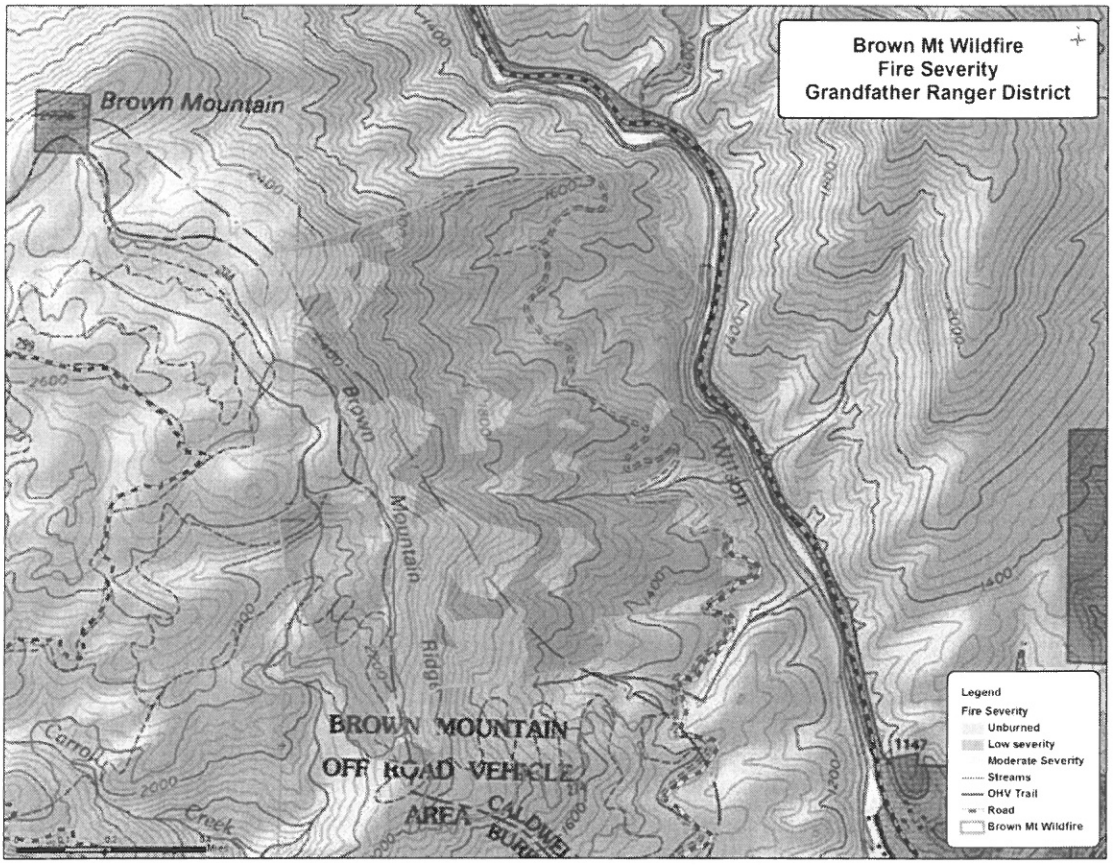
S. Transportation System

Trails: ~1.0 miles Roads: ~2.3 miles (including FS roads, system and non-system)

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 416 (low) 131 (moderate) 0 (high) 3 (unburned)

Burn severity was initially determined with a Burned Area Reflectance Classification (BARC) map generated by satellite; capturing near and mid infrared light bands analyzed by the USFS Remote Sensing Application Center (RSAC – Carl Albury). The initial map was examined based on field surveys completed on April 12. Significant differences were observed between the unburned BARC generated map and low intensity burned areas located in the field. As a result the final map was modified to reflect the local conditions. It should be stated the four separate fire intensity or severity classes, almost exclusively, only reflects varying impacts to above-ground vegetation and probably does not reflect impacts to the soils layer. The vast majority, approximately 75%, of the burn unit had a low severity fire. About 24% of the arera burned at a moderate severity. This occurred on the upper ridges and side slopes of Brown Mountain. No high severity fire was recorded or seen during the field survey. About 1% of the area was unburned.



Burned Area Reflectance Classification (BARC) map representing severity of burn.

B. Water-Repellent Soil (acres): no water-repellent soils were located.

C. Soil Erosion Hazard Rating (acres):

550 (low) 0 (moderate) 0 (high)

D. Erosion Potential: 0.49 tons/acre (From Disturbed WEPP Results)

E. Sediment Potential: 0.40 cubic yards/square mile (From Disturbed WEPP Results, occurring in 2nd year, soil weight of 1.0 ton/cubic yard)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 1-3

B. Design Chance of Success, (percent): 90

C. Equivalent Design Recurrence Interval, (years): 20 (From ERMiT)

D. Design Storm Duration, (hours): 7.06

E. Design Storm Magnitude, (inches): 6.48

F. Design Flow, (cubic feet / second/ square mile): 19.07 cfs* / 0.08 sq mile = 238 cfs/mile^2
* Estimated Peak Flow rate from FS Peak Flow Calculator, Pre-Fire

G. Estimated Reduction in Infiltration, (percent): 3

H. Adjusted Design Flow, (cfs per square mile): 19.77 cfs* / 0.08 sq mile = 247 cfs/mile^2
* Estimated Peak Flow rate from FS Peak Flow Calculator , Post-Fire

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

FSR 4096 Crossing Maintenance

Critical Values:

1. Buildings, water systems, utility systems, road and trail prisms, dams, wells or other significant investments on NFS lands.
2. Water used for municipal, domestic, hydropower, or agricultural supply or waters with special Federal or State designations on NFS lands. (2523.1 – Exhibit 01).

Threat Identification:

In the Initial BAER Report from April 24 we stated the following:

> "Hydrologic treatments, specifically redesigning a system road crossing, were determined to be a critical need based on field review of the burn on April 12. Notable increases in water yield and peakflows were observed in a burned ephemeral draw following an almost 2-inch rainstorm that occurred on April 7. Scour of forest duff and erosion of the mineral soil were observed where stormflow concentrated in the draw. Additionally, a culvert on FSR 4096, downstream of a burned drainage of ~52 acres, was mostly plugged by recent deposition of woody debris and channel substrate, and erosion of the fill material had occurred. It is assumed that water yield and peakflows have increased in stream channels in burned drainages, and will continue until burned vegetation recovers."

It is the opinion of the Hydrologist that the Critical Values at this road/stream crossing remain. However, the Risk to the critical values has diminished since the first report. The threat of peakflow and water yield increases has diminished at this point in time due to the green-up of existing forest vegetation in the drainage. At this point in the spring season plants are taking up more soil moisture thus, more soil pore space is available for attenuation of precipitation, and the amount of soil water discharged to stream channels is reduced. It is assumed that the same amount of precipitation falling on the drainage

area would not produce the same instream flow as it would have two weeks ago at the time of the initial report.

A review of the Risk Evaluation and Emergency Determination, 2523.1 - Exhibit 02 (shown below), concludes a Probability of Damage or Loss to be "Possible" and the Magnitude of Consequences would be "Major" (because of State designated Outstanding Resource Waters), resulting in a Risk Evaluation and Emergency Determination of "High". **Therefore, we request that BAER funding be dedicated to Grandfather Ranger District employees to visit the FSR 4096 Crossing and remove woody debris and sediments that pose a risk of culvert plugging.**

Additional ground treatments are not deemed to be a critical need due to the limited amount of mineral soil exposed. The duff layer remained intact and no soil movement was observed from several surveyed locations. Since erosion and sediment hazards are expected to be minimal, soil and slope treatments are not recommended.

Hazard Tree Removal

Critical Value: Human life and safety on National Forest System (NFS) lands (2523.1 – Exhibit 01).

Threat Identification: There is a threat of fire damaged trees along the Trail 9 corridor falling on trail riders. A review of the Risk Evaluation and Emergency Determination, 2523.1 - Exhibit 02, concludes a Probability of Damage or Loss to be "Likely" and the Magnitude of Consequences would be "Major" resulting in a Risk Evaluation and Emergency Determination of "Very High".

2523.1 - Exhibit 02 - Risk Evaluation and Emergency Determination

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	RISK		
Very Likely	**Very High**	**Very High**	**Low**
Likely	**Very High**	**High**	**Low**
Possible	**High**	**Intermediate**	**Low**
Unlikely	**Intermediate**	**Low**	**Very Low**

B. Emergency Treatment Objectives:

FSR 4096 Crossing Maintenance

Remove woody debris and sediments from the inlet of the culvert to reduce the risk of plugging and subsequent road prism erosion and sedimentation to the stream. This work would reduce the risk to the Critical Values of significant investments on NFS lands and special State designations on NFS lands.

Hazard Tree Removal

Reduce the hazard of fire killed trees falling on people and OHV vehilcles while riding along Trail 9.

C. Probability of Completing Treatment Prior to Damaging Storm or Event: 80 percent

D. Probability of Treatment Success: 85 percent

E. Cost of No Action (Including Loss): The greatest cost of no action would be the environmental damage should the crossing continue to erode and fail into the stream channel, a tributary to Wilson Creek, a State designated Outstanding Resource Waters.

F. Cost of Selected Alternative (Including Loss): An estimated cost of $3,720 is projected to complete the treatments.

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology	[X] Soils	[ ] Geology	[ ] Range
[ ] Forestry	[ ] Wildlife	[X] Fire Mgmt.	[X] Engineering
[ ] Contracting	[X] Ecology	[X] Botany	[X] Archaeology
[ ] Fisheries	[ ] Research	[ ] Landscape Arch	[X] GIS

Team Leader: Brady Dodd

Email: bdodd@fs.fed.us Phone: (828) 257-4214 FAX: (828) 257-4874

H. Treatment Narrative:

FSR 4096 Crossing Maintenance

Directly following a one-inch/day or greater rainfall event District personnel would visit the site and remove woody debris and sediments from the inlet of the culvert to reduce the risk of plugging and subsequent road prism erosion and sedimentation to the stream. This work would occur during the months of May and June as precipitation amounts dictate. Four visits by two employees are planned in the Part VI – Emergency Stabilization Treatments and Source of Funds table.

Hazard Tree Removal

Remove fire damaged trees within the Brown Mountain OHV Trail 9 corridor by directionally felling using chainsaws.

I. Monitoring Narrative: No monitoring is proposed.

Part VI – Emergency Stabilization Treatments and Source of Funds Interim # 2

			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										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$0	$0		$0		$0	$0
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
Clear culvert inlet of debris, District personel	each	700	4	$2,800	$0		$0		$0	$2,800
Vehicle - expenses	each	30	4	$120	$0		$0		$0	$120
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$2,920	$0		$0		$0	$2,920
D. Protection/Safety										
Hazard Tree Removal	tree	100	8	$800	$0		$0		$0	$800
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$800	$0		$0		$0	$800
E. BAER Evaluation										
Team Leader/Hydro	hours	55	8	$0	$440		$0		$0	$440
Overtime	hours	85	4	$0	$340		$0		$0	$340
Botanist	hours	56	4	$0	$224		$0		$0	$224
Overtime	hours	90	4	$0	$360		$0		$0	$360
Travel Costs				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Evaluation				$0	$1,364		$0		$0	$1,364
F. Monitoring										
				$0	$0		$0		$0	$0
Insert new items above this line!							$0		$0	$0
Subtotal Monitoring				$0	$0		$0		$0	$0
G. Totals				$3,720	$1,364		**$0**		**$0**	**$5,084**
Previously approved										
Total for this request				**$3,720**	**$1,364**					

* estimated costs as of 05/08/2014

PART VII - APPROVALS

1. /s/ [signature] Forest Supervisor (signature) 5/9/14 Date

2. _____ Regional Forester (signature) _____ Date