

BURNED-AREA REPORT
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds
☐ 2. Accomplishment Report
☐ 3. No Treatment Recommendation

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization 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: Boulder
 B. Fire Number: ID-NCF-000742
 C. State: Idaho
 D. County: Clearwater
 E. Region: 01 - Northern
 F. Forest: Nez Perce and Clearwater
 G. District: Powell – Central Zone
 H. Fire Incident Job Code: P1J2NF-0117
 I. Date Fire Started: August 11, 2015
 J. Date Fire Contained: Not Contained
 K. Suppression Cost: \$1,100,000 (estimated from I209)
 L. Fire Suppression Damages Repaired with Suppression Funds
 1. Fireline waterbarred (miles):
 2. Fireline seeded (miles):
 3. Other (identify):

M. Watershed Number:

Subwatershed Name (HUC6)	Total Acres	Acres in Fire Perimeter	Unburned Acres in Fire Perimeter	Burn Severity		
				Low	Moderate	High
Boulder Creek-Crooked Fork Creek (170603030105)	18,819	1,693	144	629	788	130
Upper Crooked Fork (170603030104)	20,734	3,612	583	1,361	1,527	141
Granite Creek (170102051403) ^a	13,114	12	8	3	1	0
Total		5,317	735	1,993	2,316	271

a. HU is on the Lolo N.F., Missoula County, Montana.

N. Total Acres Burned: NFS – 5,317

(based on adjusted perimeter delineated by BAER Assessment Team using initial BARC imagery)

O. Vegetation Types: The habitat type groups found in the fire is dominated by groups 7 and 8. Habitat type group 7 (Cool and Moist subalpine fir) is characterized by stands of subalpine fir, Engelmann spruce, and lodgepole pine, with brush understories. Western larch, whitebark pine, and Douglas-fir are less common components. These types are characterized by cool and moist site conditions. Fire intervals are estimated at greater than 120 years for most sites (Fischer, 1987). Habitat type group 8 (Cool and Wet subalpine fir) is characterized by stands of subalpine fir, Engelmann spruce, and lodgepole pine, with shrub, forb or graminoid understories. These habitat types are uncommon and occur at upper elevations in riparian areas (Green et al, 1992). These are forested riparian areas along streams and associated with wetlands. Due to this very wet condition the fire free interval can be very long. Intervals between severe, stand replacement fires are probably much longer than the majority of fire group nine, 90-130 years and are probably in excess of 150 years.

P. Dominant Soils: Soils in the Boulder Fire area are derived from granitic Batholith parent material which is predominantly coarse textured, containing high amounts of rock fragments. Soil surfaces are generally very cobbly, ashy silt loams. The thin volcanic ash mantle is derived from the Mount Mazama deposition approximately 7,000 years ago.

Q. Geologic Types: Geology is comprised of three primary geologic components. The largest is 64 percent of the area which is rhyolite breccia from the Eocene period, followed by 33 percent of granite also from the Eocene. The smallest extent is alluvium sediments from the Quaternary with three percent of the area.

R. Miles of Stream Channels by Order or Class:

Perennial: 34 Intermittent: none (per NHD)

S. Transportation System (miles)

Roads: 10 Trails: 5 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Soil Burn Severity (SBS) - Acres					
Ownership	High	Moderate	Low	Very Low/Unburned	Total
NFS	273	2,316	1,993	735	5,317

Soil Burn Severity (SBS) - Percent				
Ownership	High	Moderate	Low	Very Low/Unburned
NFS	5	44	37	14

B. Water-Repellent Soil (acres): 1,508 acres

(This number is a total of the moderate and high burn severity. At the time of data collection, soils across the Boulder Fire area were experiencing naturally occurring water-repellency. This condition exists in unburned areas of the fire as well as through all burn severity classes. The moderate and high soil burn severity areas are likely to experience fire induced water-repellency.)

C. Soil Erosion Hazard Rating (acres):

2,290 – low 10 – moderate 3,017 - high

D. Erosion Potential: 0.1 tons/acre

(Estimate is a weighted average for all soils, based on the next 24 month time period without treatment as a function of changes expected due to soil burn severity.)

E. Sediment Potential: 60 cubic yards/square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years): 5

B. Design Chance of Success (percent): 80

C. Equivalent Design Recurrence Interval (years): 25

D. Design Storm Duration (hours): 1 and 6

E. Design Storm Magnitude (inches): 0.9 (1 hour); 2.0 (6 hour)

F. Design Flow (cubic feet / second/ square mile): 0.8 (1 hour); 15.3 (6 hour)

G. Estimated Reduction in Infiltration (percent): 34

H. Adjusted Design Flow (cfs per square mile): 153 (1 hour); 234 (6 hour)

PART V - SUMMARY OF ANALYSIS

Background: The Boulder wildland fire was a reported lightning-caused ignition on August 17, 2015. The fire area is located in the upper reaches of the Lochsa subbasin, north of the Lochsa River near Powell, Idaho. The fire burned 5,317 acres of NFS lands; roughly 80% of the fire burned at moderate and low severity, with about 5% burning at high severity. The observed fire intensity and soil burn severity (SBS) is consistent with fire behavior documented in the Incident Management Team (IMT) close-out narratives. Predominantly low to moderate SBS exists across the areas where fires burned with a steady downhill backing spread, with limited spotting and occasional single tree torching. In these areas fuel consumption was limited to surface litter and smaller diameter vegetation (1 and 10 hour fuels). Limited areas of high fire intensity and high SBS exist in scattered locations where upslope runs occurred during late afternoons when the canyon inversion lifted and the fire aligned with wind and slope.

The diverse coniferous forest and understory vegetation is supported by the high amounts of precipitation, ranging from 30" – 40" annually. Records of large and intense wildland fires beginning in 1910 have occurred 5 to 6 different times since. The hot, intense fires removed protective vegetation from the soils and exposed them to erosion. Many burned and eroded areas converted to persistent shrublands and have not yet reforested, largely because of the fire-damaged soils. The combination of loose soils, steep slopes, and rain-on-snow precipitation

events produce landslides that dissect the steep valleys and periodically deliver sediment to its streams.

The NFS lands within and around the burned area provide year-round recreational opportunities. The Lochsa River is managed under the National Wild and Scenic Rivers Act. The river has no dams and is rated as one of the world's best for continuous whitewater from mid-May to mid-June. Other recreation includes backcountry skiing, snowmobiling, mountain biking, big game hunting, fishing, hiking, swimming, camping, and picnicking.

The upper main stem of the Lochsa River and the major streams in the burned area (Boulder, Crooked Fork, and Hopeful Creek) currently support runs of ESA-listed Snake River summer steelhead, spring/summer Chinook salmon (Region 1 sensitive species), ESA-listed Columbia River bull trout, Pacific lamprey, westslope cutthroat trout (Region 1 sensitive species), rainbow trout, mountain whitefish, as well as dace, sculpin and suckers.

Historically, increased sediment delivery and associated stream habitat alterations caused by high spring runoff events after wildfire may have reduced fish densities or eliminated subpopulations in smaller drainages. Current conditions suggest these effects were short-term as fish species recolonized affected areas over time. Overall, landscape elements in this area provided habitat conditions that allowed fish populations to be resilient and adapt to major natural perturbations (i.e., wildfires and floods).

Road construction and maintenance within tributary drainages has resulted in an overall reduction in the quantity and quality of aquatic spawning and rearing habitat, due to increased sediment inputs and loss of riparian trees. Road construction also created barriers where roads crossed streams. More recently, road construction has contributed to high sediment levels in some watersheds. Road failures during the 1995–1996 flood events contributed to elevated sediment levels in streams as well.

A list of values important to the Nez Perce-Clearwater National Forest was provided through a delegation of authority (October 2, 2015), then supplemented and refined during a Forest Staff and BAER Assessment Team in-briefing (October 6, 2015). The BAER team subsequently evaluated the identified values in context of the preceding characterization with field data and subsequent analysis to determine the critical values that may be treated under the BAER program (FSM 2523.1 – Exhibit 01). The characterization of the threats to these critical values also incorporated post-fire flood source area response of nearby watersheds following previous fires, most recently the Johnson Bar BAER Assessment (2014). The risks associated with these critical values were assessed by the BAER team using FSM 2523.1 – Exhibit 02. The narratives for the BAER Critical Values having unacceptable risk that warrant emergency response actions are followed by numbers that represent the response action(s) recommended for managing unacceptable risk.

A. Describe Critical Values/Resources and Threats (narrative):

(This information is organized to incorporate "Critical Values and Risk Assessment" from WO ID 2520-2014-1, effective December 17, 2014)

1. Human Life and Safety: Potential threats to visitors/recreating public and agency personnel include flooding and debris flows, hazard trees, and rockfall along roads/trails and at trailheads, developed recreation sites, and dispersed areas that are within or downstream/downslope of areas that burned at moderate or high severity.

High Risk (possible, major) to human life and safety of recreating public and agency personnel from hazard trees when hiking the Blacklead (#35) trail, including the trailhead area at the Crooked Creek bridge. Travel on fire-damaged trail segments when inclement weather is expected increases the probability of loss or injury along 4 miles of trail segments located within or downslope of moderate and high soil burn severity areas from hazard trees, flooding from accelerated overland flow, or rock/debris fall. (Treatment PS-01 and PS-03)

High Risk (possible, major) to human life and safety of recreating public and agency personnel from hazard trees, rolling rocks, flooding and localized debris flows triggered by accelerated overland flow when traveling segments of FSR 595 (ML3) that located in or below moderate and high burn severity areas. Fire-damaged road segments and post-fire impacts increase risk for loss of ingress/egress. (Treatments PS-02, RT-01, and RT-02)

Intermediate Risk (possible, moderate) to human life and safety at a heavily-used dispersed area at milepost 11.6 off FSR 595 (Boogy Down Flats), from numerous hazard trees within and around the area's perimeter. (Treatment PS-01 and PS-03)

2. Property:

High Risk (likely, moderate) to FSR 595 and FSR 75540 due to expected increased overland flow with accelerated hillslope erosion, increased stream flows with subsequent sediment and debris delivery to culvert inlet basins, ditch lines, roadway dips, and associated run-outs. Roads may become impassible to vehicles and in severe cases may be completely washed out due to fill slope failure. A major threat identified on FSR 595 is abutment scour to the Crooked Fork Bridge from increased stream flows. This one-lane bridge is located immediately below the Crooked Fork-Hopeful Creek confluence. Should culverts fail there would be delivery of large quantities of fill material downslope to adjacent streams; Crooked Fork supports Designated Critical Habitat (DCH) for bull trout and Snake River summer steelhead DCH occurs immediately downstream from the fire perimeter in Crooked Fork and Boulder Creek. FSR 595 is a high value, heavily-used ML 3 road accessing two different trailheads for the Blacklead (#35) trail. This road is important to the Forest Service as it would be need to implement potential post-fire hazard tree salvage harvest operations. (Treatments RT-01 and RT-02)

3. Natural Resources:

Low Risk (very likely, minor) to soil productivity from post-fire increases in erosion is expected in localized areas that sustained moderate to high burn severities. For consistency with the BAER risk assessment matrix, five to eight years is the estimated length of time for recovery of effective ground cover and above ground organic matter in areas that burned at moderate to high severity. Over the long term, the loss of surface soils can lead to decreased site productivity with the potential to increase the spread of invasive plant species, since noxious weeds are able to more readily establish on degraded sites. In the short term, unauthorized OHV intrusions can increase where physical barriers and vegetative screens have been damaged or lost, contributing to further degradation of soil productivity. It should be noted many soils throughout burned area have high content coarse fragment surface cover that will aid in reducing erosion along with abundant partially burned down wood in many areas that will reduce slope lengths and decrease the potential for sheet and rill erosion. Beargrass (*Xerophyllum tenax*) is abundant in many of the burned areas and acting as a stabilizing influence. Re-sprouting of bear grass and other vegetation was already

occurring when the BAER team conducted field assessments. No treatments were recommended for soil productivity.

Low Risk (likely, minor) to water quality from the threat of increased sediment. There is potential for increased sediment originating from moderate and high burn severity areas during and immediately after storm events to impact water quality in streams with designated critical habitat and suitable occupied habitat for federally listed threatened or endangered aquatic species. Overall, these are expected to be short-term effects that will persist for the next three to five years. An emergency does not exist.

Low Risk (likely, minor) for impairment of hydrologic function. Threats to hydrologic function on NFS lands within the burned areas exist on areas of moderate and high soil burn severity. The presence of hydrophobic soils, loss of canopy cover, loss of ground cover, and loss of channel stabilizing riparian vegetation all have the potential to contribute to altered hydrologic function and watershed response to precipitation events within burned watersheds. This is expected to be a short-term effect. An emergency does not exist.

High Risk (likely, moderate) to native plant diversity, intact native plant communities or naturalized communities due to the threat of introduction and spread of noxious and non-native invasive plants from known populations that exist within and adjacent to areas of high and moderate burn severity. Roads, campgrounds, trails/trailheads, and disturbances from fire suppression operations within and adjacent to the Boulder fire are primary sources and corridors for weed dispersal. The adjacent warm/dry habitats that burned at low to high severity are moderately to highly susceptible to new weed invasion. Most of the previously identified weed infested sites within the fire were either burned or occur adjacent to burned areas. The susceptible habitats contain known infestations of Spotted knapweed and Canada thistle. Small spot infestations of these noxious weeds are scattered along FSR 595, 75540, and 595D within the fire perimeter. Other discrete or small populations were identified within drop points and trailheads throughout the fire complex. Spotted knapweed and Canada thistle are invasive weeds that can readily out-compete native plants and dominate disturbed sites. (Treatment L-01)

High Risk (likely, moderate) to designated critical habitat or suitable occupied habitat for ESA-listed aquatic species (Snake River summer steelhead and Columbia River bull trout). Known fish-bearing streams within or near the fire perimeter include Boulder Creek, Crooked Fork, and Hopeful Creek. Hopeful Creek and Crooked Fork support Designated Critical Habitat (DCH) for bull trout; Snake River summer steelhead DCH occurs immediately downstream from the fire perimeter in Crooked Fork and Boulder Creek. With the high proportion of moderate (44%) and high (5%) burn severity, the expected post-fire watershed responses include increased overland flows with accelerated surface erosion and subsequent delivery of sediment and debris to stream channels. There is heightened probability for increased erosion and overland flow with mass wasting and sediment delivery to Crooked Fork and several tributaries. The primary concern is these impacts increase the potential for multiple failure areas along FSR 595, with direct and indirect impacts to DCH for the ESA-listed fish species. These threats are expected to alter habitat and channel conditions in the short term; with potential longer term impacts to salmonid productivity over the long term. (Treatments RT-01, RT-02, RT-03, and RT-04)

4. Cultural and Heritage Resources:

Very Low to Intermediate Risk for 4 cultural site/properties visited as part of the BAER assessment for the Boulder fire. Pre-fire status under the National Register of Historic Places (NRHP) of the properties included 1 - eligible, 1 – not eligible, and 2 – unevaluated, all of which would be considered BAER Critical Values. All sites were burned to some degree; with all organic (wood) structural components for 2 sites completely consumed by fire events. After relocating and re-assessing each site, it was determined none would be considered NRHP eligible. No treatments or associated funding is being requested for any of the four sites.

B. Emergency Treatment Objectives:

- Mitigate and protect, to the extent possible, threats to personal injury or human life of forest visitors and Forest Service employees by raising awareness through posting hazard warning signs on roads, trails, and recreation facilities to communicate hazards of burned trees, flooding, debris flows, and rock fall, and by repair and maintenance of roads and recreation facilities where there are threats to human life and safety. Communicate risks to cooperating agencies, local communities, and user groups. Consider temporary closures of NFS lands and recreation facilities to protect life & safety of visitors.
- Protect or minimize damage to NFS investments in roads by installing drainage features capable of withstanding potential increased overland and/or debris flows. Minimize damage to key NFS travel routes. If necessary, implement temporary wet-season administrative closures to ensure effectiveness of implemented BAER treatments and to protect the investment cost of those treatments.
- Protect or mitigate potential post-fire impacts to water quality, critical habitat or suitable occupied habitat for ESA-listed aquatic species, and cultural resources within the burned area. When implementing authorized BAER response actions ensure compliance with conservation recommendations provided by tribes and cooperating agencies.
- Treat invasive plants, which are a threat to native or naturalized ecosystems, by minimizing the expansion of existing weed populations in the burned area where soil and/or vegetation was disturbed as a result of fire suppression activities and where burn severity increases the susceptibility for occupancy of non-native invasive species.
- Assist Native American tribes, local, State, and Federal agencies and other cooperators with the interpretation of the assessment findings and potential post-fire impacts to important cultural resources, water quality, and aquatic habitats.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land - 80% Channel - NA Roads/Trails - 80% Protection/Safety - 90%

D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	80	75	-
Channel	NA	NA	NA
Roads/Trails	80	90	100
Protection/Safety	80	70	60
Initially, visitors will heed the warning signs. Public complacency is expected after the initial year unless there is a damaging event.			

E. Cost of No-Action (Including Loss): \$200,000

F. Cost of Selected Alternative (Including Loss): \$203,455

The cost of no-action is based entirely on replacement/reconstruction from damage or loss of specific road segments within the burned area. Non-market values associated with the loss of road segments include potential harm or injury to human life and indirect impacts to water quality and designated critical habitat (DCH) for ESA-listed fish species.

Overall, implementation of all recommended response actions is marginally justified. Combining estimated costs for all treatments for this analysis, then comparing the requested funding only to the no action loss or damage to roads confuses the benefit: cost calculations. The justification ratio would be higher if comparing loss or damage to roads to the requested road treatment funds. The benefit: cost for treatments that address non-market values would default to “justified”.

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 checked="" type="checkbox"/> Recreation
<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 type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/>
<input type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input checked="" type="checkbox"/> GIS	<input type="checkbox"/> Landscape Arch	

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Team Members:

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 Chandra Neils – Soil Scientist, Idaho Panhandle NF, Region 1
 Rebecca Lloyd – Soil Scientist, Nez Perce – Clearwater NF, Region 1
 Brendan Waterman – Hydrologist, Uinta-Wasatch-Cache National Forest, Region 4
 Caitlin Cuddihy – Civil Engineer, Pike-San Isabell NF, Region 2
 Margaret Kirkminde – GIS, Nez Perce – Clearwater NF, Region 1

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:**L-01 NNIS-EDRR (Non-native Invasive Plant Species - Early Detection Rapid Response):**

Reduce the potential for establishment of new noxious weed infestations in native or naturalized communities, particularly in highly susceptible burned areas, and prevent or decrease the rate of spread of existing infestations.

Noxious weed control with herbicides is recommended for current and new invader infestations within the Boulder fire. Herbicide applications will follow the requirements and mitigation outlined under the latest NEPA and Biological Assessment for listed fish species. An interagency weed management cooperative strategy within the Clearwater River Basin Weed is currently in place.

Inventory of roads, dozer lines, drop points, camps, for both current and new invader weed populations, and monitoring of weed control methods should be initiated to determine potential for weed spread and effectiveness of treatments.

- Treat satellite infestations of spotted knapweed and Canada thistle along Forest Roads 595, 75540, and 595D within the burned area. The knapweed population along the road system is contributing a seed source and the road system is acting as a spread corridor for further expansion into the burned areas.
- Treat Spotted knapweed at drop points and helispot along FSR 595 leading into the burn.
- Treat Spotted knapweed at Blacklead Trailhead west of Crooked Fork bridge and dispersed area east of bridge (FSR 595, milepost 11.6).
- Monitor weed populations within and adjacent to the fire to determine if the combination of fire disturbance and susceptible habitat facilitates weed spread or increases weed densities, along with post treatment effectiveness monitoring.

Treatment Area	Acres	Season	Total Treatment (acres x # of treatments)
Treat Spotted knapweed along FSRs 595, 75540, and 595D within the burn.	10	Summer	10 acres
Treat small infestation of Spotted knapweed at drop points and helispot along FSR 595 leading into the burn.	2	Summer	2 acres
Treat Spotted knapweed at the Blacklead Trailhead and Boogy Down dispersed area.	1	Summer	1 acre
Total			13 acres

L-01 – Early Detection Rapid Response	
Average Treatment Cost per acre: \$250.00 (includes prep and pre-treatment flagging of sites)	
Average Chemical/Personal Protection Equipment Cost per acre: \$50.00	
Implementation Monitoring of Treatment: \$400 per day (two person crew).	
Estimated treatment cost: \$300.00/acre @ 13 acres	\$3,900
Weed Monitoring: 2 days @ \$400/day	\$800
Total Estimated Cost	\$4,700

Channel Treatments:

None recommended.

Road and Trail Treatments:

RT-01 Road Storm Proofing: The primary road (FSR 595) in the Boulder fire area is expected to see increased runoff over the next couple of years. Existing conditions of culvert basins may not accommodate the expected increase in debris. It is likely that damage will occur if measures aren't taken to stabilize the roads and maintain functionality of drainage structures.

Clean culverts, ditches, run out ditches, and catchment basins of sediment and debris. Repair damaged culverts in locations determined by the Engineer that will provide relief to existing culverts. Install rolling dips where they will be most efficient and necessary. Rolling dips should be installed on the down slope side of culverts and in locations where culvert failure is possible or likely. These rolling dips will assist to remove water from the roadbed that has become trapped on the road surface causing erosion and travel hazards.

Engineering Treatments			Cost
RT-01 Road Storm Proofing	Remove berm, install rolling dips, clean ditches, culverts, and catch basins; install culvert inlet end sections, slotted inlet riser pipes, and debris racks.		\$44,550
	Clean Catch Basins (21)	\$2,100	
	Minor Armored Critical Dip (9)	\$20,250	
	Major Armored Critical Dip (2)	\$8,000	
	Clean CMP (3)	\$2,400	
	Rolling Dip w/ Aggregate Surfacing (7)	\$7,000	
	Clean CMP Outlet (6)	\$600	
	Re-shape Rolling Dip (3)	\$600	
	Remove Upslope Debris (2)	\$2,000	
	Remove Culvert (FSR 75540)	\$800	
	Cut Lead-outs into Existing Berm (FSR 75540)	\$800	
RT-02 Culvert Replacement	Install 42" CMP	\$4,500	\$15,800
	Install 30" CMP	\$6,300	
	Install 48" CMP	\$5,000	
RT-03 Bridge Riprap	Install 12" Riprap	\$3,000	\$6,600
	Install 18" Riprap	\$3,600	
RT-04 Equipment Mobilization	All Treatments		\$6,695
RT-05 Storm Patrols	Storm patrols to identify problem areas such as clogged culverts, washed out roads and damaged drainage and treatment structures. Storm patrols will complete limited maintenance by removing debris from treatment structures to ensure they continue to function during future flood events. 2 employees/day @ \$500/day/employee x 5 days - \$5,000 Vehicle and Equipment: \$1,000/day x 5 days - \$5,000		\$10,000
Total Cost			\$74,045

FSR 75540 is located directly above FSR 595 and immediately below high and moderate burn severity. One 18" culvert is currently in place at the head of a perennial tributary to Boulder

Creek. FSR 595 switches back across this perennial drainage three times below FSR 75540, creating a stacked road situation with multiple crossings at risk if the top culvert fails. Removing the culvert increases likelihood for maintaining functionality of the FSR 595 drainage features, reducing the risk to loss or damage of the road template and reducing the risk of unacceptable impacts to DCH for ESA-listed fish species. In some locations, FSR 75540 road is outsloped and berm has been created along the downhill side of the road shoulder. This berm should be pulled back into the road and incorporated into the road surface or removed (lead-outs) in sections to promote sheet flow across the road.

See Burned Area Emergency Response Treatments Catalog Chapter 4, Rolling Dips pages 109-112, Low-Water Stream Crossings pages 121-126, Catchment-Basin Cleanout pages 145-148 and BAER Specification, Road Drainage Reconstruction for more information.

RT-02 Culvert Replacement: Numerous culverts crossing perennial drainages on FSR 595 have been identified as being undersized for the post-fire flows and at risk of being overtopped. On road systems where vehicle access is required and it is both feasible and cost effective to replace the culverts to handle the post fire flows, proceed with full culvert replacements.

See Burned Area Emergency Response Treatments Catalog Chapter 4, Culvert Modifications pages 127-129 and BAER Specifications for Road Drainage Reconstruction, Culvert Replacements, and Culvert Removals for more information.

RT-03 Bridge Riprap: The Crooked Fork Bridge on FSR 595 is susceptible to abutment scour from increase flows in Crooked Fork Creek. Also, some culverts are not flush with the ground surface and have shotgun outlets. It is recommended riprap be installed below perched, erosion-prone culvert outlets to avoid propagation of headcuts transporting material into downstream waterways, especially those with DCH for ESA-listed fish species. Stabilize bridge abutments with riprap before spring runoff to maintain integrity of the structure.

RT-04 Equipment Mobilization: Transport and inspection of contractor's equipment to implement recommended road treatments.

RT-05 Road Storm Patrols: To maintain effectiveness of the implemented storm proofing treatments and protect the infrastructure investment, evaluate FSR 595 for subsequent damage from increased stormflow runoff and erosion. There is an immediate and future threat to travelers along the road within the burned area due to the increased potential for culverts to plug with sediment and debris which could washout sections of the road, which would also require considerable funding to reconstruct significant road template damage.

With the loss of vegetation, normal storm frequencies and magnitudes can more easily initiate erosion on adjacent slopes, and it is likely that this runoff will inundate the road or cause washouts at drainage facilities (culverts) or stream crossings. These events create hazardous conditions and put the safety of users at risk.

Monitor road drainage structures and debris flow treatment structures after significant storm events to ensure the maximum drainage capacity is maintained until the natural re-vegetation of the burned area has occurred. Maintain and/or repair any damage to road surfaces. Remove sediment and debris from drainage and treatment structures and repair headcutting in streams and drainages to prevent further degradation of channels. Monitor the movement of large woody debris and determine whether the material should be removed before it contacts culverts. Mitigate hazard trees at treatment locations to provide for worker safety.

See Burned Area Emergency Response Treatments Catalog Chapter 4, Storm Inspection and Response pages 149 -152 and BAER Specification for Storm Patrols for more information.

Protection/Safety Treatments:

The safety and well-being of forest visitors utilizing recreation facilities necessitate they are informed or notified of hazards when entering the burned area. Proper signage at trailheads, at recreation use areas, and along roads entering or leading to the burned area is needed to provide ample warning to recreationists. Potential threats to the public and agency personnel include flooding and debris flows, hazard trees, and rockfall along roads, trails, and at recreation facilities that are downstream or downslope of areas with moderate to high burn severity.

PS-01 Hazard Warning Signs – Trailhead and Recreation Areas: Purchase and install 'Entering Burned Area" hazard warning signs at the Blacklead Trailhead (1) adjacent to Crooked Fork Bridge and Boogy Down (2). Installation of reflectorized signs with letter size according to USFS Handbook specifications mounted on 4"x4"x8' posts at heights and distances mandated in USFS Handbook.

PS-01 – Trailhead and Recreation Burned Area Hazard Warning Signs	QTY	Rate	UOM	Total
Forestry Technician (GS-7)	2	\$260	day	\$520.00
Forestry Technician (GS-5)	2	\$200	day	\$800.00
Burned Area Hazard Sign, posts, and hardware	3	\$130	each	\$390.00
Mileage - 4x4 pickup truck (1/2 ton)	104	\$0.55	mile	\$57.20
Treatment Total				\$1,767.20

PS-02 Hazard Warning Signs - Roads: Purchase and install 'Entering Burned Area" hazard warning sign at 1 location accessing the burned area (FSR 595, milepost 9.4). Sign will be installed in visible location on uphill side of road. Sign will be installed consistent with FHWA Standard Specifications for Roads and Bridges on Federal Highway Projects (FP-03) with Forest Service supplemental specifications and follow sign and poster guidelines for the Forest Service EM7100-15. Refer to BAER Treatment map for specific locations.

PS-02 – Roads: Burned Area Hazard Warning Signs	QTY	Rate	UOM	Total
Forestry Technician (GS-7)	1	\$260	day	\$260.00
Forestry Technician (GS-5)	1	\$200	day	\$200.00
Burned Area Hazard Sign, posts, and hardware	1	\$300	each	\$300.00
Mileage - 4x4 pickup truck (1/2 ton)	20	\$0.55	mile	\$11.00
Treatment Total				\$765.50

PS-03 Recreation Area Hazard Tree Mitigation: Cut down fire-damaged trees that threaten recreation facilities or parking areas that support recreational uses at Blacklead Trailhead and Boody Down. The treatment is considered the most efficient, minimum response action to achieve a reduction in risk to human life and safety of Forest visitors and Forest Service employees, in addition to stationary vehicles or other equipment. Inspection of the treatment locations should occur through monthly during the 1 year BAER emergency period to ensure risk public safety and property has been resolved.

PS-03 – Recreation Area Hazard Tree Mitigation	QTY	Rate	UOM	Total
Forestry Technician (GS-7)	2	\$260	day	\$520
Forestry Technician (GS-5)	6	\$200	day	\$1,200
Equipment & Supplies (fuel, oil, chain)	1	150	each	\$150
Mileage - 4x4 pickup truck (1/2 ton)	104	\$0.55	mile	\$57
Treatment Total				\$1,927

Management Recommendations

Forest personnel should maintain a heightened awareness of the increased risks of flooding and debris flows in the high intensity burn areas for the next year (primarily during summer thunderstorms). Road stream crossings identified in the engineering and hydrology reports should be monitored closely to keep the public informed, provide for safety, and prevent further resource damage in the event of a debris torrent.

Replace road mileage, road directional signs, and 'road closed' signs either burned in the fire or damaged/removed as part of fire suppression operations. The road and direction signs are important for navigation by the general public. The 'road closed' signs provide resource protection (decrease prism damage, reduce sediment delivery and noxious weed spread) by discouraging unauthorized motor vehicle travel.

For a minimum of 2 years, continue monitoring for NNIS on open, closed, and recently decommissioned roads, and in disturbance areas associated with fire suppression operations (lines, drop points, ICP, etc.).

Coordination, Communication, and Consultation

Over the next year it is critical that appropriate agencies maintain due diligence and continue to inform the local tribes, forest users, private land owners, and operators of special use facilities of the potential threats resulting from post-fire watershed response.

Areas or features of concern:

- Communicate to local law enforcement and emergency management services that routes providing ingress and egress throughout the burn area may become compromised. This may result in loss of access by emergency response vehicles.
- The Forest Service is currently entered into a partnership with the Nez Perce Tribe. The Tribe's Department of Fisheries, Resource Management, and Watershed has a vested interest in improving aquatic habitat and watershed conditions throughout the Boulder fire burned area. Forest Service personnel should coordinate with the Lochsa Project Leader to identify potential opportunities to partner on culvert replacements during design and implementation of aquatic organism passage structures where appropriate.

Coordination

	Rate	Days	Cost
Forest BAER Coordinator	\$420	3	\$1,260
Forest Fish Biologist	\$420	5	\$2,100
Total Cost			\$3,360

Implementation Tracking and Required Reporting of Authorized Emergency Response Actions

	Rate	Days	Cost
Forest BAER Coordinator	\$420	5	\$2,100
Total Cost			\$2,100

In addition, associated emergency consultation required under the Endangered Species Act (ESA) for activities obligated under ID-FSM2520-2014-1 needs to be considered in the BAER funding request when emergency response actions are authorized. These are accumulated tasks above the normal program of work and are not captured in out-year program planning. **Implementation of approved BAER response actions trigger these required tasks and the unit's allocated budget does not account for these obligations.** BAER funding is the appropriate authorization to ensure this coordination and consultation is completed.

Emergency Consultation on Implementation of Authorized Emergency Response Actions

	Rate	Days	Cost
Forest Fish Biologist	\$420	4	\$1,680
Total Cost			\$1,680

NHPA Compliance for Implementation of Authorized Emergency Response Actions

	Rate	Days	Cost
Forest Archeologist	\$420	5	\$2,100
Total Cost			\$2,100

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.)

Part VI – Emergency Stabilization Treatments and Source of Funds
Boulder Fire – Nez Perce-Clearwater N.F.

Interim #

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands			All Total \$
			# of Units	BAER \$		# of units	Fed \$	# of Units Non Fed \$	
A. Land Treatments									
L-01 NNIS EDRR	acre	362	13	\$4,700	\$0		\$0	\$0	\$4,700
				\$0	\$0		\$0	\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Land Treatments</i>				\$4,700	\$0		\$0	\$0	\$4,700
B. Channel Treatments									
				\$0	\$0		\$0	\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Channel Treatments</i>				\$0	\$0		\$0	\$0	\$0
C. Road and Trails									
RT-01 Road Storm Proofing	lump sum	44,550	1	\$44,550	\$0		\$0	\$0	\$44,550
RT-02 Culvert Replacement	each	5,267	3	\$15,800	\$0		\$0	\$0	\$15,800
RT-03 Bridge Riprap	lump sum	6,600	1	\$6,600	\$0		\$0	\$0	\$6,600
RT-04 Mobilization	lump sum	6,695	1	\$6,695	\$0		\$0	\$0	\$6,695
RT-05 Road Storm Patrol	day	2,000	5	\$10,000	\$0		\$0	\$0	\$10,000
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Road and Trails</i>				\$83,645	\$0		\$0	\$0	\$83,645
D. Protection/Safety									
PS-01 Recreation: Hazard V	sign	589	3	\$1,767	\$0		\$0	\$0	\$1,767
PS-02 Roads: Hazard Warn	sign	766	1	\$766	\$0		\$0	\$0	\$766
PS-03 Hazard Tree Mitigatio	lump sum	1,927	1	\$1,927	\$0		\$0	\$0	\$1,927
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Protection/Safety</i>				\$4,460	\$0		\$0	\$0	\$4,460
E. BAER Evaluation									
Initial Assessment	Report			---	\$0		\$0	\$0	\$0
<i>Insert new items above this line!</i>				---	\$0		\$0	\$0	\$0
<i>Subtotal Evaluation</i>				---	\$0		\$0	\$0	\$0
F. Monitoring									
Coordination & Consultation	lump sum	\$9,240	1	\$9,240	\$0		\$0	\$0	\$9,240
				\$0	\$0		\$0	\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0	\$0	\$0
<i>Subtotal Monitoring</i>				\$9,240	\$0		\$0	\$0	\$9,240
G. Totals				\$102,045	\$0		\$0	\$0	\$102,044
Previously approved									
Total for this request				\$102,045					

PART VII - APPROVALS

1. _____
Forest Supervisor (signature) _____
Date
2. _____
Regional Forester (signature) _____
Date