United States Department of Agriculture | Forest Service | North Kaibab Ranger District | P.O. Box 248 Fredonia, Arizona 86022

Caring for the Land and Serving People

File Code: 2509 Date: October 5, 1996

Route To:

Subject: Final Report on Bridger Complex Burned Area Rehab

To: Forest Supervisor, Kaibab National Forest

Enclosed for your signature and forwarding to the Regional Office is the final Burned-Area Report (FS 2500-8) for the Bridger Complex. Section J has a dialog of what actions were accomplished and Part VI contains the final costs.

If you have any questions, please contact Janet Travis at the District Office.

/s/ GARY HOLSTEN
for
JILL LEONARD
District Ranger

1 enclosure

USDA-FOREST SERVICE Date of Report: Oct. 5, 1996

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 WFSU-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: Bridger Complex B. Fire Number: AZ-KNF-00215

C. State: Arizona D. County: Coconino
E. Region: Southwestern (03) F. Forest: Kaibab
G. District: North Kaibab

H. Date Fire Started: June 20, 1996 I. Date Fire Controlled: July 26, 1996
J. Suppression Cost: $ 5,200,000

K. Fire Suppression Damages Repaired with WFSU-PF12 Funds:
  1. Fireline waterbarred (miles) 46
  2. Fireline seeded (miles) 46
  3. Other (identify) Fire camp rehabilitated

L. Watershed Number: 15010002, 15010003

M. NFS Acres Burned: 53,503 Total Acres Burned: 53,533
Ownership type:
( )State ( )BLM ( )PVT (30)Nat'l Park

N. Vegetation Types: Pinyon Pine/Utah Juniper/Big Sagebrush
Ponderosa Pine/Pinyon Pine/Gambels Oak/Big Sagebrush
O. Dominant Soils: Lithic Ustochrepts; Typic Haplustalfs
Mollic Eutroboralfs; Typic Ustochrepts
P. Geologic Types: Kaibab Limestone Formation

Q. Miles of Stream Channels by Order or Class:
1st = 120 2nd = 53 3rd = 12 4th = 14

R. Transportation System:
Trails: 6.9 (miles) Roads: 79.6 (miles)

PART III - WATERSHED CONDITION

A. Fire Intensity (Acres): 23,472 (low) 16,210 (moderate) 13,821 (high)

B. Water Repellant Soil (Acres): 5,350 (approx 10%)

C. Soil Erosion Hazard Rating (Acres):
14,691 (low) 24,475 (moderate) 14,337 (high)

D. Erosion Potential: 11.49 tons/acre
E. Sediment Potential: 1,414 cu. yds/sq. mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 3 years.
B. Design Chance of Success: 60 percent.
C. Equivalent Design Recurrence Interval: 10 years.
D. Design Storm Duration: 1 hours.
E. Design Storm Magnitude: 1.1 inches.
F. Design Flow: 101 cfsm.
G. Estimated Reduction in Infiltration: 5 percent.
H. Adjusted Design Flow: 142 cfsm.

PART V - SUMMARY OF ANALYSIS

The Bridger complex fires ignited June 20, 1996 and burned approximately 53,500 acres of mostly Pinon pine-Utah juniper-Big sagebrush and some Ponderosa pine-Gambel oak ecosystems. The burned area is within the North Kaibab Ranger District of the Kaibab National Forest. The burned area is located between the Kanab Creek Wilderness Area on the west, the western slope of Little Mountain on the east, and the North Rim of the Grand Canyon on the south. The burned area is approximately thirty miles south-south east of Fredonia and 10 miles south west of Jacobs Lake. 97.5% of the burned area drains into Kanab Creek, which eventually drains into the Colorado River within the Grand Canyon. The remaining 2.5% drains directly into the Colorado River within the boundaries of Grand Canyon National Park.

The fire was fueled by strong winds and record low fuel moistures. Fire intensity was high within approximately 26 percent of the burned area but development of water repellent soils was limited by the low amount of surface litter and short fire residence time. Soils are derived from limestone parent materials and are characterised by low ground cover densities. Surface runoff is low due to predominately gently sloping landforms and rapid infiltration characteristics of the soils.

A. Describe Emergency:

BAER survey of the area burned by the Bridger Complex fires indicates the following emergency conditions exist:

1. **Threat to Long-Term Soil Productivity**
Approximately 2600 acres of moderately steep to steep slopes burned with high burn intensity, consuming most of the protective vegetative ground cover. Soil erosion rates are expected to exceed soil loss tolerance values on the basis of USLE erosion estimates. There is a high potential that increased soil loss rates will result in a long term loss of soil productivity.

2. **Threat to Property**

Increases in runoff, ash and sediment are expected from moderately steep and steep slopes that burned with high intensity in Sowats Canyon and on the west facing slopes of Little Mountain. Forest Road 427 uses low water crossings to cross stream channels draining these slopes. Increased runoff and sediment is likely to erode gullies through these crossings. This road provides the main winter access to view points and trailheads on the north rim of the Grand Canyon. It also provides winter access to a microwave site located at the south end of the district.

B. Emergency Treatment Objectives:

To maintain long term soil productivity by minimizing on-site soil loss and to prevent damage to Forest Road 427 from expected increases in peak flows and sediment yield.

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

Land 80 % Channel N/A % Roads 80 % Other N/A %

D. Probability of Treatment Success

	<----Years after treatment-----> 1	3	5
Land	60%	70%	90%
Channel	N/A	N/A	N/A
Roads	70%	90%	90%
Other	N/A	N/A	N/A

E. Cost of No-Action (Including Loss): $ 574,700

F. Cost of Selected Alternative (Including Loss): $ 465,200

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Grant Loomis

Phone: 602 225-5200 DG Address: G.LOOMIS:R03F12A

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.

			NFS Lands			Other Lands		All
Line Items	Units	Unit Cost $	Number of Units	WFSU-FW22 $	Other $ ident.	Number of Units	Fed $ ident.	Total $
A. LAND TREATMENTS								
Aerial Seeding	Acres	28.08	2600					73,016
Seed				56,574				
Helicopter				12,141				
Ground crew				4,301				
Planning & Admin.				729				729
B. CHANNEL TREATMENTS								
C. ROADS AND TRAILS								
Armor road crossings	ea	422	2	844				844
Planning and Admin				161				161
D. STRUCTURES								
E. BAER EVALUATION/ ADMINISTRATIVE SUPPORT								
F. TOTALS				74,750				74,750

PART VII - APPROVALS

1. /s/ _____ _____
Forest Supervisor (Signature) Date

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

MESSAGE SCAN FOR PENNY LUEHRING

To P.Luehring:R03a
To G.Gibbons:SO
To D.Brewer:SO

From: JANET TRAVIS:R03F07D03A
Postmark: Jan 28,97 2:03 PM Delivered: Jan 28,97 2:20 PM
Status: Previously read
Subject: BAER final report

Comments:
Penny, here's the final BAER report for the Bridger Complex. It got lost somewhere in transit in October when we completed it and started in through channels to the RO. Sorry about the delay. George Gibbons said to send it to you directly from the District this time. He will try to follow-up with a letter from the SO. If you have any questions, etc., give me a call. Janet

----------X----------

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.

1. Seed approximately 2600 acres of moderately steep to steep slopes in Sowats Canyon and on the west flank of Little Mountain that burned with high burn intensity. The vegetation on these slopes consisted of Pinyon Pine/Utah Juniper/Gambel Oak and Big Sagebrush prior to the fire. The potential to successfully seed these slopes is good. They would be seeded with a seed mix consisting (by weight) of:

Yellow Sweetclover	20%
Regreen	65%
Prairie Junegrass	5%
Western Wheatgrass	10%

Seed would be applied by helicopter at a rate of 6 pounds per acre. This mix would result in an application of (25) seeds per square foot. Yellow Sweetclover was selected for its nitrogen fixing ability. Although not native to the area Yellow Sweet clover is widespread in the North Kaibab and provides good ground cover. Soils are nitrogen deficient and should benefit from inclusion of this species in the mix. Regreen was selected to provide a quick ground cover during the first year when the watershed is most at risk. The other grasses (native perennials) were selected to provide long term site stability. Prairie Junegrass was selected to provide site protection early in the season and Western Wheatgrass to provide ground cover through the warm season when monsoon thunder storms are common. The intent of this treatment is to provide a quick ground cover when the watershed is most at risk and to provide watershed stability while the natural vegetation recovers.

2. Protect Forest Road 427 from increases in peak flows and sediment expected from the severely burned slopes of Little Mountain and Sowats Canyon. The road would be protected by placing large riprap on the downstream side of seven low water crossings. Riprap placement should prevent increased runoff from causing headcuts that would create gullies across the roads.

NOTE: The rehabilitation treatments proposed in this report have been discussed with John Ray, resource specialist with the Grand Canyon National Park. John indicated that the sediment expected from the fire should benefit the Colorado River. He also indicated that the rehabilitation measures proposed in this plan are acceptable to the Park.

J. Implementation:

On July 18th thru 20th, 2600 arces were aerial seeded. In the initial cost estimates for the seed, several seed mixes were discussed and costs per pound of each species obtained. Granite Seed had based their estimates on costs per pound on a seed mix that contained blue grama. The BAER funding request was based on these estimates. The finalized seed mix did not contain blue grama, but a higher amount of Regreen. Due to this change, Granite Seed was unable to supply the Regreen at the their original price estimate since they had planned to cover their overhead costs with the cost of the blue grama. Granite Seed was the only seed company the BAER team found with the necessary amount of Regreen available, so even though the price per pound increased, the seed was ordered from Granite Seed at the higher cost per pound. A factor the BAER team did not figure into the seeding costs was pounds of live seed per pound of seed. This increased the pounds of seed needed by around 2,100 pounds. The increase in cost per pound and the increase in number of pounds needed, increased the total cost of the seed by about $15,000 over the BAER request. This was partially offset by lower helicopter costs, ground crew costs, and "Planning and Admin." costs. Total cost of the aerial seeding was $73,745.

After additional on the ground analysis of the low water crossings originally planned for armoring in the BAER request, it was determined only 2 of the crossings would need armoring.. This was done the week of September 16th. Equipment breakdowns and equipment operator availability, prevented the work from being done before this time. Being unable to accomplish the work earlier has not effected the overall success since the thunderstorms which occurred in the area before the crossing work was done had not caused major damage to the crossings.

OTHER LETTERS

United States Department of Agriculture | Forest Service | North Kaibab Ranger District | P.O. Box 248 Fredonia, Arizona 86022

Caring for the Land and Serving People

File Code: 2509

Date: ~~June~~ July 8, 1996

Route To:

Subject: Burned Area Rehab for Bridger Complex

To: Forest Supervisor, Kaibab National Forest

Enclosed for your signature and forwarding to the Regional Office is the Burned-Area Report (FS 2500-8) for the Bridger Complex. We are requesting funds to seed approximately 2600 acres of steep slopes which burned under high intensity and to fortify 7 low water crossings along FR 427 which have the potential to wash out due to the fire. Grant Loomis, Hydrologist on the Tonto NF, and Fransico Escobedo, Soil Scientist in the Regional Office, were the leaders of the rehab team.

If you have any questions, please contact Grant at 602-225-5253 or Janet Travis at the District Office.

/s/ Scott Nannenga
JILL LEONARD
District Ranger

1 enclosure

United States Department of Agriculture | Forest Service | Southwestern Region | 517 Gold Avenue SW.
Albuquerque, NM 87102-0084
FAX: (505) 842-3800
V/TTY: (505) 842-3292

File Code: 2520-3/6520 Date: July 9, 1996
Route To:

Subject: Bridger Complex Burned Area Emergency Rehabilitation Request

To: Chief

Enclosed for your review and approval is a copy of the Burned Area Report (FS-2500-8) for the Bridger Complex Fires on the Kaibab National Forest. This initial funding request is for $81,880.

The fires in this complex burned approximately 53,000 acres on the North Kaibab Ranger District, north of the Grand Canyon. Most of the burned area drains into the Colorado River via Kanab Creek. Fire intensity was high within 26% of the burned area but development of water repellent soils was limited. The watershed concern now is to minimize soil productivity loss and prevent damage to Forest Service roads. The Forest is proposing to seed the moderately steep and steep slopes within the high burned intensity area and to armor several road crossings. The Forest has coordinated with Grand Canyon National Park concerning proposed treatments. If you have any questions, please contact Penny Luehring at 505-842-3141.

/s/ Jose M. Salinas for

JOHN R. KIRKPATRICK
Deputy Regional Forester

Enclosure

cc:
PDB