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

Date of Report: 05/12/2011

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:Last Chance Fire

B. Fire Number:NM-LNF-000009

C. State:New Mexico

D. County: Eddy

E. Region: 3

F. Forest:Lincoln

G. District Guadalupe R.D.

H. Fire Incident Job Code: P3F2UG

I. Date Fire Started: 04/24/2011

J. Date Fire Contained:05/06/2011

K. Suppression Cost: $2,300,000.00

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

M. Watershed Number: 1306001108 (Middle Last Chance)

N. Total Acres Burned: 53,342
NFS Acres(22,702) Other Federal (16,668) State (4,415) Private (9,557)

O. Vegetation Types: Pinyon/Juniper Woodland, Desert Shrubland

P. Dominant Soils: Lithic Argiustols, Lithic Calciustolls and Rock Outcrop

Q. Geologic Types: Limestone, Sandstone and Dolimite

R. Miles of Stream Channels by Order or Class:
Order 1 = 185 miles
Order 2 = 109 miles
Order 3 = 55 miles
Order 4 = 19 miles

S. Transportation System

Trails: 18.5 miles Roads: 24.1 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 17,595 (low & unburned) 5,105 (moderate) 2 (high)

B. Water-Repellent Soil (acres): 18,543 (Slight), 4,162 (moderate)

C. Soil Erosion Hazard Rating (acres):
13820 (low) 9022 (moderate) 0 (high)

D. Erosion Potential: 3.8 tons/acre

E. Sediment Potential: 181 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 4

B. Design Chance of Success, (percent): 85

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

D. Design Storm Duration, (hours): 1 hour

E. Design Storm Magnitude, (inches): 25 year – 2.58 inches

F. Design Flow, (cubic feet / second/ square mile): 264

G. Estimated Reduction in Infiltration, (percent): 18

H. Adjusted Design Flow, (cfs per square mile): 89

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Last Chance Fire originated on National Forest Lands, and was started on April 24, 2011, ignited as a result of an unattended campfire. The fire was centered in the Last Chance Canyon and Sitting Bull Falls area of the Guadalupe Ranger District on the Lincoln National Forest, New Mexico. The fire was turned over to the Pecos Zone Type 3 IC team the same evening. By April 25, 2011, the fire had expanded to 15,000 acres and threatened the community of Queen. By April 26, the fire had crossed over private and state lands into BLM lands. Partial containment was obtained by April 30, 2011, and the fire was 100% contained on May 6, 2011.

The fuel types were primarily pinon/juniper woodland and desert shrubland. There is one perennial stream, Sitting Bull Falls, which is a high use developed recreational site within the burned area. Elevations range from approximately 4,300 to 5,600 feet, and in many areas the terrain is rugged, very steep canyon country. The deep canyons that experienced moderate severity burn poss a high potential for erosion and loss of control of water.

Little to no vegetative ground cover remains in the moderate severity burn areas within the burned area. Grass root collars remain intact within the moderate burn severity areas and are expected to green up with the onset of the monsoons. The burned area will experience much higher than normal erosion and overland flow due to hydrophobic soils combined with steep slopes until vegetative cover becomes reestablished on into the growing season. The canyon country within the burned area was subject to flash floods and rapid increases in water flows pre-fire due to steep very rocky shallow soils, post-fire conditions are expected to greatly magnify this situation, resulting in a higher susceptibility to flash flooding and increases in peak flows. These inherent conditions, modified by post-burn factors will impact the values at risks listed below. It has been determined from assessment and modeling that the following are values at risk and that public safety is at risk.

1. Sitting Bull Falls is an extremely popular developed recreational area located within the burned area. A paved, fully handicapped accessible trail leading to the 150 foot limestone cliff waterfall. The developed recreation site contains a large stone-constructed pavillion, built by the CCC, 7 picnic stone pavilions (1 built by the CCC, the remainder constructed in the 1980s), a bathhouse with full electric and water facilities, paved walkways, sprinkler system, trail systems and upper & lower parking lots. This recreational area is at risk from excessive sedimentation, falling rocks and potentially stranding visitors at the site due to flooding of the eleven low water crossings located below on forest road 276 that is the only access in and out of the recreation site. These low water crossings are located in Last Chance Canyon which drains all of the large canyons of the burned area.

2. Forest Road 276 crosses Sitting Bull Canyon below the recreation site. This crossing consists of two large culverts which are at risk from being undercut on the downstream side and fail due to increased modeled peak flows and/or from being plugged by floatable debris. If this failed the road would would be impassable and could leave people stranded at the Recreational site and would be a significant loss of investment.

3. Forest Road 276 (also called CR 409 or Sitting Bull Falls Road) is the only access road that runs down Last Chance Canyon, crossing the stream in 11 low water crossings, and one crossing with two large culverts. This road is subject to flash flooding events. Even in pre-fire conditions, this road has been closed due to high flood waters, and people have been trapped in Sitting Bull Falls recreation area for 24-48 hours. There is a probability of a buildup of floatable debris to clog the culverts, and a storm patrol will need to be implemented to remove the debris from the culverts. Due to the flooding concerns and possibility of entrapment, FSR 276 should be closed to travel, with a locked gate.

4. Last Chance Canyon 1896 Apache/Calvary Battle Site is located in Last Chance Canyon is a value at risk. A portion of the site is located within the floodplain of the canyon with a potion of it being located on the

toeslopes of the canyon wall. This site is on the National Register of Historic Places (#346694). The site has been preserved "in situ" since a 1999 research project surveyed the engagement area within the canyon system. The integrity of this Cultural Resource site is at risk from erosion and overland water flow in Last Chance Canyon.

Critical Values Identified

Critical Values were identified (FSM 2523.1 Exhibit 01) during the BAER assesment are: human life and safety, property, natural resources and cultural and heritage resources. The BAER team then evaluated the risk to those critical values using the BAER Risk Assessment (FSM 23235.1 Exhibit 02)

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

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 condition, no vegetative ground cover remains in the moderate severity burn areas within the burned area. This combined with the presence of hydrophobic soils, steep slopes within the burn area, and the erosive nature of the canyon walls, are predicted to contribute to erosion, sedimentation, and loss of control of water. This canyon system before the burn was subject to flash floods and rapid increases in water flows; the post-burn condition is expected to magnify this situation, resulting in a higher susceptibility to flash flooding and increases in water flows. These inherent conditions, modified by post-burn factors, will impact some values at risk.

Values are at risk from increased peak flows, debris torrents and sedimentation. Peak flows are predicted to increase over the burned area. Soil erosion rates were modeled to increase in the burned area. The Sitting Bull Falls Recreation site as well as access to this area are at risk from sediment and debris torrents from increased peak flows. In addition, the loss of vegetative cover, the steep slopes and unanchored rocks covered by a very thin layer of soils will result in increased rock falls, ranging in size from cobbles to boulders. FSR 276, with the multiple low water crossings may be overtopped by water and require debris removal or repair. At a stream crossing below the recreation site, the crossing consists of two long culverts which may overtop and fail due to increased peak flows and/or from being plugged by floatable debris. The downstream side of the double culvert stream crossing at Sitting Bull Falls is in danger of undercutting. Public use may be hazardous because of rock falls, flash floods, and debris flows.

Cultural resource values are at a high risk of damage and potential vandalism, due to loss of concealing vegetative cover. Previously, the vegetative cover allowed a major National Register of Historic Places (NRHP) Historical Register Site (battlefield) to maintain integrity, with cultural resource items "in situ." This loss of vegetation due to the fire has resulted in the area identified as being at risk of losing site integrity, should heavy rains from the monsoons flood the area.

Values at risk were determined from field surveys, observations, input from district personnel and specialists, and further evaluated through the risk matrix. The values below rated at a high to a very high risk to human health or safety, risk to infrastructure or to natural or cultural resources. These are itemized with a description and recommended BAER treatment.

Summary of Threats and Risk Matrix Value
(Risk Matrix Rating is the Likelihood of Occurrence/Magnitude = Risk Value)

Human life and safety on or in close proximity to burned NFS lands.

- Sitting Bull Falls recreation area is a heavily used recreation site with one forest service access road into the site. The probability of a damaging post fire event is very likely (>90%) and magnitude of the consequences is major with the risk associated with this being very high due to the potential loss of life or entrapment within the recreational site.
- FSR 276. The probability of a damaging post fire event is very likely (>90%) and magnitude of the consequences is major with the risk associated with this being very high due the potential for loss of life or entrapment within the recreational site.
- NM Hwy 137. The probability of a damaging post fire event is likely (>50 to <90%) and magnitude of the consequences is major with the risk associated with this being very high due the potential for increased flow across the low water crossing on NM 137.

Property on or in close proximity to the burned NFS lands

- Sites at Sitting Bull Falls. The probability of a damaging post fire event is very likely (>90%) and magnitude of the consequences is moderate with the risk associated with this being very high due to the potential for Forest Service infrastructure and considerable negative effects to cultural resources..
- Forest Road 276. The probability of a damaging post fire event is very likely (>90%) and magnitude of the consequences is major with the risk associated with this being very high due the substantial loss of Forest Service infrastructure.

Natural Resources

- Loss of soil productivity and hydrologic function due to little to no vegetative ground cover remains in the moderate severity burn areas within the burned area. The probability of a damaging post fire event is likely (>50 to <90%) and magnitude of the consequences is moderate. There is an existing grass component and herbaceous cover that will green up with the onset of the monsoons, providing vegetative ground cover. During the assessment, it was found that root collars and surface roots were intact, providing a basis for natural recovery. There will be short-term increase in erosion and peak flows until natural recovery of the moderate burn severity found within the burned area occurs. No BAER treatments were proposed; as the team analyzed the probability that seeding success would be low (less than 40%) due to the steep and rocky terrain as well as the extreme hot climate and the low precipitation.

Cultural and Heritage Resources

- Last Chance Canyon Apache/Calvary Battle Site. The probability of a damaging post fire event is very likely (>90%) and magnitude of the consequences is major with the risk associated with this being very high due to the potential erosion and increased peak flows.

B. Emergency Treatment Objectives:

1. Close the burned area by means of a Administrative closure. Post flood warning hazard sign on NM Highway 137 where Last Chance Canyon crosses the highway by means of a low water crossing. Post closure signs at all entrances into the burned area. Install a locking swing gate on Forest Road 276 at the Forest boundary to prevent entry into the Sitting Bull Recreational site.

2. Hydromulch 4 acres of steep moderately burned slopes adjacent to Sitting Bull recreational area and the handicapped accessible trail leading to Sitting Bull Falls.

3. Harden both sides of the large double culvert system under Forest Road 276 on Sitting Bull Canyon just below the Recreational site. Harden with large rip-rap on upstream side of culverts and installation of splash pad and cement on downstream side to prevent further undercutting and potential failure.

4. Seed and Mulch 13 acres of the 114 acreLast Chance Battle field ground to assist in stabilizing this National Register of Historic Places site. The 13 acres is the area where the initial Battle started and has the highest artifact concentration of both Apache and Calvary artifacts.

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

Land 95 % Channel N/A % Roads/Trails 95 % Protection/Safety 95 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	90	95	95
Channel	--	--	--
Roads/Trails	90	95	95
Protection/Safety	95	95	95

E. Cost of No-Action (Including Loss):650,000

F. Cost of Selected Alternative (Including Loss):160,700

G. Skills Represented on Burned-Area Survey Team:

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

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H. **Treatment Narrative:**

Land Treatments:

1. Hydromulch and seed 4 acres adjacent to Sitting Bull Falls recreation site. These areas have moderate severity burns on steep side slope adjacent to the recreational site and handicap accessable walkway to the Falls. Seed mix is comprised of a non persistent annual barley and a mix of native species. This treatment is intended to stabilize steep slopes adjacent to the recreational site.

Little Bluestem	(*Schizachyrium scoparium*)	5 seeds/square foot
Green Sprangletop	(*Leptochloa dubia*)	5 seeds/square foot
Plains Lovegrass	(*Eragrostis intermedia*)	5 seeds/square foot
Sand Dropseed	(*Sporobolus cryptandrus*)	5 seeds/square foot
Annual Barley	(*Hordeum vulgare*)	20 seeds/square foot
	Total:	40 seeds/square foot

2. Hand seed and straw mulch 13 acres of mostly moderate severity burn on priority area of the Last Chance battle field. Seed mix will be the same as the mix mentioned above. Application rate is 40 seeds per square foot. This treatment is intended to assist in site stabilization and reduce post fire effects of erosion

Channel Treatments:
There are no channel treatments recommended for the Last Chance BAER.

Roads and Trail Treatments:

1. Hardening of the crossing of FSR 576 containing the two culvert system at Sitting Bull Falls.

2. Installation of closure gate on FSR 276 at the Forest Service boundary. This is necessary to keep visitors from entering the recreational area, putting at risk human health and safety.

3. Storm Patrol and debris removal from the culverts at FSR 276. This is necessary to protect the forest infrastructure and reducing risk to human health and safety.

Protection/Safety Treatments:

1. Implementation of a burned area closure order, to remain in effect until after the monsoon season or later if deemed necessary.

2. Installation of locking gate at Forest Boundary on Forest Road 276 entering Sitting Bull Falls Recreational area.

3. Post closure/warning signs at access points into the burned area.

I. **Monitoring Narrative:**

Last Chance Fire BAER treatments will be monitored to determine 1) if treatments were successful (effective ground cover, recreation site damage minimization, resources protection, road damage minimization) and 2) if treatments resulted in undesirable results (i.e., introduction of noxious weeds). Final summaries will be provided annually.

1) Treatment effectiveness.

Monitoring treatment effectiveness will consist of monitoring the seeding and hydro-mulching following contract completion to ensure effectiveness. Initial plots for repeatable photo points will be established before the contracts commence, to provide baseline data. The monitoring efforts will be completed in September of each year. In addition, storm patrols will be scheduled for immediate monitoring after significant rain events targeting affected roads and low water crossings for debris and sediment removal.

2) Monitoring undesirable results

Monitoring for undesirable outcomes (i.e., noxious weed populations) will be done on the Last Chance Fire along the perimeter of the Sitting Bull Falls Recreation Area. Noxious weeds have been identified by the Chief of the Forest Service as one of the top four threats to National Forest System lands. Monitoring of noxious weeds will be conducted at the end of monsoon season.

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										
Hydromulch/seeding	10	8,000	10	$80,000	$0		$0		$0	$80,000
Hand Mulching/seed	13	1,154	13	$15,000	$0		$0		$0	$15,000
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$95,000	$0		$0		$0	$95,000
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$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										
Harding of culverts	1	19,000	1	$19,000	$0		$0		$0	$19,000
Storm Patrol	5	1,000	5	$5,000	$0		$0		$0	$5,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$24,000	$0		$0		$0	$24,000
D. Protection/Safety										
Closure Gate	1	3,000	1	$3,000	$0		$0		$0	$3,000
Closure/warning sign	17	118	17	$2,000	$0		$0		$0	$2,000
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$5,000	$0		$0		$0	$5,000
E. BAER Evaluation										
					$47,165		$0		$0	$47,165
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$47,165		$0		$0	$47,165
F. Monitoring										
Monitoring				$3,000	$0		$0		$0	$3,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$3,000	$0		$0		$0	$3,000
G. Totals				$127,000	$47,165		**$0**		**$0**	**$174,165**
Previously approved										
Total for this request				**$127,000**						

1. */s/Robert G. Trujillo* 5/12/2011
   Forest Supervisor (signature) Date

2. _____ _____
   Regional Forester (signature) Date