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

[x] 1. Funding request for estimated WFSU-SULT 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 or design analysis
[ ] Status of accomplishments to date

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

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Bear's Oil, Wendover, Pleasant, and Rhodes Fires

B. Fire Number: P18522 (Bears Oil and Wendover); P18527 (Pleasant and Rhodes)

C. State: Idaho

D. County: Idaho and Clearwater

E. Region: Northern

F. Forest: Clearwater

G. District: Powell

H. Date Fire Started: August 9, 2003

I. Date Fire Contained: Not contained as of September 26, 2003

J. Suppression Cost: $17,463,219[1]

K. Fire Suppression Damages Repaired with Suppression Funds

[1] 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): 4.5 Miles
2. Fireline seeded (miles): 0.0 Miles
3. Other (identify): 0.0 Miles

L. Watershed Number: Upper Lochsa River (69,937 Acres) 1706030303, and Cayuse Creek (28,901 Acres) 170603070301.

M. Total Acres Burned: 8905 Acres (Wendover 3439 Acres; Bears Oil 883 Acres; Pleasant 3868 Acres; Rhodes 715 Acres)
NFS Acres(**8690**) Other Federal (**0**) State (**0**) Private (**216**)

N. Vegetation Types: Field observations show that the fire area is dominated by mid to 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 (26.5%), lodgepole pine (22.5%), Douglas-fir (22.3%), grand fir (1.6%), Engelmann spruce (10.3%),mountain hemlock (7.1%), western larch (0.3%), unknown (2.1%), nonstocked (7.3%).

O. Dominant Soils: The fire areas are dominated by a variety of soil types on mid to high elevation broadly rounded mountain uplands, frost-churned slopes, a lake 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 (41.5%), Border Zone metamorphics (39.8%), Belt Series metasedimnetary rocks (17.7%), and sediments (1.0%). The Mazama volcanic ash layer covers much of the area.

Q. Miles of Stream Channels by Order or Class: 22.9 Miles
Order 1 – 17.1 Miles
Order 2 – 4.4 Miles
Order 3 – 1.3 Miles

R. Transportation System

Trails: 12.5 miles Roads: 19.0 miles (Clearwater NF 18.2 Miles and Plum Creek 0.8 Miles)

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

All fires combined: **Unburned:** 1528 Acres (17.2%); **Low:** 4065 Acres (45.7%); **Moderate:** 2234 Acres (25.1%); **High:** 1077 Acres (12.1%). Burn severity by ownership revealed that 18.8% of NFS lands were unburned, 50.0% burned with low severity, 27.0% burned with moderate severity, and 4.2% burned with high severity. On Plum

Creek Timber Company lands, 15.7% was unburned, 43.2% in the low severity class, 41.0% burned in the moderate severity class, and 0.1% burned in the high severity class.

Bear's Oil: **Unburned:** 285 Acres (32.3%); **Low:** 453 Acres (51.2%); **Moderate:** 111 Acres (12.6%); **High:** 35 Acres (3.9%).

Pleasant: **Unburned:** 634 Acres (16.4%); **Low:** 1672 Acres (43.3%); **Moderate:** 908 Acres (23.5%); **High:** 648 Acres (16.8%); **Water:** 4 acres (0.1%).

Rhodes: **Unburned:** 234 Acres (32.6%); **Low:** 335 Acres (46.7%); **Moderate:** 88 Acres (12.2%); **High:** 61 Acres (8.5%).

Wendover: **Unburned:** 375 Acres (10.9%); **Low:** 1605 Acres (46.6%); **Moderate:** 1127 Acres (32.8%); **High:** 334 Acres (9.7%).

B. Water-Repellent Soil (acres):

Combined fires: 2194 acres (24.5%); Bear's Oil: 91 acres (10.2%); Pleasant: 1102 acres (28.5%); Rhodes: 105 acres (14.6%); Wendover: 898 acres (26.1%)

C. Soil Erosion Hazard Rating (acres): See Attached Maps.

Mass Wasting Potential: Low – 5584 Acres (70.8%); Mod. – 2303 Acres (29.2%); High – 931 Acres (11.8%).

Debris Avalanche Potential: Low – 5693 Acres (64.6%); Mod. – 2309 Acres (26.2%); High – 816 Acres (9.3%).

Surface Erosion Potential: Low – 3479 Acres (39.5%); Mod. – 197 Acres (2.2%); High – 5142 Acres (58.3%).

Fire Erosion Potential: Low – 2660 Acres (30.2%); Mod. – 2468 Acres (28.0%); High – 3690 Acres (41.9%).

Sediment Delivery Potential: Low – 2301 Acres (26.1%); Mod. – 2621 Acres (29.7%); High – 3896 Acres (44.2%).

D. Erosion Potential: 52.2 tons/acre[1]

E. Sediment Potential: 33,400 cubic yards / square mile[1]

[1] Results are from Disturbed WEPP. Modeled high severity fire in the uplands and riparian; 30-60% slope; 20-50% ground cover; 10-30% 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 Bear's Oil, Pleasant, Rhodes, and Wendover 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 or timber harvest, 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 (NFS) lands 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 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, 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, 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	5593	0-5 years	**0-5 years**
Medium	2234	1-5 years	**1-15 years**
High	1077	3-5 years	**3-20 years**
Total	8904		

*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): 80%

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 cfsm[1]

[1] For design storm analysis, we used a 15 minute, 25 year storm that occurred in Sleeping Child Creek. This storm produced a 110 cfsm runoff in a 1.8 mi2 burned watershed (Site 14), which was greater than a 500 year runoff. This watershed was selected for the design storm because the runoff was water only (not debris) and the watershed was small (Less than 2 Mi2), where impacts are most likely to roads or other facilities.

Road drainage in watersheds less than 2 Mi2 should be designed to handle these flows. In watersheds 5 to 20 mi2, the design storm should be approximately 23 cfsm (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 will be falling this fall, 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 the Lolo Motorway (500), Tobaggon Ridge Road (581), and Music Line (5613), Trail #25 (Wendover Fire), Trail #35 (Rhodes Fire), and Trail #249 (Pleasant 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. This has already been observed in the Wendover Fire along the Lolo Motorway. 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 Wendover, and Pleasant fires poses a threat to Roads 5615 and 581, where culverts are partially or completely plugged, or undersized. Potential fill failures on these roads would result in detrimental effects to downstream anadromous and T&E fisheries habitat. This threat also exists on Trail #25 (Wendover Fire), Trail #35 (Rhodes Fire), and Trail #249 (Pleasant 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 the Lolo Motorway (500), Toboggan Ridge Road (581), and Music Line Road (5613);
2. Hazard trees falling on Trail #25 (Wendover Fire), Trail #35 (Rhodes Fire), and Trail #249 (Pleasant Fire);
3. Culvert failure on Road 581 (Tobaggon Ridge) and 5615 causing fill failures and detrimental effects to downstream anadromous and T&E fisheries habitat;
4. Erosion of Trail #25 (Wendover Fire), Trail #35 (Rhodes Fire), and Trail #249 (Pleasant Fire), also resulting in detrimental effects to downstream anadromous and T&E fisheries habitat.

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

1. Hazard tree removal on the Lolo Motorway (10.1 Miles), Toboggan Ridge Road (7.0 Miles), and Music Line Road (0.7 Miles);

2. Hazard tree removal on Trail #25 (1.5 Miles), Trail #35 (0.5 Miles), and Trail #249 (1.0 Miles);

3. Wendover Fire – Badger Creek. An 18 inch relief culvert on Forest Road 5615 at N46^{o} 33.380' by W114^{o} 49.563' needs cleaning to handle increase peak flows. The culvert is located at T37N, R13E, Section 16;

4. Pleasant Fire – Site 1. An undersized and plugged 12 inch relief pipe on Forest Road 581 (Between Cayuse and Moss creeks; N46^{o} 36.639' by W114^{o} 50.908') needs replacing to handle increased peak runoff from the fire. The culvert is located at T38N, R13E, Section 29;

5. Pleasant Fire – Site 2. The 36 inch culvert at Moss Creek on Road 581 needs to be replaced (N46^{o} 36.747' by W114^{o} 51.118'). The location is T38N, R13E, Section 29. The culvert will need to be designed to handle fish passage;

6. Pleasant Fire – Site 3. The 12 inch culvert is partially plugged on Road 581 (N46° 36.516' by W114° 51.577'). Burn intensity in the watershed above the pipe is light to moderate, however, the pipe will fail with the first significant rain event. The culvert is also undersized and should be replaced with an 18 inch culvert;

7. Pleasant Fire – Site 4. The 18 inch culvert is located in a deeply incised channel at N46° 37.473' by W114° 51.597'. Burn intensity in the watershed above the pipe is moderate. The culvert should be replaced with a 24 inch pipe;

8. Pleasant Fire – Site 5. The 24 inch culvert over a perennial stream that is completely blocked. Water is running backwards in the ditch and over the road and fill, creating rills. The culvert filling most likely occurred in response to storms after the burn. The culvert is located on Road 581 at N46° 37.556' by W114° 51.648'). Burn intensity in the watershed above the pipe is moderate. The culvert is undersized. Removal of the culvert should be accomplished this fall as there is a great risk of fill failure triggering a debris torrent into Mink and Cayuse creeks. When the culvert is replaced next spring, a 36 inch pipe should be used. There is 5 feet of fill over the inlet and 15 feet of fill over the outlet. The road is 24 feet wide;

9. Pleasant Fire – Site 6. The 12 inch culvert under Road 581 is partially blocked. The location is N46° 37.584' by W114° 51.829'. Burn intensity in the watershed above the pipe is moderate to high. The culvert is undersized and should be replaced with a 24 inch pipe. There is 2 feet of fill over the inlet and 4 feet of fill over the outlet. The road is 18 feet wide;

10. Pleasant Fire – Site 7. The 12 inch culvert under Road 581 is undersized and should be replaced with an 18 inch pipe. The location is N46° 38.074' by W114° 52.555'. Burn intensity in the watershed above the pipe is moderate to high. There is 2 feet of fill over the inlet and 4 feet of fill over the outlet. The road is 18 feet wide;

11. Trail erosion control, including installation of cross drains and water bars on Trail #25 (1.5 Miles), Trail #35 (0.5 Miles), and Trail #249 (1.0 Miles);

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

Land __ % Channel ___ % Roads **80** % Trails **80** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
Channel			

	Years after Treatment		
Roads	80%	100%	100%
Trails	80%	100%	100%

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

Three parameters were used to determine the loss of resources if no treatment were applied. These include loss of bull trout in Mink and Cayuse creeks, valued at $250,000, the lost of Road 581 at the replacement culvert sites, valued at $100,000, and the loss of trails 35 and 249 due to flooding, valued at $24,000. The total cost of the no action is **$374,000**.

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 581 would be mitigated to $20,000. The loss of trail 35 and 249 would be mitigated to $4800. The total value of resource loss after implementation of the proposed treatments is reduced to $87,300. The cost of implementing the proposed treatments is $60,699. Assuming a 80% treatment success, the total value of successful implementation of treatments is (0.8) x ($87,300 + $60,699) for a total of $118,399. 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) x ($87,300 + $60,699) or $29,600. The total cost of this alternative is the value of successful implementation ($118,399) plus the value of unsuccessful implementation ($29,600) or **$147,999**.

G. Skills Represented on Burned-Area Survey Team:

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

Team Leaders: Dick Jones and Jim Mital

Email: rmjones@fs.fed.us and jmital@fs.fed.us

Phone: Dick (208-476-8274) Jim (208-476-8348) FAX: 208-476-8329

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:

1. Hazard tree removal on the Lolo Motorway (10.1 Miles), Toboggan Ridge Road (7.0 Miles), and Music Line Road (0.7 Miles). $3560;

2. Hazard tree removal on Trail #25 (1.5 Miles), Trail #35 (0.5 Miles), and Trail #249 (1.0 Miles). $2742;

3. Wendover Fire – Badger Creek. An 18 inch relief culvert on Forest Road 5615 at N46° 33.380' by W114° 49.563' needs cleaning to handle increase peak flows. The culvert is located at T37N, R13E, Section 16. $126;

4. Pleasant Fire – Site 1. An undersized and plugged 12 inch relief pipe on Forest Road 581 (Between Cayuse and Moss creeks; N46° 36.639' by W114° 50.908') needs replacing to handle increased peak runoff from the fire. The culvert is located at T38N, R13E, Section 29. $1377;

5. Pleasant Fire – Site 2. The 36 inch culvert at Moss Creek on Road 581 needs to be replaced (N46° 36.747' by W114° 51.118'). The location is T38N, R13E, Section 29. The culvert will need to be designed to handle fish passage. $34,445;

6. Pleasant Fire – Site 3. The 12 inch culvert is partially plugged on Road 581 (N46° 36.516' by W114° 51.577'). Burn intensity in the watershed above the pipe is light to moderate, however, the pipe will fail with the first significant rain event. The culvert is also undersized and should be replaced with an 18 inch culvert. $1117;

7. Pleasant Fire – Site 4. The 18 inch culvert is located in a deeply incised channel at N46° 37.473' by W114° 51.597'. Burn intensity in the watershed above the pipe is moderate. The culvert should be replaced with a 24 inch pipe. $1657;

8. Pleasant Fire – Site 5. The 24 inch culvert over a perennial stream that is completely blocked. Water is running backwards in the ditch and over the road and fill, creating rills. The culvert filling most likely occurred in response to storms after the burn. The culvert is located on Road 581 at N46° 37.556' by W114° 51.648'). Burn intensity in the watershed above the pipe is moderate. The culvert is undersized. Removal of the culvert should be accomplished this fall as there is a great risk of fill failure triggering a debris torrent into Mink and

Cayuse creeks. When the culvert is replaced next spring, a 36 inch pipe should be used. There is 5 feet of fill over the inlet and 15 feet of fill over the outlet. The road is 24 feet wide. $5000;

9. Pleasant Fire – Site 6. The 12 inch culvert under Road 581 is partially blocked. The location is N46° 37.584' by W114° 51.829'. Burn intensity in the watershed above the pipe is moderate to high. The culvert is undersized and should be replaced with a 24 inch pipe. There is 2 feet of fill over the inlet and 4 feet of fill over the outlet. The road is 18 feet wide. $1287;

10. Pleasant Fire – Site 7. The 12 inch culvert under Road 581 is undersized and should be replaced with an 18 inch pipe. The location is N46° 38.074' by W114° 52.555'. Burn intensity in the watershed above the pipe is moderate to high. There is 2 feet of fill over the inlet and 4 feet of fill over the outlet. The road is 18 feet wide. $1117;

11. Trail erosion control, including installation of cross drains and water bars on Trail #25, (1.5 Miles) and Trail #35 (0.5 Miles). $7392.

Structures: None.

I. **Monitoring Narrative:**

Noxious Weed Monitoring-existing weed populations, primarily of spotted knapweed along roads, 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. $1000.

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										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$0	$0		$0		$0	$0
B. Channel Treatments										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
Road Hazard Trees	Miles	$200	17.8	$3,560	$0		$0		$0	$3,560
Trail Hazard Trees	Miles	$914	3	$2,742	$0		$0		$0	$2,742
Culvert Replacement	Ea	$6,715	7	$47,005						$47,005
Trail Erosion Control	Miles	$3,696	2	$7,392	$0		$0		$0	$7,392
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$60,699	$0		$0		$0	$60,699
D. Structures										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
Salary	Ea	19680	1	$19,680	$0		$0		$0	$19,680
Travel/Per Diem	Ea	690	1	$690						Weed monito
Imagery/Equip	Ea	4560	1	$4,560	$0		$0		$0	$4,560
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Evaluation				$24,930	$0		$0		$0	$24,240
F. Monitoring										
Weed Monitoring				$1,000	$0		$0		$0	$1,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$1,000	$0		$0		$0	$1,000
G. Totals				**$86,629**	**$0**		**$0**		**$0**	**$85,939**

PART VII - APPROVALS

1. /s/ *Larry J. Dawson* 09/26/03
   Forest Supervisor (signature) Date

2. _____ _____
   Regional Forester (signature) Date