File Code: 2520-3 **Date:** August 24, 2000
Route To:

Subject: Box Canyon Fire Burned Area Emergency Rehabilitation (BAER) Request

To: Forest Supervisor, Wasatch-Cache NF's

The enclosed initial request for BAER funds for the Box Canyon Fire is approved with the following contingencies.

1. The stabilizing riparian shrubs are to be effective in meeting the emergency objectives within a 2 year time period. Any plantings that are to be used for non-emergency purposes or that will be effective at meeting your stated objectives later than 2 years should be funded by other appropriated funds.
2. BAER will only fund the equivalent cost of a temporary fence when replacing your damaged riparian protection exclosure. Any cost above the cost for a temporary fence must be charges to other appropriated funds.

Charge all treatment activities to job code P49081.

You must keep track of all funds by treatment, or project type, and fiscal year. A report must be sent at the end of the fiscal year to the RO showing the expenditures for each fire. A final 2500-8 report must be submitted to the RO when projects and treatments have been completed and reviewed.

Please contact the Jeff Bruggink, Regional BAER Coordinator, at (801) 625-5357, or Ken Heffner, Regional Hydrologist, at (801) 625-5368, if you have questions or concerns.

JACK A. BLACKWELL
Regional Forester

Enclosure

Cc:
Wasatch-Cache NF's (Charlie Condrat, Paul Flood)
BPR (Jeff Bruggink, Ken Heffner, Bill Burbridge)
FR (Dick Ottesen)

Date of Report: August 15, 2000

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding Request for Estimated WFSU-FW22 Funds

[ ] 2. Accomplishment Report

[ ] 3. No Treatment Recommendation

B. Type of Action

[x] 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

[ ] 3. Final report-following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Salt Lake Desert Complex - Box Canyon

B. Fire Number: UT-SLD-421

C. State: Utah

D. County: Tooele

E. Region: R4

F. Forest: Wasatch-Cache

G. District: Salt Lake

H. Date Fire Started: August 1, 2000

I. Date Fire Controlled:

J. Suppression Cost:

K. Fire Suppression Damages Repaired with WFSU-PF12 Funds:

1. Fireline waterbarred (miles) 0

2. Fireline seeded (miles) 0

3. Other (identify) _____

L. Watershed Number: 16020305 – Skull Valley

M. NFS Acres Burned: 720 Total Acres Burned: 800

(0)State (0)BLM (80)PVT ( ) _____

N. Vegetation Types: Utah Juniper/Antelop Bitterbrush/Bluebunch Wheatgrass
Mt. Big Sagebrush/Bluebunch Wheatgrass

O. Dominant Soils: (see attached)
Kapod very cobbly loam (85% of area)
Reywat-Broad Rock outcrop association (10% of area)
Podmor, moist Dateman – Rock outcrop association (5% of area.

P. Geologic Types: Colluvium derived dominantly from quartzite and sandstone.
Alluvium derived dominantly from sandstone and limestone.

Q. Miles of Stream Channels by Order or Class:

Order 1	Order 2		
- ephemeral (2.5 miles)	- ephemeral (0.7 miles) - perennial (0.4 miles)		

R. Transportation System:
Trails: 0 miles Roads: 2.1 miles (maintenance level 2 roads)

PART III - WATERSHED CONDITION

A. Fire Intensity (acres): 20 acres (low) 20 acres (moderate) 760 acres (high)

B. Water-Repellent Soil (acres): 20 acres

C. Soil Erosion Hazard Rating (acres): 0 (low) 750 (moderate) 50 (high)

D. Erosion Potential: 1 tons/acre

E. Sediment Potential: 490 cubic yards / square 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: 10 years

D. Design Storm Duration: 24 hours

E. Design Storm Magnitude: 1.9 inches

F. Design Flow: 22.5 cubic feet per second per square mile

G. Estimated Reduction in Infiltration: 25 percent

H. Adjusted Design Flow: 25 cubic feet per second per square mile

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:
See attached narrative.

B. Emergency Treatment Objectives:
See attached narrative.

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

Land >90 % Channel >90 % Roads NA % Other 90 %

D. Probability of Treatment Success

		<----Years after treatment-----> 1	3	5
Land	Noxious Weeds	90	90	90
	Invasive Weeds	80	80	80
Channel	Seeding/ Mulching	90	90	90
	Willow planting	80	80	80
Roads		NA	NA	NA
Other	Fencing	90	90	90

E. Cost of No Action (Including Loss): $ $426,100

F. Cost of Selected Alternative (Including Loss): $ $80,495

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Charlie Condrat

Phone:: 801-524-3939 Electronic Address: ccondrat@fs.fed.us

Fax:: 801-524-3172

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.

The following treatments have been proposed to mitigate the threat to life, property, and loss of site productivity:

Land Treatments:
The objective is to improve ground cover on moderate and severely burned areas, essentially all Forest Service lands within the burn area. This will be accomplished by the aerial seeding of of quick cover producing vegetation prior to the onset of runoff producing storms, that usually begin in October in this area. Seeding treatments consist of bluebunch wheatgrass applied at a rate of 40 pls (pure live seed) per square foot or 14.65 pounds per acre (predicted by seed provider to be approximately 85% viability). Because the burned area is contained within a range allotment scheduled for use within the recovery time period, another important objective of the treatment is to protect recovering vegetation from grazing by installing a temporary exclosure fence.

Channel Treatments:
Box canyon within the burned area contains a live spring/stream complex with critical habitat for the sensitive boreal toad. This rparian area was severely burned and is now subject to bank erosion and destabilization, as well as sedimentation of springs and pool structures utilized by the boreal toad. The objective is to preserve bank integrity by restoring the stabilizing riparian shrub root masses destroyed by the fire. The existing riparian exclosure fence was destroyed by the fire and will need replacement to allow for establishment of planted riparain shrubs. A 30 foot wide strip of straw mulch will be added to severely burned slopes (approximately 0.7 acres) immediately adjacent to Box Canyon Creek to enhance seedling germination and plant growth and to protect critical stream pools and spring habitat from sedimentation. Mulch will be applied at a rate of 2 tons per acre.

Roads and Trail Treatments:
No treatment is necessary.

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

			NFS Lands			Other Lands			All
Line Items	Units	Unit Cost $	Number of Units	WFSU-FW22 $	Other $	Number of Units	Fed $	Non-Fed $	Total $
					ident.		ident.	ident.	
A. LAND TREATMENTS									
Aerial seeding	Acres	8.00	720	5,760					
Ground support to aerial seeding (safety, labor)	Hours	15.00	24	360					

Bluebunch wheatgrass (seed)	LBS	5.00	10,550	52,750					
Fence (temporary)	Miles	4,000	3.0	12,000					
Fence (replacement)	Miles	4,000	0.5	2,000					
Riparian shrubs (plants)	Plants	1.00	1,000	1,000					
Riparian plants (planting)	Hours	15.00	30	450					
Riparian mulching w/labor	Tons	650	1.5	1,000					

B. CHANNEL TREATMENTS

C. MONITORING

Weed Surveys (2001)	Day	175	8	1400					

D. STRUCTURES

E. BAER EVALUATION/ADMINISTRATIVE SUPPORT

Salary, Travel, Etc.									
Condrat	day	235	5	1175					
Padgett	day	250	5	1250					
Flood	day	225	6	1350					

F. TOTALS

Land Treatments				75,320					
Monitoring				1,400					
BAER Eval/Admin				3,775					

PART VII - APPROVALS

1. /s/ Bernie Weingardt 8/22/00

Forest Supervisor Date

2. _____ _____
Regional Forester Date

Part V-A
Watershed Emergency

Threats to Human Life

Field reviews within and downstream of the burn confirmed there are no situations where human occupancy of flood prone areas exist. Therefore, the effects of the fire do not appear to have created any significant threats to human life.

Threats to Property

Field reviews within and downstream of the burn confirm there is property potentially threatened by effects of the fire. They are:

- There is one water pipe that diverts water from Box Canyon Creek and ultimately to an open canal. The canal crosses National Forest lands and could fill with sediment eroded from nearby burned hillsides. The probability of this occurring is believed to be low because there is a buffer of unburned juniper immediately adjacent to the canal.

- There is currently a gravel filter over the top of the irrigation intake structure. There is a potential for this structure to become clogged by sediment. Without treatment, the probability of this occurring is moderate should sediment get into the channel and transported downstream to this structure.

Threats to Water Quality

Field reviews within and downstream of the burn confirmed there are no significant threats to water quality. There will be sediment and ash output and minor, inconsequential changes to chemical quality but the effects to on-site and downstream water quality and aquatic resources are expected to be minor.

- There are springs used for private, domestic water on private land adjacent to the Forest. The potential for the fire to affect the water quality of these springs is low and flows may actually be enhanced by the reduction of junipers on adjacent lands.

Threats to Long-term Soil Productivity and Ecosystem Integrity

The greatest threats from the Box Canyon fire are most likely to be to long-term soil productivity and ecosystem integrity. **Uplands:** Prior to this burn, the majority of the area was dominated by native perennial grasses, shrubs, and trees; invasive weedy species, while present, were not abundant. Because of the intensity of the fire, nearly all native, perennial vegetation that occurred prior to the burn was killed. Experience in adjacent areas shows that without treatment, there is a nearly 100 percent likelihood that cheatgrass (*Bromus tectorum*) and bulbous bluegrass (*Poa bulbosa*) will dominate the area within a year or two. This threat is considered to be

extreme. Once cheatgrass and bulbous bluegrass become established, it is unlikely that the desired native species will ever be able to dominate this area without a high amoumt of management effort. This invasion will result in very poor rangeland condition, potential increased fire frequency, and subsequent accelerated soil erosion and associated loss of long-term soil productivity. **Riparian Areas:** Box Canyon Creek is one of only a few perennial streams on the west side of the Stansbury Mountains. The stream and its associated spring, which were also severely burned, contain critical habitat for the R4 sensitive species boreal toad. For these reasons, it is essential to maintain the quality of the channel and adjacent riparian ecosystems. The riparian area adjacent to approximately 1,000 linear feet of stream channel was severely burned with little or no likelihood for regrowth of cottonwoods (*Populus* spp.), box elder (*Acer negundo*), dogwood (*Cornus sericea*), and/or willow. Because of the severity of the burn, we are anticipating that a longterm conversion of riparian vegetation type will occur along Box Canyon Creek, from sedge/shrub types to grasses and weedy annuals. PFC studies have shown Box Canyon creek to have few large bank stabilizing boulders, and that large woody debris and live shrubs are critical in preserving bank stability. Our proposal to replant shrubs along the banks, while not resulting in total recovery of prefire characteristics, does have a good chance of preserving streambank integrity by establishing a more stabilizing root mass within the first couple of growing seasons. Our second objective is to protect boreal toad populations by limiting the introduction of excessive sediments into the spring and stream pool areas. We will do this by creating a straw mulch substitute filter strip that can function until riparian/green line vegetation is reestablished

Threats to Heritage Resources

Field reviews within the burn indicate there are no significant threats to heritage resources.

Part V-B
Emergency Treatment Objectives

The goal of the burned area emergency rehabilitation is to:

- Re-establish native plant communities in a timely fashion in order to reduce or eliminate a threat to long-term soil productivity and protect the ecological integrity of the ecosystem.

Treatment objectives to achieve the goal are:

- Control expected invasion by cheatgrass (*Bromus tectorum*) and bulbous bluegrass (*Poa bulbosa*) through application of bluebunch wheatgrass (*Agropyron spicatum*).

- Accelerate, using wildlife funds, re-establishment of an important winter range plant through application of antelope bitterbrush (*Purshia tridentata*).

- Prevent the long term conversion of the Box Canyon riparian area from sedge-shrub

communities to grass and weedy annuals.

- Minimize sediment into Box Canyon Creek, one of only a few perennial streams on the west side of the Stansbury Mountains that contains critical habitat for the sensitive boreal toad.

Box Canyon BAER Implementation and Effectiveness Monitoring Plan

Cheatgrass/Bulbous bluegrass

For a period of two years (per local BLM and FS direction to monitor noxious and invasive weeds after wildfire), monitor four (4) line-intercept transects stragetically placed within the burn perimeter. Two local GS-9 staff will conduct the monitoring. Each transect will be read twice yearly (spring and fall) in 2001.

If the above monitoring indicates treatment has been ineffective or less than desirable, local FS staff may decide to request additional dollars to re-seed with the same or alternate seed mix, spray additional acreage infested with cheatgrass/bulbous bluegrass.

Item	Costs of Treatment	Costs of Non-treatment
Site Productivity (720 acres)	Seed: $52,750 Aerial application: $6,120	$360,000 ($500/acre)
Riparian Loss (1.5 acres)	Willow Planting Straw mulch (56 bales) $1000	$7,500 ($5,000/acre)
Fence (3.5 miles)	$5,250 ($1,500/mile)	$ 8,600 (cost of grazing private land for 3 years)
Irrigation water (pipeline and headbox replacement)	Not necessary if adjacent lands are treated.	$50,000