Downey Creek Fire 2020

Picture of the Sulfur Creek side of Downey Mountain

Date of Report: November 20, 2020

BURNED-AREA REPORT

PART I - TYPE OF REQUEST

A. Type of Report

☒ 1. Funding request for estimated emergency stabilization funds

☐ 2. No Treatment Recommendation

B. Type of Action

☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

☐ 2. Interim Request #___

☐ Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Downey Creek

B. Fire Number: 2020-WA-MSF-000165

C. State: Washington

D. County: Snohomish

E. Region: 06 – Pacific Northwest

F. Forest: 05 – Mt. Baker-Snoqualmie NF

G. District: Darrington RD

H. Fire Incident Job Code: P6NFQ0

I. Date Fire Started: August 16, 2020

J. Date Fire Contained: October 30, 2020

K. Suppression Cost: $200,000 (estimated; from WFDSS Decision)

L. Fire Suppression Damages Repaired with Suppression Funds (estimates):

1. **Fireline repaired (miles):** 0
2. **Other (identify):** 0

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
171100060203	Sulphur Creek	19,887	1,310	6.6%
171100060204	Downey Creek	22,351	510	2.3%
171100060205	Milk Creek-Suiattle River	19,583	823	4.2%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	2,644
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0
PRIVATE	0
TOTAL	2,644

O. Vegetation Types:

Douglas-fir, Grand Fir, Mountain Hemlock, Pacfic Fir, Parkland, Subalpine Fir, and Western Hemlock.

P. Dominant Soils:

The soils within the Downey Creek Fire perimeter are dominated by a colluvium composed primarily of basaltic and andesitic parent materials, mixed with volcanic ash. These parent materials take the forms of lava flows, volcanic necks, and pyroclastic materials. Lava flows and volcanic necks form resistant features and outcrops, as they are generally fine-grained and competent, whereas pyroclastics have little resistance to weathering and tend to form unstable soils. The largest areas of contiguous soils are derived from ash and cinder deposits, generally from Glacier Peak eruptions. Soil surveys and general soil maps maintained by the Natural Resources Conservation Services (NRCS) web soil survey provided soil properties necessary for analysis. Dominant soils are Typic Vitricryands and Nimue loamy sand.

Q. Geologic Types:

The majority of the geology within the Downey Creek fire formed 5 to 23 million years ago (mya). Much of the lithology consists of volcanic rocks and deposits as well as lava and andesite flows. These areas are dominated by the Fifes Peak Formation (Tabor et al., 2006). A smaller portion of the fire contains Oligocene (23 to 33 mya) volcanic rocks dominated by the Ohanapecosh Formation (Fiske et al., 1963). Additional geology in the area consists of volcanic rocks of Huckleberry Mountain (Frizzell and others, 1984), tuffaceous rocks (Swanson, 1978), and sandstone (Swanson, 1978). A smaller portion of the fire area consists of nonglacial Quaternary alluvium and landslide deposits.

R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	1.3
INTERMITTENT	1.8
EPHEMERAL	3.1
OTHER (DEFINE)	0

S. **Transportation System:**
Trails: *National Forest (miles):* 2.39 *Other (miles):* 0
Roads: *National Forest (miles):* 0.73 *Other (miles):* 0

PART III - WATERSHED CONDITION

A. Burn Severity (acres): All references to soil burn severity observations, effects, and ground conditions associated with the Downey Creek Fire are based on the modified BARC and not on a final ground truthed soil burn severity model.

Table 4: Modified BARC in lieu of Soil Burn Severity, Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	1,153				1,153	44%
Low	531				531	20%
Moderate	461				461	17%
High	499				499	19%
Total	2,644				2,644	100%

B. Water-Repellent Soil (acres):

The extent of water repellent soils is estimated to be at least 480 acres for the Downey Creek Fire or 50% of the moderate and high soil burn severity areas.

C. Soil Erosion Hazard Rating:

Approximately 437 acres of low (16%); 127 acres of moderate (5%); and 2,081 acres of high (79%) erosion hazard risk were estimated for the Downey Creek Fire.

D. Erosion Potential:

No model runs completed for the Downey Creek Fire due to minimal level of critical values.

E. Sediment Potential:

No model runs completed for the Downey Creek Fire due to minimal level of critical values.

F. Estimated Vegetative Recovery Period (years):

Vegetation recovery will vary depending on plant association group, soil type, aspect, and soil burn severity. Areas that burned at a low soil burn severity will generally recover within the first two years. Areas that burned with moderate soil burn severity may recover the shrub layer, for the most part, in 3-5 years with canopy formation occurring much later. For sites with high soil burn severity and full vegetative stand replacement, recovery may take decades.

G. Estimated Hydrologic Response (brief description):

The Downey Creek Fire is within the Sulphur Creek, Downey Creek, and Milk Creek-Suiattle River 6th Field Subwatersheds (HUC 12). These drainages are all tributaries to the Suiattle River which is located south western edge of the burn area. The Suiattle River then flows approximately 20 miles downstream into the Sauk River, then the Skagit River, which is a tributary to the Puget Sound. Most of the high soil burn severity where we are expecting the greatest increases in flows are within the Sulphur Creek subwatershed.

Elevations of the burn area perimeter ranges from approximately 1,500 feet above mean sea level where Downey Creek meets the Suiattle River to 5,924 feet at Downey Mountain. Annual precipitation is approximately 81 inches throughout the analysis area with most of the precipitation from October through April from large frontal systems that tend to be lower intensity, longer duration, and larger in geographic extent. Snowpack accumulates in the high portions of the fire area.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Downey Creek Fire was discovered on August 16th, after an atfernoon thunderstorm. Most of the Downey Creek Fire is located within the Glacier Peak Wilderness. Most of the fire's growth occurred during a east wind event during the week of September 6th. The BARC imagery was taken on October 13th, 2020. The Downey Creek Fire was called contained on October 30, 2020 after fall storm events in the area. The Mt. Baker-Snoqualmie National Forest BAER team began their assessment on October 30th. Due to minimal amount of critical values determined in the Downey Creek Fire and the inability to collect soil burn field data over the majority of the fire area due to the fire's remote location and weather conditions, the team chose to accept the BARC as the final soil burn severity map. Human life and safety and one trail were determined to be critical values and were analyzed by the critical value matrix (table 5).

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

Table 5: Critical Value Matrix

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	RISK		
Very Likely	**Very High**	**Very High**	**Low**
Likely	**Very High**	**High**	**Low**
Possible	**High**	**Intermediate**	**Low**
Unlikely	**Intermediate**	**Low**	**Very Low**

1. Human Life and Safety (HLS):

The Suiattle Road is an important access point into the Glacier Peak Wilderness. Based on the potential for flooding, sediment laden flows, rock falls, hazard tree danger, etc., the BAER team identified a **high risk** for human life and safety of the public and USFS employees within the burn area. There is a **possibility** of flooding and hazard trees with **major** consequences to human life and safety.

2. Property (P):

There are three trails located within and affected by the Downey Creek Fire. This is a section of the Pacific Crest Trail (8.7 miles) of the PCT are within the burned area and portions of the trail will possibly be damaged by increased overland and debris flows where modified BARC indicates soil burn severity was moderate. Watershed effects are considered possible and the magnitude of consequence is moderate due to the threat of rockfall/debris flow causing serious injury/loss of life on this popular trail. Overall risk is intermediate and mitigation treatments are proposed.

3. Natural Resources (NR):

A quick assessment by the BAER Team members determined there were no BAER critical values for NR that were under imminent threat from post-fire effects from the Downey Creek Fire.

4. Cultural and Heritage Resources:

A quick assessment by the BAER Team members determined there were no BAER cultural critical values that were under imminent threat from post-fire effects from the Downey Creek Fire.

B. Emergency Treatment Objectives:

Proposed Land Treatments: None Proposed

Proposed Channel Treatments: None Proposed

Proposed Trail Treatments: Protect trail investment from damage or loss due to increased post-fire runoff and erosion.

Proposed Protection/Safety Treatments: Protect human life and safety by raising awareness through posting a hazard warning sign as Forest Users enter the burned area on Forest Service Road 26. This sign will warn Forest Users of potential hazards resulting from post-fire conditions.

C. Probability of Completing Treatment Prior to Damaging Storm or Event: (in 2021)
Land: N/A
Channel: N/A
Roads/Trails: 90%
Protection/Safety: 90%

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	*3 years after treatment*	*5 years after treatment*
Land	N/A	N/A	N/A
Channel	N/A	N/A	N/A
Roads/Trails	80	90	95
Protection/Safety	95	95	95

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

F. Cost of Selected Alternative (Including Loss):

G. Skills Represented on Burned-Area Survey Team:

☐ Soils ☒ Hydrology ☒ Engineering ☐ GIS ☒ Archaeology
☐ Weeds ☒ Recreation ☐ Fisheries ☐ Wildlife
☐ Other:

Team Leader: Christopher Stewart
Email: christopher.s.stewart@usda.gov **Phone(s):** 360-746-4251

Forest BAER Coordinator: Christopher Stewart
Email: christopher.s.stewart@usda.gov **Phone(s):** 360-746-4251

Team Members: *Table 7: BAER Team Members by Skill*

Skill	**Team Member Name**
Team Lead(s)	Chris Stewart
Soils	
Hydrology	Andrew Montgomery
Engineering	Santino Pascua
GIS	
Archaeology	Paul Alford
Weeds	
Recreation	Bridget Wisniewski
Other	

H. Treatment Narrative:

Land Treatments: None Proposed

Channel Treatments: None Proposed

Roads and Trail Treatments:

Trail Stormproofing: 0.85 miles of trail require drainage treatments due to increased water compromising the trail tread where it crosses through and immediately below moderate and high soil burn severity (SBS). Note that the SBS map, which was taken directly off the BARC due to timing and access constraints. Work will include installing drainage (rolling grade dips, grade reversals, nicks), waterbars (only where necessary), armoring drainage crossings, restoring out-sloping, and snagging trees as appropriate for worker safety.

Treatment	Units	# of Units	Unit Cost	Total Cost
Trail Stormproofing Sulfur Creek Trail # 793	Miles	0.85	$5,890/mile	$5,007
Total:		0.85		$5,007

Protection/Safety Treatments:

Road Hazard Sign: This cost estimate is for placing a hazard related sign on FSR 26 as Forest Users enter the burn area to notify them of post fire hazards.

Treatment	Units	# of Units	Unit Cost	Total Cost
Installation of warning sign	Sign/Posts	1	750	$750
Total:				$750

I. Monitoring Narrative: None Proposed

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Line Items	Units	Unit Cost	# of Units	BAER $	Other $	# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$0	$0		$0		$0	$0
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treatments				$0	$0		$0		$0	$0
C. Road and Trails										
Trail Stormproofing				$5,007	$0		$0		$0	$5,007
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road and Trails				$5,007	$0		$0		$0	$5,007
D. Protection/Safety										
Road Hazard Sign				$750	$0		$0		$0	$750
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$750	$0		$0		$0	$750
E. BAER Evaluation										
Initial Assessment	Report			$800	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				$800	$0		$0		$0	$0
F. Monitoring										
				$0	$0		$0		$0	$0
				$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				$6,557	$0		**$0**		**$0**	**$5,757**
Previously approved										
Total for this request				**$6,557**						

PART VII - APPROVALS

1. JODY WEIL Digitally signed by JODY WEIL Date: 2020.11.20 10:43:13 -08'00' 11/20/20

Forest Supervisor Date

Appendix: Maps

Figure 1: Downey Creek Fire Modified BARC Map

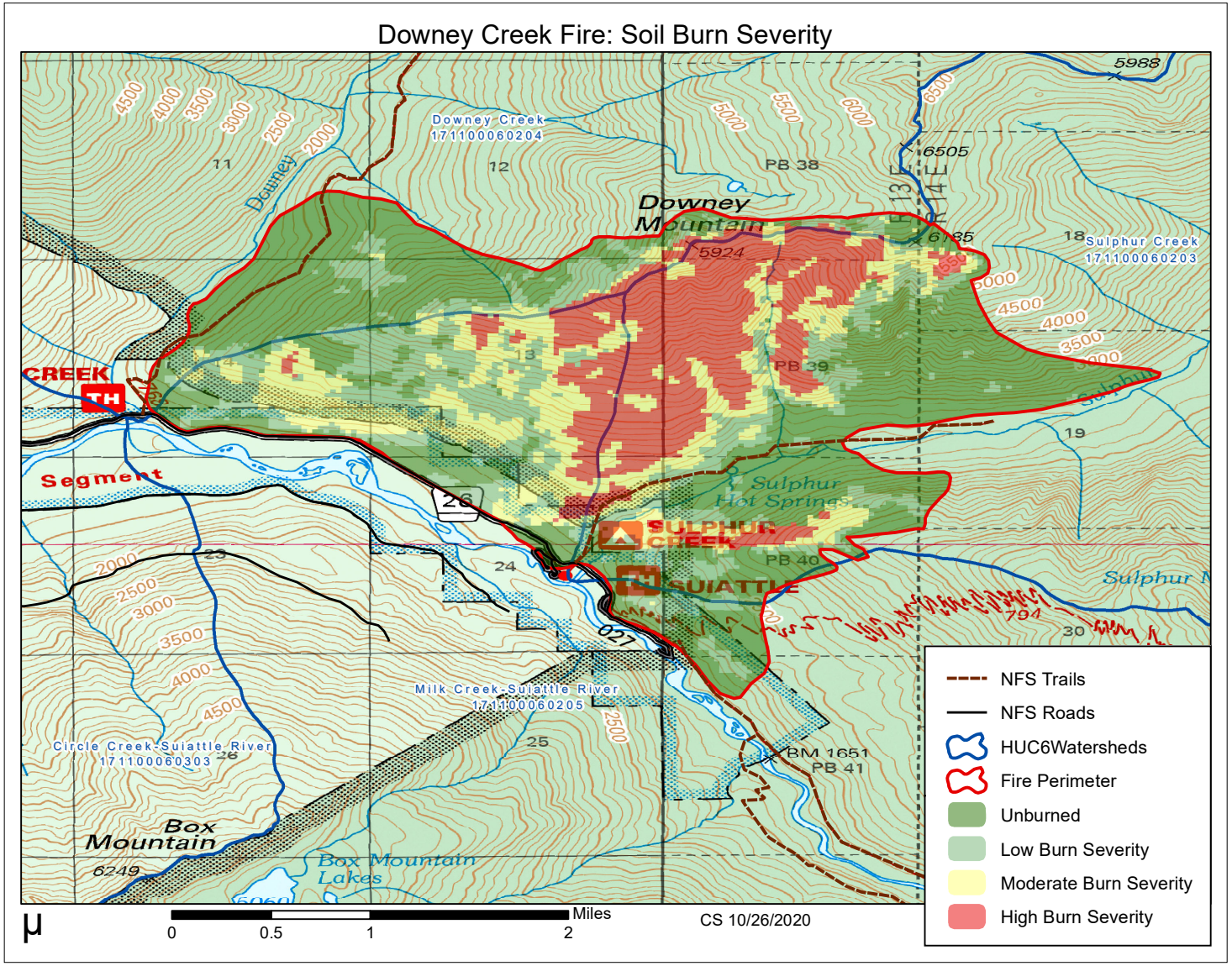

Figure 2: Downey Creek Proposed Treatments