

Date of Report: September 16, 2003

Revised March 25, 2004

**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: Crazy HorseB. Fire Number: MT-FNF-00092C. State: MTD. County: MissoulaE. Region: 01F. Forest: FlatheadG. District: Swan LakeH. Date Fire Started: 08/10/2003I. Date Fire Contained: NAJ. Suppression Cost: \$12.7 million (est. as if 9/10/03)**K. Fire Suppression Damages Repaired with Suppression Funds**

1. Fireline waterbarred (miles): 27 miles dozer line; 6 miles handline  
2. Fireline seeded (miles): 0.25 miles  
3. Other (identify):

L. Watershed Number: 5<sup>th</sup> Code Huc 1701021101 (South Swan)

Small Watersheds within the fire: Elk Creek, Frenchy Creek, Glacier Creek, Hemlock Creek, Kraft Creek, Red Butte Creek, and Windfall Creek

M. Total Acres Burned: 11,098

NFS Acres( 8534 ) Other Federal ( ) State ( ) Private ( 2564 )

N. Vegetation Types: Douglas Fir, Subalpine Fir, Western Larch, Lodgepole pine, Subalpine MeadowO. Dominant Soils: Udifluvents, Eutroboralfs, Cryoboralfs, Cryochrepts, and CryandsP. Geologic Types: Precambrian meta-sedimentary; predominantly argillites, siltites, quartzites, or limestones.

Q. Miles of Stream Channels by Order or Class:

Rosgen Stream Type	Miles within Crazy Horse Perimeter
A	26.6
B	5.7
C	3.7
E	0.7

R. Transportation System

	Miles of Trails	Miles of Roads
Forest Service	6.1	18.9
Plum Creek	3.4	15.8

**PART III - WATERSHED CONDITION**

- A. Burn Severity (acres): 6391 (low) 4503 (moderate) 133 (high)
- B. Water-Repellent Soil (acres): 5635
- C. Soil Erosion Hazard Rating (acres):  
111 (low) 4328 (moderate) 6658 (high)
- D. Erosion Potential: 31.4 tons/acre
- E. Sediment Potential: 13,285 tons / square mile

**PART IV - HYDROLOGIC DESIGN FACTORS**

- A. Estimated Vegetative Recovery Period, (years): 2
- B. Design Chance of Success, (percent): 80
- C. Equivalent Design Recurrence Interval, (years): 100
- D. Design Storm Duration, (hours):
- E. Design Storm Magnitude, (inches):
- F. Design Flow, (cubic feet / second/ square mile): 29-80
- G. Estimated Reduction in Infiltration, (percent): 40
- H. Adjusted Design Flow, (cfs per square mile): 44-112

**PART V - SUMMARY OF ANALYSIS**

#### A. Describe Watershed Emergency:

- Water Quality, Fisheries, and Aquatics, both within the fire area and downstream.

It is predicted that throughout most of the area, increased side slope soil erosion and deposition of such materials into stream channels (sedimentation) will be low. Sediment that enters a stream will not likely degrade fisheries habitat due to the abundance of A2 and A3 channel types present. Removal of the soil surface organic matter layer by the fire has resulted in a decreased capacity for surface soil moisture storage throughout the burn area. This reduction is significant on areas that received high and moderated burn intensities; consequently, increased peak stream flows are predicted from such areas until sites are revegetated and soil organic layers are re-established. In general, the magnitude of predicted increased flow due to the fire across the study area is not a major concern ranging from a low of no increase in Elk Creek to a high of about 55 percent in Frenchy Creek. As was the case for sediment, increased flows will most likely create few instream channel problems throughout the burn area due to the predominance of A2 and A3 channel types.

Despite the fact that the overall effect of the fire on stream sediment, flow and nutrient levels is assumed to be minimal, a concern does exist related to culverts at stream crossings and road network design (see Roads report for more details). Within the burn area, six road crossings were selected for detailed field assessment based on both fisheries and road transportation concerns. In all six cases existing culverts were undersized to accommodate the predicted post-fire 100 year event

Bull trout are listed as threatened under the Endangered Species Act. Elk Creek is proposed critical habitat in the draft FWS bull trout recovery plan and is a priority watershed on the FNF. Cutthroat trout and brook trout are present in the stream but relatively uncommon. Only 7% of the Elk Creek watershed burned and at mostly low burn intensity. The burn area is at very high elevation and far from fish habitat. There is no anticipated effect of the fire to fish or fish habitat.

Glacier Creek, Kraft Creek, Red Butte Creek all contain small populations of bull trout. Red Butte Creek, Kraft Creek, and Hemlock Creek also support conservation populations of westslope cutthroat trout, which are considered a sensitive species in Region 1. All watersheds also contain populations of introduced brook trout. There is concern that post-fire runoff could transport excessive amount of trees and create massive debris jams in Glacier Creek. This could block migrating bull trout and further degrade unstable banks. There is also concern that significant hillslope erosion could occur in the canyon of Glacier Creek as a result of the fire. Deposition of this sediment could negatively affect cutthroat trout populations.

- Threats to Long-term Soil Productivity and Ecosystem Integrity

Aerial reconnaissance verified by field observations of the Crazy Horse Fire Area revealed that the burn severity was primarily within a low to moderate range, with small concentrated areas of high burn severity. The fire pattern was mixed across the area reflecting no strong relation to particular landform setting.

Low soil burn severity sites will re-vegetate rapidly and have very low potential for soil erosion. Most of the moderate and high burn severity sites occurred in multi-storied stands and stands with shrubby undergrowth. Most moderate soil burn severity sites are expected to re-vegetate though it may take two growing seasons to achieve 50% effective ground cover (the point at which surface erosion begins to be reduced). High soil burn severity sites will be the slowest to re-vegetate.

Soils representative of all soil burn severity classes were examined in the field to assess post-fire hydrophobic (water-repellent) conditions. Field observations showed that post-fire hydrophobic conditions were slight on low soil burn severity and unburned areas.

Field reviews within the burned area indicate a threat to long-term soil productivity and ecosystem integrity in areas of some moderate and most high burn severity where vegetation recovery is questionable. Compromised soil productivity and fire suppression activities has provided a natural avenue of ingress to a host of noxious weed species that are currently found in moderate to heavy populations throughout the road system that crisscrosses the burned area in the Flathead National Forest.

The spread of noxious weeds is expected to increase within the fire area, especially along roads and trails, moderate and severe burned areas or where fire suppression activities disturbed the existing weed seed bank and opened uninfested lands to invasion by adjacent weed populations. A great degree of concern regarding potential noxious weed spread is shared by all land managers/owners involved including Flathead Forest, Missoula County and private landowners. Those species of greatest concern include spotted knapweed (*Centaurea maculosa*), St. John's wort/Goatweed (*Hypericum perforatum*), Orange hawkweed (*Hieracium aurantiacum*) and Canada thistle (*Cirsium arvense*). All are Montana State and Flathead County listed noxious weed species. There are isolated infestations of Common tansy (*Tanacetum vulgare*) as well. Tansy ragwort (*Senecio jacobaea*) has been located in the adjacent Moose fire area. The Kootenai and Flathead National Forests have spent millions of dollars trying to control tansy that was introduced into this area by the Little Wolf Fire in 1994. Existing NEPA documents have assessed these actions and RODs are in place.

Over 400 acres of potential whitebark pine habitat occurs in the upper elevations within the Crazy Horse Fire area and it has historically been a major species on these sites. The Crazy Horse Fire burned into several high elevation basins where whitebark pine is present and historically flourished. There were some areas of stand replacement fire intensities. Normally this would be the ideal conditions for whitebark pine regeneration. However, natural regeneration of whitebark pine has a low probability due to lack of sufficient seed producing trees, especially where ridge top stands burned. This species has been identified through the Northern Region Overview as at high risk of being lost as a component in the ecosystem, primarily because of the exotic disease whitepine blister rust. Re-establishing this species is of high priority, in recognition of its important role in high elevation ecosystems. The Crazy Horse fire may have seriously impacted a large portion of the remaining live, cone-producing whitebark pine trees in the area.

- Threats to Life and Property

Field review within the burn area confirm that there is a risk to property and life. These risks include hazard trees along roads and trails throughout the fire area, loss of trail and road signs, damage to roadside barriers and guard rails.

The existing road systems that lie within the Crazy Horse fire burned area have numerous stream crossings that have been affected by the fire. Culverts that are currently plugged or have catchments that are full or brushed in should be cleaned out to insure unobstructed flows. In the event of heavy rain or rain on snow events road patrols will be sent out to inspect the road system stream and ditch relief crossings to identify and correct any potential problem areas before adverse resource impacts occur.

Trail integrity may have been affected by the fire. Structural erosion improvements along the trails have been impacted. An intensive survey is required to identify all areas along trails and developed recreation sites to detail impacts to trails as current conditions may pose a threat to human health and safety.

Roads on Plum Creek Timber Company lands are generally in good condition. However, it is recommended that all catchment basins within moderately or severely burned areas be cleaned, larger corrugated metal pipes be installed at four locations, and additional drainage dips be installed. These locations are identified in the road log contained in the project file located at the Swan Lake Ranger District office.

Other private lands affected or potentially affected by the fire were evaluated and no emergency conditions were identified.

B. Emergency Treatment Objectives:

- Minimize fire effects on water quality and fisheries habitat by reducing the amount of sediment delivered to streams.
- Mitigate effects on long-term soil productivity and ecosystem function/integrity by seeding targeted areas, by spraying existing noxious weed infestations, and re-establishing whitebark pine in the ecosystem.
- Provide for public health and safety by conducting hazard tree assessments and treatment, and safety inventories along trails and by repairing, replacing, and installing health and safety signs.
- Minimize fire effects on the road and trail system by restoring and improving drainage on road and trail systems, by removing floatable woody debris in and around culverts, and by conducting storm patrols during runoff events.

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

Land **80** % Channel **NA** % Roads **90** % Other **90** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	75	85	90
Channel	NA	NA	NA
Roads	80	85	90
Other			

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

F. Cost of Selected Alternative (Including Loss):

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

Team Leader: John Lane, Forest Soil Scientist, Custer National Forest,

**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:*Critical Area Seeding*

The steep, high soil burn severity areas along Glacier Creek are the only locations recommended for treatment. The steep slopes are twenty to 50 feet in length and end at the water edge with intermittent, narrow, low relief terraces on alternating sides of the channel. The slopes have 15 to 25 percent rock fragments on the surface. While the slopes are reasonably armored, re-vegetation is expected to be somewhat slower here because heat from the fire has affected roots to a depth of 1 to 2 inches. The combination of slope steepness and short-term hydrophobic soils equates to potential for some erosion. Any erosion on the slopes will deposit sediment directly into Glacier Creek. The recommended treatment is seeding with a mixture containing a short-term cover crop and native species. These treatment areas are adjacent to critical bull trout streams. This treatment is to allow for some vegetation establishment this fall and the resulting sediment filtering capability next spring or early summer prior to seasonal thunder showers.

The recommended native seeding prescription calls for 24 lbs PLS/acre (70 seed/ft.<sup>2</sup>) and includes the following native cultivars available from a number of commercial sources in the Intermountain area:

Idaho Fescue	<i>Festuca idahoensis</i>	10 seed/ft <sup>2</sup>	0 .96 lb/acre
Slender Wheatgrass	<i>Elymus trachycaulus</i>	20 seed/ft <sup>2</sup>	5.47 lb/acre
Blue Wildrye	<i>Elymus glaucus</i>	20 seed/ft <sup>2</sup>	9.68 lb/acre
Mt. Brome	<i>Bromus marginatus</i>	20 seed/ft <sup>2</sup>	7.92 lb/acre

Seeding of the barley should be done as soon as possible to provide for immediate germination and growth. Native seed will be applied in October to insure a dormant fall seeding to prevent fall germination.

Some of the high elevation lakes have small areas that burned hot near and on the shore. These areas looked like campsites or potential campsites. We recommend that the lakes with these conditions be closed to camping until adequate vegetation is re-established.

*White Bark Pine Regeneration*

To aid in the restoration of whitebark pine, a species at risk due to exotic disease and other factors, whitebark pine cones are proposed to be collected from live whitebark pine trees in the Mission Mountains near the vicinity of the Crazy Horse Fire area. Enough seed cones will be collected to provide seed for growing 4000 whitebark pine seedlings. These seedlings would be planted within the fire area in moderate and high severity burned areas in three years using volunteer labor or other funds. Currently no seedlings are available from seed collected within the Mission Mountains. Seedlings established from seed cones collected locally would have a greater chance of success than seedlings from seed collected from other locations.

*Weed Treatment*

Treat existing populations of noxious weeds (mostly spotted knapweed and St. Johnswort) to prevent their spread into adjacent burned areas. Experience in the Swan Valley has shown that the risk of weed spread is high.

Channel Treatments:

No Channel Treatments are proposed at this time.

### Roads and Trail Treatments:

#### *Trail Assessment*

An assessment is needed in order to determine impacts of the fire to the trail systems and to identify necessary trail work to protect important resources. These trails include Forest Service trails #607, #695 and #515 and associated trailheads. Trails and campgrounds in the burned area are currently closed to public use due to fire suppression and rehabilitation activities. Preliminary investigation indicates that trail drainage is inadequate to handle post fire drainage. A detailed **assessment as soon as safety conditions and treatment of needed drainage problems will be done before allowing any public access.**

#### *Trail Hazard Tree Treatment*

In order to provide for human health and safety we are proposing to treat hazard trees along trails. Approximately 9.5 miles of trail need to be treated for hazard tree. These trails provide public access to the Mission Mountain Wilderness.

### Roads

#### *Road Drainage*

On Flathead National Forest System Roads 561, 9569, 9576, 9577, 9588, 9761, 561F, 9590 and 9578 there are 21 locations that have been identified as needing additional drainage features. These sites consist of constructing diversion dips and placement of riprap for bank and fill slope stabilization and soil erosion control. One site (Road 9569) has been identified for culvert removal and returning the crossing site to as near natural conditions as practicable. An additional 12 locations have been identified as needing culverts installed or replaced with larger culverts, installing flared inlets, riprap placement at culvert inlets and headwalls for cut slope bank stabilization and riprap placed at culvert discharge channels.

Items 1 through 5 below reflect an adjustment to previous 2500-8 BAER proposals. These 5 items provide for adjustment of cost estimates and, in some cases, the designs for five stream crossing structures originally proposed in the initial BAER specs for the Crazy Horse Fire. These changes were the result of more detailed field assessments and design evaluations.

### **Item 1. Kraft Creek - Culvert Replacement of FR 561, MP 6.43**

Original Proposal: The existing situation is a 6'6" by 4' arch-pipe with an adjacent 3' concrete culvert that were determined to be insufficient to handle post-fire flows. The culverts block about 1½ to 3 miles of habitat to upstream fish migration (exact length is uncertain). A cutthroat trout population has persisted upstream of the barrier. The stream will experience a period of increased sediment, increased temperatures, channel instability, and other changes to habitat as a result of the fire. Over the long term, fish habitat will recover but it is uncertain if the isolated cutthroat trout population can survive the short-term chaos. If the fish migrate downstream to escape they will be unable to return and the entire population would be lost.

The BAER team proposed to install a 9' by 6'5" arch-pipe at a flat slope with appropriate grade control gradient to allow fish passage. Since Kraft Creek has an approximate 10% gradient in this area, numerous channel grade control features would be needed. The BAER estimated cost was \$16,730.

Revised Proposal: The objectives remain the same but the original proposal is not practical. Kraft Creek is too steep to install a culvert at a flat gradient. Providing fish passage through

large pipes laid at a flat slope ( $\approx 0.5\%$ ) is applicable at sites with natural stream gradients less than 5% and with channel characteristics that would allow the change. The channel gradients at Kraft Creek are approaching or are greater than 10%. The revised proposal is to install a bottomless arch culvert or a bridge. This is consistent with the Northern Region aquatic species passage protocol. The high resource value of Kraft Creek is judged important enough to ensure fish passage at all times. Therefore, installation of a bottomless arch or bridge is the only feasible solution. This is estimated to cost \$79,000. The cost estimate provided by the FNF includes site survey and design, administration costs, and contract costs for bottomless arch structures.

## **Item 2. Tributary to Kraft Creek (“Cheese Creek”) - Replace Culvert at FR 561, MP 8.65**

Original Proposal: The existing 5' by 6' arch-pipe was judged to be insufficient for post-fire flows and also somewhat of a safety hazard since it is too short for proper road width clearance. This is located on an unnamed tributary to Kraft Creek headwaters and nicknamed “Cheese Creek” in this report to help distinguish it from the Kraft Creek project downstream. The existing culvert is not a fish barrier, but fish use in this stream is sporadic. Cutthroat trout have been captured in Cheese Creek at some years but absent in other years. The amount of habitat upstream of the culvert is speculated to be 1/3 of a mile.

The BAER proposal was to install a 9'6" by 6'5" culvert at 0-1% gradient. This proposal was based on the premise that the arch-pipe laid at a flat gradient with downstream grade control would be adequate for fish passage. This would provide fish passage and was generally estimated to cost \$14,480.

Revised Proposal: The original proposed crossing is still appropriate, but the cost estimate was conservative and did not include a site survey, design, incidental material costs, dewatering costs, or appropriate grade control if required. The revised cost estimate of \$28,000 includes these additional costs.

## **Item 3. Red Butte Creek - Culvert Replacement of FR 9576, MP 0.10**

Original Proposal: The existing 6' by 5' arch-pipe and adjacent 3' concrete pipe were determined to be insufficient to handle post-fire flows. The crossing is near the mouth of Red Butte Creek and approximately 96% percent of Red Butte Creek burned. The existing culverts block fish passage to the entire stream. Red Butte Creek has about 2 miles of fish habitat and so far an isolated cutthroat trout population has persisted upstream of the barrier. The fire will dramatically change Red Butte Creek and the stream will experience a period of increased sediment, increased temperatures, channel instability, and other major changes to habitat. Over the long term, fish habitat will recover but it is uncertain if the isolated cutthroat trout population can survive the short-term chaos. If fish migrate downstream to escape, they will be unable to return past the culvert barrier and the entire population would be lost.

The BAER team proposed to install an 11'5" by 7'3" arch-pipe laid at a flat gradient with downstream grade control would be adequate for fish passage. Since Red Butte Creek is approximately 8% gradient in this area, numerous channel grade control features would be needed. The BAER estimated cost was \$18,230.



Revised Proposal: The objectives remain the same but the original proposal is not practical. Red Butte Creek is too steep to install a culvert at a flat gradient and still provide adequate fish passage. Providing fish passage through large pipes laid at a flat slope ( $\approx 0.5\%$ ) is applicable at sites with natural stream gradients less than 5%. The channel gradients at Red Butte are approximately 8%. The revised proposal is to install a bottomless arch culvert or a bridge. This is consistent with the Northern Region aquatic species passage protocol. The high resource value of Red Butte Creek is judged important enough to ensure fish passage at all times. Therefore, installation of a bottomless arch or bridge is the only feasible solution. This is estimated to cost \$90,000.

The cost estimate provided by the FNF includes site survey and design, administration costs, and contract costs for bottomless arch structures.

#### **Item 4. Upper Frenchy Creek - Culvert replacement of FR 9588, MP 0.05**

Initial Proposal: It was uncertain if the existing 60" pipe could handle post-fire flows. One hundred percent of the watershed above this pipe burned. There is a large, old beaver dam just upstream of the culvert (no longer maintained by beavers). If the dam held together, the culvert would be OK. But when the beaver dam collapses, the culvert was at risk. The proposal was to not risk failure and replace the culvert with a 7' by 5'1" arch-pipe. Frenchy Creek has perennial flows in this location and it is desirable to make the new culvert able to pass fish. This would allow fish that ascend from Kraft Creek to access the headwaters of Frenchy Creek. Upper Frenchy Creek has never been inventoried and it is uncertain how much fish habitat exists upstream of the pipe. The new culvert was generally estimated to cost \$11,030.

Revised Proposal: The ranger district decided that the road is not needed for access for an extended period of time after salvage. Fire salvage is proposed in the Frenchy Creek drainage and the road will be needed for 1-2 years for haul route. It is assumed the old beaver dam will hold together for that period. After the salvage is completed, the culvert will be removed and the stream bank re-contoured. This would prevent a culvert wash-out and allows fish passage.

#### **Item 5. Lower Frenchy Creek - Culvert replacement of FR 9761, MP 0.40**

Initial Proposal: The existing two culverts (a 24" CMP and a 30" CMP) were determined to be insufficient to handle post-fire flows in Frenchy Creek. One hundred percent of the watershed above this pipe burned. Frenchy Creek has perennial flows upstream but ironically, at this location, it is intermittent. As springtime runoff recedes, the lowermost  $\frac{1}{2}$  mile of Frenchy Creek dries up as water slips underground in the large alluvial fan. Fish from Kraft Creek (about  $\frac{1}{3}$  of a mile below this location) are presumed to seasonally use Frenchy Creek for foraging and refuge but do not occupy the stream year-round.

The BAER proposal was to replace these culverts with a single 7' by 5'1" arch-pipe. The BAER team proposed that the arch-pipe laid at a flat gradient with downstream grade control would be adequate for fish passage. Due to the intermittent nature of Frenchy Creek, it is not necessary to design stream simulation or to be absolutely certain about fish passage for all species at all times. The new culvert was generally estimated to cost \$8,030.

Revised Proposal: The original proposed crossing is still appropriate but the cost estimate was conservative and did not include a site survey, design, incidental material costs, dewatering costs, or appropriate grade control if required. The FNF estimated cost is \$28,000.

Roads on Plum Creek Timber Company lands are generally in good condition. All roads within the burn area should be patrolled in the event of heavy rain or rain on snow event. Specific locations and specifications can be found in the engineering project files. **This work should be conducted before spring runoff.**

#### *Road Hazard Tree Treatment*

Assessment of hazard trees is ongoing. It is recommended that hazard trees are removed from approximately 19 miles of National Forest System roads.

#### Structures:

No treatments are proposed at this time.

### H. Monitoring Narrative:

**The following is a brief synopsis of proposed monitoring. Detailed monitoring plans are included in the attached specification sheets.**

#### Hydrologic Function – Fish Habitat Monitoring

Increases in stream sediment and flow are anticipated following the Crazy Horse Fire. To ameliorate potential effects, treatments have been prescribed to 1) upsize existing culverts to accommodate predicted Q100 peakflows, 2) repair existing road networks to minimize sediment inputs to streams, and 3) seed and mulch high intensity burned slopes to minimize soil erosion and subsequent sedimentation to streams. To evaluate the effectiveness of the treatments proposed in meeting hydrologic function and fish habitat objectives the following monitoring items are proposed to be evaluated at both above and below treatment location within the study area: Establish cross sections to monitor changes in stream channel morphometry, channel substrate and residual pool depths for 200 yards upstream and downstream of roads where treatments were established or 200 yards upstream or downstream of where grass was planted within the riparian area.

#### Noxious Weed Monitoring

Monitor known and high potential infestation sites for noxious weed species in the burned area; determine need and extent of control treatments required. Scout all fire suppression related disturbance as well as areas of high burn severity (as specified in the weed monitoring specification) where weed invasion potential is substantial and control treatments may be required; accurately map treated and new noxious weed populations using GPS and GIS. Establish photo plots for documentation.

#### Re-vegetation Monitoring

Monitor vegetation recovery in seeded areas to determine success of re-vegetation efforts on slope and watershed stability within the Crazy Horse Fire area on Flathead National Forest lands. Determine if vegetation re-establishment on seeded areas is an effective cover for the stabilization of critical watersheds and the protection of downstream values at risk.

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

			NFS Lands				Other Lands			All
	Unit		# of	WFSU	Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT \$	\$	units	\$	Units	\$	\$

<b>A. Land Treatments</b>										
Reforestation of Whitebark Pine - Seed Collection	cones	\$10.30	400	\$4,120			\$0			\$4,120
<b>Weed Treatment (added)*</b>		<b>\$125</b>	<b>70</b>	<b>\$8,750</b>						
Critical Area Seeding	acres	\$150.70	70	\$10,549						\$10,549
<i>Subtotal Land Treatments</i>				<b>\$23,419</b>			<b>\$0</b>		<b>\$0</b>	<b>\$14,669</b>
<b>B. Channel Treatments</b>										
<i>Subtotal Channel Treat.</i>				<b>\$0</b>			<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<b>C. Road and Trails</b>										
Trail Reconstruction and waterbar installation and maintenance	miles	\$1,286.10	9.5	\$12,218			\$0		\$0	\$12,218
Trail Assessment	miles	\$265.89	9.5	\$2,526			\$0		\$0	\$2,526
Trail Hazard Tree Assessment	miles	\$93.37	9.5	\$887			\$0		\$0	\$887
Trail Hazard Tree Treatments	miles	\$1,071.37	9.5	\$10,178						\$10,178
Road Hazard Tree Treatment	miles	\$221.26	19	\$4,204						\$4,204
Road Hazard Tree Assessment	ea	\$10.00	976	\$9,760						\$9,760
Area Wide Road Culvert Cleaning	ea	\$12,469.00	1	\$12,469						\$12,469
Remove Culvert Road 9569	ea	\$2,212.00	1	\$2,212						\$2,212
Install Small (<=36") Corrugated Metal Pipe	ea	\$2,825.40	5	\$14,127						\$14,127
Install Large Corrugated Metal Pipe Arches & Bridges	ea	\$56,250	4	\$225,000						\$225,000
Stabilize Culverts (Inlets and Outlets)	cy	\$83.31	67	\$5,582						\$5,582
Install Diversion Dips on Roads	ea	\$700.56	18	\$12,610						\$12,610
Install Hazard Warning Signs	ea	\$221.00	20	\$4,415						\$4,415
Storm Patrol	ea	\$1,855.00	1	\$1,855						\$1,855
										\$0
<i>Subtotal Road &amp; Trails</i>				<b>\$318,043</b>			<b>\$0</b>		<b>\$0</b>	<b>\$318,043</b>
<b>D. Structures</b>										
							\$0		\$0	\$0
<i>Subtotal Structures</i>				<b>\$0</b>			<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<b>E. BAER Evaluation</b>										
BAER Assessment Team				\$40,000			\$0		\$0	\$40,000
LANDSAT Imagery				\$580						\$580
BAER Implementation Leader				\$10,000						\$10,000
							\$0		\$0	\$0
<i>Subtotal Evaluation</i>				<b>\$50,580</b>						<b>\$50,580</b>
<b>G. Monitoring Cost</b>										
Noxious Weed Monitoring (200 acres per year for 3 years)	acres	\$21.85	600	\$13,110			\$0		\$0	\$13,110
Monitoring Seeding/Revegetation Effectiveness	ea	\$38.50	70	\$2,695						\$2,695
Monitor Hydrologic Function and fish habitat (above and below rds & grass seeded areas)	ea	\$6,500.00	1	\$6,500						\$6,500

<i>Subtotal Monitoring</i>				\$22,305						\$22,305
<b>H. Totals</b>				\$414,347			\$0		\$0	\$414,347

\*This interim request reflects a \$156,600 increase for modification of the original large culvert designs. See the two new spec sheets that replace the original spec for "Insatall Corrugated Metal Pipes."

## **PART VII - APPROVALS**

1. /s/ Cathy Barbouletos September 16, 2003  
Forest Supervisor (signature) Date
  
2. \_\_\_\_\_  
Regional Forester (signature) Date