

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**PART II - BURNED-AREA DESCRIPTION**A. Fire Name: Dollar Lake B. Fire Number: OR-MHF-000382C. State: OR D. County: Hood River CountyE. Region: 06 F. Forest: Mt. Hood National ForestG. District: Hood River RD H. Fire Incident Job Code: P6GC1SI. Date Fire Started: 8/27/2011 J. Date Fire Contained: not contained as of 10/11/11
Estimated containment 10/15/11K. Suppression Cost: \$ 15,800,000 (as of 10/3/11)

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): handline: 9.0 miles trails: 4.8 miles dozer line: 8.2 miles

2. Fireline seeded (miles):

3. Other (identify):

M. Watershed Number: 1707010506 (West Fork Hood River)
1707010505 (East Fork Hood River)N. Total Acres Burned: 6304NFS Acres(6304) Other Federal (--) State (--) Private (--)O. Vegetation Types: Subalpine forest; Douglas fir, subalpine fir, noble fir, western larch.

P. Dominant Soils: The Mount Hood Soil Resource Inventory Soil Map Units 380, 381 and 382 are the dominant soil mapping units within the moderate to high burn severity areas of the fire. Surface soils are dark gray, soft, very friable, non-sticky, non-plastic, sandy loams and very fine sandy loams, with weak, fine granular structure and less than 20 percent coarse fragments. These soils formed in ash mixed with andesitic residuum and colluvium.

The soils in the area are in the Frigid and Cryic soil temperature regimes and have a Low to Moderately Low potential for surface runoff as a result of rainfall in excess of the soils infiltration capacity. The forest floor is covered with a 1 to 3 inch layer of decomposing needles and twigs from subalpine tree species including mountain hemlock, noble fir, western larch, subalpine fir, and Douglas-fir over many fine roots and fungal mycelia.

Table 1. Major Soil Map Units - Distribution by Acres and Selected Attributes

SRI Code	Surface Soil Texture in SRI*	% Slope Class	Sum of Acres	Surface Erosion Potential	Rate of Surface Runoff	Water Detention Storage Capacity
333	sandy loam	0 – 30	566	Slight – Moderate	Moderate	Moderate
379	sandy loam	5 – 30	788	Slight	Moderate	Moderate
380, 380-6	loam	5 – 30	1907	Slight	Moderate	Moderate
381-6	loam	30 – 70	401	Moderate	High	Low
382, 382-6	loam	30 – 70	892	Moderate	High	Low

*Field observations were predominately fine sandy loams with a greater amount of coarse fragments in the western fire area.

Q. Geologic Types:

Geology – Dollar Lake Fire

The Dollar Lake Fire burned an area on the lower north flank of Mt. Hood, a large dormant volcano that is presently between eruptions. The burned area is bordered or dissected by five major drainages; from west to east these are: Ladd Creek, Clear Branch, Pinnacle Creek, Coe Branch, and Eliot Branch. Three of these creeks originate from glaciers: Ladd Creek, Coe Branch, and Eliot Branch. The subwatersheds of all the creeks tend to be long and narrow.

The ridges between these drainages are generally composed of andesite lava flows that erupted from Mt. Hood several hundred thousand years ago. The resistant andesite bedrock usually forms wide, gentle-sloping ridge tops with very steep valley walls where the forces of erosion have been concentrated. Major glacial advances about 20,000 years ago and again about 12,000 years ago have left extensive glacial till deposits that mantle the lower ridge crests where the valley glaciers spilled out of their valleys and merged (generally below about 4300' elevation).

More recent glacial advances have left steep, sparsely-vegetated moraine deposits just above the upper limits of the fire. These landforms are generally within one mile of the present glaciers.

The glacially eroded valley bottoms are partially filled in with alluvial deposits derived from glacial deposits and valley wall erosion. The three glacier derived channels experience geologically frequent, highly destructive, massive debris flows that transport hundreds of thousands of cubic yards of material to the West Fork and Middle Fork Hood River valleys. Sand-size and smaller material can be transported all the way to the Columbia River. The most recent massive debris flows in each of the three glacier derived channels are displayed in the table below.

Channel	Most Recent Massive Debris Flow Event	Estimated Volume (cubic yards)
Ladd Creek	September 1, 1961	400,000
Coe Branch	November 8, 1958	300,000
Eliot Branch	November 7, 2006	700,000

Neither Clear Branch nor Pinnacle Creek host massive or even large debris flows.

R. Miles of Stream Channels by Order or Class:

Perennial Streams - 12.4

Intermittent Streams - 17.7

S. Transportation System

Trails: 13.67 miles Roads: 0.12miles

PART III - WATERSHED CONDITION

A. Burn Severity by total and FS (acres): 2562 (unburned/low) 2538 (moderate) 1195 (high)

The limited field observations of burn severity generally coincide with the descriptions in the USDA Forest Service Field Guide for Mapping Post-Fire Soil Burn Severity¹.

High Severity Burn

All or nearly all of the pre-fire ground cover and surface organic matter (litter, duff, and fine roots) is generally consumed, and charring may be visible on larger roots. The prevailing color of the site is often "black" due to extensive charring. Bare soil or ash is exposed and susceptible to erosion, and aggregate structure may be less stable. White or gray ash (up to several centimeters in depth) indicates that considerable ground cover or fuels were consumed.

Moderate Severity Burn

Up to 80 percent of the pre-fire ground cover (litter and ground fuels) may be consumed but generally not all of it. Fine roots (~0.1 inch or 0.25 cm diameter) may be scorched but are rarely completely consumed over much of the area. The color of the ash on the surface is generally blackened with possible gray patches. There may be potential for recruitment of effective ground cover from scorched needles or leaves remaining in the canopy that will soon fall to the ground. The prevailing color of the site is often "brown" due to canopy needle and other vegetation scorch. Soil structure is generally unchanged.

Unburned and Low Severity Burn

Surface organic layers are not completely consumed and are still recognizable. Structural aggregate stability is not changed from its unburned condition, and roots are generally unchanged because the heat pulse below the soil surface was not great enough to consume or char any underlying organics. The ground surface, including any exposed mineral soil, may appear brown or black (lightly charred), and the canopy and understory vegetation will likely appear "green."

¹ Rocky Mountain Research Station General Technical Report RMRS-GTR-243, October 2010. Annette Parsons, Peter R. Robichaud, Sarah A. Lewis, Carolyn Napper, and Jess T. Clark.

Dollar Fire Burn Severity by Subwatershed				
	Unburned or Very Low	Low	Moderate	High
Subwatershed	Wilderness/ Total (acres)	Wilderness/ Total (acres)	Wilderness/ Total (acres)	Wilderness/ Total (acres)
Clear Branch	114/119	40/41	664/666	332/335
Coe	323/602	369/444	643/725	428/481
Eliot	124/187	122/160	76/102	15/18
Ladd	215/234	173/189	414/450	261/283
McGee	13/13	21/21	12/12	4/4
Pinnacle	79/376	45/177	352/583	26/75
Grand Total	867/1530	771/1032	2160/2538	1066/1195

B. Water-Repellent Soil by total and FS (acres): During field surveys some soil water repellency was found, but due to safety concerns, the number of sites checked was limited. Soils are slightly repellent naturally, which is reflected in the Soil Resource Inventory.

C. Soil Erosion Hazard Rating (all National Forest Lands)(acres):
3772 (low) 2215 (moderate) 298 (high)

D. Erosion Potential: 103 tons/acre (WEPP² model, 10 year event)

E. Sediment Potential: 46,231 cubic yards / square mile (WEPP model, 10 year event)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 10

B. Design Chance of Success, (percent): 60

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

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 2.5

F. Design Flow, (cubic feet/second/ square mile): 2 year event 42 -54 csm³
10 year event 107-131 csm

G. Estimated Reduction in Infiltration, (percent): 2 year event: 11.3 % to 22 %⁴
10 year event: 1.5 % to 4.2 %

H. Adjusted Design Flow, (cfs/square mile): 2 year event: 60-69 csm⁵
10 year event: 134 to 156 csm

² Elliot, William J.; Hall, David E. 2010. Disturbed WEPP Model 2.0. Ver. 2011.07.08. Moscow, ID: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Online at <<http://forest.moscowfsl.wsu.edu/fswepp>>.

³ Modeled, USFS peak flow calculator

⁴ Modeled, USFS peak flow calculator

⁵ Modeled, includes bulking due to sediment/debris, and loss of infiltration.

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Dollar Lake Fire began on August 27, 2011 as the result of a lightning strike in the Coe Branch drainage near the Elk Cove trail. The burned area is located north of Mt. Hood in the Eliot Branch, Coe Branch, Pinnacle Creek, Clear Branch, and Ladd Creek drainages, entirely on National Forest System lands.

Four major stream systems drain the north and west flank of the Dollar Lake fire. Coe Branch, a tributary to the Middle Fork Hood River, lies on the north flank of Mt. Hood and drains northerly into the Middle Fork. Pinnacle Creek and Clear Branch both drain into Laurance Lake, a reservoir on Middle Fork Hood River. Ladd Creek drains northwesterly into the West Fork Hood River. An additional fifth stream system, the Eliot Branch was mostly burned during the Gnarl Ridge fire, but did have some additional burning during Dollar Lake. The majority of the burned area in all of the streams is located in the Mt. Hood Wilderness Area. Maintaining good water quality in Coe Branch, Pinnacle and Clear Branch Creeks is significant as these streams provide habitat for bull trout as well as being utilized by the Middle Fork Irrigation District (MFID) for irrigation and power generation. Additionally, the Middle Fork Hood River contains bull trout and anadromous fish habitat downstream of the burned area.

Burn severity mapping for the Dollar Lake Fire began with an initial Burned Area Reflectance Classification (BARC) satellite-derived map of postfire vegetation condition obtained from the Remote Sensing Application Center (RSAC) from a Landsat image on September 9, 2011. Two helicopter flights by BAER team members were made for further evaluation of burn severity, and combined with a second BARC map from a Landsat image on September 24, 2011 to create the final burn severity map. Ground surveys to validate burn severity were limited due to safety concerns.

Critical Values Identified

Critical Values identified (FSM 2523.1 Exhibit 01) during the Dollar Fires BAER assessment are:

1. Human Life and Safety, **FS 2840 road bridge at Coe Branch, culvert crossing on Eliot Branch, culvert crossing on FSR 18 at old Ladd Creek, and the FSR 18 road bridge on Ladd Creek.**
2. Property, **MFID diversions on the Coe Branch & Eliot Branch, Coe Branch Diversion Transmission Line, Laurance Lake, BPA tower near Red Hill Creek, and various hiking trails in Mt. Hood Wilderness.**
3. Cultural Resources, **1910 Railroad Camp, near old Ladd Creek on the Lolo Pass road.**
4. Natural Resources, **ESA Bull Trout & Steelhead Habitat, Coe Branch, Eliot Branch, Pinnacle, and Clear Branch. Possible post-fire invasive plant establishment on fire lines, drop points, burned area, etc.**

The Dollar Lake Fire BAER team evaluated the risk to critical values per FSM 2523.1 Exhibit 02. The estimated risk to downstream critical values is based on the assumption of the design storm, a 10 year 24 hour rainfall event (as estimated by the ERMiT Model⁶) of at least 2.5 inches of rainfall, occurs sometime within a 12 month period following containment of the fire.

The risk matrix (below), Exhibit 2 of Interim Directive **2520-2010-1** was used to evaluate the Risk Level for each value at risk identified during Assessment. These values at risk are required to be assessed prior to any treatment per the interim directive.

⁶ Robichaud, Peter R.; Elliot, William J.; Pierson, Fredrick B.; Hall, David E.; Moffet, Corey A. 2006. **Erosion Risk Management Tool (ERMiT) Ver. 2009.09.17.** [Online at <<http://forest.moscowfsi.wsu.edu/fswepp/>>.] Moscow, ID: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.	– Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects	Property damage is limited in economic value and/or to few investments; damage to natural or cultural resources resulting in minimal, recoverable or localized effects
RISK			
Very Likely (>90%)	Very High	Very High	Low
Likely (>50% to <90%)	Very High	High	Low
Possible (>10% to <50%)	High	Intermediate	Low
Unlikely (<10%)	Intermediate	Low	Very Low

The Very High and High Risk are unacceptable risk levels due to threats to human life, property, infrastructure and resources, therefore treatments should be applied. An Intermediate Risk could be unacceptable if human life or safety is the critical value at risk.

Value at Risk: Property			
Risk	Probability of Damage	Magnitude of Consequences	Value at Risk
Intermediate	Possible	Moderate	MFID Diversion, Eliot Branch
High	Likely	Moderate	MFID Diversion (loss of power generation due to high turbidity), Coe Branch
High	Possible	Major	Coe Branch Diversion Transmission Pipeline
High	Possible	Major	BPA Tower, near Red Hill Creek
Low	Possible	Minor	Laurance Lake (sedimentation from fire)
Intermediate	Possible	Moderate	Hiking Trails

Value at Risk: Life			
Risk	Probability of Damage	Magnitude of Consequences	Value at Risk
High	Possible	Major	2840 Road Bridge, Coe Branch
High	Possible	Major	2840 Road Crossing, Eliot Branch
High	Possible	Major	FSR 18 Road Bridge, Ladd Creek
Intermediate	Possible	Moderate	FSR 18 Road Crossing, (old) Ladd Creek

Value at Risk: Resources			
Risk	Probability of Damage	Magnitude of Consequences	Value at Risk
Intermediate	Possible	Moderate	Upper Clear Branch Large Woody Debris Placement
High	Likely	Moderate	ESA Fish Coe Branch
Low	Possible	Minor	ESA Fish Eliot Branch
Intermediate	Possible	Moderate	ESA Fish Pinnacle Creek
Intermediate	Possible	Moderate	ESA Fish Clear Branch
Intermediate	Possible	Moderate	Non-Native and Invasive Weeds (Introduction/Spread)

Value at Risk: Heritage Resources			
Risk	Probability of Damage	Magnitude of Consequences	Value at Risk
Intermediate	Possible	Moderate	1910 Rail Road Camp, Old Ladd Creek

Water Quality

The largest threat to water quality is increased turbidity and sedimentation resulting from primary hillslope erosion and secondary sediment introduction by channel bed and bank erosion. The biggest threat is to water quality in Coe Branch. The upper portion of the Coe Branch watershed and tributary Compass Creek burned with a moderate to high severity. A good portion of the riparian area in Coe Branch is either unburned or burned with a moderate to low severity which will provide some buffering capability for hillslope erosion. Compass Creek on the other hand lost most of its riparian area and burned at a moderate to high severity. Pinnacle Creek has some potential for increased turbidity, while Clear Branch will likely see increased turbidity due to the presence of moderate to high severity burn areas around the 2840 road. The increased turbidity will be low compared to the Coe Branch basin.

Fisheries

Several Federally listed Proposed, Endangered, Threatened, or Sensitive (PETS) salmon and trout species and their critical and essential fish habitat are known to be present in both the East Fork Hood River 5th field watershed and West Fork Hood River 5th Field watershed of the Hood River basin. The Dollar Lake Fire burned in multiple drainages of the Upper Middle Fork Hood River 6th field subwatershed of the East Fork Hood River 5th field watershed, and Upper West Fork Hood River 6th field subwatershed of the West Fork Hood River 5th field watershed. Potential values at risk for aquatic species are a reduction in both quality of spawning and rearing habitat for both the short (0 to 5 years) and long-term (5 to 50 years) for Federally listed as threatened Columbia River (CR) bull trout (*Salvelinus confluentus*), Lower Columbia River (LCR) steelhead trout (*Oncorhynchus mykiss*), LCR chinook salmon (*O. tshawytscha*), LCR coho salmon (*O. kisutch*) and their critical habitat. Other aquatic species at risk are: Regional Forester's special status listed as sensitive Columbia dusksnail (*Colligyrus sp. nov. 1*), and Scotts Apatanian Caddisfly (*Allomyia scotti*) both have known or potential habitat in both subwatersheds of the burned area and or area of influence. Management Indicator Species (MIS) Native coastal cutthroat trout (*O. clarki clarki*) and rainbow trout (*O. mykiss*), are known to be present in both subwatersheds and non-native brook trout (*S. fontinalis*) are known or have habitat in both subwatersheds which may experience a loss of quality spawning and rearing habitat for both the short and long-term.

Miles of Bull Trout Critical Habitat - 5.06

Miles of Steelhead Critical Habitat - 0.18

Upper Middle Fork Hood River Subwatershed

Drainages of concern in the Upper Middle Fork Hood River subwatershed are Eliot Branch, Compass, Coe Branch, Pinnacle, Clear Branch and their tributaries. Historical documentation indicates bull trout, rainbow trout (possibly steelhead), and cutthroat trout being present up to an irrigation diversion at about RM 0.8 in Eliot Branch Creek (a glacially influenced stream). Bull trout critical habitat is present from the mouth upstream to the MFID irrigation diversion.

Compass Creek has historical documentation of CR bull trout being present. Bull trout have been found up to about RM 0.75 in Compass Creek with potential habitat up to about RM 1.4. LCR steelhead trout and their critical habitat are present at Compass Creek confluence with Coe Branch Creek. Coastal cutthroat trout are present up to about RM 0.90 of Compass Creek.

Coe Branch Creek has historical documentation of CR bull trout being present up to the confluence with Compass Creek at RM 2.4; bull trout critical habitat is commensurate with their distribution. Steelhead trout critical habitat is also present in Coe Branch up to the confluence with Compass Creek and steelhead are considered present in Coe Branch. Coastal cutthroat trout have been observed up to a natural longstanding 130' waterfalls located at RM 4.5.

Pinnacle Creek is a Class I stream with coastal cutthroat trout, rainbow trout, and bull trout residing in the stream. Bull trout critical habitat extends from the mouth upstream into the Dollar Lake Fire perimeter.

Clear Branch has bull trout, coastal rainbow and cutthroat populations both above and below the Clear Branch Dam located at RM 0.75. Lower Columbia River steelhead have both spawning and rearing habitat below the Dam and it is designated critical habitat. Clear Branch is the stronghold for bull trout. Fewer than 100 spawning adults and almost all spawning occurs in Clear Branch above the dam. Most of Clear Branch is designated critical habitat for bull trout.

Upper West Fork Hood River Subwatershed

The drainage of concern in the Upper West Fork Hood River sub watershed is Ladd Creek. Ladd Creek is one of the headwater streams of the West Fork Hood River. Ladd Creek supports a population of rainbow trout and likely LCR steelhead trout. LCR Chinook salmon and steelhead trout are present in West Fork Hood River up to the McGee and Elk Creeks confluence that forms the West Fork. Chinook are also present in McGee Creek upstream about 1.0 mile and steelhead ascend further than that.

Coe Branch Diversion (Middle Fork Irrigation District)

The Coe Branch diversion is a structure owned by the Middle Fork Irrigation District (MFID) on National Forest Lands. The \$2,000,000 structure is on the Coe Branch just upstream of Forest Road 2840. The diversion is part of system that diverts water for irrigation purposes during the summer months and power generation during the non-irrigation months. The diversion and associated pipeline are located downstream from large areas of high severity burns in the Coe Branch and Compass Creek watersheds. Threats to this value at risk include potential damage from debris flows, lost ability to generate power and/or deliver water for irrigation purposes due to high turbidity, sedimentation obstructing the intake for the diversion, and potential damage to the water transmission line due to stream flow capture and erosion. The value of the water transmission line exceeds \$750,000.

Debris Flow Damage - Potential debris flows may originate in the moderate to high severity burn areas in Coe Creek and Compass Creek. The geologist's report rated the likelihood of debris flow delivery to the Coe Creek Diversion as "Low" due to the existence of a large, low gradient alluvial plain between the fire area and the diversion. It is thought that any debris flows would settle out before reaching the diversion. The alluvial plain is unburned for the most part and a reconnaissance flight over the area verified that there is a large amount of standing and down trees to block large runouts from debris flows.

High Turbidity - Soil and ash erosion has a high potential to increase turbidity in Coe and Compass Creek, which in turn may require temporary shutdown of the diversion facility due to this high turbidity. Turbidity may also increase from debris flows even if they settle out somewhere upstream of the diversion facility, as this soil and ash will stay suspended due to its fine grain nature. Discussions with MFID indicate that temporary shutdown of the diversion facility in neighboring Eliot Creek from high turbidity is still necessary 3 years after the Gnarl Fire. Shutting down the diversion facility means loss of revenue from power generation for MFID.

Damage to the Water Transmission Line - The water transmission line from the Coe Diversion runs underneath the access road and ultimately ties into the main pipeline down below FR 2840. A flood event in January, 2011 filled in the main Coe Creek channel and routed the stream through an old overflow channel near the access road and water transmission line (see stream capture area on map above). There is a good chance of capturing Coe Creek stream flow and directing it into the MFID access road with increased flows that have been "bulked up" with ash and eroded soil from the high severity burn areas. This redirected flow has a high potential to erode and damage the transmission line.

The following assessment of the potential monetary loss is based on MFID personnel best estimate using information from previous damaging events including the 2006 debris flow from Eliot Creek and the 2008 Gnarl Fire.

Damage from High Turbidity – As described above, the main loss would be due to lost revenue from power generation. The following value is assuming high turbidity in October and November and the number of temporary shutdowns decreases as vegetation begins to stabilize the burn area (experience from Gnarl Fire).

Value - \$100,000 (this figure is subject to change based on the price of electricity)

Damage to Water Transmission Line – There is a high potential for stream capture and damage to the water transmission pipeline as discussed above. Based on experience from past damage, MFID has calculated the following value for repair of the damaged line.

Value - \$750,000 for damage of approximately 1000' of pipeline (greater lengths of pipeline damage would incur more costs). In addition, lost revenue from hydropower generation while the pipeline is being replaced would be \$260,000 (assumes 2 months needed for repair of pipeline).

Laurance Lake

Laurance Lake is created by Clear Branch Creek Dam on the Clear Branch River in Hood River County, Oregon and is used for irrigation, hydroelectric power, fish and wildlife protection and recreation purposes. Construction was completed in 1969. It has a normal surface area of 250 acres. It is owned by Middle Fork Irrigation District. Its capacity is 4000 acre feet. Normal storage is 3550 acre feet. It drains an area of 9 square miles.

The Clear Branch and Pinnacle Creek watersheds were partially burned during the Dollar Lake Fire. Approximately 1161 acres of the 3344 acre Clear Branch watershed, and 1210 acres of the 1618 acre Pinnacle Creek watershed are in the Dollar Lake Fire area. Approximately 30 % of the Clear Branch watershed and 41 % of the Pinnacle Creek watershed were burned at moderate/high burn severity. Post fire sediment modeling using the ERMiT model shows about 71,000 tons (or cubic yards) of sediment will be delivered to the Clear Branch and Pinnacle Creeks downstream of the fire following a 10 year storm event. Much of this sediment should settle in the Clear Branch and Pinnacle Creeks before it reaches Laurance lake, but if the entire amount were delivered to the lake, it would be equal to about 44 acre feet of sediment, or about 1.2 % of total water storage capacity of Laurance Lake. If debris flows occur in the steeper portions of Pinnacle Creek where they are likely, the amount of delivered fire-related sediment would be much greater.

BPA Powerline Right of Way

A high voltage transmission line tower northwest of the Red Hill bridge construction site is potentially at risk if a debris flow diverts Ladd Creek into Red Hill Creek, and high flows erode the stream bank. The high voltage transmission line tower is approximately 34 feet west of the Red Hill Creek.

Trails

The values at risk include hiking on trails within the burned area. The effect of the fire has increased the risk to the trail infrastructure through erosion and to human life due to the fire undermining the tread of the trail, and killing almost all the trees along the affected stretches of trails. Unless high risk hazard trees are felled along the entire stretch of these trails, emergency erosion control work would be very dangerous. To reduce the risk to BAER implementation personnel and crews, hazard trees must be felled prior to any erosion control treatment.

Rill erosion on the trails is predicted, and on trails in the adjacent Gnarl Ridge Fire area there was rill erosion after less than 0.5 inches of rainfall. Rill erosion is expected to be severe on most areas of the trails, as they are steep trails, classified in the 5 to 20% gradient class.

Total Miles of Trail within the Dollar Lake Fire Perimeter

Trail	Trail #	Miles
EDEN PARK	600H	0.46
ELK COVE	631	4.17
MAZAMA	625	1.30
PINNACLE RIDGE	630	2.58
TIMBERLINE	600	3.49
VISTA RIDGE	626	1.66
Grand Total		13.67

Miles of High and Moderate Burn Severity Impacted Trails (proposed for BAER treatments)

Trail	Moderate Burn Severity (miles)	High Burn Severity (miles)	Total High and Moderate Burn Severity(miles)
EDEN PARK	0.07	0.26	0.33
ELK COVE	2.03	0.35	2.38
MAZAMA	0.44	0.42	0.86
PINNACLE RIDGE	1.41	0.74	2.15
TIMBERLINE	0.50	0.14	0.64
VISTA RIDGE	0.57	1.02	1.59
Grand Total	5.06	2.93	7.99

Invasive Plants

Spotted, diffuse, and meadow knapweed (*Centaurea stoebe*, *C. diffusa*, and *C. pratensis*), all Class B noxious weeds, are present in the fire area. Bulldozers, crew carriers, other vehicles, and equipment used to fight the fire may have spread knapweed seed within the fire area or transported and introduced knapweed seed from infestations outside the fire area. Drop points, parking areas, sling spots, medic sites, dozer lines, handlines, and burned areas may be invaded by knapweed species and other invasive non-native plants not currently growing in the vicinity of the Dollar Lake fire. Prevention measures have included a weed-washing station near the ICP located in Odell. Postfire control measures of invasive plants next spring may include manual (handpulling), mechanical (mowing), and/or chemical (herbicide) treatment. Repeated treatments in successive years following the fire are expected to be needed to effectively control invasive plant species.

Populations of spotted, diffuse, and meadow knapweed occur along Highway 35, Forest Roads 2840, 18, 16 and 13, and on adjacent county and private land. The aforementioned Forest Roads and Hwy. 35 right-of-way have been treated for noxious weeds for two seasons. Noxious weed seeds from nearby populations may be spread along road corridors by vehicles, equipment, wildlife, hikers, and mountain bikers.

Evaluation of Aerial Mulching For Erosion Control in the Mt. Hood Wilderness

The Dollar Lake Fire BAER team evaluated the use of various aerially applied erosion control materials to reduce the amount of post-fire sediment yield in watersheds where critical beneficial uses were identified. The erosion control materials evaluated were wood straw, wood shreds produced from local slash piles, and certified weed free agricultural straw. Areas proposed for aerially applied erosion control materials were:

Clear Branch: 47 acres

Coe Branch: 249 acres

Ladd Creek: 165 acres.

The estimated cost of aerially applied straw was \$ 1200/acre, and wood straw/wood shreds about \$ 4,500/acre. Using the ERMiT model it was determined that applying either erosion control material would reduce surface erosion by about 80 % the first winter on the sites that were treated. However, since it was not possible (steep slopes, over 70 %) to treat all burned areas within the drainages, the overall sediment reduction was only 7 % in the Clear Branch, 13 % in the Coe Branch, and 21 % in Ladd Creek.

The BAER team presented their findings to the Forest Supervisor, Hood River District Ranger, and other staff on October 4, 2011. It was decided to not go forward with aerially applied erosion control work, due to the issues surrounding BAER treatments in wilderness, the cost of the treatments, the risk of introducing invasive plants into the wilderness through agricultural straw application, and that it was only possible to control a small percentage of the total modeled post fire sediment yield.

B. Emergency Treatment Objectives:

Reduce risk of damage to the Coe Creek water transmission line and bull trout habitat by creating a relief stream channel designed to carry a significant amount of high flow/flood water away from infrastructure (Middle Fork Irrigation District) as well as protect a weak stream bank that is prone to avulsion.

Reduce risk of damage to BPA tower by notifying the BPA by certified letter regarding the potential risk to the tower near the Red Hill Creek bridge site.

Evaluate the effectiveness of PAM-12⁷ (soil stabilization product) in comparison to wood straw mulch for post-fire soil stabilization on a total of approximately 16 acres of high burn severity soils immediately below the Mt. Hood Wilderness in the Coe Branch drainage.

Provide for the early detection of invasive non-native plants invading the burned area from adjacent populations or transported to the burned area by various fire-fighting equipment (dozers, trucks, etc.).

Ensure the safety of BAER implementation teams and the public by posting warning signs, removing hazard trees threatening BAER implementation personnel performing erosion control work to prevent further fire-related damage to the trail tread. Protect existing investment in the trail network by performing erosion control (water bars) work on steeper (> 5 % slope).

⁷ The PAM 12 Plus® granule is manufactured from recycled paper fiber that is combined with a patented polymer technology and agglomerated to form an engineered soil stabilization solution. The granule is designed to act as both a delivery mechanism and a visual tracer for the active ingredient that helps to manage and stabilize the soil. The versatile granule can be applied dry or hydraulically.

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

Land 50 % Channel 80 % Roads/Trails 30 % Protection/Safety N/A %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	75%	75 %	75 %
Channel	75 %	75 %	75 %
Roads/Trails	75 %	75 %	75 %
Protection/Safety	N/A	N/A	N/A

E. Cost of No-Action (Including Loss):_ To be determined

F. Cost of Selected Alternative (Including Loss):_ To be determined

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input type="checkbox"/> Range	<input checked="" type="checkbox"/> Meteorologist (consultant)
<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 checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS	

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Phone: 503-668-1780

FAX: _____

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:

Treatment #L1--Aerial Mulching (Wood Straw) and aerial PAM-12 application: Mulch approximately 6 acres with a high burn severity outside the Mt. Hood Wilderness on the upper slopes of the Coe Branch (below the Elk Cove trail) with wood straw (4 tons/acre), and apply PAM-12 (1/2 ton/acre) to approximately 10 acres immediately adjacent. The objective of this treatment is to evaluate the effectiveness of PAM-12 in comparison with woodstraw. The PAM-12 and wood straw would be applied on the same slope position and burn severity, making it possible to compare effectiveness. For treating a small number of acres, the cost of applying PAM-12 is approximately \$ 1,500/acre, in comparison to the cost of woodstraw which is about \$ 5,200/acre. If the PAM-12 treatment is effective, it would add an additional, cost effective, method of post-fire erosion control. If it is not possible to implement this project this fall, the need for this work will be re-evaluated in June/July 2012.

Cost:

Aerial Wood Straw application: \$ 31,200

Aerial PAM-12 application: \$ 15,000

Treatment #L2 --Invasive Plant Detection Surveys: Postfire assessments will ensure early detection and rapid response, prescribing subsequent treatment to control and prevent the spread of invasive non-native plants, including noxious weeds, in the Dollar Lake fire area. Invasive plants can be difficult and costly to control. Detection assessments are intended to reduce the postfire potential for significant increase in invasive plant populations that could spread into the burned area and quickly out-compete native vegetation, causing erosion problems in the future, displacing native plants, and degrading wildlife habitat. In order for native vegetation to establish successfully, invasive plant populations need to be located during the first three years after the fire in order to control their establishment and spread.

Conduct an invasive plant species detection assessment in along approximately 10 miles of fire line (including handline, dozer line, and hiking trails used for fire control) that are in close proximity to known knapweed populations, drop points, parking areas, sling spots, and medic sites. Detection assessments would be conducted to determine if treatment of invasive plants is warranted. If invasive plants are detected the first year, an invasive species emergency stabilization treatment and assessment plan would be submitted to request funding for any treatments possible to complete within one year of fire containment.

Cost: This detection assessment would take approximately one-two weeks to complete. The estimated cost to conduct surveys on the disturbed areas would be about \$10,000 (includes vehicles, personnel, and data management). Treatment costs vary, depending on method of control, with an approximate average of \$250.00 per acre.

Channel Treatments:

Treatment #C1--Water Transmission Line and Bull Trout Habitat

The purpose of the work described below is to create a relief stream channel designed to carry a significant amount of high flow/flood water away from infrastructure as well as protect a weak stream bank that is prone to avulsion. The need is to reduce the risk that flooding would result in damages to the Middle Fork Irrigation District (MFID) and Mt. Hood National Forest (MHNH) infrastructure and at the

same time reduce both short and long term impacts to ESA listed fish populations and habitat, most notably bull trout.

Proposed Action: The proposed action was arrived at by an iterative process that began with BAER team recommendations and then was commented on and modified by a group of stakeholders that included MHNH, MFID, Oregon Department of Fish and Wildlife, and U.S. Fish and Wildlife Service personnel. We believe that this proposal is the best alternative that addresses all the values at risk. Other alternatives considered either did not provide enough infrastructure risk reduction, were considered to be too much of an impact on the environmental values at risk (especially bull trout individuals and habitat), or some combination of both.

Relief stream channel: The existing Coe Branch channel alignment was created during a small (likely less than 5-year recurrence interval) flood event that occurred in January 2011. The channel avulsed from its previous location about 600 feet upstream of the forest road 2840 bridge and shifted to the west towards the MFID Coe diversion access road. After flowing for about 200 feet it shifted abruptly back to the east and rejoined the old channel about 300 feet upstream of the 2840 road.

The plan is to rough out a channel in the sediment plug that formed in January 2011 in the same alignment as the pre-flood channel. Channel dimension would match up and downstream conditions as much as possible – bank full width would be 20-25 feet and the channel would be 1-3 feet in depth. Excavation would be done with a track mounted excavator and would be completely “in the dry,” i.e. no in-water work or work within the ordinary high water channel would occur given the current location of the stream relative to the proposed relief channel. A small plug of sediment would be left at the upstream end (basically at the original avulsion point) but this plug will be designed to erode and fail as the water rises. Excavated sediment would be placed in a high, upland area between the existing and relief channels; no fill would be placed in the existing channel.

In addition, to further ensure that most of the high flows are routed down the relief channel as opposed to the existing channel large woody debris in the form of logs would be placed over the entrance of the existing channel and would extend west through the riparian area towards the MFID access road. This wood will be a combination of logs already present in the sediment plug and some brought from a nearby off-site source. Twenty logs would be used for this portion of the project but only portions of four logs would be placed within the ordinary high water portion of the existing channel.

Stream bank protection: The weak point of the existing channel where an avulsion is most likely is located at the bend where the channel shifts abruptly back to the east. This is also at the head of an existing swale, or low point, located in the uplands but that would readily carry flood waters directly towards MFID infrastructure. To provide additional protection to this corner and further minimize the risk of channel avulsion about ten logs would be placed to increase stream bank, floodplain, and upland roughness. Of these ten logs only three would have portions within the existing ordinary high water channel. Logs would be placed by an excavator. Some existing trees located near the corner would need to be felled to provide safe operating space for the excavator. The number of trees to be felled is approximately 5 but that number is an estimate. Trees won't be felled until the excavator is on-site so that only those absolutely necessary for removal are felled. Felled trees would be utilized as part of the bank and floodplain protection.

Cost - \$ 22,600

Trail Treatments:

Purpose: Implement actions to minimize fire-related surface erosion on the Elk Cove, Mazama, Pinnacle Ridge, Timberline, and Vista Ridge trails, and provide for the safe implementation of the BAER erosion control treatments by removing hazard trees. To be most effective this work needs to be completed prior to the first damage producing storm.

Treatment #T1—Reconstruct/Construct Trail Drainage Structures: Implement erosion control Work (water bars, etc.) on approximately 8 miles of trail to reduce the potential for the concentration of water flow and accelerated surface erosion resulting from the increased runoff caused by intense fire effects (this includes portions of trails that are in the high and moderate burn severity areas). The amount of erosion control work will be the minimum needed to prevent further fire-related runoff damage to the existing trails.

Treatment #T2– Trail Hazard Tree Abatement: Remove the minimum number of high hazard trees along trails (including ingress and egress to sites for treatment #S1) prior to commencing Treatment #T1, to provide for the safety of BAER implementation personnel and crews.

Treatment #T3–Hazard warning signs, public information: Install hazard signs, produce information packages and send press releases to inform the public of hazards and any trail closures related to the Dollar Lake fire.

Treatment	Units	Cost/Unit	Miles	Cost
#T1, Trail erosion control	miles	\$4500	8	\$36,000
#T2, Hazard tree removal	miles	\$6,000 ⁸	8	\$48,000
#T3, Hazard warning signs	each	\$3,000	1	\$3,000

⁸ Cost assumes cross-cut saws will need to be used in Wilderness. If chainsaws are allowed the cost will be \$ 2,000/acre.

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.)

Coe Branch In-channel work:

The response of the area to winter and spring flows will be assessed in late spring of 2012, in the two following years, and in following years as required. Depending on the response and/or flows received the MHNH may recommend additional measures and/or maintenance to ensure the values at risk continue to be protected. Any recommendations would be routed to the stakeholders involved in the current proposal development (and any others as needed) for review and comment.

If further work is required the proposal would be routed through all required agencies such as Oregon Department of State Lands, Army Corps of Engineers, and the regulatory agencies for appropriate review and approval. If any additional work is required it would be planned for the normal in-water work window between July 15 and August 15.

The estimated cost of monitoring for the period of 2012 thru 2014 is approximately \$ 1200/year, or a total of \$ 3,600.

Aerial PAM-12 and Woodstraw mulching:

This work will be monitored by field visits in 2012 and 2013 to evaluate the effectiveness of each treatment. The estimated cost per year is \$ 1000, for a total cost of \$ 2,000. A report with photographs will be written documenting each annual field monitoring visit.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim # 1

			NFS Land s				Other Land s			All
		Unit	# of	WFSU	Other				Non Fed	Total
Line Items	Units	Cost	Units	SULT \$	\$		# of unit s	Fed \$	# of Unit s	\$
A. Land Treatments										
#L1 Aerial Treatments										
Woodstraw	Acres	\$5,200	6	\$31,200	\$0			\$0		\$ 31,200
PAM-12	Acres	\$ 1,500	10	\$ 15,000	\$0			\$0		\$ 15,000
#L2 Invasive Plants	Each	\$10,000	1	\$10,000						\$10,000
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0
<i>Subtotal Land Treatments</i>				\$0	\$0			\$0		\$0
B. Channel Treatments										
#C1 MFID Pipeline	each	\$22,600	1	\$ 22,600	\$0			\$0		\$ 22,600
& Bull Trout habitat				\$0	\$0			\$0		\$0
				\$0	\$0			\$0		\$0
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0			\$0		\$0
C. Road and Trails										
#T1 Trail Erosion Control	Miles	\$ 4,500	8	\$ 36,000	\$0			\$0		\$ 36,000
#T2 Hazard Tree Removal	Miles	\$ 8,000	4	\$ 32,000	\$0			\$0		\$ 32,000
#T3 Hazard Signs	Each	\$ 3,000	1	\$ 3,000	\$0			\$0		\$ 3,000
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0
<i>Subtotal Road & Trails</i>				\$0	\$0			\$0		\$0
D. Structures										
				\$0	\$0			\$0		\$0
				\$0	\$0			\$0		\$0
				\$0	\$0			\$0		\$0
<i>Insert new items above this line!</i>				\$0	\$0			\$0		\$0
<i>Subtotal Structures</i>				\$0	\$0			\$0		\$0
E. BAER Evaluation										
BAER assessment	each	\$ 53,000		\$0	\$0			\$0		\$0
				\$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										
Coe Channel Work	each			\$ 3,600	\$0			\$0		\$ 3,600
Aerial Mulching	each			\$ 2,000				\$0		\$ 2,000
<i>Subtotal Monitoring</i>				\$0	\$0			\$0		\$0
G. Totals				\$ 155,400	\$0			\$0		\$155,400

