Date of Report: **07/25/05**

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report
[**X**] 1. Funding request for estimated WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation
`

B. Type of Action
[**X**] 1. **Initial Request**
[ ] 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: **Mason Gulch**

B. Fire Number: **CO-PSF-683**

C. State: CO

D. County: Custer, Pueblo

E. Region: 02

F. Forest: San Isabel

G. District: San Carlos

H. Date Fire Started: 7/6/05

I. Date Fire Contained: 7/16/05

J. Suppression Cost: $5,500,000

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 22
2. Fireline seeded (miles): 8
3. Other (identify): Dozer Line - 6 miles waterbarred and seeded

L. Watershed Numbers: 1102000201001 – Red Creek (HUC6)

M. Total Acres Burned: **11,357 acres**
NFS- 9,124 acres State- none **Private- 2,233 acres**
(Custer Co. 367 ac., Pueblo Co. 1,866 ac.)

N. Vegetation Types: Pipo/Quga, Abco-Psme/Vamy

O. Dominant Soils: Hectman, Guffey, Teaspoon, Cathedral

P. Geologic Types: FOUNTAIN FORMATION--Arkosic sandstone and conglomerate
(Also, Interbedded Felsic & Hornblendic Gniesses on higher parts)

Q. Miles of Stream Channels by Order or Class:
Perennial (including lakes)- 6 miles Intermittent- 46 miles

R. Transportation System:
Trails: 3.1 miles Roads: 4 miles (All ownerships)

PART III - WATERSHED CONDITION

A. Burn Severity (acres): low- 158 (1%) moderate- 3,469 (30%) high- 7,730 (69%)

B. Water-Repellent Soil (acres): 11,199 (high and moderate bun severity)

C. Soil Erosion Hazard Rating (acres):
Low- 1,867(1%) moderate- 6,254 (55%) high- 3,236 (28%)

D. Erosion Potential: 10 Ton/acre average

E. Sediment Potential: 9,010 cubic yards/square mile (for 5 year period)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	3-5 years
B. Design Chance of Success, (percent):	80%
C. Equivalent Design Recurrence Interval, (years):	2
D. Design Storm Duration, (hours):	1.23
E. Design Storm Magnitude, (inches):	1.0
F. Design Flow, (cubic feet / second/ square mile[CSM]):	500
G. Estimated Reduction in Infiltration, (percent):	900%
H. Adjusted Design Flow, (cfs per square mile):	300-700+ CSM (avg = 520)

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Mason Gulch fire burned over 11,357 acres, 69% in high severity burn, in the Red Creek watershed. Entire watersheds burned, from ridge to ridge, including riparian zones. Soil surface conditions are such that revegetation will be slow and spotty especially on north-facing slopes where densely stocked stands of mixed conifers were consumed by the fire. Field reconnaissance of burned area show an estimated 90% of the fire now has soil conditions that will repel water during storm events. The area is at risk from severe erosion and sedimentation from the monsoon season characterized by thunderstorms beginning in early to mid July in average years which are expected to cause flooding. Two ranch headquarters, a youth camp and a small number of homes are at risk from flooding and sedimentation immediately downstream from the fire. Flood warning signs have been posted in the burned area as of July 21, 2005.

Threats to Life and Property- The fire has created significant threats to life and property, both on NFS lands, and on private property below NFS lands where moderate and high severity burn has occurred. The threats are broken out and described below:

Flooding: A combination of soil water-repellency and the loss of ground cover have created conditions conducive to flooding during convectional storms for the next three years. Modeling based on the 2-year return interval storm (1.23"/hour) indicate that nearly all watersheds may produce flood-flows of at least 300 cfs/mi^2 (CSM), with several exceeding 500 CSM.

FS Roads and crossings: The road system, particularly the crossings, were designed to pass storms of 2-years or less return interval, probably on the order of $\leq$ 300 CSM. Projected storms will be as much as two orders of magnitude higher. These roads receive a great deal of use by forest-users in the summer months when the strong convectional storms are most common. .

Water Quality: Ash flows from a low-intensity storm that occurred since the fire (July 15, 2005) has already heightened concern for water quality impacts. Private wells are deep enough so as not to be at risk.

Threats to Long-Term Soil Productivity and Ecosystem Integrity-

Accelerated Erosion: Pre-fire annual soil erosion was on the order of 1 ton/acre. Post-fire erosion, a severity-weighted average for the whole fire, will be about 10 tons per acre. Erosion on the high and moderate severity lands will be on the order of 14 tons/acre. Ash flows and sediment have occurred in the south half of the burned area after a single rain event measuring as little as one-hundredth of an inch.

Noxious Weeds: Field reviews have discovered populations of several known noxious weeds. The North Creek area along the southern fire perimeter is heavily infested with leafy spurge, musk thistle, and Canada thistle. While the District noxious weed inventory shows no weed populations within the burned area, (see map in project file), during field recon of the burned area, a population of musk thistle was found in the riparian zone of South Red Creek just upstream of the Bear's Head Ranch. Tamarisk is present in along the South Red Creek drainage just outside the burned area on FS land. Noxious weeds were not identified in or around the north end of the burn. Should new infestations be identified within the first year after the fire, an interim request to cover the cost of control will be submitted for approval.

B. Emergency Treatment Objectives:

- Seeding done at appropriate locations and application rates intended to increase short term ground cover
- Maintain roads and crossings from damaging flood flows
- Monitor the burn area to assess whether the fire has exacerbated the existing noxious weed conditions

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land (for entire fire area)- **50** % Roads- **75** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	50-80	90-95	90-95
Channel	none		
Roads	75-90	80-90	80-90
Other			

E. Cost of No-Action (Including Loss): **See attached cost/risk analysis document.**

F. Cost of Selected Alternative (Including Loss): **$486,256**

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Ken Kanaan

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H. **Treatment Narrative (See attached Treatment Spec sheets and map):**

Land Treatments:

Aerial seeding: For the high severity fire areas seeding will occur on approximately 6,200 acres on NFS jurisdiction. The intent of the treatment is to prevent loss of topsoil, improve infiltration rates and replace organic litter consumed by the fire. FS will make sure that the seed has been tested for noxious weed content and inert matter within the past 120 days. All seeds will be certified to Colorado noxious weed free standards. Seed mix is a selection of native perennial grasses developed in consultation with NRCS and tailored to the site. Refer to specification sheet on aerial seeding for details. Following is the proposed seed mix.

Common Name	Scientific Name	Variety	Req. PLS/Ac (100%)	% of Species in mix	PLS seeding rate per species/ac
Green needlegrass	Nassella viridula	Loderm	10.00	15.00	1.50
Western Wheatgrass	Pascopyrum smithii	Arriba, Barton, Rosanna	16.00	20.00	3.20
Little Bluestem	Schizachyrium scoparium	Pastura	7.00	15.00	1.05
Arizona Fescue	Festuca arizonica	Redondo	4.50	15.00	0.68
Sideoats Grama	Bouteloua curtipendula	Vaughn, Butte	9.00	20.00	1.80
Sandberg bluegrass	Poa secunda		3.00	15.00	0.45

Roads and Trail Treatments:

Road maintenance: To prepare for the anticipated flows from the fire area, approximately 2 miles of road will have significant heavy maintenance to include culvert and ditch cleaning, plus re-installation of rolling dips. A gate will be installed to restrict public access and limit public exposure to risk from flooding. Refer to road maintenance specification sheet for details.

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.)

Noxious weed monitoring: During the latter part of the 2005 growing season and the first half of the 2006 growing season, monitor establishment of new weed populations within the burn area. Refer to noxious weeds specialist report and specification sheet for details.

PART VI -- EMERGENCY REHABILITATION TREATMENTS AND SOURCE OF FUNDS BY LAND OWNERSHIP

			NFS LANDS			OTHER FED		OTHER LANDS		All
		Unit	# of	WFSU	Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$	units	$	Units	$	$
A. Land Treatments										
Aerial Seeding	acres	25.00	6,200	$155,000						$155,000
Grass Seed	acres	48.00	6,200	$297,600						$297,600
Subtotal Land Treatments				**$452,600**						**$452,600**
B. Channel Treatments										
None planned										
Subtotal Channel Treatments										
C. Road and Trails										
Road Maintenance	project		1	$15,701						$15,701
Road closures	project		1	$1,600						$1,600
Subtotal Road & Trails				**$17,301**						**$17,301**
D. Structures										
None planned										
Subtotal Structures										
E. BAER Evaluation										
Team costs - H2BET2 charges (not included in total below)	total				19,438					$19,438
Subtotal BAER Evaluation					19,438					**$19,438**
F. Monitoring										
Noxious weed monitoring	project		1	$5,756						$5,756
Subtotal Monitoring				**$5,756**						**$5,756**
G. Other										
Subtotal Other										
H. Totals				**$475,657**						**$495,095**

PART VII - APPROVALS

1. ***/s/ Brian Ferebee*** — ***July 26, 2005***
   Forest Supervisor (signature) — Date

2. */s/ Glenda L. Wilson for* — July 28, 2005
   Regional Forester (signature) — Date