

Date of Report: 12/6/2010

BURNED-AREA REPORT
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST**

A. Type of Report

- ☒ 1. Funding request for estimated emergency stabilization funds (except for invasive plant surveys)
☐ 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: Pyramid/Mt. Jefferson Fire B. Fire Number: OR-MHF-000233
C. State: Oregon D. County: Marion/Clackamas
E. Region: 6 F. Forest: Mt. Hood National Forest
G. District: Clackamas River H. Fire Incident Job Code: P6FR3R
I. Date Fire Started: 8/17/2010 (lightning) J. Date Fire Contained: 10/12/2010
 (Fire staff declared on 11/2/10 that the fire had actually been contained on 10/12/10)
K. Suppression Cost: \$ 2,772,228
L. Fire Suppression Damages Repaired with Suppression Funds
 1. Fireline waterbarred (miles): 8 miles (waterbarred where needed)
 2. Fireline seeded (miles): none
 3. Other (identify):
M. Watershed Number: Upper Clackamas River (1709001102), Breitenbush River (1709000501)
N. Total Acres Burned: 1760 wilderness acres: 1496 non-wilderness acres: 264
 NFS Acres(1668) Other Federal (Warm Springs) (92) State () Private ()
O. Vegetation Types: Pacific Silver Fir and Mountain Hemlock Zones.
P. Dominant Soils: cobbly and gravelly fine sandy loam, cobbly sandy loam, and cobbly loam

Q. Geologic Types:

The Pyramid Butte fire occurred in an area that is within the High Cascades Physiographic Province. Most of the bedrock in this area is young volcanic rocks primarily consisting of basalt lava flows with minor pyroclastic flows. The only other major geologic unit in this area is upland glacial till deposits. Three landform types are present. The steep valley walls of the South Fork North Fork Breitenbush River valley are a product of glacial and fluvial erosion. Creek channels in this area tend to be short, straight, very steep, and moderately incised. Northeast of an imaginary line connecting Davey Lake and Pyramid Lake, the ground surface is covered by glacial till deposits or very young lava flows. This gentle-sloping surface has poorly developed drainages. Pyramid Butte is a recent cinder cone and has almost no developed drainages.

R. Miles of Stream Channels by Order or Class: perennial: 4.6 , intermittent: 10.9

S. Transportation System

Trails: 1.7 miles Roads: 1.0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 641 (unburned*) 192 (low) 526 (moderate) 402 (high)

*note: these acres are shown as unburned in BARC, but many areas had ground fires which were not picked up by Landsat.

B. Water-Repellent Soil (acres): unknown

C. Soil Erosion Hazard Rating (acres):
1140 (low) 336 (moderate) 2 (high)

D. Erosion Potential: 10-36 tons/acre (delivered) (ERMIT model)

E. Sediment Potential: 6400 – 23,040 cubic yards / square mile (delivered) (ERMIT model)

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): n/a (no road major drainage structures threatened)

C. Equivalent Design Recurrence Interval, (years): 2¹

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 3.4 inches

F. Design Flow, (cubic feet / second/ square mile): 29- 32 csm (USGS Streamstats)

G. Estimated Reduction in Infiltration, (percent): 5-50 %

H. Adjusted Design Flow, (cfs per square mile): 31.1 to 45 csm²

¹ 2 year recurrence interval selected because of high likelihood of a 2 year flood occurring soon after the fire.

² Estimated Streamstats streamflow modified by percent of watershed in high/moderate burn severity, and adjusted for estimated post-fire bulking with sediment/woody debris.

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Invasive Plants

Spotted and diffuse knapweed, Butter & Eggs, Spotted and diffuse knapweed, Canada Thistle, Bull Thistle, St. John's Wort, Scotch Broom, Tansy Ragwort, hairy cat's ear, and orange hawkweed may be present in the vicinity of various portions of the fire area. Crew carriers, other vehicles, equipment, and handcrews used to fight the fire may have spread invasive plant seeds within the fire area, or transported and introduced invasive plant 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 invasive non-native plants not currently growing in the vicinity of the Pyramid/Jefferson fire. Prevention measures have included checking equipment to make sure it is clean before entering the fire area. If invasive plants are found during surveys, postfire control measures of invasive plants next spring may include manual (handpulling), mechanical (mowing), and/or chemical (herbicide) treatment (wherever permitted).

Geologic Hazards/Slope Stability – Potential Effects on Trails and Water Quality

Debris Flow Potential

Debris flows are a type of landslide that typically occurs in a confined creek channel. Debris flows are mixtures of soil, rock, and water with the consistency of very wet concrete mix. They are capable of traveling many miles if the channel geometry allows. Debris flows can initiate from hillslope landslides that reach the channel and then transform into debris flows, or from the mobilization of channel material in very steep confined channels. Usually debris flows initiate during intense rainfall events.

Debris flows can incorporate downed logs and knock over trees, sometimes creating log jams that may temporarily dam the channel. A dam-burst can restart the debris flow.

On the Debris Flow Potential Map all possible debris flow channels have been color coded to indicate those channel segments with the potential to experience in-channel debris flow initiation (red), scour (blue), transport (yellow), and deposition (green). A channel segment in the transport zone will experience extensive movement of channel material but no net loss in the volume of that material.

Aerial photos (2004) of this area indicate that debris flows have occurred recently in "South Babe Lake" Creek and in at least 2 of the short straight and steep channels on the east slope of the South Fork North Fork Breitenbush River valley.

Debris Flow Hazard Evaluation

Several factors can be evaluated to assess the relative debris flow hazard of creek channels within the Pyramid Butte fire perimeter.

1. Channel length (feet) within initiation zone (steeper than 36%) (**IZ**)
2. Channel length (feet) within scour zone (steeper than 18%) (**SZ**)
3. Number of channel heads (**CH**)
4. Channel length (feet) within high burn severity (**HB**)
5. Channel length (feet) within moderate burn severity (**MB**)

More channel heads and longer potential debris flow channel lengths suggest a greater hazard for debris flows at the channel mouth or at any other evaluated point along the channel. Debris flows often initiate at channel heads from small debris slides in the adjacent hillslopes that deliver sediment into the channel. The longer the channel length, the more likely some log and sediment jam can temporarily dam the channel. If the jam were

to burst, then a debris flow could result. If adjacent hillslopes have had their vegetation and root structure destroyed by the fire, then the potential for a debris flow increases.

The landform types and channel geometry within two of the Pyramid Butte fire polygons, PB2 and PB3, are such that fire-enhanced debris flows are very unlikely.

The highest likelihood of fire-enhanced debris flows are in the numerous channels that have developed in the steep valley sidewalls of the South Fork North Fork Breitenbush River valley, located in the PB1 fire polygon. These channels are all steep enough to host debris flows but many are not very confined, are short in length, and have only one or two channel heads. In addition, many of these channels empty onto a relatively flat valley floor. These conditions together result in a moderate potential for small debris flows that deposit coarse materials onto the valley floor and deliver some fine material to the South Fork North Fork Breitenbush River. Only a few channels have the length, confinement, and number of channel heads to be considered as high-hazard debris flow channels.

The most hazardous channels (most likely to host a fire-enhanced debris flow) within the Pyramid Butte fire perimeter are listed below. This evaluation was made by a slope stability specialist using the 5 factors listed above. The channels are listed in the approximate order of debris flow hazard beginning with the highest hazard. Only those channels with a relatively high hazard are listed. Many creeks within the fire perimeter are unnamed. Creek names that are in quotes in the table below are assumed names based on nearby geographic features. Each listed channel includes all tributaries to that channel that are within the fire perimeter.

Channel name	IZ	SZ	CH	HB	MB	Trail Crossings at Risk
"South Babe Lake"	20500	4800	19	12000	7400	none
"Northwest Davey Lake"	2000	3300	6	2400	1300	none
"South Davey Lake"	2800	1200	4	1600	1800	none

Resources at Risk

Roads and Trails:

Roads: Only a few roads are within or immediately downstream from the fire perimeter. No road/creek crossings are at risk from fire-enhanced debris flows or other flood flows bulked with sediment/debris.

Trails: No trail/creek crossings are at high risk from fire-enhanced debris flows within the Pyramid Butte fire perimeter. The Pacific Crest Trail (PCT) crosses 9 channels that are debris flow prone; however, these crossings are at high elevation, with not much channel length above the crossing. Also, these channels are single-headed channels.

Trails, including the PCT were evaluated, were to determine if erosion control was needed to prevent further damage from fire-related runoff. Resource specialists determined the erosion control measures implemented following fire suppression activities would be sufficient for the time being to protect the trail. Additional National Fire plan funds will be requested to repair damaged trail tread and fall hazard trees. Signs were posted to temporarily close the trail to the public.

Water Quality: Water quality can be adversely affected by debris flows that transport large quantities of fine sediment. Most of the streams considered here are ultimately tributaries to the South Fork of the North Fork Breitenbush River, which in turn is a tributary of the North Fork Santiam River.

Salem and eight other communities draw from streams in the North Santiam River Watershed as their primary drinking water source. Water flowing from the North Santiam River Watershed is normally of very high quality.

Fairly large amounts of fine sediment from the burned area can be expected to reach the South Fork of the North Fork Breitenbush River, but water quality downstream in the North Santiam River is not expected to be measurably affected during peak runoff periods. If a debris flow originates in the burned area, the potential affect to water quality may be more significant. Water providers downstream should be notified of the potential for some post fire debris flows in the burned area.

Soils: Some significant surface soil erosion is expected during the first several winters in the Mt. Jefferson Wilderness portion of the burn where burn severity was moderate or high, and surface soil erosion hazard was moderate to severe. No BAER treatment measures are planned, however, because most of the burned area is in Mt. Jefferson Wilderness, and no downstream life or property are threatened.

The area outside of the Mt. Jefferson Wilderness (264 acres, including 92 acres in Warm Springs) is on gentler terrain, and where the fire burned up to a lake or stream, the potential for sediment delivery is relatively low because of gentle slopes, and frequent unburned vegetative buffers adjacent to the water body. Burn severity in the non-wilderness portion of the fire was low to moderate. Field surveys made during the BAER assessment confirmed it would be best to let the non-wilderness portion of the area recovery naturally, due to high cost of aerially applied BAER treatments, and the low risk of resource damage.

B. Emergency Treatment Objectives:

No emergency BAER treatments, other than invasive plant surveys, are planned to minimize surface erosion because most of the Bull of the Woods Fire area is in wilderness where no BAER activities are permitted unless life or property are threatened.

The objective of invasive plant surveys is to detect fire-suppression related invasive plant infestations early so they can be treated.

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

Land ___ % Channel ___ % Roads/Trails ___ % Protection/Safety ___ %

D. Probability of Treatment Success **(N/A)**

	Years after Treatment		
	1	3	5
Land			
Channel			
Roads/Trails			
Protection/Safety			

E. Cost of No-Action (Including Loss): **N/A**

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

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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.)

Invasive Species Surveys:

Sites used by fire staff for lookouts, drop points, etc. will be surveyed next spring for invasive plants that may have been brought in by fire personnel, and their vehicles and equipment. Approximately 22 miles of roadsides treated with a masticator will be surveyed for invasive plants that may have been brought in by the equipment.

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

Interim #

			NFS Lands				Other Lands			All
		Unit	# of		Other		Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$		\$	Units	\$	\$
A. Land Treatments										
Invasive Plant Surveys	1	\$2,000	1	\$2,000	\$0		\$0		\$0	\$2,000
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Land Treatments				\$2,000	\$0		\$0		\$0	\$2,000
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treat.				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Road & Trails				\$0	\$0		\$0		\$0	\$0
D. Protection/Safety										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Structures				\$0	\$0		\$0		\$0	\$0
E. BAER Evaluation					3240					
				---			\$0		\$0	\$0
Insert new items above this line!				---	\$0		\$0		\$0	\$0
Subtotal Evaluation				---	\$0		\$0		\$0	\$0
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
Insert new items above this line!				\$0	\$0		\$0		\$0	\$0
Subtotal Monitoring				\$0	\$0		\$0		\$0	\$0
G. Totals				\$2,000	\$0		\$0		\$0	\$2,000
Previously approved										
Total for this request				\$2,000	\$3,240					\$5,240

PART VII - APPROVALS

1. /s/ Kathryn J. Silverman for
Forest Supervisor (signature)

12/10/2010
Date

2. _____
Regional Forester (signature)

Date