

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

Date of Report: September 26, 2003

**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: Beaver Lakes Complex (Includes Beaver Lakes and Siah Lake)

B. Fire Number: P18522

C. State: Idaho

D. County: Idaho

E. Region: R1- Northern

F. Forest: Clearwater

G. District: Powell

H. Date Fire Started: August 8, 2003  
as of September 26, 2003.

I. Date Fire Contained: Not contained

J. Suppression Cost: \$17,463,219<sup>1</sup>

K. Fire Suppression Damages Repaired with Suppression Funds

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<sup>1</sup> Includes costs for Beaver Lakes, Siah Lake, Hopeful II, Wendover, and Bears Oil. The Lolo portion of the Hopeful II Fire was \$2,720,619. The Clearwater portion of these fires is \$14,720,600.

1. Fireline waterbarred (miles): 4.7 Miles (2.4 Miles of dozer line and 2.3 Miles of hand line was obliterated).

2. Fireline seeded (miles): None

3. Other (identify): None

L. Watershed Number: Spruce Creek (15,905 Acres) 170603030105; Storm Creek (32,721 Acres) 170603030207.

M. Total Acres Burned: 13,065 Acres (Beaver Lakes =12,467 Acres and Siah Lake = 598 Acres)

NFS Acres(**10,906**) Other Federal (**0**) State (**0**) Private (**2,159**)

N. Vegetation Types: Field observations show that the fire area is dominated by high elevation forest cover types. Estimates from the TSMRS (Timber Stand Management Record System) database indicate the following cover types were present within the burn perimeter prior to the fire: subalpine fir (31.1%), lodgepole pine (15.0%), Engelmann spruce (9.3%), Douglas-fir (2.5%), whitebark pine (0.7%), mountain hemlock (0.3%), western larch (0.1%), other (1.9%), unknown (18.2%), nonstocked (20.9%). The nonstocked and unknown areas are likely occupied by subalpine meadows, talus slopes, several alpine lakes, and rock outcrop areas.

O. Dominant Soils and Landforms: The fire area is dominated by a variety of soil types on mid to high elevation broadly rounded mountain uplands, frost-churned slopes, cirque basins, and high elevation stream terraces and outwash valleys. Soils are shallow to moderately deep loams, sandy loams, and silt loams with moderate to high levels of gravel, cobbles, and boulders. Soils are primarily Inceptisols with weak horizonation and little incorporation of organic matter. Rock outcrops are common on higher peaks and mountain slopes. Silt loams derived from the Mazama volcanic ash layer are present throughout much of the fire area, ranging in thickness from absent to approximately 10 inches in depth.

P. Geologic Types: The fire area is underlain by Idaho Batholith granitics (48.3%), Border Zone metamorphics (48.0%), Belt Series metasedimentary rocks (2.2%), sediments (1.2%), unknown (0.3%). The Mazama volcanic ash layer covers much of the area.

Q. Miles of Stream Channels by Order or Class:

Clearwater: Order 1 = 6.44 Miles

Order 2 = 6.74 Miles

Order 3 = 2.34 Miles

Lolo 0.45 Miles

Total 15.97 Miles

R. Transportation System

Trails: 10.62 Miles

Roads: 16.73 Miles

### **PART III - WATERSHED CONDITION**

#### A. Burn Severity (acres):

Beaver Lakes Fire: **Unburned:** 2859 Acres (22.9%); **Low:** 5465 Acres (43.8%); **Moderate:** 2910 Acres (23.3%); **High:** 1231 Acres (9.9%). Burn severity by ownership revealed that 23.5% of NFS lands were unburned, 45.5% burned with low severity, 23.6% burned with moderate severity, and 7.4% burned with high severity. On Plum Creek Timber Company lands, 20.2% was unburned, 35.9% in the low severity class, 22.1% burned in the moderate severity class, and 21.7% burned in the high severity class. We believe the higher severity burning on Plum Creek timber Company lands was due to the presence of red logging slash on portions of their lands.

Siah Lake Fire: **Unburned:** 61 acres (10.2%); **Low:** 318 acres (53.2%); **Moderate:** 154 acres (25.7%); **High:** 52 acres (8.7%); **Water:** 13 acres (2.1%)

B. Water-Repellent Soil (acres): Combined: 2815 acres (21.5%); Beaver Lakes Fire: 2686 acres (21.5%); Siah Lake Fire: 129 acres (22.1%)

#### C. Soil Erosion Hazard Rating (acres): See attached maps.

Mass Wasting Potential: Low – 6630 Acres (63.3%); Mod. – 3227 Acres (30.8%); High – 611 Acres (5.8%).

Debris Avalanche Potential: Low – 5299 Acres (50.7%); Mod. – 4954 Acres (47.4%); High – 195 Acres (1.9%).

Surface Erosion Potential: Low – 3619 Acres (34.6%); Mod. – 192 Acres (1.8%); High – 6637 Acres (63.5%).

Fire Erosion Potential: Low – 1586 Acres (15.2%); Mod. – 5547 Acres (53.1%); High – 3316 Acres (31.7%).

Sediment Delivery Potential: Low – 2758 Acres (26.4%); Mod. – 808 Acres (7.7%); High – 6882 Acres (65.9%).

D. Erosion Potential: 43.6 tons/acre<sup>1</sup>

E. Sediment Potential: 27,000 cubic yards / square mile<sup>1</sup>

<sup>1</sup> Results are from Disturbed WEPP. Modeled high severity fire in the uplands and riparian; 20-45% slope; 20-45% ground cover; 0-30% rock; Fenn modified climate. This is a worse case analysis. Most of the fire will have no increase in erosion or sediment.

## **PART IV - HYDROLOGIC DESIGN FACTORS**

### **A. Estimated Vegetative Recovery Period, (years):**

The effects of the Beaver Lakes and Siah Lake fires on recovery of vegetation within its boundaries will vary primarily by the severity of the burning that took place and the available seed sources. In undisturbed soil areas, the native seedbank for shrubs, forbs, and grasses will likely respond favorably to the burn since they have evolved with such natural disturbances. Where the soil has been altered, primarily by road construction, spread of noxious weeds is a concern that should be monitored over time. Slope, aspect, fuel loadings, and the type of vegetative cover present when the fire burned influenced the severity of the burn.

**Unburned to Low Severity Burn Areas:** In areas where the burn severity was unburned to low, recovery would generally be expected to occur within one growing season. Vegetative recovery is considered to be any vegetation which providing more than 80% cover which effectively intercepts rainfall and provides an extensive root mass as defined on page II-26 of the Clearwater National Forest Plan. These unburned to low severity burn areas are expected to maintain adequate live tree stocking levels and associated understory vegetation in most cases. Tree mortality is expected to average less than 30% in these areas, ranging from 0% to 50%. Perennial grasses, forbs, and shrubs generally will resprout after low severity burns and a duff/litter layer will reform within several years. Tree planting may be planned for many areas on National Forest System Lands (except the Siah Lake fire which is within the Selway Bitterroot Wilderness Area) where fire has killed significant areas of the live tree cover, but it is unknown whether tree planting will occur on private lands. All areas on National Forest System (NFS) lands requiring tree planting will have trees established and free to grow within five growing seasons. Vegetative recovery will vary from 0 to 5 years.

**Moderate Severity Burn Areas:** In areas where the burn severity was moderate, the majority of the trees are expected to die as a direct result of the fire, with mortality ranging from 50% to 100%. Most of the needles remain on the trees, but have turned red as a result of the burn effects. Tree planting will likely occur on National Forest System Lands (except the Siah Lake fire which is within the Selway Bitterroot Wilderness Area), but it is unknown whether tree planting will occur on private lands. All areas requiring tree planting on National Forest Lands will have trees established and free to grow within five growing seasons. Vegetative recovery will vary from 1-15 years. Some of the larger areas that burned at moderate severity are a greater distance from surviving seed sources. This will slow the recovery time. Existing seed from shrubs, forbs, and grasses stored deeper in the soil, will provide some vegetative recovery in these areas

**High Severity Burn Areas:** In areas where the burn severity was high, nearly all of the trees were killed or are expected to die as a direct result of the fire, with mortality ranging from 80% to 100%. Tree planting will likely occur on National Forest System Land (except the Siah Lake fire which is within the Selway Bitterroot Wilderness Area), but it is unknown whether tree planting will occur on private lands. All areas requiring tree planting will have trees established and free to grow within five growing seasons.

Vegetative recovery will vary from 3-20 years. The largest areas that burned at high severity are surrounded by medium severity burn areas and thus are at a greater distance from seed sources. This will slow the vegetative recovery time. The heat produced in the high severity burning in these areas has destroyed much of the existing seed stored in the soil, so shrub, forb, and grass recovery will occur at a slower pace. Encroachment by noxious weeds may be a concern on high burn severity areas adjacent to road and trail corridors where weeds already exist.

#### Vegetative Recovery Period on NFS Lands - Years

Burn Severity	Total Acres	Reforestation Period	Vegetative Recovery Period *
None to Low	7112	0-5 years	<b>0-5 years</b>
Medium	2432	1-5 years	<b>1-15 years</b>
High	762	3-5 years	<b>3-20 years</b>
Total	10306		

\*Vegetative Recovery is considered be any vegetation which provide >80% cover which effectively intercept rainfall and provides an extensive root mass.

- B. Design Chance of Success, (percent): 75%
- C. Equivalent Design Recurrence Interval, (years): 25 Years
- D. Design Storm Duration, (hours): 1/4 Hours
- E. Design Storm Magnitude, (inches): 0.53 Inches
- F. Design Flow, (cubic feet / second/ square mile):
- G. Estimated Reduction in Infiltration, (percent): 25%
- H. Adjusted Design Flow, (cfs per square mile): 110 cfs<sup>m1</sup>

<sup>1</sup> For design storm analysis, we used a 15 minute, 25 year storm that occurred in Sleeping Child Creek in 2001. This storm produced a 110 cfs<sup>m</sup> runoff in a 1.8 mi<sup>2</sup> burned watershed (Site 14), which was greater than a 500 year runoff event. This watershed was selected for the design storm because the runoff was water only (not debris) and the watershed was small (Less than 2 Mi<sup>2</sup>), where impacts are most likely to roads or other facilities. It is possible, that the Beaver Lakes Fire could receive a similar storm with similar watershed response where burn intensities are high. Storm runoff should be adjusted downward in watersheds where burn intensity is less than high. Road drainage in watersheds less than 2 Mi<sup>2</sup> should be designed to handle these flows. In watersheds 5 to 20 mi<sup>2</sup>, the design storm should be approximately 23 cfs<sup>m</sup> (Parrett and Others, Fire Hydrology, 7/2003).

## **PART V - SUMMARY OF ANALYSIS**

### A. Describe Watershed Emergency:

Based upon the BAER Teams' field survey and analysis, the following emergencies exist on National Forest System lands:

### **Threat to life and private property:**

Hazard trees, trees that are standing and partially burned along roads and trails, are falling, posing a risk to life and private property. Hunting use along roads and trails is heavy in the fall, putting the public in contact with the risk. Roads and trails where the risk is high include Road 373 (Beaver Lakes Fire), Trail #63 (Beaver Lakes Fire), and Trail #99 (Beaver Lakes Fire).

### **Threat to Federal property and aquatic ecosystem integrity:**

Accelerated sheet and rill erosion will occur due to the lack of canopy, ground cover, and water repellency of soils. Increased sediment delivery to the stream channels will result in degraded water quality and loss of channel capacity. Runoff will increase due to loss of infiltration capacity. Increased stream flows from high intensity burns in the Beaver Lakes Fire poses a threat to Road 373, where a culvert is undersized. A potential road wash out on this road would result in detrimental effects to downstream anadromous and T&E fisheries habitat. This threat also extends on six plastic relief pipes on cost-share roads in Plum Creek Section 35 and on Trail #63 (Beaver Lakes Fire), Trail #99 (Beaver Lakes Fire), and Trail #59 (Siah Lake Fire).

#### **B. Emergency Treatment Objectives:**

The emergency treatment objectives are to protect life and property, maintain soil productivity and water quality to protect high value fisheries, and prevent the invasion of noxious weeds. Specifically we are concerned with the potential for (See Treatment Map):

1. Hazard trees falling on Road 373;
2. Hazard trees falling on Trail #63 (Beaver Lakes Fire) and Trail #99 (Beaver Lakes Fire);
3. Culvert failure on Road 373 causing detrimental effects to downstream anadromous and T&E fisheries habitat;
4. Relief culvert failure on six plastics pipes on cost-share roads in Section 35 causing detrimental effects to downstream anadromous and T&E fisheries habitat;
5. Erosion of Trail #63 (Beaver Lakes Fire), Trail #99 (Beaver Lakes Fire), and Trail #59 (Siah Lake Fire).

Treatments designed to reduce the risk of the potential adverse effects of the fire include:

1. Hazard tree removal along Road 373 (2.3 Miles);
2. Hazard tree removal on Trail #63 (2.5 Miles) and Trail #99 (1.5 Miles);
3. Increasing culvert size on Cost Share Road 373. The culvert located at T38N, R16E, Section 25 needs to be upgraded to handle increased runoff from the fire. The new culvert, at a minimum, will need to handle design storm peak flows (See Hydrologist Specialist Report);

4. Clean, replace, or repair six plastic culverts on cost share roads in Section 35 to handle increased runoff expected from the fire;
5. Trail erosion control, including installation of cross drains and water bars on Trail #63 (2.5 Miles), Trail #99 (1.5 Miles), and Trail #59 (1.5 Miles).

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

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

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	N/A		
Channel	N/A		
Roads	80%	100%	100%
Trails	80%	100%	100%

E. Cost of No-Action (Including Loss):

Four parameters were used to determine the loss of resources if no treatment were applied. These include loss of bull trout and chinook salmon in Spruce Creek, Brushy Fork Creek, and Storm Creek valued at \$250,000, the lost of Road 373 at the replacement culvert site, valued at \$10,000, the loss of cost share roads in Section 36 if six culverts fail, valued at \$20,000, and the loss of trails 59, 63, and 99 due to flooding, valued at \$44,000. The total cost of the no action is **\$324,000**.

F. Cost of Selected Alternative (Including Loss):

Implementation of the proposed treatments would have the following affect on the three selected parameters. The potential effects on the bull trout and chinook salmon would be reduced from \$250,000 to \$62,500. The loss of Road 373 would be mitigated to \$2500. The loss of cost share roads in Section 35 would be mitigated to \$0. The loss of trail 59, 63, and 99 would be mitigated to \$4400. The total value of resource loss after implementation of the proposed treatments is reduced to \$69,400. The cost of implementing the proposed treatments is \$47,742. Assuming a 80% treatment success, the total value of successful implementation of treatments is  $(0.8) \times (\$69,400 + \$47,742)$  for a total of \$93,713. Added to this amount is the cost of the values lost do to 20% of the treatments not being

successful. This amounts to  $(0.2) \times (\$69,400 + \$47,742)$  or \$23,428. The total cost of this alternative is the value of successful implementation (\$93,713) plus the value of unsuccessful implementation (\$23,428) or **\$117,141**.

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 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 Leaders:\_\_\_ Dick Jones and Jim Mital

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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.)

Land Treatments: None

Channel Treatments: None

Roads and Trail Treatments:

Trails: Erosion control work is needed on 1.5 miles of Trail 59 in the Siah Lake Fire (\$9504), 1.5 miles of Trail 99 in the Beaver Lakes Fire (\$9504), and 2.5 Miles of Trail 63 in the Beaver Lakes Fire (\$9240). Erosion control work will include installing waterbars and drainage dips on the trail tread. The work should be completed prior to July 15, 2004 to prepare the trail for increased runoff from the fire.

Hazard tree removal is needed along 1.5 miles of Trail 99 in the Beaver Lakes Fire (\$2745), and 2.5 Miles of Trail 63 in the Beaver Lakes Fire (\$2285).

Roads: Hazard tree removal is needed on 2.3 miles of Road 373. Costs will be \$200/Mile or \$460.

A 24" culvert on Cost Share Road 373 (T38N, R16E, Sec. 25) will be upgraded to a 48" pipe to handle increased runoff from the fire. The pipe is 50 feet long. The new culvert will exceed the design storm peak flows. Cost of the culvert survey and installation is \$10,000.



Clean, replace, or repair six plastic culverts on cost share roads in Section 35 to handle increased runoff expected from the fire. Cost of the culvert cleaning, replacement, or repairing is estimated at \$4000;

Structures: None

**I. Monitoring Narrative:**

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Noxious Weed Monitoring-existing weed populations, primarily of spotted knapweed along road locations, will be monitored for encroachment into areas of moderate to high burn intensity where populations of noxious weeds had not previously been observed. Walk through weed surveys will be conducted within one year to determine if weed invasion is occurring in burn areas. If such monitoring identifies encroachment of noxious weeds into such areas, appropriate treatment measures will be identified and an interim 2500-8 report will be submitted for weed treatment funding. \$500.

**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 \$
<b>A. Land Treatments</b>										
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$0	\$0		\$0		\$0	\$0
<b>B. Channel Treatments</b>										
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
Road Hazard Tree	Miles	\$200	2.3	\$460	\$0		\$0		\$0	\$460
Trail Hazard Tree	Miles	\$1,258	4	\$5,032	\$0		\$0		\$0	\$5,032
Culvert Replacement	Each	\$10,000	1	\$10,000						\$10,000
Culvert Repair/Replace	Each	\$667	6	\$4,002						\$4,002
Trail Erosion Control	Miles	\$5,136	5.5	\$28,248	\$0		\$0		\$0	\$28,248
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road &amp; Trails</i>				\$47,742	\$0		\$0		\$0	\$47,742
<b>D. Structures</b>										
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$0	\$0		\$0		\$0	\$0
<b>E. BAER Evaluation</b>										
Salary	Each	12,300	1	\$12,300	\$0		\$0		\$0	\$12,300
Travel/Per Diem	Each	425	1	\$425						\$425
Imagery and Equip	Each	2850	1	\$2,850	\$0		\$0		\$0	\$2,850
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$15,575	\$0		\$0		\$0	\$15,575
<b>F. Monitoring</b>										
Weed Monitoring				\$500	\$0		\$0		\$0	\$500
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$500	\$0		\$0		\$0	\$500
<b>G. Totals</b>				<b>\$63,817</b>	<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	<b>\$63,817</b>

## **PART VII - APPROVALS**

1. \_\_\_\_\_  
Forest Supervisor (signature) \_\_\_\_\_  
Date \_\_\_\_\_
2. \_\_\_\_\_  
Regional Forester (signature) \_\_\_\_\_  
Date \_\_\_\_\_