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

Date of Report: 04/20/2011
Revised 5/6/2011

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

[X] 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

A. Fire Name:White Fire

B. Fire Number:NM-N5S-000187

C. State:New Mexico

D. County: Lincoln

E. Region: 3

F. Forest: Lincoln NF

G. District: Smokey Bear

H. Fire Incident Job Code: PNF-10H

I. Date Fire Started: April 3

J. Date Fire Contained: 04-20-2011

K. Suppression Cost:2.8 million

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles)8.9:
2. Fireline seeded (miles):0
3. Other (identify):

M. Watershed Number:1306000801(Rio Ruidoso)

N. Total Acres Burned: 10,361
NFS Acres(9,608) Other Federal (0) State (0) Private (753)

O. Vegetation Types:Pinyon Pine, One seed Juniper, Alligator Juniper,Ponderosa Pine, GambelOak,

P. Dominant Soils:Lithic Haplustolls, Typic Haplustolls Moderately deep, Typic Calciustolls

Q. Geologic Types: Limestone

R. Miles of Stream Channels by Order or Class:
Order 1 35.1eph Order 2 17.7eph Order 3 10.2eph Order 4 2.3eph Order 5 .7perennial

S. Transportation System

Trails:0 miles Roads:17.53 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1710 (low) 3111 (moderate) 4146 (high)

B. Water-Repellent Soil (acres):7276

C. Soil Erosion Hazard Rating (acres):
324 (low) 0 (moderate) 10,036 (high)

D. Erosion Potential: 14.7 tons/acre

E. Sediment Potential: 967 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5

B. Design Chance of Success, (percent): 75

C. Equivalent Design Recurrence Interval, (years): 25

D. Design Storm Duration, (hours): 25yr/1hr

E. Design Storm Magnitude, (inches): 2.8

F. Design Flow, (cubic feet / second/ square mile): 530

G. Estimated Reduction in Infiltration, (percent): 86

H. Adjusted Design Flow, (cfs per square mile): 787

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The White Fire burned on Forest Service and private lands above the southwest potion of the Village of Ruidoso and above all of the Village of Ruidoso Downs. Fuel types were primarily pinon/juniper (P/J) woodland with a smaller amount of Ponderosa Pine. The terrain within the burned area is steep to very steep

with a very high potential for excessive erosion and loss of control of water. The White fire burned area parallels Highway 70 for approximately ten miles from the southwest portion of the fire at the Village of Ruidoso to the southeast portion of the fire at Glencoe. Highway 70 is bordered by the White Fire to the north and by private property on both sides along the 10 mile length of the southern perimeter of the fire. Due to the topography and proximity of the burned area to private property, there is considerable risks/threats to life and property.

The risk matrix below, Exhibit 2 of Interim Directive No.: **2520-2010-1**, was used to evaluate the Risk Level for each value identified during Assessment:

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.	– Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects	Property damage is limited in economic value and/or to few investments; damage to natural or cultural resources resulting in minimal, recoverable or localized effects
	RISK		
Very Likely (>90%)	**Very High**	**Very High**	**Low**
Likely (>50% to <90%)	**Very High**	**High**	**Low**
Possible (>10% to <50%)	**High**	**Intermediate**	**Low**
Unlikely (<10%)	**Intermediate**	**Low**	**Very Low**

Values are at risk from significant increased peak flows, debris torrents and excessive sedimentation. Peak flows are predicted to increase from two to five times over the burned area. Soil erosion will increase by over an order of magnitude on the burned area. Residences on private land as well as the Ruidoso Downs Racetrack and Casino are at risk from sediment and debris torrents from increased peak flows. Highway 70 and Gavilan road, with associated infrastructures, may be overtopped by water and require maintenance or repair. Culverts may overtop and fail due to increased peak flows and/or from being plugged by floatable debris. Bridges may be weakened or washed out. Public use may be hazardous because of falling trees, flash floods, and falling debris. Infrastructure delivery systems may be damaged by hillslope erosion and or gullying. The numerous municipal and residential wells are at risk from inundation of water, providing health and safety issues.

The following risks are based on the BAER risk assessment matrix. The Very High and High Risk are unacceptable risk levels due to threats to human life, property, infrastructure and resources, therefore treatments should be applied. For an Intermediate Risk, this could be unacceptable if human life or safety is the critical value and treatments may be needed. Due to the changed post-fire watershed condition, no vegetative ground cover remains in high to moderate severity burn areas within the burned area, a presence of hydrophobic soils, steep to very steep slopes within the burn area, and the erosive nature of the soils, these

combine to result in excessive erosion, sedimentation, and loss of control of water. These highly unstable conditions put the following values at risk, and were confirmed through the assessment using the risk matrix:

Natural Resources

- Loss of site productivity and hydrological function due to excessive soil erosion and runoff (Very Likely, Major).

Human Health and Safety on Forest

- Loss of access to residences on Forest inholdings (Very Likely, Major).
- Loss of life or injury from hazards in the burn area (Very Likely, Major).
- Hazards to the public (human life and safety) from post fire conditions (Very Likely, Major).

Human Life, Safety, and Property (residences and infrastructure) Below Burned Area and Off Forest:

- In particular, 2 residences located directly in drainage bottom at the outlet of Lookout Canyon (Very Likely, Major) and the residences at the outlet of Johnson Canyon (Very Likely, Major). Residences and outbuildings located below bridge at Meander drive, outlet of unnamed drainage east of Johnson Canyon (due east of racetrack) and at unnamed drainage west of Stetson Cemetary (Very Likely, Major). Residential area with numerous homes along River Lane.
- Ruidoso Downs Racetrack and Casino, located at the outlet of a large unnamed drainage on an alluvial fan (Very Likely, Major).
- Numerous large stables and structures associated with the Ruidoso Downs Racetrack that occupies approximately 25 acres located directly at the outlet of Johnson Canyon (due east of racetrack) (Very Likely, Major).
- Ruidoso Downs Municipal water system (services Ruidoso Downs Racetrack and Casino) and Seeping Springs Campground well (Very Likely, Major)
- Buried and above ground utilities (Likely, Moderate).
- Acequias located along Rio Ruidoso (Likely, Minor).
- Domestic Residential wells and other ground water wells below burned area (estimated 185) (Likely, Moderate).
- Loss of access and bridges to residences (Very Likely, Major).
- Cemetery (Possible, Major).
- Highway 70 (culvert blockage, overflow, sedimentation on highway) (Likely, Major) .
- Municipal road (Gavilan Canyon Rd., Ruidoso) (Very Likely, Major).
- Municipal bridge (Bridge on Meander Rd., Ruidoso) (Very Likely, Major).
- Floatable debris in drainages (Very Likely, Major).

Transportation Infrastructure on Forest

- 7.9 miles of impacted NFS system roads; 7 miles of level two roads (FSR 120B, 120C, 5624, 5624A) and .9 miles of level three roads (FSR 5619) (Very Likely, Major).

Cultural Resources

- Potential damage to Cultural Heritage sites (Unlikely, Moderate).

B. Emergency Treatment Objectives:

1. Manage unacceptable risks to resources (site productivity and hydrologic function) near the municipalities of Ruidoso and Ruidoso Downs, particularly those resulting from flooding and sedimentation affecting property owners, residences and high value commercial properties, municipal watersheds, and

cultural and natural resources. This is a result of watershed conditions characterized as very little to no pine needle cast potential in the moderate burn severity, and none in the high burn severity.
2. Post flood warning hazard signs on roads, with road closures and hazard warning signs on visitor use areas.
3. Culvert removal and installation of rolling dips and low water crossings for critical stream crossings to protect NFS system roads and bridges.
4. Sediment catchment basins and checkdams intended to trap sediment and act as grade control structures, and prevent extensive gullying of drainage.

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

Land **75** % Channel **90** % Roads/Trails **90** % Protection/Safety **90** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	85	85	85
Channel	80	80	80
Roads/Trails	80	80	85
Protection/Safety	60	70	80

E. Cost of No-Action (Including Loss): 17,700,000

F. Cost of Selected Alternative (Including Loss):7,600,000

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader:Mike Natharius

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H. **Treatment Narrative:**

Land Treatments:
To greatly increase the effectiveness and odds of success, implementation of the straw mulching and aerial seeding will not begin until June13. By this time we will be out of the windy season and will be closer to the monsoon so that straw mulch is not displaced and seeding success potential is increased.

Helimulch approximately 1790 acres of high severity burn with certified weed free straw at an application rate of 2 tons per acre. Straw mulching will occur in critical locations throughout the burned area, primarily located above the values at a Very High Risk. This treatment is intended and proven to be effective in reducing erosion and subsequent downstream sedimentation by providing immediate ground cover and reducing the threats to values at risk below the burned area on private lands.

Aerial seed approximately 6280 acres of high and moderate burn severity. A majority of the high to moderate burn severity acres have little to no potential for needle cast to act as protective ground cover. Application rates will be 20 seeds per square foot. The seed mix is comprised of western wheatgrass (3 seeds), blue grama (2 seeds) and annual barley (15 seeds). This seed mix has a high percentage of annual barley in it which is a quick growing non-persistant annual intended to provide protective ground cover in a short period of time. This mix also has a small pecentage of native species in to assist in giving the burned area a jump start in native grass recovery.

Channel Treatments:
These treatments will be implemented immediately after funding is secured.
1. Construct 3 earthen sediment catchments to reduce ash, sedimentation and peak flows. There is risk of extensive downcutting in drainage bottoms, and potential for headcutting extending up into the watershed. These are intended as sediment catchments and grade control structures.
2. Clean out existing silted in sediment catchments located within the burned area. This will be done to increase sediment holding capacity of catchment.
3. Construct checkdams to act as grade control structures, prevent gullying of drainage bottoms, and reduce off-site sedimentation. These are to be placed in small side drainages. These are small pole and wire structures intended to act as grade control structures and sediment catchments. This type of checkdam was installed on the Cree Fire in 2000, which borders the White Fire, and were found to be very effective in acting as grade control structures.

Roads Treatments:
These treatments will be implemented immediately after funding is secured. These are some treatments that have been identified that reduce the risk of losing access to private property inholdings within the Forest boundaries. These have been identified as necessary to reduce additional losses of soil and sedimentation into the drainage networks, thus contributing to increased downstream effects. These treatments are to protect the current investments in this infrastructure.

1. Removal of several non-functioning culverts or poorly placed culverts. Two of these sites will be converted to low water crossings. The remainder will be converted to rolling dips installed in the road. Armouring with rock will be done to harden the low water crossings.
2. Install rolling dips on several road segements to improve drainage and reduce likelihood of roads washing out. Armouring will be done to harden the rolling dips, due to the low clay material in the local soil.
3. Road armouring (with rip-rap) of the two low water crossings and other sections at risk will occur. The hardening (rip-rap) of the headcut will be done, to prevent the headcut from expanding up past the road. This road is the only access into a private residence inholding within the NFS boundary, and allowing the headcut to continue would render the road impassable. The hardening will also occur on areas where water crosses the roads and no other drainage exists.
4. Placement of boulders and signs at two access points that enter the burn areas will be done to provide road closure of 2.76 miles of road. These road closures will be done for resource protection as well as safety.
5. Storm Patrol Storm patrol is an activity that is done during storms to evaluate and fix drainage problems as they occur.

Protection/Safety Treatments:
These treatments will be implemented immediately after funding is secured.

1. Implementation of a burned area closure order.
2. Installation of temporary closure and warning signs at access points into the burned area
3. Protection and Safety – Early Warning System. Due to the potential threats to human life and safety from post-fire conditions that exist within the White Fire, the BAER Team advises that the collaborators seriously consider the installment of an Early Warning System (EWS). Two areas have been identified on National Forest Lands that would be appropriate for the installation of these systems. One site is on Gavilan Ridge, above the head of Lookout and Johnson Canyons. Another site is on Sonny Ridge, to cover the area on the east side of the White Fire. BAER team members met with local and state level representatives from NRCS, a county commissioner and the mayor of Ruidoso to discuss values at risk.

   The EWS can measure rainfall and duration to allow early detection of hazardous condition. The National Weather Service is responsible for setting thresholds relative to precipitation, and issuing flashflood warnings. The EWS communication system can provide local emergency networks with direct contact via cell phone and satellite to allow for real-time tracking of conditions via internet connections. The local emergency network would be responsible for maintaining and operating the equipment. The BAER team bases this recommendation on the high burn severities as a result of the fire, the potential post-fire conditions, and the urban interface values at risk below the burn area. Additionally, the BAER team recommends putting together a public information team.

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

White Fire BAER treatments will be monitored to determine if treatments were successful (effective ground cover, road damage mitigation, resources mitigation, sediment basin integrity);

Monitoring treatment success will entail follow-up monitoring for the seeding and mulching to ensure effectiveness. Initial plots for photo points and transects will be established before the treatments commence, to provide statistical baseline data, conducted in May and June. Plots and transects will be taken across the burn unit. Post monsoonal monitoring will take place to determine germination success and soil retention. This will be done in September, as will the post treatment monitoring on the roads, and the non-native invasive species locations. In addition, storm patrols have been outlined, to have immediate monitoring after significant rain events, reviewing affected roads and sediment catchment basins to ensure those treatments are functioning as planned.

Part VI – Emergency Stabilization Treatments and Source of Funds **Initial**

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	on F	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
Aerial Seeding	ac	39.968	6280	$251,000	$0		$0		$0	$251,000
Aerial Mulching	ac	874.86	1790	$1,566,000	$0		$0		$0	$1,566,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$1,817,000	$0		$0		$0	$1,817,000
B. Channel Treatments										
Install Catchments	ea	5800	3	$17,400	$0		$0		$0	$17,400
Clean Catchments	ea	4200	8	$33,600	$0		$0		$0	$33,600
Wire Checkdams	ea	1200	25	$30,000	$0		$0		$0	$30,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$81,000	$0		$0		$0	$81,000
C. Roads										
Rolling Dips	ea	550	21	$11,550	$0		$0		$0	$11,550
Remove Culverts	ea	550	5	$2,750	$0		$0		$0	$2,750
Clean Culverts	ea	350	2	$700	$0		$0		$0	$700
Road Hardening Treatment				$33,800	$0		$0		$0	$33,800
Install Low Water Crossing	ea	600	2	$1,200	$0		$0		$0	$1,200
Storm Patrol				$4,000						
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$54,000	$0		$0		$0	$50,000
D. Protection/Safety										
Warning/Hazard Signs	ea	40	50	$2,000	$0		$0		$0	$2,000
Road Closures	ea	1000	2	$2,000	$0		$0		$0	$2,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$4,000	$0		$0		$0	$4,000
E. BAER Evaluation										
BAER Assessment Costs	ea	81000	1	---	$81,000		$0		$0	$81,000
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$81,000		$0		$0	$81,000
F. Monitoring										
Treatment Effectiveness				$11,000			$0		$0	$11,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$11,000	$0		$0		$0	$11,000
G. Totals				$1,967,000	$81,000		**$0**		**$0**	**$2,044,000**
Previously approved										
Total for this request				**$1,967,000**						

Note: 4/27/2011 Items identified in green shading approved by Regional Forester. Other items were sent to the WO as a request for approval.

PART VII - APPROVALS

1.	/s/ *Robert G. Trujillo* Forest Supervisor (signature)	4/20/2011 Date
2.	*/s/ Faye L. Krueger (for)* Regional Forester (signature)	4/28/2011 Date
3.	*/s/Steven T. Segovia (for)* Director, Watershed, Fish,Wildlife, Air & Rare Plants	05/05/2011 Date