USDA-FOREST SERVICE FS-2500-8 (7/00)
Date of Report: 2/18/04

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

[] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)
[] 2. Interim Report
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[**X**] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Walker

B. Fire Number: P37133

C. State: NEW MEXICO

D. County: Otero

E. Region: R-3

F. Forest: Lincoln

G. District: Sacramento

H. Date Fire Started: 5/09/2003

I. Date Fire Contained: 5/14/03

J. Suppression Cost: $1,278,000 as of 5/14/03

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

L. Watershed Number: 1306001002

M. Total Acres Burned: 2690
NFS Acres(2,393) Other Federal (112) State ( ) Private (185)

N. Vegetation Types: PONDEROSA PINE; PINYON – JUNIPER; MIXED CONIFER; OAK SHRUB; MTN GRASSLAND

O. Dominant Soils: LITHIC ARGIUSTOLLS; LITHIC ARGIBOROLLS; PACHIC ARGIBOROLLS; MOLLIC EUTROBORALFS: soils are shallow and rocky but some have high erosion potential.

P. Geologic Types: YESO, and SAN ANDRES FORMATIONS: with ALLUVIAL stream bottom deposits. Yeso Formation derived soils have a extremely high erosion potential.

Q. Miles of Stream Channels by Order or Class:
1st 7.1
2nd 2.5
3rd 1.8

R. Transportation System

Trails: ___ miles Roads: 7.4 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 637 (low) 1574 (moderate) 479 (high)

B. Water-Repellent Soil (acres): 100

C. Soil Erosion Hazard Rating (acres):
150 (low) 990 (moderate) 1550 (high)

D. Erosion Potential: 50 tons/acre

E. Sediment Potential: 45,000 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 15

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

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 2.4

F. Design Flow, (cubic feet / second/ square mile): 80

G. Estimated Reduction in Infiltration, (percent): 25

H. Adjusted Design Flow, (cfs per square mile): 60

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency: The watershed emergency consists of threat to downstream lives and property and to soil productivity from on-site soil loss due to loss of ground cover. The loss of ground cover was the result of the Walker Fire. The loss of cover increases the risk of flood hazard, increased sedimentation and debris flows which pose a threat to areas

downstream. High and moderate intensity burned areas, covering 2,053 acres, are concentrated in the watershed of Sixteen Springs, Crooked Canyon and Elk Canyons. These stream channels are tributaries to the Rio Penasco.

The Walker Fire high intensity burns took place mostly (85 percent of 479 acres of total high intensity burns) in the Sixteen Springs Canyon watershed area with smaller burns in the Crooked Canyon and Elk Canyon watersheds. These burned areas pose a potential threat to downstream lives and property from flooding and potential debris flows. Private residences are located immediately below drainages in an area with high and moderate burns. The slopes of these drainages range from 30 to 80 percent with soils likely to be subjected to high levels of erosion with a additional potential for damaging runoffs or debris flows exiting from steep drainages to downstream structures.

The burned area is entirely located within the watersheds of Sixteen Springs Canyon and Elk Canyon which are a part of the Rio Penasco 5th level Hydrologic Unit Code watershed. The Rio Penasco watershed has been designated by the state of New Mexico as not fully supporting the designated use of cold water fishery for the water in this stream. The reason for nonsupport of designated use in this reach is stream bottom deposits. With an increase in sedimentation and stream bottom deposits to the Rio Penasco this will only worsen or change Rio Penasco's current supporting designation status should sediment laden runoff from the burned watershed enter the Rio Penasco.

The Rio Penasco is a fish habitat stream and concerns have been expressed that this habitat may be greatly threatened from upstream sedimentation impact coming from Elk Canyon as a result of the Walker Fire . Sixteen Springs is a tributary to Elk Canyon, and Elk Canyon is a tributary to the Rio Penasco. The confluence of Elk Canyon and Rio Penasco is located 8.3 miles from the downstream edge of the eastern perimeter of the Walker Fire. A segment of the Sixteen Springs Canyon passes through 3.2 miles of the burned section of the Sixteen Springs' Walker Fire. From the upper headwater of Sixteen Springs watershed to the eastern edge of the Walker fire perimeter, the total channel distance is 7.6 miles. Below the fire's eastern edge Sixteen Springs becomes increasingly sinuous over the next few miles.

Sixteen Springs is a 21,687 acre watershed. Approximately 1486 acres of the Sixteen Springs watershed are affected from the Walker Fire. High burn areas cover approximately 375 acres. Some 883 acres are the moderate burns, and 228 acres for the low burn areas. The Walker Fire sits approximately ¾ of the way downstream on the Sixteen Springs watershed side where the elevation drops from 8560 to 6920 feet to the fire's western perimeter edge for a distance of 7.6 miles. The channel's elevation drops to 6520 feet for another 3.2 miles as it passes through the main burn of the Walker Fire. The majority of the high intensity burns lies on the steepest north facing slope with gradients ranging from a few percent to around 80 percent.

The Elk Canyon is a 22,675 acre watershed. It's shape, size, channel length, aspect, geomorphology, geology, and elevation are similar to that of the Sixteen Springs watershed located to the south. However, approximately 500 acres are the burned area on the Elk Cayon watershed, located ¾ of the way down from the Elk Canyon's headwater area. Approximately 300 acres of the 500 acres burned are on Forest Service lands. The remaining ownership of the land belongs to the Mescalero Tribe.

Effective ground cover and canopy cover removal in the severely burned watersheds is close to 100%. Much of the burned area has shallow soils with sandy loam and loam surface texture with a high amount of mostly loose cobble-sized surface rocks. This may result in severe sheet and rill

erosion potential, and rock debris due to high slopes ranging from 30 to 80 percent over the majority of the burned areas. Substantial soil loss is likely without stabilization.

Proposal of mitigation measures will need to be focused on the side drainages (mostly on the north facing slopes of the affected Sixteen Springs watershed) of 1st order streams that feed into the 3rd order Sixteen Spring Canyon and some 1st order drainages that feed into Elk Canyon for the protection of life and property. Those locations include contour felling, hazard tree removal, and hydro mulching. Broadcast aerial seeding is proposed for the 2500 acres that may include private property (185 acres) and Mescalero lands (112 acres) that would already be in the flight path of the aerial applicator seeding.

The main channels of Sixteen Springs Canyon, Elk Canyon, or Crooked Canyon will not be required for modifications due to the large channel size and the tendency for occasional large excess flows that could exceed 800 cfs between a 10 and 25 year storm event (up to the confluence for both Elk Canyon and Sixteen Spring Canyon channels). Since Walker Fire is situated ¾ of the way on both Elk Canyon and Sixteen Canyon watersheds and are mid-watershed contributors, it is likely that storms are produced in higher elevations of the Sacramento mountains due to the orographic lifts on the climatic patterns to produce moisture at those areas.

A cabin on the Mescalero Reservation is treatened by potential rock fall originating from severe and moderate burned Forest Service land upslope from the structure. This rock fall could be generated by overland flow originating on forest land in an area of severe burn and flowing downhill.

B. Emergency Treatment Objectives:

Reduce the risk for high erosion on slopes above private property.
Redirect damaging flows away from downstream structures.
Reduce the potential for rock debris above private property.
Reduce sedimentation impact to downstream properties and fisheries.
Restrengthen road crossings to reduce the risk of washing out.
Re-establish vegetation (grass) growth to help reduce erosion and sedimentation.

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

Land **80** % Channel **80** % Roads **75** % Other **70** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	90	90
Channel	80	80	90
Roads	75	80	95
Other	70	80	95

E. Cost of No-Action (Including Loss): $1,400,000 or more including private property. Potential

additional cost to a tourist based economy from loss of fishery and the asthetic value of the Rio Penasco. Water quality impacts to a portion of an existing fishery resource, and a State deisgnated non-attainment stream.

F. Cost of Selected Alternative (Including Loss): $400,000 (assumes 30% loss to private propery)

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Email: bdancker@fs.fed.us Phone: 505-434-7250 FAX: 505-434-7218

H. **Treatment Narrative:**

Land Treatments:
Aerial application of five perennial species and one annual specie of seed is proposed. The intent is to jump start the stabilization of soils on that portion (2,300 NFS acres) of the severe and moderate burn through the establishment of vegetative cover to maintain on-site productivity and protect downstream water quality and property. This mix includes sideoats grama (39%), perennial ryegrass (10%), western wheatgrass (10%), little bluestem (2%), sand dropseed (10%), and annual ryegrass (29%) at a rate of approximently 9 pounds per acre of PLS (60 seeds per square foot). The primary watershed proposed for aerial seeding is Sixteen Springs Canyon. This seed mixture was selected, in part, because of the success of a simular mixture used on the Penasco Fire.

Straw mulching by hand application on 60 acres of Forest Service land above private properties to help protect and hold soils back on sloped areas. The immediate initial grass growths will act as filter strips and help reduce the risk of erosion and pulses of sediment nearby to downstream properties.

A cooperative effort between the Forest Service and the Mescalero tribe to straw mulch by hand application 20 acres of Forest Service land above a cabin, after the property is aerial seeded as part of the general seeding effort, to help protect the structure by provideing improved plant growth conditions. The Forest Service will provide the straw and the Mescalero tribe a hand crew. The accelerated grass growth will act as filter strips and help reduce the risk of erosion and rock movement on a steep slope.

Log erosion barriers will be applied on 100 acres. Areas to be treated are above private property locations. As part of this treatment, hazard trees will be cut to provide for the safety of workers.

The NRCS proposes to seed 280 acres of severe burn on private lands with EWP funds. (See attached burn severity/treatment map for locations of specific treatments.)

The NRCS is proposing to install jersey barrier eyebrows above the homes to divert flow and debris as part of the private land treatment with EWP funds.

The suppression organization for the Walker Fire is conducting rehab on hand and dozer lines as part of the wrap-up of their suppression effort. This includes drainage and hand seeding.

Channel Treatments

No channel treatments on the main channels are to be proposed. However, an estimated 30 small log checkdams may be implemented on 1st order drainages above private properties and near sensitive areas where drainages feed into Sixteen Springs Canyon or Elk Canyon.

Eight native material trash racks will be installed in the steep drainages above private property and/or structure(s). Trash racks have successfully been used on both the Scott Able (2000) and Penasco (2002) fires. Trash racks can be used in steep drainages to help trap or slow the movements of small or very large cobble rocks and woody debris that could otherwise accumulate.

A small dozer will be utilized for approximately 50 hours or less at a cost of about per $100/hour to reroute the drainage channels threatening the private propery located in Sixteen Springs in section 35. The direction of flow in the channel will be altered in a fashion to divert the flood flows in a direction away from the residence and shed, and allow for water and debris flow to pass through the property witout damage to improvements.

Roads and Trail Treatments:

Ten or fewer road crossing drainage areas as identified by a road condition log itemizing each will require some re-strengthening or improvements on the upstream and/or downstream side from sediment and debris overflows. The re-strengthening road crossing areas will help reduce the risk of roads being undercut or eroded out from above normal fire induced damaging flows. Forest Service road 175 or Sixteen Springs Canyon road will require jersey barriers, filter cloths, and ripraps. Approximately 60 linear feet of Jersey Barriers may be required. A few appropriate sized CMPs may be required as an alternative to reduce the risk of roads undercutting. Up to 100 linear feet of CMPs may be required as an alternative choice. These mitigation and protection measures will help ensure safer accessibility of roads used by local residents of Sixteen Springs.

H. **Monitoring Narrative:**

There is a need to monitor the effectiveness of all treatments implemented as part of the Walker Fire BAER. This will require one week after the summer monsoon season by one journey level resource specialists. A detailed monitoring plan will be submitted as a separate document to the Regional BAER coordinator

Comments concerning Walker BAER Accomplishment 2003 (Bob Dancker, 2/18/04)

Monitoring was conducted by district personnel in conjunction with other management activities and no separate charge was incurred.

Unit costs for heli-mulching activity are extremely high due to being charged for a whole day of helicopter use. Helicopter was available on severity. Charge for helicopter was expected by the BAER team to be only for the actual time the helicopter was on the project which was about two or three hours or less. When final accounting became available it was noted that heli-base

manager had charged Walker BAER for the whole day ($30,600). The cost of the actual mulching (excluding the standby helicopter charge) is estimated at about $1600 /acre.

The straw mulching project the helicopter was used for was of a very critical nature providing runoff protection to a private residence immediately adjacent to the burned area. The project if under taken as a hand application would have taken considerably longer and required an expensive support effort, which was not required with the helicopter application. The project was completed within a few hours.

Economies of scale did not benefit this BAER effort as the total acreage burned and the required treatments were on a small area compared to other BAER projects. The treatments were critical where applied, especially adjacent to the private residence.

The aerial seeding was accomplished at a relatively reasonable cost.

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Landowners

			NFS Lands				Other Lands				All
		Unit	# of	WFSU	Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$		units	$	Units	$	$
A. Land Treatments											
Seed and application	acres	26	1700	$44,200				$0		$0	$44,200
Contour Felling	acres	750	7	$5,250				$0		$0	$5,250
Straw Mulching	acres	3600	10	$36,000				$0		$0	$36,000
Subtotal Land Treatments				$85,450				$0		$0	$85,450
B. Channel Treatments											
Small check dams	each	1954	18	$35,172				$0		$0	$35,172
Trash Racks	strut	4500	3	$13,500				$0		$0	$13,500
Subtotal Channel Treat.				$48,672				$0		$0	$48,672
C. Road and Trails											
				$0				$0		$0	$0
Subtotal Road & Trails				$0				$0		$0	$0
D. Structures											
				$0				$0		$0	$0
Subtotal Structures				$0				$0		$0	$0
E. BAER Evaluation											
Assessment	hours	64	100	$6,400				$0		$0	$6,400
BARC map	each	2780	1	$2,780				$0		$0	$2,780
Subtotal Assessment				$9,180				$0		$0	$9,180
G. Monitoring Cost	days	0	0	$0				$0		$0	$0
Subtotal Assessment				$0				$0		$0	$0
H. Totals				**$143,302**				**$0**		**$0**	**$143,302**

PART VII - APPROVALS

1. /s/ Paul Schmidtke — 2/18/04
   for Forest Supervisor (signature) — Date

2. _____ _____
   Regional Forester (signature) — Date