



United States
Department of
Agriculture

Forest
Service

Region 1

200 East Broadway
P. O. Box 7669
Missoula, MT 59807

File Code: 6520/2520-3

Date: October 4, 2000

Route To:

Subject: Alder Creek Fire, Burned Area Emergency Rehabilitation (BAER)

To: Forest Supervisor, Lolo National Forest

Enclosed is the approved initial Burned Area Emergency Rehabilitation (BAER) for the Alder Creek Fire. You are authorized to spend up to \$30,567 for the assessment, land, road and trail treatments, and monitoring activities shown in Part VI of the report. For out-year monitoring needs, you must submit an annual interim request that describes monitoring needs based on previous year's results.

Use the assigned P-code for the approved suppression land treatments. Please provide me with your Final Accomplishment Report (FS 2500-8), describing actual costs and accomplishments, within 60 days of project completion. Based on your monitoring schedule, a monitoring report is due by June 30, 2001. Contact Bruce Sims (406)-329-3447 if you have any questions.

/s/ Kathleen A. McAllister

DALE N. BOSWORTH
Regional Forester

Enclosure

fsfiles/unit/wwfrm/2500/baer_reports_approvals/approved/alder_2500-8_jo
bsims:janet:100400
I concur:



10/2//2000

Date of Report:

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

- ☒ 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)
- ☐ 2. Interim Report
 - ☐ 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: Alder Creek

B. Fire Number: MT-LNF- 220

C. State: Montana

D. County: Granite

E. Region: 1

F. Forest: Lolo

G. District: Missoula

H. Date Fire Started: 8/26/00

I. Date Fire Contained: N/A

J. Suppression Cost: \$1,150,000

K. Fire Suppression Damages Repaired with Suppression Funds

- 1. Fireline waterbarred (miles): N/A
- 2. Fireline seeded (miles): N/A
- 3. Other (identify): N/A

L. Watershed Number: 17 01 02 02 12 09

M. Total Acres Burned: NFS Acres (4380) Other Federal (0) State (0) Private (0)

N. Vegetation Types: High Severity burn occurred in Douglas-fir (DF), mixed Subalpine fir (SAF), and Whitebark Pine covertypes. Moderate Severity burn occurred in DF, DF/Lodgepole pine (LPP), LPP, SAF, and minor amounts of Ponderosa pine (PP).

O. Dominant Soils: Deep, medium textured, Inceptisols and Alfisols on moderately steep to steep mountain slopes.

P. Geologic Types: Pre-cambrium meta-sedimentary argillites, siltites and limestones.

Q. Miles of Stream Channels by Order or Class: 1ST: 11, 2ND: 9, 3RD: 3

R. Transportation System

Trails: 5.0 miles Roads: 2 miles FDR system, 0 miles non-system road

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1903 (low) 2127 (moderate) 349 (high)

B. Water-Repellent Soil (acres): 0

C. Soil Erosion Hazard Rating (acres): 3892 (low) 402 (moderate) 86 (high)

D. Erosion Potential: 6 tons/acre per 24 months

E. Sediment Potential: 457 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 6 years for erosion, 60 years for runoff

B. Design Chance of Success, (percent): 80

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 1.1

F. Design Flow, (cubic feet / second/ square mile): 8

G. Estimated Reduction in Infiltration, (percent): 10

H. Adjusted Design Flow, (cfs per square mile): 10

PART V - SUMMARY OF ANALYSIS

A. Description of Resource Emergencies

Watershed Emergency:

The Alder Creek Fire burned in Lavina Creek, Alder Creek, Tekoa Gulch, Selmo Gulch, and portions of Hutsinpilar Creek and Eagle Creek drainages. These streams flow into Rock Creek. In the 1996 "Montana List of Waterbodies in Need of Total Maximum Daily Load (TMDL) Development", 46 miles of the mainstem of Rock Creek (MT76E001-9) is listed as a Water Quality Limited Segment (WQLS). Rock Creek is identified as a "Threatened" cold water fishery. Rock Creek is classified as a "Blue Ribbon Trout Stream" by the State of Montana. For 30 years the Lolo National Forest has focused its management on protecting water quality and maintaining a healthy fishery resource in the Rock Creek Sub-Basin. These objectives are formalized in Chapter IV of the Lolo Forest Plan. Historically, Rock Creek was a major bull trout and westslope cutthroat trout drainage in western Montana. Currently, bull trout use the mainstem primarily as wintering habitat and as a migration corridor, although low numbers of fish are found during all seasons. Westslope cutthroat trout are widespread, although numbers appear depressed in the downstream reaches. In the burned area, Alder Creek (as documented in the Rock Creek Sub-Basin Review) is the most important spawning and rearing tributary for large migratory bull trout and westslope cutthroat trout from the Clark Fork River and Rock Creek. The Alder Creek watershed is an incised trough characterized by high, steep ridges and narrow V-shaped valleys. The soils formed from the Belt Series are quite stable with generally low erosion and low mass failure hazards. Side slopes are steep ranging from 40 percent to 100 percent cliffs.

Trails Emergency:

Steep portions of the Hutsinpilar Trail are situated directly below areas of high and moderate burn severity. Additional runoff from these will concentrate the trail and run down a section where log waterbars have been burned out. Over a short stretch of trail, the Alder Creek Fire consumed 15 log waterbars. Post-fire runoff will be concentrated and funnelled down this trail section causing increased surface erosion. Resulting sediment will lower water quality in Alder Creek. This lowering of water quality is not the desired condition as specifically stated in the Lolo forest Plan.

Noxious Weed and Wildlife Winter Range Emergency:

Noxious weeds, including spotted knapweed (*Centaurea maculosa*) and leafy spurge (*Euphorbia esala*), are rapidly invading and replacing native vegetation communities across the west. Such invasions can have devastating impacts on wildlife and long-term soil productivity. Noxious weeds will out-compete desirable big game forage plants and seriously lower the productivity of forested winter ranges. Invasion of ungulate winter ranges can reduce forage production by >90%. In western Montana, droughty timber/bunchgrass or timber/shrub communities are most at risk from noxious weed invasions. Disturbance from logging, road construction, or wildfire significantly increases both the rate of spread of these weeds, and the degree to which these weeds can permanently displace native vegetation.

The Alder Creek fire burned within that portion of the Rock Creek drainage with some of the highest wildlife values. Prior to the fire, the area provided critical security for a large elk population (in excess of 300 animals during the late summer and fall) and mule deer (~50-75). The fire also burned through excellent potential bighorn sheep habitat. Bighorn sheep (300-400 animals) were precluded from that habitat prior to the fire by dense conifers. Elk, mule deer, and bighorn sheep should find excellent habitat after the fire. Unfortunately, the fire also provided conditions conducive to the spread of noxious weeds. Without control, approximately 10-15% of the 4000 + acre fire will become unsuitable for deer, elk, and sheep habitat as a result of noxious weed spread without control.

Approximately 78 acres of the burned area are inherently highly vulnerable to noxious weed invasions because of the burn severity. In addition, 20 acres along Rock Creek known as the Microburst area was burned. The spread of weeds into the forest prior to the fire was limited. While weeds were a minor problem prior to the fire, noxious weeds are expected to increase another 3-4 fold due to the reduction in canopy closure, regular horse use along the trail and exposed ground surface. Without treatment these disturbed sites will be fully occupied by noxious weeds within 3 to 5 years with resultant soil loss and reduced long term soil productivity

Vegetation Emergency: Subalpine fir, Douglas-fir, Lodgepole pine and Mixed mesic forest covertypes were the predominate covertypes that burned in high and moderate severity areas. There are minor amounts of Ponderosa pine, xeric forest types, and Whitebark pine. Habitat types (Pfister, 1978) are not available for this area but most likely would be in the subalpine fir (SAF) series. The area would be classified as Fire Group 7, 8 and 9. Historically, stand replacement fires would occur at an average frequency of 50 to 130 years. The Alder fire typifies the type of fire that would've occurred naturally. Lodgepole pine is expected to regenerate naturally. Beargrass (*Xerophyllum tenax*) and fireweed (*Epilobium angustifolia*) were sprouting on the hillsides within the high severity burn area. There is no emergency treatment needed to establish grass, shrub or tree species in these areas.

Fisheries Emergency:

Rock Creek and it's tributaries are priority watersheds for bull trout on the Lolo National Forest, designated "Blue Ribbon Trout Streams" and are Bull Trout core areas for Montana Fish, Wildlife and Parks. Rock and Alder Creeks are documented to contain bull trout, which are federally listed under ESA as threatened. They also contain the Regionally sensitive westslope cutthroat trout. In addition, these streams supports other native coldwater species and several introduced cold water game fish including brook trout, brown trout and rainbow trout.

Based on field reviews of burn areas in Alder Creek) we saw shrub and forbs already resprouting. As a result of the fire there are adequate down trees on hillslopes to reduce surface erosion potential. Good numbers of young-of -the-year westslope cutthroat trout were observed in Alder Creek.

Effects of the fire, which will impact fish, are:

- 1) Increased sediment, and ash, from surface run off from burned areas.
- 2) Impacts that result from increased stream flow, which may include sediment from increased channel scour.
- 3) Increases in stream temperature resulting from total kill of trees in the high severity burn areas.

Cultural Resources Emergency: There are no previously identified cultural properties within the Alder Fire. Three historic structures were located near the fire. Rock Creek Cabin, Puyear Ranch cabin and Hogback Homestead were protected using a combination of hose-lays and shelter wrap but none were actually impacted by the fire or fire suppression. There is a small chance that the fire has revealed undocumented sites that may be subject to increased erosion and degradation. Regardless, in keeping with Section 106 of the National Historic Preservation Act and 36CFR800, both the fire and proposed BAER rehab activities must be evaluated for their effects on significant and eligible cultural resources and consultation with the State Historic Preservation Office (SHPO) and the Confederated Salish and Kootenai Tribes (CSKT) on these effects must occur.

B. Emergency Treatment Objectives: Emergency treatment efforts will focus on restoring erosion control structures to trail systems where established drainage was destroyed by the fire. Recommended treatment objectives are proposed to reduce the risk of water quality impacts, tributary channel degradation and loss of fish habitat. Treatment details are provided below.

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

Trails 75 % Channel N/A % Roads N/A % Cultural 70 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Trails	100	100	100
Channel	--	--	--
Roads	--	--	--
Cultural	50	70	90

E. Cost of No-Action (Including Loss):_ If the proposed treatments are not implemented at this time, accelerated erosion along the damaged trail lengths will lead to more extensive and expensive repair work. Likewise, not treating the weeds now will result in a rapid expansion into the burned area necessitating more expensive later treatment. The total proposed cost of actual treatment in Alder creek is about \$11,000. Failure to complete these restoration measures now will lead to an estimated later expenditure of about \$25,000.

F. Cost of Selected Alternative (Including Loss):_ **\$30,567**

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input type="checkbox"/> Range	<input type="checkbox"/>
<input type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input type="checkbox"/> Contracting	<input checked="" type="checkbox"/> Ecology	<input type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/>
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS	

Team Leader: Arne Rosquist

Email: arosquis@fs.fed.us
(406) 329-3795

Phone: (406) 329-3811

FAX: _____

H. Treatment Narrative:

Land and Slope Treatments:

Treatment 1: **Apply herbicide to control noxious weeds.**

Controlling noxious weeds will help maintain winter range forage productivity, maintain native plant diversity, density, composition, and vigor, and avoid the establishment of new noxious weeds. The herbicide will be limited to picloram (brand name TORDON), applied @ 1pt/ac in 2 gal water. Application will be limited to licensed applicators and will follow all label restrictions. Where riparian zones or high water table situations are encountered, no herbicide will be applied. Treatment will be limited to areas with completed NEPA (Lolo National Forest has an approved weed treatment NEPA document; 1991, Lolo National Forest Weed EIS). The costs below are 66% of the total treatment costs, those solely attributable to wildfire. One third of the cost will be covered by other funds to cover treatment of pre-existing conditions.

a. year 1 roadside spraying	2 mi	@ \$133/mi	\$ 266
b. year 1 aerial spraying	78 ac	@ \$35/ac	\$ 2,730
c. year 1, hand spraying	20 ac	@ 268/ ac	\$ 5,360

Total: \$ 8,356.

Channel Treatments: – none are proposed.

Trail Treatments:

Trail treatments primarily involve replacement of burned waterbars and spot trailbed stabilization and drainage work to eliminate anticipated post-fire concentrated runoff, and subsequent erosion, down steep grades in moderate to high burn severity areas. Stabilization of short sections of trail in order to reduce erosion potential is appropriate in specific areas. Trail signs describing potential fire-caused hazards (potential for snag windthrow and burned-out voids in the trailbed for example) will be installed at burn area entry points and at trail-road junctions within the burn area. Specific hazard trees (imminent danger of falling) that are a safety hazard to crews implementing the trail treatments will be removed.

There are two system trails within the burn area -- Alder Creek Trail #209 and Hutsinpilar Creek Trail #215. Alder Creek trail is not expected to contribute to post-fire runoff and erosion problems due its primitive nature and its location within low burn intensity areas. Overall, the Hutsinpilar Trail is also in low intensity burn areas, but one stretch of trail with steep grades is located below an area of moderate and high burn intensity. Post-fire runoff will be concentrated and funneled down the trail in this section causing surface erosion and ultimately increasing sediment and lowering water quality in Alder Creek.

On this trail within the fire area, 15 waterbars would be replaced and spot trail stabilization on approximately 500 feet of trail will be performed to repair drainage destroyed by the fire. Two signs warning of hazardous conditions would be installed and specific hazard trees will be felled along the 1.4 miles of trail that are in the burned area. Total cost of trail work will be \$2,275.

Consequences of not doing this work are significant – as it relates to maintaining surface material on trails, maintaining soil productivity downslope of trails, protecting water and fish resources.

Probability of Completing Treatment: 75% prior to December 1, 2000
100% prior to July 1, 2001

Probability of success:

Year 1	Year 3	Year 5
100	100	100

I. Monitoring Narrative:

Alder Fire - Post-fire Burn Area Emergency Rehabilitation Monitoring Plan

Background:

For 30 years the Lolo National Forest has focused its management on protecting water quality and maintaining a healthy fishery resource in the Rock Creek Sub-Basin. These objectives are formalized in Chapter IV of the Lolo Forest Plan. In the burned area, Alder Creek (as documented in the Rock Creek Sub-Basin Review) is the most important spawning and rearing tributary for large migratory bull trout and westslope cutthroat trout from the Clark Fork River and Rock Creek. without remediation, post-fire runoff will be concentrated and funneled down the trail in this section causing surface erosion and ultimately increasing sediment and lowering water quality in Alder Creek. The Lolo Forest Plan firmly states The Forest's objective of avoiding this consequence. To assure proposed treatments meet the goals of avoiding water quality impacts to Alder Creek, the following effectiveness monitoring is proposed:

Proposed Activities:

- (1) **Monitor effectiveness of noxious weed treatment** by standard vegetation plot transect methodology. Survey would be conducted mid-to-late summer 2001. Estimated cost is three work days for \$600.
- (2) **Monitor effectiveness of trail waterbar replacements on runoff control and reduction of erosion.** Effectiveness will be determined by observation and photo documentation of selected representative structures and site conditions. Monitoring will be accomplished by one person either hiking or riding the trail to inspect and photograph waterbars, and outlets. Estimated cost is \$1000.

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

Line Items	Units	NFS Lands				Other Lands				All Total
		Unit Cost	# of Units	WFSU SULT \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$	
A. Land Treatments										
Weed Spray, Roads	miles	\$133	2	\$266			\$0			\$266
Weed Spray, Aerial - yr. 1	acres	\$35	78	\$2,730			\$0		\$0	\$2,730
Weed Spray, Hand - yr. 1	acres	\$268.00	20	\$5,360			\$0			\$8,500
				\$0			\$0			\$0
				\$0			\$0			\$0
Subtotal Land Treatments				\$8,356			\$0		\$0	\$8,356
B. Channel Treatments										
				\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$0			\$0		\$0	\$0
C. Road and Trails										
Trail Water Bars	ea	\$50	15	\$750			\$0		\$0	\$750
Trailbed Drainage & stabilization	ft	\$1.25	500	\$625			\$0		\$0	\$625
Trail Hazard Signs	ea	\$100.00	2	\$200			\$0		\$0	\$200
Tr Hazard Tree Remove	miles	\$500.00	1.4	\$700			\$0		\$0	\$700
Subtotal Road & Trails				\$2,275			\$0		\$0	\$2,275
D. Other										
Subtotal Other				\$0			#REF!		#REF!	\$0
E. BAER Evaluation										
Survey/assessment Form	Days	\$250.00	36	\$9,000			\$0		\$0	\$9,000
BAER Cont. Support	Days	\$250.00	10	\$2,500			\$0		\$0	\$2,500
Team Travel & PD	Days	\$120.00	44	\$5,280						\$4,800
Subtotals BAER Eval				\$16,780						\$34,900
F. Monitoring										
				\$0						\$0
				\$0						\$0
Runoff Dispersion Treatments	survey	\$1,100.00	1	\$1,100						\$1,100
Herbicide Trtmt Effectiveness	survey	\$600.00	1	\$600						\$600
Subtotals Monitoring				\$1,700						\$1,700
Subtotals				\$29,111						\$29,111
Overhead (0.05%)				\$1,456						\$1,456
G. Totals				\$30,567						\$30,567

PART VII - APPROVALS

1. ~~/s/ DEBORAH L. AUSTIN~~
Deborah L. R. Austin, Forest Supervisor

10/2/2000
Date

2. /s/ Kathleen A. McAllister
Dale N. Bosworth, Regional Forester

10/4/00
Date