

Date of Report: 09-16-03

BURNED-AREA REPORT Fish
(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 DESCRIPTIONA. Fire Name: Fish CreekB. Fire Number: MT-LNF-264C. State: MontanaD. County: Mineral, MissoulaE. Region: NorthernF. Forest: LoloG. District: NinemileH. Date Fire Started: Aug. 8, 2003
containment on Sept 28, 2003.I. Date Fire Contained: 90% Sept 15, 2003, expectJ. Suppression Cost: \$23.3 million

K. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 47
2. Fireline seeded (miles): 47
3. Other (identify): helipads, camps 2 acres

L. Watershed Number: 170102040402, 170102040403, 170102040404, 170102040502, 170102040504, 170102040506, 170102040507, 170102040508, 170102040603M. Total Acres Burned: 36,710

NFS Acres(19,986) Other Federal () State (2,808) Private (13,916)

N. Vegetation Types: Fires in the Fish Creek complex burned over a major riparian bottomland area along with some of its steep face and side drainages eventually burning over two major watershed divides and into some alpine areas before being contained. Cover types include cottonwood and other broadleaf dominated

bottomlands along with cedar/hemlock, Ponderosa pine, dry Douglas-fir, mixed Douglas-fir/larch, lodgepole pine, spruce/subalpine fir and whitebark pine.

O. Dominant Soils: The dominant soils in the burned area are underlain by weak to moderately-weathered Precambrian meta-sedimentary rocks, known as the Belt Supergroup. These soils are well drained to somewhat excessively drained, medium to moderately coarse textures (silt loams to sandy loams), and are non-plastic. Rock fragments throughout the soil profile are common, and range from moderate to high percentages. These soils are typically shallow to moderately deep on ridgetops and mountain side-slopes, and deep on toe-slopes and valley bottoms. Most soils usually have a volcanic ash surface layer with a silt loam texture. Coarse fragments ranging from 5 to 35 percent rock fragments in the surface. The subsoils are typically sandy loams, having 35 to greater than 60 percent coarse fragments.

P. Geologic Types: Dominant rock types are Precambrian meta-sedimentary rocks, known as the Belt Supergroup. major landforms are mostly moderately steep to very steep mountain slopes, and range from broad convex ridges to complex slopes. Drainageways are quite variable in the fire area, and range from somewhat broad, trellis-like to parallel patterns. Streams are predominantly steep (>10% gradient) ephemeral tributaries to Fish and Petty Creeks.

Q. Miles of Stream Channels by Order or Class: Order 1: 66.5, Order 2: 16.1, Order 3: 10.1, Order 5: 7.2

R. Transportation System

Trails: 9.4 miles Roads: 291 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 7,954 (low) 17,187 (moderate) 11,569 (high)

B. Water-Repellent Soil (acres): 36,710

C. Soil Erosion Hazard Rating (acres):
12,710 (low) 11,000 (moderate) 13,000 (high)

D. Erosion Potential: 9.7 tons/acre

E. Sediment Potential: 1077 cubic yards / square mile
Deer Creek watershed: 2228 cy/sqmi and remainder is 743 cy/sqmi.

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3

B. Design Chance of Success, (percent): 85

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

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 0.8

F. Design Flow, (cubic feet / second/ square mile): 21

G. Estimated Reduction in Infiltration, (percent): 33

H. Adjusted Design Flow, (cfs per square mile): 40

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Fish Creek Fire was generally a mosaic burn, with exception of the Deer Creek drainage, which was entirely a canopy burn. Stormflows will probably significantly increase in this drainage with attendant increases in erosion and sediment. The entire riparian area of Deer Creek was burned. Fish habitat in Deer Creek is at risk, as well as water quality in Fish Creek, and the main Fish Creek road. Thompson Creek watershed also was burned over in part. High flows may also damage or destroy the Fish Creek road at the Deer Creek Confluence, a major travel route.

B. Emergency Treatment Objectives:

The following is a summary of treatments recommended for the immediate emergency. Treatment areas were prescribed based on the potential for damaging floods, loss of soil productivity, and for the mitigation of loss of life and property.

Treatments are designed to:

- Mitigate hydrologic effects of high-density local roads and steep, erodible slopes in old harvest units for steep upper reaches of Deer Creek.
- Mitigate hydrologic effects of local roads in old harvest units for upper reaches of Thompson Creek.
- Mitigate possible destruction of Deer Creek Culvert at confluence with Fish Creek – main Fish Creek road accesses homes
- Mitigate sediment impacts to Fish Creek, a migratory route for Bull trout

Roads

- Upper Deer Creek roads – remove culverts, rip road beds, straw mulch and seed disturbed areas where culverts removed
- Deer Creek at the confluence with Fish Creek – remove culvert, construct temporary passage above unstable alluvial fan
- System roads on Thompson Creek - clean ditches, culverts, install drain dips

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

Land 95 % Channel 95 % Roads 95 % Other 95 %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Roads			
Dip const.	85	85	85
Dip Reconst.	85	85	85
Decommision	85	85	85
Armor culvert	85	85	85
Stream crossing	85	85	85
Storm proof	85	85	85
Culvert clean	85	50	50

Channel			
Land			
Other			

E. Cost of No-Action (Including Loss):_ **\$3,253,800 See FishCreekcost-riskAnalysis.xls for details.**

F. Cost of Selected Alternative (Including Loss):_ **\$1,261,040 See FishCreekcost-riskAnalysis.xls for details.**

G. Skills Represented on Burned-Area Survey Team: (See Appendix One for Team Makeup)

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range	<input type="checkbox"/>
<input checked="" 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:___ Henry F. Shovic, Gallatin National Forest

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Phone: 406 587 6714

FAX: 406 587 6768

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:

The Fish Creek fire includes the Slaughterhouse Gulch area of lower Fish Creek, the Thompson Creek and Deer Creek areas of Fish Creek, and the upper reaches of West Fork Petty Creek, Ed's Creek, and Gus Creek in the Petty Creek Drainage.

The roads in the fire area are a mix of USFS, Plum Creek Timber Company, Montana Department of State Lands, and small private roads. The Forest Service is the predominant land and road owner, although Plum Creek Timber holdings are substantial. Affected roads provide timber and recreation access. Some roads serve private residences. Roads within the fire area range from higher standard arterials to very low standard jammer roads. Several roads are cost-shared with Plum Creek timber. Outside the fire area, the Fish Creek road is a county road connecting the forest transportation system to Interstate 90.

Some areas, like the Deer Creek drainage, were burned severely. Road treatments in Deer Creek are extensive and are designed to reduce the risk of damaging storm flows and debris flows. In other areas, road treatments are designed to address higher runoff in individual sub-drainages and ultimately higher flows in the main stems, compared to concerns with an individual sub-drainage "blowing out". Culverts will be cleaned and dips added, for instance, and lower reach culverts will be removed, but mid-slope jammer roads will not be obliterated.

Road treatments designed for the Fish Creek fire area include:

- Maintenance-type activities to ensure proper drainage. These activities include cleaning existing culverts, cleaning and reshaping drivable dips, and constructing new drivable types where needed. This type of work is appropriate where the road is needed for on-going access and properly designed and maintained drainage structures can handle the anticipated increased runoff.
- Storm-proofing roads where access is not immediately needed. This consists of removing drainageway and ditch relief culverts altogether, and constructing waterbars as needed across the roadway. By removing the culverts, the drainage capacity is practically unlimited and there simply is no longer a structure that could plug; hence, maintenance and monitoring of structures is not needed.
- Temporary Stream Crossing. Deer Creek is at risk of flood and debris flows and the existing culvert is undersized, installed improperly, and substantially plugged. It would fail under anticipated storm flows. The treatment consists of constructing a bypass route crossing Deer Creek with a "temporary" bridge at a stable site upstream of the current crossing and totally removing the undersized culvert. (A permanent structure would be installed after the drainage has had a chance to stabilize.)
- Road decommissioning to Closure Level 3. The Deer Creek drainage is very heavily roaded and the roads contribute to the hydrologic instability of the drainage. The Forest is in the process of decommissioning all Forest Service roads in the drainage, which would leave private roads only in the lower reaches. This treatment would decommission the remaining Forest Service roads. Closure Level 3 consists of removing all culverts and ripping the roadbeds to promote infiltration and revegetation.

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.)

I. Monitoring Narrative:

- (1) **Monitor stream discharge in Deer Creek.** Collecting streamflow information following the fire will allow: 1) determination of the effects of land treatments on mitigating peak flows, 2) validation of peak flow model coefficients and 3) evaluation of whether watershed improvements are related to changes in flow regimes. Discharge measurements on Deer Creek would be by a combination of current meter and automatic water level recorder. Peak flow in the other burned tributaries of Fish Creek would be via "crest gages". Gages can be assembled on-forest from easily purchased material and installed this fall. The gages would be read twice a week between April 1 and June 30, 2004. The cost of this item would be 30 person days for data collection and reduction at \$5,000 plus \$450 for supplies and material costs. Estimated total cost is \$5,500.
- (2) **Monitor effectiveness of runoff dispersion treatments of abandoned roads** at selected indicator sites by establishing photo points. Photo points would be established this fall and observations and photo documentation of site condition would be completed. These observations and photography would be repeated after snowmelt runoff and again late in the fall of 2004 after the summer thunderstorm season. Effectiveness would be determined by the degree of rilling or gullyng observed (photographed), amount of off-site sediment movement and the degree of re-vegetation of the treatment. The cost is estimated at 25 work-days plus photography costs for \$3,500.

- (3) **Monitor results of grass seeding on treated road system** by standard vegetation plot transect methodology. Each seeded area would be surveyed once during mid-to-late summer 2004. Estimated cost is 15 work days for \$2,500.
- (4) **Monitoring Weeds:** Monitor known and high potential infestation sites for noxious weed species in the burned area; determine need and extent of control treatment to be implemented. The objective is to identify the spread and potential threat of weed infestation in burned areas. Data gathered will be used to facilitate prompt treatment to control weed populations for the purpose of protecting native plant diversity and ecological integrity of the plant communities in the burned area. \$1,500.
- (5) **Monitor stream morphology and habitat conditions** via a resurvey of streams within the fire area to determine how conditions have changed from those documented in the 1997 bull trout baseline analysis. Standard methods for aquatic data collection and analysis as documented in Lolo National Forest Monitoring Plans would be used. The resurvey would provide information regarding the effectiveness of various erosion abatement projects implemented under the emergency fire rehabilitation. Sampling locations will be selected this fall with initial monitoring completed at the same time. A second survey will be completed during the summer of 2004 following the first post-fire runoff. Information collected in 2004 will be used to evaluate the need for follow-on treatments and/or monitoring. About 15 miles of Fish, Deer, and Thompson Creeks is proposed for the monitoring: Estimated Cost for monitoring is 30 work-days at \$5,000.
- (6) **Monitor Costs and Accomplishment Schedules of Recommended BAER Treatments** by monthly reconciliation of financial transaction records, time sheets, project notes and other accounting records. Spreadsheets tracking expenditures and accomplishments will be updated on a monthly basis and reports provided to the Regional BAER Coordinator on demand. The estimated cost for monitoring and recording costs and accomplishments is 25 work-days at \$3,500.
- (7) Monitor changes in suspended sediment below proposed BAER hillslope treatments in Deer Creek. Effectiveness monitoring includes; 1) McNeill core sampling in four sites in Deer Creek to determine spawning habitat suitability and monitor changes in substrate fines; 2) Electrofishing to determine fish presence (recolonization) in Deer Creek. This will help determine how long it takes westslope cutthroat trout (WCT) to recolonize Deer Creek and to verify species composition in the stream post-fire; 3) Photo points will be established to document hillslope changes (new alluvial fans, road failures, etc) in Deer Creek; and 4) Conduct suspended sediment sampling and bedload sampling in Deer Creek to determine the effectiveness of BAER treatments in the watershed.

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

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

FISH CREEK FIRE

			Lolo N. F.			OTHER LANDS		All
		Unit	# of	FED	Other	# of	Non Fed	Total
Line Items	Units	Cost	Units	\$	\$	Units	\$	\$
A. Land Treatments								
		0	0	\$0				
		0	0	\$0				
Subtotal Land Treatments				\$0			\$0	\$0
B. Channel Treatments								
Subtotal Channel Treatments				\$0			\$0	\$0

C. Road and Trails								
Drainage Dip Reconstruction	each	154	294	\$45,276				
Drainage Dip Construction	each	213	209	\$44,517				
Decommision (level 3)	mile	2,500	34.8	\$87,000				
Temporary Stream crossing	each	48000	1	\$48,000				
		0	0	\$0				
Storm Proof	mile	1140	13.8	\$15,732				
Culvert Cleaning	each	84	196	\$16,464				
Subtotal Road & Trails				\$256,989			\$0	\$256,989
D. Structures								
Subtotal Structures				\$0			\$0	\$0
E. BAER Evaluation								
Team				\$63,600			\$0	\$0
satellite imagery	each	480	1	\$480				\$0
Implementation Leader	each	36000	1	\$36,000				\$0
Forest Liaison	day	350	10	\$3,500				
				\$0				
Subtotal BAER Evaluation				\$103,580			\$0	\$103,580
F. Monitoring								
Monitor stream discharge,								
runoff on decom roads,								
seeding on road system,								
weed treatment,								
stream morphology change,								
costs and accomplishments	project	21500	1	\$21,500				
Monitor sediment and hillslope								
in Deer Creek and on fans	project	6408	1	\$6,408				
for three years								
Subtotal Monitoring				\$21,500			\$0	\$21,500
G. Totals				\$382,069			\$0	\$382,069

PART VII - APPROVALS

1. /S/ Barbara K. Beckes (for)
Forest Supervisor (signature)

09/17/2003
Date

2. _____
Regional Forester (signature)

Date

Appendix One Team Makeup Lolo BAER

POSITION	TEAM MEMBER / AGENCY
Team Leader	Henry Shovic, USFS, Gallatin NF
Private Liaison	Kit Sutherland, Private Lands
Administrative Support	Becky Chapman, USFS, Lolo NF Carol Goffe, USFS, Region One
Archaeology	Roger Free, USFS, Lolo NF Sydney Wimbrow, Lolo, NF
Engineering (Roads & Trails)	Randy Gage, USFS, Lolo NF Roger Billadeau, USFS, retired, Lolo NF Alan Christian, USFS, Lolo, NF
Fisheries	Pat Price, USFS, Kootenai NF
Soil and Watershed	Scott Hagerty, USFS, Olympic NF John Blaine, NRCS Neill Svenson, NRCS Jeff Collins, DNRC
Vegetation	Steve Dagger, USFS, Lolo, NF
Wildlife	Mike Hillis, USFS, retired, Lolo, NF
GIS	Dan Hurlbert, NPS, Shenandoah NP Kendall Cikanek, USFS, Superior, NF
Hydrology	Ted Geier, USFS, Region Nine Rob Davies, USFS, Idaho Pan, NF Amy Rollins, USFS, Lolo, NF Renee Hannah, DNRC
Plans and Logistics, PIO/Writer/Liaison	Marcia Hogan, USFS, Region One Sue Reel, USFS, Lolo, NF
Other Support	Skip Rosquist, USFS, Lolo, NF Shane Hendrickson, USFS, Lolo, NF Rob Mcleod, USFS, Lolo, NF Janet Krivacek, USFS, Lolo, NF Dennis Gordon, USFS, Bitterroot, NF