USDA FOREST SERVICE

Date of Report: 1/30/89

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

PART I - TYPE OF REQUEST

1. Type of Report

[ ] A. Funding (Request for estimated FFF funds)
[X] B. Accomplishment Report

2. Type of Action

[ ] A. Initial (estimated funding is first requested)
[ ] B. Interim

[ ] Updating the initial funding request.
[ ] Supplying information for accomplishments to date on emergency work underway.

[X] C. Final

[ ] Best estimate for funds needed to complete eligible rehabilitation measure.
[X] Following completion of funded work.

PART II - FIRE LOCATION

1. Fire Name (from Form FS-5100-29): FORT CANYON
2. Forest Supervisor's Fire No. (from Form FS-5100-29): #38
3. State: UTAH
4. County: UTAH
5. Region: R-4
6. Forest: UINTA
7. Ranger District: PLEASANT GROVE
8. Date Fire Started: August 31, 1988
9. Date Fire Controlled: 9/5/88
10. Estimated Suppression Costs: $270,000
11. Fire Suppression Damages Repaired with FFF 102 Funds:

3.45 miles (firelines waterbarred)
8.8 acres (firelines seeded) includes 2.4 acres inside wilderness.
1.1 miles Other (identify) Access road drainage.

12. Fire Intensity: 40 % (low) 25 % (medium) 35 % (high)

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed No.: 016 American Fork
2. NFS Acres Burned: 325
3. Water Repellant Soil: _____none_____ % of NFS acres burned

4. Vegetation Types: Oakbrush = 50%, Mt. Brush = 45%, White Fir-Mt. Mahogany- and Sagebrush-grass = 5%.
5. Geologic Types: Granite
6. Soil Erosion Hazard Rating:

__5__ % (low) __55_ % (medium) __40_ % (high)

7. Erosion Potential: _____7,615 cu. yds/sq. miles
8. Miles of Stream Channels by Regional Order or Classes: Fort Creek =.9miles East Fork Fort Creek = .95 miles, and Left Fork Fort Creek = .8 Miles.
9. Miles of Forest Service Trails: .4 miles Used as fireline.
10. Miles of Forest Service Roads by Maintenance Levels: None

___-__ miles (Level I) __-__ miles (Level II)
__-__ miles (Levels III, IV, V)

PART IV - CALCULATED RISK AND CLIMATIC EVALUATION

1. Estimated Vegetative Recovery Period: 3 years.
2. Chance of Success Desired by Management: 85 percent.
3. Equivalent Design Recurrence Period: 25 years.
4. Related Design Storm Duration: _6_ hours.
5. Related Design Storm Magnitude: 1.8 inches.
6. Related Design Flow ____5 cfsm.
7. Estimated Reduction in Infiltration: 200 percent.
8. Adjusted Related Design Flow: __458 cfsm.

PART V - SUMMARY OF SURVEY AND ANALYSIS

1. Skills Represented on Burned Area Survey Team ("x" appropriate boxes):

[x] Hydrology	[x] Soils	[ ] Geology	[ ] Range
[ ] Timber	[x] Wildlife	[x] Fire Mgmt.	[ ] Engineering
[ ] Contracting	[x] Local Mgmt.	[ ] Research	[x] Recreation

2. Describe Emergency: Loss of watershed cover has increased erosion and flood hazards in Fort Canyon. Two expensive homes and associated improvements are situated in the floodplain in an area one mile below the National Forest and wilderness boundary.

3. Emergency Rehabilitation Objective: Reestablish a vegetative cover adequate to protect the soils against erosion, reduce downstream flood damage, and minimize reductions in water quality and fisheries impacts in Fort Creek, while providing for the needs of wintering big game species.

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

   Land __90_ % Channel _____ % Roads __100 % Other __100 %

5. Net Environmental Quality Benefit Index:

   [x] Significant [ ] Not Significant

6. Net Social Well Being Benefit Index:

   [ ] Significant [x] Not Significant

7. Benefit/Cost Ratio: 19.2/1
8. Net Benefits: $ 150,955_____
9. Cost Effectiveness Index: [ ] I. [x] II. [ ] III. [ ] IV.

PART VI - ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS AND SOURCE OF FUNDS

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 Lands
Line Items	Units	Unit Cost $	No. of Units	FFF 092 $	Other $ 102 ident.	No. of Units	Federal$ EWP-403 ident.	Non-Federal $ volunteer identify	Total $
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
A. LAND									
a. Seeding	Acres	20.40	162	3,079				226	3,305
b. " Firelines	Acres	76.48	8.8		673				673
c. Drainage-Firelines	Miles	784	.75		588				588
d. " -Handlines	Miles	*	2.7		*				*
e.									
B. CHANNELS									
a. Opening water courses	Miles								
b. Stabilizing streambanks	Miles								
c.									
d.									
e.									
C. ROADS AND TRAILS							FFF-102		
a. Drainage	Miles					1.1	1,237		1,237
b.									
c.									
D. MAJOR STRUCTURES									
a. Preplanned - from Forest Plans									
E. TOTAL				$3,079	$1,261		$ 1,237	$ 226	$ 5,803

* Included with funds listed above.

PART VII - APPROVALS

/S/
Forest Supervisor (Signature) _____ Date _____

/S/
Regional Forester (Signature) _____ Date _____

Narrative - Fort Canyon Fire Rehabilitation

The Fort Canyon Fire started on August 31, 1988 on private land north of the city of Alpine. It was controlled on September 5, after burning a total of 389 acres, including 64 acres of private land and 325 acres of National Forest Land. All land burned within the Uinta National Forest is in the Lone Peak Wilderness. Destruction of vegetation and litter on the burned area was variable ranging from low intensity in some stands dominated by maple and on northerly aspects to high intensity on southerly aspects dominated by scrub oakbrush and curlleaf mountain mahogany and other droughty sites: The burn is mostly on steep slopes with sideslope generally ranging between 45% and 75% but some slopes in excess of 120% with considerable rock outcrop are present. Bedrock on the entire area is granite which has been shaped by the forces of both glaciation and fluvial processes. Elevations range from about 5800 feet on Fort Creek near the Forest boundary to about 7800 feet northwest of First Hamongog. Erosion hazards on the burned over slopes range from moderately low to extreme.

The Lehi City water supply arises in the First Hamongog area about 1/2 mile north of the northeast edge of the fire. The transmission line for this water source lies beneath the old jeep road which was also used as a fireline and access route on the east side of the fire. This facility does not appear to be in danger resulting from the fire as the fire burned with low to moderate intensity on the slopes immediately above this route. The fire burned in three tributaries to the Right Fork of Fort Creek. Of these the Left Fork of the Right fork is a perrenial stream which is a fishery for a short distance above the Forest boundary and for several miles downstream on Fort Creek. Below the Forest boundary on main Fort Creek at least 2 high value residences and a large barn are located in close proximaty to this stream channel and could possibly suffer damage should a summer thunderstorm result in flooding from the burned area. That possibility now exists on the drainage most effected by the burn, the East Fork of the Right Fork of Fort Creek ("Easton Creek"). Other developments such as waterlines, bridges and culverts, and powerlines associated with residential development are located in the floodplain in the vicinity.

Oakbrush and maple consumed by the fire will resprout but most of the litter on those areas which were hotly burned has been destroyed and it will be several years until these areas will recover to their original watershed condition. In the meantime erosion and flood hazards on portions of the area which burned hot will remain high for several years.

The burned area is important habitat for deer and elk. The lower portions of the burned area serve as critical winter range while the northerly slopes and higher parts of the burn serve as transitional winter range and as summer habitat. About 35 head of elk spend the winter in the vicinity of the Forest boundary at the lower end of the burned area. The area involved was closed to livestock grazing to protect watershed values about 25 years ago.

Because of the sudden reduction in ground cover watershed conditions on severely burned portions of the burn have been severely altered. It is proposed that 178 acres of the burned area be broadcast seeded by hand. This includes 16 acres of private lands just outside the wilderness boundary belonging to the heirs of Lamar Moyle. Utah Division of Wildlife Resources participated in the field survey for this report and they will furnish seed of species suitable for wildlife for addition to the seed mix selected for soil stabilization purposes. Alpine and Lehi Cities have expressed interest in participating as sponsors for seeding of the private land. Although a temporary debris basin may be desirable on the Right Fork of the Right Fork of Fort Creek no suitable location for such a structure could be found during field examination of the burned area.

The Operational Plan for the management of the Lone Peak Wilderness (page 12) states "Utilize native species to rehabilitate disturbed areas." Some of the area included in the burn was reseeded for watershed restoration purposes prior to the establishment of the Lone Peak Wilderness. The exotic species utilized have been very successful and are now naturalized within the area. Because the the native species available for reseeding are generally less successful at providing satistfactory watershed cover on a prompt timetable we are we are providing cost estimates for both a non-native seed mix and an adaptable native seed mix. We believe the non-native mix offers a substantially better chance for successful stabilization and control of surface runoff from the burned area and consideration should be given to relaxing the requirement for seeding only native species. The costs for seeding the 162 acres of National Forest System lands under either option are presented below. An option for seeding a mixture combining both native and non-native seed could also be considered.

SPECIES	LBS./A.	$/LB.	LBS.	TOTAL $
NON-NATIVE MIX				
Smooth Brome, Bromus inermis (Lincoln)	3	1.15	486	558
Intermediate Wheatgrass, Agropyron intermedium	3	1.45	486	705
Orchardgrass, Dactylis glomerata	2	.92	324	298
Hard Fescue, Festuca longifolia	1.5	1.85	243	450
Alfalfa, Medicago sativa (Ladak)	1.5	1.36	243	330
TOTALS	11		1,782	2,341
NATIVE MIX				
Bluebunch Wheatgrass, Agropyron spicatum	2.5	5.80	405	2,349
Mountain Brome, Bromus marginatus	3	2.60	486	1,264
Slender Wheatgrass, Agropyron tracycaulum	2.5	4.20	405	1,701
Utah Sweetvetch, Hedysarum boreale	1	16.50	162	2,673
Arrowleaf Balsamroot, Balsamorhiza sagittata	.5	7.50	81	608
Pacific Aster, Aster chilensis	.5	17.00	81	1,377
TOTALS	10		1,620	9,972

Appropriate species would be added to the above mixes of either native or non-native furnished by the Utah Division of Wildlife Resources. Bruce Giunta who represented Wildlife Resources on the rehabilitation team has informed us that several of the following species will be made available at 1.5 - 2.0 lbs. per acre: Ladak alfalfa, Cicer milkvetch, Oneflower Helianthella, Arrowleaf balsamroot, Lewis flax, Utah sweetvetch, Mountain big sagebrush, or Showy goldeneye.

The estimated cost of flying time for aerial reseeding the National Forest Lands by hand methods is $2820. An additional $200 will be needed for manpower for mixing, hauling, and loading seed and $374 is needed for administration of this proposal. Total cost is estimated at $5,735 if non-native seed is used. If native seed is utilized then the total cost is estimated at $13,366. Cost per acre is estimated at $82.51 if native seed is used or $35.40 if non-native seed is purchased. The additional cost to reseed the 16 acres of private land is estimated at $566 or $1320 depending on which seeding option is selected.

It is suggested that work be delayed until after the first Fall storm has arrived. This will allow for procurement of seed and provide for a better chance of successful establishment of germinating seedlings.

In addition to the work proposed with Emergency Burn Rehabilitation and Emergency Watershed Protection Funds (403), 0.75 miles of tractor-built fireline were proposed for drainage and seeding and this work has already been completed at a cost of $820. An additional 2.7 miles of hand constructed fireline will also need reseeding and drainage. The Tractor fireline was all outside the wilderness area area on Private lands as was .7 miles of the handline so seeding has been completed on these portions but seeding of the handlines within the wilderness must await a decision on seed mixtures. Also FFF funds were used to replace drainage in 1.1 miles of jeep road across private land which was utilized to provide access for fire suppression activities. The cost of the latter was $1,237.

After a review of the seeding alternatives and environmental consequences, the District Ranger and Forest Supervisor decided upon seeding with non-native species. The costs included in the enclosed tables thus reflect this decision.

ACCOMPLISHMENT

The Regional Office approved the reseeding proposal for the Fort Canyon Fire but required that the reseeding be completed by hand methods rather than by aerial broadcasting from a helicopter. It was estimated that it would cost approximately $10 more per acre to do the job by hand and approval to do the work was finally granted on October 12, nearly 5 weeks after the project proposal was initially submitted to the Regional Office. In the meantime the Utah Division of Wildlife Resources determin ed that because of the heavy demand on their seed supply resulting from other large fires within the State they would be unable to contribute seed to this project. The seed order for this

burn was thus increased proportionately to seed the burned area at the rate of 13 lbs. per acre, an increase of 325 lbs. for the 162 acres of National Forest System Lands to be seeded. No sponsors to share the costs of seeding the 16 acres of private lands outside the National Forest boundary could be found.

The seed was ordered soon thereafter in conjunction with seed for the Wallsburg Ridge Burn rehabilition. Though the seed was acquired at a good price the total price of seed, $2,405, exceeded the original estimate by $64 because of the increased amount of seed ordered. The seed was supplied by Granite Seed Company of Lehi, Utah and was delivered to Pleasant Grove on October 25. Initiation of seeding was delayed until after the end of the deer hunt.

Hand seeding work was begun on the upper portion of the burn on November 2, the day after the work on the Wallsburg Ridge burn was completed. Seed was hauled to the wilderness trailhead within about one half mile of the upper end of the burned area via pickup and was distributed by hand and packhorse to the portions of the burn needing treatment in that vicinity. A fall rainstorm closed project work down on November 3, but work resumed on November 4. Using a crew of 4 to 6 persons the work was completed in 97 hours, 32 hours of which were contributed volunteer labor. The final seeding was completed using cyclone seeders on November 7 at a cost to the government for hand labor of $582 or $3.59 per acre. In addition the estimated costs of volunteer and other contributed labor should be included to reflect the real costs of completing this project. These costs are estimated at $226 for an additional labor cost of $1.40 per acre. Thus the seeding costs add up to close to $5.00 per acre. In addition 4.5 hours of overhead costs were accrued for final report preparation and other project administration costs adding a cost of $92 to the project. Total costs for the project are summarized as follows:

Seed	$2,405
Labor (force account)	556
Equipment (purchase)	26
Labor (donated)	226
Overhead & administration	92
Total	$3,305

The total cost was thus $20.40 per acre or $5.00 less per acre than the estimated cost to complete the work if helicopter seeding had been done. Of course this cost could not have been achieved had vehicle access not been available very close to both the upper and lower portions of the fire, but it was suprising that the work could be done by hand for the above costs. Conditions on the Wallsburg Ridge fire would not have allowed the work to have been done by hand for anywhere near this cost.

Photo 3 - Burn Rehabilitation Team members, Steve Winslow (USFS) and Bruce Guinta (UDWR) inspect hot southfacing slope which is proposed for seeding with EWP Funds. Area was broadcast seeded by hand in early November.
9/3/88 PHS

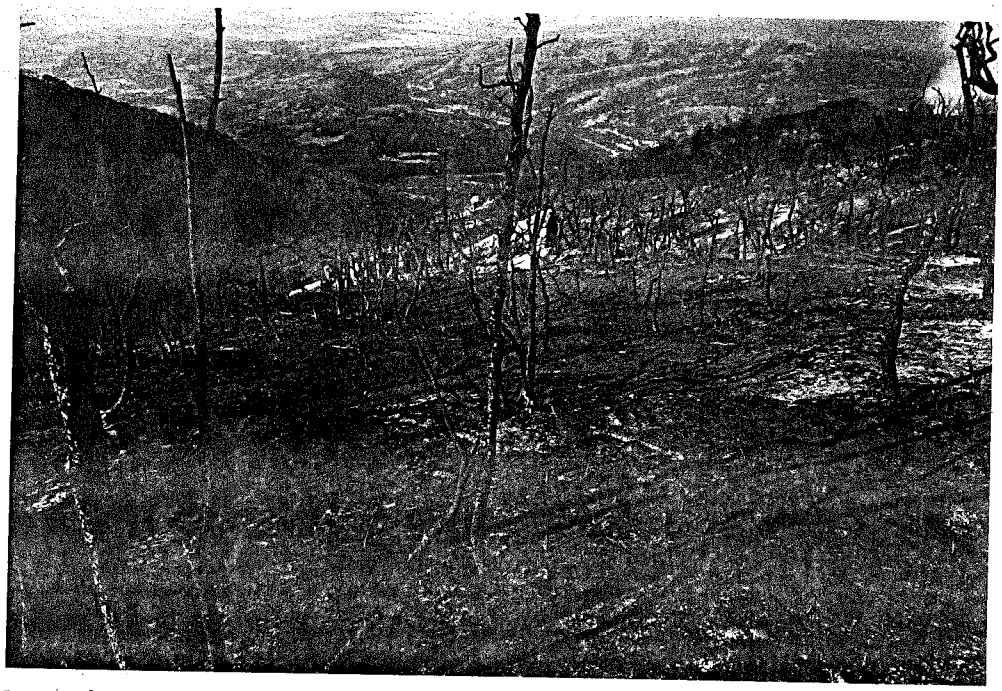

Photo 4 - Additional portion of Fort Canyon Fire proposed for seeding by ERB Team. Homes threatened by flash flooding from burned area lie along Fort Canyon Creek behind charred limb in upper center of photo.
9/3/88 PHS

Wages = 112.74

The following seed mixtures will be used to provide for soil stabilization, wildlife, livestock, and visual management in doing the proposed revegetation work. Where seed can be drilled rather than broadcast, the rate used for seeding can be 1/2 that listed.

Low Elevation and Droughty Sites

Species	Pounds Pure Live Seed (Lbs) per Acre	
Grasses		
Smooth Brome (Manchar or Lincoln depending on the elevation)	3.0 × 6.8 × 1.15 = 23.4	
Orchard Grass	2.0 × 6.8 × .92 = 12.5	
Kentucky Bluegrass	1.0 × 6.8 × 1.99 = 13,5	
Hard Fescue	1.0 × 6.8 × 1.85 = 12.58	
Fairway Crested Wheatgrass	1.5 × 6.8 × 3.29 = 33,5	
Intermediate Wheatgrass	3.0 × 6.8 × 1.45 = 29.5	
Pubescent Wheatgrass	2.0 × 6.8 × 5.35 = 76.7	
Indian Ricegrass	1.0 × 6.8 × 8.45 = 57.4	
Western Wheatgrass	1.5 × 6.8 × 6.95 = 47.2	
Forbs		
Alfalfa, Ladak	1.0 × 6.8 × 1.36 = 9.25	
Small Burnett	1.0 × 6.8 × 2.65 = 11.22	
Chickpea Milkvetch	1.0 × 6.8 3.25 = 22.1	
Palmer Penstemon (if available)	.25 × 6.8 17.95 = 30.5	
Louisiana Sagebrush (if available)	.25	
Yarrow (if available)	.25 × 6.8 20.00 = 34.0	
Shrubs (if available)		
Snowberry	.5 × 6.8 × 37	125.8
Wild Rose	.5 × 6.8 × 14.50	49.3
Big Sagebrush (Vesseyana)	.25 × 6.8 × 4.10	6.97
Bitterbrush	1.0 × 6.8 × 9.45	64.26
Total	22.00	660.12
		112.74
		20.00
		792.86

Seed
John Reese 232.07
Cat work on Tractor Line 147.59
Low Boy = $385
= 55
$819.66 +

319.75
- 232.07
87.68
132.74
220.42 = $1,040.08

Acres Seeded = .75 miles catline = 2.25
1.1 miles access road = 3.3
.7 miles handline = .85
6.4 Acres

Seed
Cat Work on Road Drainage 340.37
= $550
Transport 110
660
John Reese 236.14
Seeding
$1236.51