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Forest Service
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Reply to: 2520-3

Date: March 7, 1996

Subject: Shovel Fire Rehabilitation

To: Regional Forester, R3

Attached is the final accomplishment report for the Shovel Fire Burned Area Emergency Rehabilitation project.

JOHN M. MCGEE
Forest Supervisor

Enclosure

USDA-FOREST SERVICE Date of Report: 2/29/96

BURNED-AREA REPORT
(Reference FSH 2509.13, Report FS-2500-8)

PART I - TYPE OF REQUEST

A. Type of Report

[ ] 1. Funding request for estimated EFFS-FW22 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 and design analysis
  [ ] Status of accomplishments to-date

[x] 3. Final report - following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Shovel B. Fire Number: AZ-CNF-179

C. State: Arizona D. County: Pima
E. Region: 3 F. Forest: Coronado
G. District: Santa Catalina

H. Date Fire Started: 7/15/95 I. Date Fire Controlled: 8/7/95
J. Suppression Cost: $1,932,509. est.

K. Fire Suppression Damages Repaired with EFFS-PF12 Funds:
  1. Fireline waterbarred (miles) 3.75
  2. Fireline seeded (miles) 2.00
  3. Other (identify) Erosion control matting,1.50 miles

L. Watershed Number: 1505030158

M. NFS Acres Burned: 1275 Total Acres Burned: 1275
Ownership type:
( )State ( )BLM ( )PVT ( )____ _____

N. Vegetation Types: Ponderosa pine, with some Douglas fir, white fir and aspen

O. Dominant Soils: Typic Ustorthents, HSM, 5, +1.
Typic Dystrochrepts, LSC, 6, -1.

P. Geologic Types: Granite, gneiss

Q. Miles of Stream Channels by Order or Class:
3-Order-1 1-Order-2 _____ _____

R. Transportation System:
Trails: 2 (miles) Roads: 0 (miles)

PART III - WATERSHED CONDITION

A. Fire Intensity (Acres): 960 (low) 110 (moderate) 205 (high)

B. Water Repellant Soil (Acres): 205

C. Soil Erosion Hazard Rating (Acres):
_____ (low) 1090 (moderate) 185 (high)

D. Erosion Potential: 26.5 tons/acre
E. Sediment Potential: 8480 cu. yds/sq. mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 5 years.
B. Design Chance of Success: 80 percent.
C. Equivalent Design Recurrence Interval: 25 years.
D. Design Storm Duration: 24 hours.
E. Design Storm Magnitude: 4.6 inches.
F. Design Flow: 32 cfsm.
G. Estimated Reduction in Infiltration: 15 percent.
H. Adjusted Design Flow: 52 cfsm.

PART V - SUMMARY OF ANALYSIS

A. Describe Emergency:

The intensity of the Shovel Fire left approximately 205 acres with steep slopes denuded of vegetation. These acres are mostly at the head the Canada del Oro drainage, and partly in the Cargedoro Canyon drainage. Extensive soil loss in this area will severely affect two miles of trail and two miles of powerline access. Up to ten miles of trail downstream will be effected by post-fire runoff. The terrain is extremely steep and reconstruction of trails will be expensive, and will require structural reinforcement in many areas. The area is adjacent to the Tucson metropolitan area and is heavily used by recreationists. Because the terrain is steep, access is limited. People will continue to use the affected trails and road segments because there are no good alternative routes. Without slope stabilization treatments, conditions will be hazardous for users. Also, an underground powerline is in the area. This powerline was recently buried, and so the soil covering it is still loose. Vegetative cover was lost in the fire, leaving the powerlines vulnerable to the increased erosive energy associated with post-fire runoff. The area has extremely high aesthetic values because of the limited extent of the mixed conifer habitat ("sky island"), and the proximity to a large metropolitan population. If slopes are stabilized, there is a good probability that aspen stands will establish. Without treatment, this probability is greatly reduced. The area also represents an entire Mexican Spotted Owl management territory, and so maintanence of soil productivity is extremely important.

B. Emergency Treatment Objectives:

The treatment objectives are to minimize soil loss and increase infiltration on severely burned slopes. This will be accomplished by installing structures that will act to disperse the energy of post-fire runoff, and hold soil on the slope. In addition, a limited area will be seeded with native grasses to help hold soil, and maintain soil productivity.

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

Land 90 % Channel _____ % Roads _____ % Other _____ %

D. Probability of Treatment Success

	<----Years after treatment-----> 1	3	5
Land	80%	85%	95%
Channel			
Roads			
Other			

E. Cost of No-Action (Including Loss): $ 140,000

F. Cost of Selected Alternative (Including Loss): $ 27,000

G. Skills Represented on Burned-Area Survey Team:

[ ] Hydrology	[x] Soils	[ ] Geology	[x] Range
[ ] Timber	[x] Wildlife	[x] Fire Mgmt.	[ ] Engineering
[ ] Contracting	[x] Ecology	[ ] Research	[ ] Archaeology
[ ] _____	[ ] _____	[ ] _____	[ ] _____

Team Leader: Jennifer Ruyle
Phone: (520)749-8700 DG Address: R03F05D05a

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.

Description of treatments:

Contour felling - On severly burned slopes, log terraces will be created by falling dead trees and placing them perpendicular to the slope at appropriate intervals. Logs will be anchored, either to each other or to the ground.

Seeding - A limited area will be seeded to provide vegetative cover. Areas to be seeded include areas where trees have been thoroughly burned, and there are no residual needles. In most areas seeding will be a secondary treatment, done in conjunction with log terraces and/or erosion control cloth. On the powerline access, seeding will be the primary treatment. The seed mix used will be a combination of two native cool season grasses:

Arizona fescue (Festuca arizonica)	50%
Slender wheatgrass (Elymus trachycaulus)	50%

Erosion control matting - This treatment will be used in burned drainages and on steep slopes that have been seeded. In drainages, matting will be supplemented with small diameter logs, placed over the mat with the large end upslope.

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

NOTE: Emergency rehabilitation is work done promptly following a wildfire and is not to solve watershed problems that existed prior to the wildfire.

Line Items	Units	Unit Cost $	NFS Lands			Other Lands			All
			Number of Units	EFFS-FW22 $	Other $ ident.	Number of Units	Fed $ ident.	Non-Fed $ ident.	Total $
A. LAND TREATMENTS									
Contour felling	acres	54	200	$10,847					$10,847
B. CHANNEL TREATMENTS									
C. ROADS AND TRAILS									
D. STRUCTURES									
E. BAER EVALUATION/ ADMINISTRATIVE SUPPORT									
F. TOTALS			200	$10,847					$10,847

PART VII - APPROVALS

1. /s/ John M. McGee — Forest Supervisor (Signature) — 3/7/96 — Date

2. /s/ — Regional Forester (Signature) — Date