USDA-FOREST SERVICE FS-2500-8 (7/00)

Edited J.Bruggink 10/18/01

Date of Report:

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. **Type of Report**

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

B. **Type of Action**

[ ] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)

[X] 2. Interim Report
[x] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

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

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Rankin

B. Fire Number:ID-SCF-071

C. State: Idaho

D. County: Custer

E. Region:04

F. Forest: Salmon-Challis

G. District:Yankee Fork_

H. Date Fire Started:8/11/2000

I. Date Fire Controlled: 09/02/2000

J. Suppression Cost: $3,850,000 as of 09/01/2000

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 9 miles (cat line)
2. Fireline seeded (miles): 9 miles
3. Other (identify): 8 damaged culverts replaced

L. Watershed Numbers: Lower Yankee Fork 170602011501; Middle Yankee Fork 170602011504

M. Total Acres Burned:6991
NFS Acres (6696) Other Federal ( ) State ( ) Private (295 acres within fire perimeter)

N. Vegetation Types: Subalpine fir/pinegrass; Subalpine fir/elk sedge; Subalpine fir/grouse whortleberry; Mountain big sagebrush/Idaho fescue; Douglas-fir/pinegrass, Douglas-fir/elk sedge, Lodgepole pine/pinegrass, Lodgepole pine/elk sedge.

O. Dominant Soils: Loamy-skeletal, mixed, Typic Cryochrepts and Loamy-skeletal, mixed, Typic Cryoborolls.

P. Geologic Types: Challis Volcanics and Idaho Batholith (granitics)

Q. Miles of Stream Channels by Order or Class:

Order 1: 12.6 miles
Order 2: 6.6 miles
Order 4: 0.2 miles

R. Transportation System

Trails: 1.75 miles Roads: 6.85 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 2,537 (low) 692 (moderate) 1,481 (high)

B. Water-Repellent Soil (acres): 1,985

C. Soil Erosion Hazard Rating (acres):

278 (low) 1,322 (moderate) 5,388 (high)

D. Erosion Potential: 5 tons/acre

E. Sediment Potential: 3200cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	2-3
B. Design Chance of Success, (percent):	80%
C. Equivalent Design Recurrence Interval, (years):	10
D. Design Storm Duration, (hours):	24
E. Design Storm Magnitude, (inches):	2.4
F. Design Flow, (cubic feet / second/ square mile):	17.3
G. Estimated Reduction in Infiltration, (percent):	62%
H. Adjusted Design Flow, (cfs per square mile):	27.8

PART V - SUMMARY OF ANALYSIS

A. **Describe Watershed Emergency**:

Threats to Life and Property

Threats to life are low, however, safety is a concern due the existance of hazard trees.

There is a low potential flooding threat to a private cabin in “unnamed” creek north of Rankin Creek that is located in an alluvial fan.

The Shoshone-Bannock tribe hatchbox progam and Yankee Fork rearing ponds are threatened by sediment from Crealey Creek. Protecting Crealey Creek from additional amounts of sediment is critical to the protection of these properties.

Reducing the risk of transportation system failure is critical in providing forest visitor safety.

Threats to Water Quality

The Yankee Fork is listed as a 303(d) stream. Field reviews within and downstream of the burn confirm there are significant threats to water quality in the event of a high intensity storm. The concern is that sediment may bury spawning gravels and fill pool habitat in the Yankee Fork drainages. This river is critical to the recovery of chinook salmon, steelhead, and bull trout[i]. This concern is related to anticipated increases in sediment delivery to streams from high severity burn acreage, and potential increases in sediment delivery to streams if the threats to roads and trails previously described occurs. Another serious threat is the possible breaching of the leach ponds in Preachers Cove. Althought the probabily of this happening is low, it must be considered due to high resources values it would affect.

Threats to Threatened and Endangered species

Several fish species occur within or adjacent to the burned area. These include Snake River chinook salmon, Snake River summer steelhead, Snake River sockeye salmon, bull trout, westslope cutthroat trout, sculpin, and hatchery rainbow trout. Chinook salmon, steelhead, and bull trout are listed as Threatened under the Endangered Species Act (1973). Snake River sockeye salmon are listed as Endangered under the Endangered Species Act (1973). This analysis concludes that the fire has likely not created an emergency condition that may cause unacceptable impacts to Snake River sockeye salmon and resident fish species. However, the fire has created an emergency condition that may cause unacceptable impacts to chinook salmon and steelhead. The emergency threat to these species is the potential for increased amounts of sediment to move from areas of high burn intensity into spawning and juvenile rearing areas. This threat can be reduced or eliminated through the aerial seeding, slash cutting, and installing wattles and drop structures. These treatments significantly reduce the emergency risk posed to these species; can be implemented prior to the next damaging storm; will be effective within the next two growing seasons; and do not conflict with desired conditions, ecosystem health, or biodiversity.

Threats to Long-term Soil Productivity and Ecosystem Integrity

Maintanence of long term soil productive is necessary to minimize erosion potentials and subsequent movement of sediment into the stream channels. Erosion hazard potentials are high within the Rankin fire perimeter. Slope maps provide an indication of high potential for runoff and flash flood conditions. 55% of the burned area has slopes greater than 35%, and 22% having slopes greater than 60%. Hydrophobic conditions exist over 28% of the burn. This surface layer is thin, which suggests it may break down with one or more wetting/drying and freeze/thaw cycles. Ash “sealing” of the soil surface in the higher intensity burns may take at least two years to degrade. Soil loss on steep slopes under high burn intensity can have soil losses of 5 tons/acre with these soils having a 1 ton/acre soil loss tolerance.

A portion of the Rankin Fire burned through the 1985 East Basin Creek Fire. Rehab efforts (ie. Aerial seeding) on selected high intensity burn areas resulted in favorable effective ground cover within 3 years.

Known populations of Noxious weeds (Spotted Knapweed, Bull thistle, and Canada thistle) occur along road sides within the fire area threaten to spread into areas burned. Burned riparian vegetation adjacent to the Custer Motor Way is particularly suscepible to invasion. Yellow and Dalmation Toadflax have a potential to move into some of the areas of coarse textured soils. A noxious weed EIS covers needed treatment activites.

Threats to Heritage Resources

Very little heritage resource inventory has been completed within the Rankin Burn area. Completed work revealed 13 historic and prehistoric sites were inventoried in the burn area. Fourteen additional historic sites were discovered during suppression activities. Nine out of the 27 sites known to be located within the burn area are considered significant to understanding the prehistory and history of the Yankee Fork area and therefore are eligible for the National Register of Historic Places. These sites, which survived, but were burned in the fire, include two historic cabins, two historic placer mining features, one historic powerline, two historic roads, one mining site, one historic livestock driveway, and one prehistoric site. Refer to the Heritage Specialist Report for a complete list of sites that are known to be located within the Rankin Fire; including those not affected by the fire and those destroyed by the fire. These nine National Register-eligible sites will need protection from erosion and monitoring.

The Rankin Fire was in close proximity of the historic mining towns of Custer and Bonanza City. Given this fact and the fact that additional historic sites were reported by fire crews, it is expected that that historic mining sites and other historic sites are common in the burn area. As a result, any proposed ground-disturbing activity within the burn area (estimated to be approximately 5 acres) will require inventory and project clearance through the State Historic Preservation Officer (SHPO). Any ground-disturbing activities within site boundaries will require monitoring by an archeologist.

B. **Emergency Treatment Objectives**:

The objectives of the emergency treatments are to:

- Protect T&E fish habitat by reducing the amount of sediment into the the Yankee Fork and adjacent side drainages.
- Maintain water quality.
- Protect biodiversity and site productivity by controlling noxious weed spread.
- Assure the transportation system can withstand increased water flows and reduce sediment input into adjacent drainages.
- Protect historic and prehistoric sites from debris movement, flooding, and hazard trees.
- Maintain soil productivity by reducing soil loss.

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

Land 80 % Channel 90 % Roads 90 % Other 90 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
Aerial seeding	80	50	30
Slashing	50	50	40
Straw wattles	80	60	10
Log base control	90	80	70
Noxious weed	80	50	10
Channel			
Modification	90	0	0
Roads			
drainage	90	80	70
Other			
Cultural	90	80	80

Note: Straw wattles last 2-4 years
Note: Channel modification is a short term precaution. Starting in 2001 there is a Plan to rehabilitate these tailing ponds.

E. Cost of No-Action (Including Loss): $3,578,960

F. Cost of Selected Alternative (Including Loss): $575,216

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Kent E. Houston
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Team members:
Duane Monte – Soils
Carol Van Dorn – Hydrology
Dave Reeder – Wildlife / Botany/ Noxious weeds
Sharon Bradley – Timber
Esther Morgan – Archeology
Bart Gamett – Fisheries
Tony Beke – Engineering
Pete Schuldt – Engineering & GIS

H. **Treatment Narrative:**

Land Treatments:

Purpose: To minimize soil loss, help maintain soil productivity, increase infiltration, reduce runoff and allow for native re-establishment.

Treatment 1: Aerial seeding of 407 acres of high intensity; medium to high severity burn in upper Rankin Creek, Crealey Creek, Unnamed creek, and along the Yankee Fork with oats (avenia satvia) a non invasive and non competitive species. This treatment is needed to provide ground cover that can retain ash and soil on-site during the first growing season. Long-term soil productivity will be protected and there will be a reduction in the amount of sediment delivered to streams.

~~The following table displays seed application rates and costs~~

~~Plant~~	~~Seeding Rate (lb PLS/ac)~~	~~Cost/lb~~	~~Total Seed Cost ($)~~	~~Total aplication costsl~~
~~*Oats*~~	~~12~~	~~0.19~~	~~$912~~	~~$6912~~

Effectiveness: This treatment is expected to be highly effective at 80% in establishment of a cover crop the first year.

Treatment 2: Integrated Pest Management (IPM) will be used to control the spread of noxious weeds in the burn area for three years following the fire. Chemical techniques will be used in this situation. The purpose is to prevent the aggressive spread and competition with native species with weeds after fire. The species found are Spotted Knapweed, Canada / Bull Thistle, and Yellow Toadflax; with known adjacent locations of Dalmation Toadflax. Rapid expansion and increased densities are expected from existing populations. Dozers and fire crews may have introduced knapweed seeds from fire traffic through infested areas. The Fire Camp at Peach Creek was infested with knapweed. Work is in accordance to the Forest wide noxious weed EA.

Effectiveness: Noxious weed treatments must occur annually over at least three years after the fire to be 80% effective the fist year.

Treatment 3: Slashing trees on 46 acres key slopes in Crealey and upper Rankin Creek drainages to increase ground cover and reduce erosion.

Effectiveness: This treatment is expected to be moderately effective at 50%.

Treatment 4: 1500 feet Straw wattling in upper Rankin Creek at critical toe slope /inner gorge interfaces to further help retain sediment from reaching stream channels.

Effectiveness: This treatment is 80% effective in holding ash and soil on site.

Treatment 4a: At the recommendation of WO during the July 01 site visit, 1200 feet additional straw wattling in upper Rankin Creek at critical mid slope locations to further help retain sediment from reaching stream channels. Requested additional funding for FY02 = $2,000.

Effectiveness: This treatment is 80% effective in holding ash and soil on site

Channel Treatments:

Purpose: Channel treatments are effective in directing flow.

Treatment 1: Use track hoe to define the existing channel and assure direct flow away from leach ponds in preachers cove. Breaching of the leach ponds would severily effect water quality and subsequently fish habitat downstream.

Effectiveness: This treament is expected to be very effective (90%) in assuring flow away from the leach ponds.

Roads Treatments:

Purpose: Reduce the risk of transportation system drainage failure that could increase erosion, sedimentation, and cause downstream degradation to water quality important to T & E species. The road along Rankin Creek lies right adjacent to the creek, thus having little to no delivery distance for sediment input into the creek. Protecting the road investment is also a consideration.

Treatment 1: Rankin Creek Road 40035 culvert armoring. Five locations where suppression damaged culverts were replaced, construct armored grade dips and oversized drains to protect road prism and fill slopes.

Effectiveness: This technique is an accepted method of controlling erosion and sediment from roads. 90% effective the first year.

Structures:

Purpose: To assist in the retention of ash and soil that has the potential of being deposited in the ephemeral drainage that flows into critical fish habitat

Treatment 1: Install 30 single-log base control structures in the ephemeral drainage immediately above Crealey Creek hatch box sites and historic cabin to capture and retain sediment behind them.

Effectiveness: This treatment has been shown to be moderately effective in controling soil movement.

Treatment 2: Install 5 in-stream headcut stabilization structures in the recently impacted Crealey Creek channel below the debris dam (adjacent/downstream of the cabin and previously located hatchbox sites). Seeding the headcut areas with an approved certified weed-free riparian/aquatic grass mix. Requested additional funding for FY02 = $5,500.

Effectiveness: This treatment has been shown to be moderately effective in controling further headcutting.

Treatment 3: Re-place or remove a culvert on the frontage road at the mouth of Crealey Creek (sized to handle drainage). The existing culvert is non-functional following the fire induced sediment/precipitation event. Re-work the existing channel and debris to funnel flows into the new culvert or ford. Engineer and construct a small settling pond below the mouth of the drainage to catch sediment before reaching the ESA listed fish rearing ponds. Seeding further disturbed areas with an approved certified weed-free grass/forb mix. Requested additional funding for FY02 = $6,500.

Effectiveness: This treatment has been shown to be moderately effective in controling further erosion and sediment transport.

Heritage Resources:

Purpose: To reduce the risk to National Register-Eligible properties from increased runoff and erosion potential in high intensity burn areas susceptible to runoff events or overland flow, and to reduce potential damage to standing historic structures by falling hazard trees.

Treatment 1: Evaluate, monitor, and/or recover nine heritage resource sites identified within harms' way within high burn intensity areas (twice a year during wet weather events for 3 years). These sites include historic cabins (CH-157, CH-626), placer ditches (CH-157, New site 1) and other placer mining features (New site 14); an historic power line (CH-470), historic roads (CH-624, New site 9), and one prehistoric site (CH-176; see Table 1 for more information about these sites) located within areas of high potential for erosion resulting from de-vegetation by the fire.

Effectiveness: Monitoring sites relative to potential runoff events can be effective in reducing damage to heritage resource sites.

Treatment 2: Removal of standing trees killed by the fire (hazard trees) that could fall on top of, and destroy the standing cabin at site CH-626.

Effectiveness: Removal of hazard trees around standing cabins can be effective in reducing damage to these structures.

Treatment 3: Provide protective measures such as installing erosion control devices and digging trenches around site historic cabin site CH-626, and seeding as appropriate for sites pending additional monitoring. Initial treatments of single log grade stabilizers and rice straw wattle placement (with wood stakes) would be placed above the site CH-626, which is in a steep slope system, along with seeding. Sites where there is a high probability of massive soil movement and/or erosion would have 4 ft deep trenches dug outside their boundaries in the path of potential soil movement/erosion (CH-626). Sites on gentle slopes would be seeded with weed-free seed by hand (CH-157, CH-176, CH-470, CH-626 New site 1, New site 9, New site 12, and New site 14).

Effectiveness: Trench construction, rice wattle stabilization and/or seeding is believed to be an effective means to mitigate site deterioration from runoff events. If these measures fail, full-scale data recovery may be necessary.

Treatment 3a: Re-establish protective measures such as cleaning and improving trenches around historic cabin site CH-626, and seeding. Initial treatments of single log grade stabilizers and rice straw wattle placement (with wood stakes) placed above the site CH-626, which is in a steep slope system, proved to be effective following the recent fire induced sediment/precipitation event. Sites where there is a high probability of massive soil movement and/or erosion would have 4 ft deep trenches dug outside their boundaries in the path of potential soil movement/erosion (CH-626) and be seeded with an approved certified weed-free grass seed mix by hand. Requested additional funding for FY02 = $1,000.

Effectiveness: Trench construction have proved to be an effective means to mitigate site deterioration from runoff events.

H. **Monitoring Narrative:**

Monitoring is to be done to assess if treatments are properly functioning. Monitoring will be by photo documentation, visual observations, and field measurements. Fish habitat, seeding treatment , road drainage, historic sites, soil productivity, and noxious weed spread will be assessed at key times specifed in the monitoring plan over a period of 3 years. A yearly monitoring report will be written summarizing that years field work. The monitoring plan is attached to the 2500-8.

Proposed Activities:

1. Monitor effectiveness of road drainage. Monitor road drainage and effectiveness of rolling dips, water control structures, and armoring. With an expected 2-3 year recovery, three years of annual monitoring is to be done after spring runoff and major storm events. Estimated annual cost is $700 ($600 salary – 6 person days and $100 travel costs). The three-year total is $2,100.

2. Monitor spread of noxious weeds. Monitor possible spread of Spotted knapweed, Bull thistle, and Canada thistle into the burn. Monitor once in June, July, and late August for three years. Estimated annual cost is $302 ($252 salary – 1 person days and $50 travel costs). The three-year total is $906.

3. Monitor Chinook / Steelhead Salmon and Bull trout habitat. Monitor reds, rearing ponds and hatch box sites affected by increased flows for 3 years. Estimated annual cost is $1,250 ($1,000 salary - 5 days and $250 travel costs). The three-year total is $3,750.

4. Monitor Heritage sites. Monitor historic sites and the prehistoric campsite and identify any necessary mitigation measures needed related to fire effects. Three years of annual monitoring to evaluate treatments effectiveness. Estimated annual cost is $1,000 ($800salary - 4 days and $200 travel costs. The three-year total is $3,000.

5. Monitor Soil Productivity and Hydrology. Monitor vegetative recovery, upland soil erosion, and hydrophobic layer degradation. Three years of annual monitoring to evaluate treatments effectiveness. Estimated annual cost is $1,200 ($1,000 salary - 4 days and $200 travel costs. The three-year total is $3,600.

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

Line Items	Units	Unit Cost	# of Units	WFSU SULT $	Other $	# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
1. Aerial seedng	acres	$13.08	407	$5,324			$0		$0	$5,324
2. Hand seeding	acres	######	10	$16,068			$0		$0	$16,068
3. Slashing	acres	$928.33	46	$42,703			$0		$0	$42,703
4. Straw wattles	lin feet	$10.36	2900	$30,044			$0		$0	$30,044
5. Noxious weeds cont	acres	$113.43	35	$3,970			$0		$0	$3,970
6. Hazard tree remova	number	$169.38	50	$8,469			$0		$0	$8,469
Subtotal Land Treatments				$106,578			$0		$0	$106,578
B. Channel Treatments										
1. Single log base	str	91.67	30	$2,750			$0		$0	$2,750
control structures							$0		$0	$0
2. Channel Modficatio	ea	825	2	$1,650			$0		$0	$1,650
				$0			$0		$0	$0
Subtotal Channel Treat.				$4,400			$0		$0	$4,400
C. Road and Trails										
1. Rock closure	ea	770	2	$1,540			$0		$0	$1,540
2. Armored dips	ea	3092	5	$15,460			$0		$0	$15,460
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Road & Trails				$17,000			$0		$0	$17,000
D. Structures										
Heacut structures	ea	1100	5	$5,500			$0		$0	$5,500
Culvert and settling po	ea	6500	1	$6,500			$0		$0	$6,500
Subtotal Structures				$12,000			$0		$0	$12,000
E. BAER Evaluation										
1. BAER Team Cost	ea	23000	1	$23,000			$0		$0	$23,000
2. BAER Treatments	ea	847	1	$847			$0		$0	$847
ventory and protection	ea	1000	1	$1,000			$0		$0	$1,000
plementation overhead	ea	21500	1	$21,500			$0		$0	$21,500
Subtotal evaluation				$46,347			$0		$0	$46,347
G. Monitoring Cost							$0		$0	$0
one year				$4,502			$0		$0	$4,502
Subtotal monitoring				$4,502			$0		$0	$4,502
H. Totals				**$190,827**			**$0**		**$0**	**$190,827**

PART VII - APPROVALS

1. _____
District Ranger (signature) Date

2. _____
BAER Coordinator (signature) Date

3. /s/Pamela K. Mihelich for GEORGE MATEJKO 10/18/01
Forest Supervisor (signature) Date

4. /s/ Jack G. Troyer for 10/25/01
Regional Forester (signature) Date