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

Date of Report: 6/2/06

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: Cornfield

B. Fire Number: AZ-PNF-0258

C. State: Az

D. County: Yavapai

E. Region: 03

F. Forest: Prescott

G. District: Bradshaw

H. Fire Incident Job Code: P3CM1V

I. Date Fire Started: 5/28/06

J. Date Fire Contained: 5/30/06

K. Suppression Cost: $250,000

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 0
2. Fireline seeded (miles): 0
3. Other (identify): slash - 4 miles

M. Watershed Number: Kirkland Creek 1503020301 / Sycamore Creek 1503020302

N. Total Acres Burned:
NFS Acres(1100) Other Federal (**0**) State (0) Private (0)

O. Vegetation Types: Chaparral

P. Dominant Soils: Typic Argiustolls, Lithic Ustorthents

Q. Geologic Types:Granite, Alluvium

R. Miles of Stream Channels by Order or Class:
2.27 Ephemeral Miles

S. Transportation System

Trails: 0 miles Roads:2.5 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 278 (low) 329 (moderate) 438 (high)

B. Water-Repellent Soil (acres): 767

C. Soil Erosion Hazard Rating (acres):
700 (low) 400 (moderate) 0 (high)

D. Erosion Potential: 19.8 tons/acre

E. Sediment Potential: 3163 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3-5

B. Design Chance of Success, (percent): 80

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

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 3.58

F. Design Flow, (cubic feet / second/ square mile): 449

G. Estimated Reduction in Infiltration, (percent): 62

H. Adjusted Design Flow, (cfs per square mile): 985

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Life and private property: The majority of the Upper Ferguson Wash watershed above a private resident was subjected to high burn severity. This places a potential threat to human life and safety and property due to the effects of a projected increase of flow and sediment yield in Upper Fergusan Wash.

Wildlife: The Southwestern Toad habitat is known to be within the proximity of the fire. The projected increase of sediment yield would potentially be detrimental to this species.

Noxious Weed: Cheat grass exists within and near the burned area. Potential for spread of this weed has increased as a result of the fire.

Soils: Areas subjected to low burn severity have experienced minimal soil damage and loss of ground cover. Moderate burn severity sites experienced a mixture of low to none and moderate hydrophobicity. A large portion of the soils were exposed to high burn severity. The high burn severity sites have predominantly moderate hydrophobiciy, a loss of ground cover, some soil structure deterioration, and overall organic matter loss. These soils will experience a decrease in infiltration rates, increase in run-off, and an acceleration of erosion rates that will contribute to a large increase of sediment load. The elevated erosion rates may also interfere with a loss of long term productivity. The majority of the soils subjected to high burn severity are deep alluvium soils that have had some previous gully erosion and are in jeopardy to experience further gully expansion and initiation.

The following table provides predicted erosion rates and sediment yields of Upper Ferguson Wash.

Erosion/ Sediment	**Pre-fire**	**Post-fire**	**Seeding Treatment**
Average Erosion Rate (t/acre/yr)	7.2	17.2	10.5
Total Sediment Yield (t/yr)	3165	5751	3507

Hydrology: The USGS regression equation for this region was used to calibrate the precipitation and curve number data used in the Win TR-55 model for pre-fire conditions. The same precipitation information was used during model runs for post-fire and post-treatment conditions.

At the outlet near the private residence value at risk, the channel is an ephemeral, approximately 50 feet wide and 7 feet deep with a substrate that is decomposed granite with some gravels and little vegetation. As the table below shows, even 500 year events do not escape the active channel area near the outlet. These facts strongly suggest that the channel has been both downcutting and widening during pre-fire conditions. The effect of storm events increases greatly after a fire. Until the watershed recovers, the effects of a 10 year event may be felt on an annual basis. Post-fire conditions, with the increased flow and erosive power, may undermine channel banks, causing the channel sides to slump and increasing channel width. Bank erosion is especially prone to occur on channel bends. The connected effects of high flow events may cause indirect damage to the private residence located at the base of the Upper Ferguson Wash watershed.

Pre-fire-USGS		Pre-fire Win TR-55		Post-fire Win TR-55		Post-Treatment Win TR-55	
	Discharge	Discharge	Stage	Discharge	Stage	Discharge	Stage
2	32	66	0.7	260	1.5	190	1.3
5	103	136	1.1	396	1.9	307	1.6
10	196	202	1.3	510	2.4	407	2.2
25	399	305	1.7	670	2.6	551	2.4
50	565	388	1.9	795	2.9	664	2.6
100	843	477	2.2	924	3.1	782	2.9
500		571	2.4	1057	3.4	964	3.2

Roads and Trails: There is approximately 2.5 miles of forest level 2 roads within the fire perimeter. No trails are present within the fire perimeter. The Level 2 roads are not expected to be in jeopardy from post flow events because the catchment areas impacting road crossings is minimal.

Heritage Resources: There are 2 prehistoric sherd, lithic, and groundstone scatter sites that appear to be eligible for the National Register of Places. These sites are well stabilized and are not in jeopardy of post fire deterioration.

B. Emergency Treatment Objectives:

- Reduce the threat to human life, safety and property affiliated with the private residence located on the Upper Fergusan Wash from flooding and sediment yield.
- Minimize potential detrimental impacts to the Southwest Toad which is designated as a sensitive species.
- Minimize the spread of Cheat Grass.
- Assist the soils to maintain long-term productivity and decrease the potential for gully formation

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

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

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	60	85	90
Channel	NA	NA	NA
Roads/Trails	NA	NA	NA
Protection/Safety	50	75	90

E. Cost of No-Action (Including Loss): $379,298

F. Cost of Selected Alternative (Including Loss):$96,741

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: David Moore

Email: dmoore05@fs.fed.us Phone: (928)777-2250 FAX: (928)777-2208

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:

A cover crop (Barley) would be hand seeded at a rate of 10 pls/ acres on 180 acres. The seeding will occur within 270 acres of high burn severity within the Upper Ferguson Wash Watershed. The cover crop will allow quick initial propogation because of the characteristics associated with an annual phenology. This will speed up the soil and hydrology recovery process by providing ground cover and organic matter needed to improve soil structure. The seeding efforts will improve infiltration rates and decrease accelerated run-off, and erosion rates. The decreased erosion rates would assist the soils to maintain long-term productivity and decrease the potential for gully formation. The decreased erosion rates will also decrease the sediment yield potential which will minimize potential detrimental impact to the Southwest Toad. The seeding efforts will also provide competition for cheat grass and potentially minimize the spread of this weed.

Channel Treatments: None

Roads and Trail Treatments: None

Protection/Safety Treatments:

The seeding (as described in *Land Treatments*) would potentially decrease a post fire flood event frequency and decrease sediment yield on Upper Fergusan Wash. This will potentially reduce the threat to human life, safety and property affiliated with the private residence located on the Upper Fergusan Wash.

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.)

Land Treatment: Qualatative monitoring will be used to determine the seeding propogation success and erosion control effectiveness. The site will also be monitored for cheat grass infestation.

Sediment Yield and Flows: Upper Ferguson Wash will be monitored to determine qualative post flood events and sediment yield production.

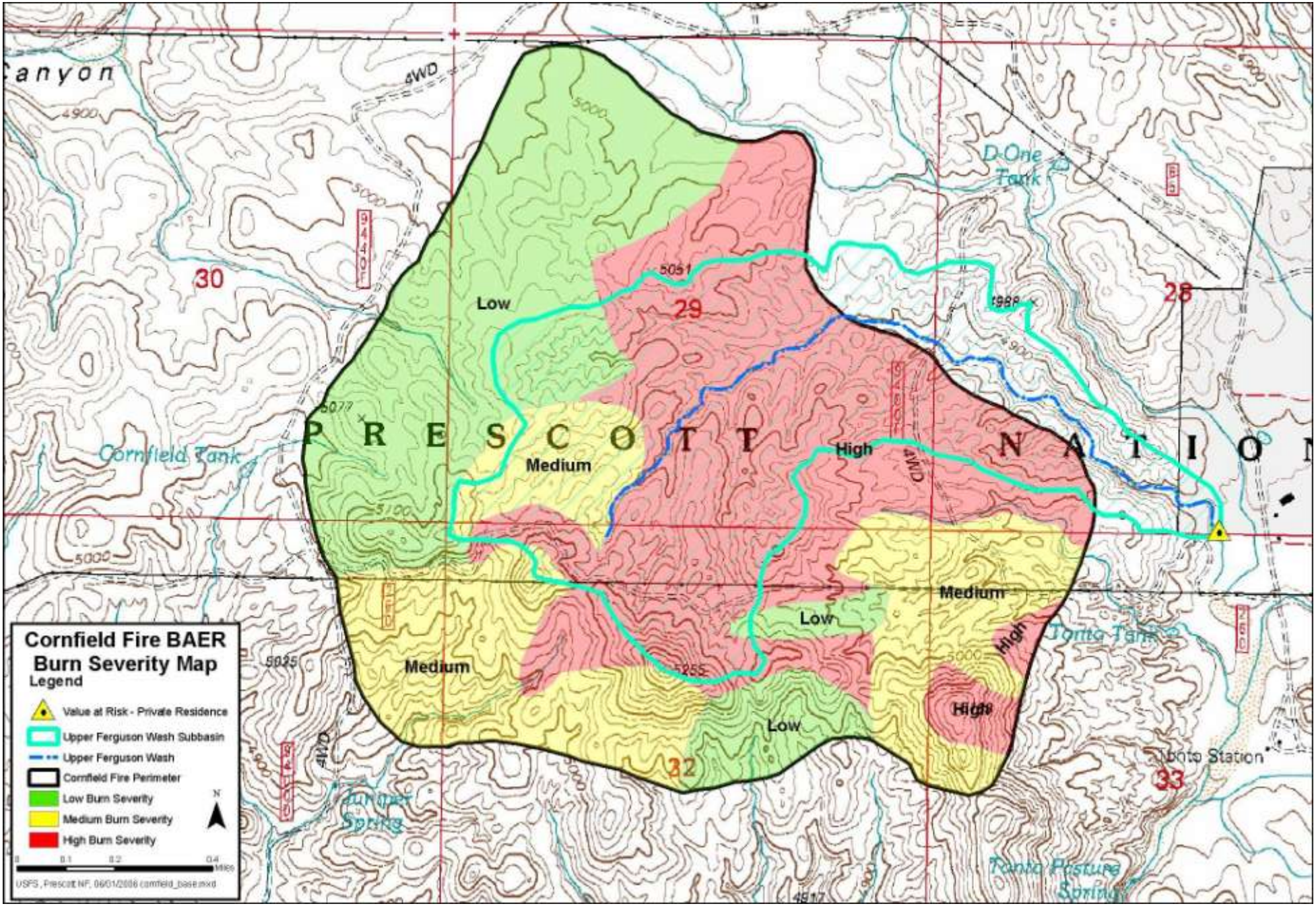
Part VI – Emergency Stabilization Treatments and Source of Funds **Interim #**

			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										
Seeding	acres	40	180	$7,200	$0		$0		$0	$7,200
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$7,200	$0		$0		$0	$7,200
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										
				$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 Road & Trails				$0	$0		$0		$0	$0
D. Protection/Safety										
				$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 Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
				---	$4,500		$0		$0	$4,500
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$4,500		$0		$0	$4,500
F. Monitoring										
Seed & Flow Event	each	600	2	$1,200	$0		$0		$0	$1,200
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$1,200	$0		$0		$0	$1,200
G. Totals				$8,400	$4,500		**$0**		**$0**	**$12,900**
Previously approved										
Total for this request				**$8,400**						

PART VII - APPROVALS

1. /s/ *Alan M. Quan* June 2, 2006
   Forest Supervisor (signature) Date

2. /s/ *Abel M. Camarena* (for) June 6, 2006
   Regional Forester (signature) Date


Cornfield Fire BAER
Burn Severity Map
Legend
Value at Risk - Private Residence
Upper Ferguson Wash Subbasin
Upper Ferguson Wash
Cornfield Fire Perimeter
Low Burn Severity
Medium Burn Severity
High Burn Severity
N
0 0.1 0.2 0.4 Miles
USFS, Prescott NF, 06/01/2006 cornfield_base.mxd
P R E S C O T T N A T I O N
Low
Medium
High
Low
Medium
High
Low
Medium
High
29
30
28
32
33
Cornfield Tank
D-One Tank
Tonto Station
Tonto Tank
Tonto Pasture Spring
Juniper Spring
4WD
5000
5100
5051
5077
5025
5255
4917