Date of Report: 9/27/2019

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: Swan Lake

B. Fire Number: AK-KKS-903181

C. State: AK

D. County: Kenai Peninsula

E. Region: R10 - Alaska

F. Forest: Chugach

G. District: Seward

H. Fire Incident Job Code: PNL92Q

I. Date Fire Started: June 5, 2019

J. Date Fire Contained: Estimated 10/1/2019

K. Suppression Cost: $47,500,000 as of 9/24/2019

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

FireLine Repair Status in Miles

Sum of Miles	Repair Status							
Fire Line Type	Completed - Inspected	Completed - Ready for Inspection	In Progress	In Use - Fire Management	Other - See Comments	Repair Needed	Unknown	Grand Total
Access or Improved Road	26.0		3.5	0.2		17.9	0.5	48.1
Completed Dozer Line	34.8		0.3		18.6	52.3	1.9	107.9
Completed Hand Line	24.2			0.6		14.6	16.5	55.9
Completed Line							106.7	106.7
Line Break Completed							0.2	0.2
Other	4.1	6.8	10.2			9.2		30.3
Planned Fire Line	1.9							1.9
Planned Secondary Line	0.2							0.2
Repair Line	29.9					24.4	0.5	54.8
Road as Completed Line	2.6		6.6			9.4	2.2	20.8
Road Repair	0.3					4.8	6.0	11.1
Uncontrolled Fire Edge							379.4	379.4
Grand Total	**124.1**	**6.8**	**20.6**	**0.8**	**18.6**	**132.6**	**513.9**	**817.3**

M. Watershed Numbers:

Subwatershed Name	Total Subwatershed Acres	% Burned	Other Federal Acres	Chugach National Forest	Grand Total
190203020604	11,058	90%	9,952		9,952
Beck Lake	24,682	45%	11,091		11,091
East Fork Moose River	26,904	73%	19,561		19,561
Headwaters Mystery Creek	14,758	72%	10,119	447	10,566
Hidden Lake-Hidden Creek	16,947	62%	10,551		10,551
Jean Creek-Kenai River	31,462	37%	11,713		11,713
Juneau Creek	34,990	9%		3,147	3,147
Middle Chickaloon River	17,866	0%	2		2
Middle Moose River	36,103	72%	26,123		26,123
Muskrat Lake	17,793	41%	7,255		7,255
Outlet Mystery Creek	27,784	56%	15,475		15,475
Skilak Lake	72,794	7%	5,338		5,338
Thurman Creek	12,800	96%	8,141	4,145	12,285
Torpedo Lake-Kenai River	28,706	0%	28		28
Upper Chickaloon River	30,581	37%	7,414	3,816	11,230
Upper Moose River	25,761	50%	12,855		12,855
Grand Total	**9,954,837**	**0**	**155,618**	**11,554**	**167,172**

N. Total Acres Burned: 167,172 total acres

NFS Acres (11,554) BLM (0) Other Federal (155,618) Private (0)

O. Vegetation Types: The burn area is characterized by mixed hardwood forest composed of birch, aspen and Lutz spruce with a shrubby understory of willow, Sitka alder and rusty menziesia. Gaining elevation, the forest changes to Lutz spruce/ mountain hemlock stands with areas of subalpine vegetation.

P. Dominant Soils: Glacial deposits range widely in texture and are overlain by well to poorly drained silt loams. Peatland soils (histosols) occupy the depressions. Gravelly till and outwash are overlain by shallow to moderately deep silty soils (inceptisols and spodisols). Steep mountain sides are mantled by thin erosive soils (inceptisols).

Q. Geologic Types: The Kenai mountains in the fire area are composed primarily of, or underlain by, folded and faulted, weakly metamorphosed shales, greywackes, and volcanics of Mesozoic age (Valdez Formation). Glacial deposits mantle the valley bottoms.

R. Miles of Stream Channels by Order or Class: 247.9 miles

S. Transportation System

FS Trails: 2.4 miles **Other Agency:** 18.3 miles **Total Trails** 20.7 miles

FS Roads: 0 miles **Other Agency:** 35.3 **Total Miles:** 35.3

PART III - WATERSHED CONDITION

A. **Burn Severity (acres):** Due to cloud cover, satellite imagery could not be contained in order to create BARC imagery, and with limited access to the fire area, soil burn severity was not mapped with traditional methods. From helicopter flights, it was estimated that less than 1% of the FS acres were high burn severity, less than 10% in moderate burn severity, 60% in low burn severity, and the rest in very low severity or unburned.

B. **Water-Repellent Soil (acres):** Water repellency was not field verified. Several light rains have impacted the fire area and likely lessened any fire induced water repellency.

C. Soil Erosion Hazard Rating: Soil erosion hazard is not mapped for the burn area. In general the thin higher elevation soils would be more susceptible to erosion than the lowland glacial till and wetland soils.

D. Erosion Potential: Not estimated**Sediment Potential:** Not estimated

F. Estimated Vegetative Recovery Period (years): lower elevation forests and shrublands 5-15 years, high elevation subalpine systems 10-20 years – higher burn severities might take longer to recover

G. Estimated Hydrologic Response (brief description): The Forest Service (FS) portion of the Swan Lake Fire burned primarily within the Thurman Creek watershed (tributary to Chickaloon River), as well as in the Juneau Creek drainage (tributary to the Kenai River) and small unnamed tributaries to the Chickaloon River. Post-fire watershed response in the FS portion of the Swan Lake Fire is expected to consist primarily of an initial flush of ash in streams draining burned hillslopes, and localized erosion where soils are exposed, especially on steeper slopes. Stream flow response to precipitation and snowmelt is not expected to change appreciably from pre-fire conditions. The probability of elevated erosion will reduce as vegetation is reestablished, restoring ground cover, infiltration and surface roughness. The relatively muted hydrologic response expected in this area is due to low soil burn severity, the complex mosaic pattern of burned and unburned ground, and the gentle gradient of much of the topography.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Swan Lake Fire was ignited by lightning on June 5, 2019, in a remote area of the Kenai National Wildlife Refuge Wilderness located approximately five miles northeast of Sterling, Alaska. The 167,164 - acre perimeter fire burned predominantly on National Wildlife Refuge with only approximately 12,000 acres burning to the west on Chugach National Forest lands. Overall the burn was mosaic in nature with patches of burned and unburned fuels.

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

Table 1: 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):**
   a. Potential threats to visitors/recreating public and agency personnel include hazard trees and hillslope erosion along trails and at developed recreation sites or dispersed areas that are within or downstream/downslope of areas that burned at moderate severity. The risk to human life and safety of the public and agency personnel staying at or working around any of the three FS cabins or the developed recreation sites within the burned area was judged to be **Very High Risk** (very likely, major magnitude of consequences), due to the number of fire-damaged trees likely to fall over the next few years. The same risk was judged to exist where an old latrine pit was exposed due to the burning of the wood cover.
2. **Property (P):**Potential threats to FS property include damage to cabins and campsite infrastructure from falling hazard trees and trails from runoff and erosion. The risk of damage to cabins, outbuildings, and developed campsites (bear boxes, pit toilet risers) from falling trees was judged to be **High** (likely with moderate magnitude of consequences). The risk of damage from erosion and sediment deposition to the segment of trail along Juneau Lake was judged to be **Very High** (very likely with moderate magnitude of consequences).
3. **Natural Resources (NR):**Potential threats to natural resources include degradation of natural plant communities by invasive plant species. **Very High Risk** (very 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 the burn area. Powerlines, roads, campgrounds and trailheads within and adjacent to the Swan Lake fire are the primary corridors for weed dispersal and are highly susceptible to new weed invasions in areas that have been burned and areas disturbed by fire suppression activities. Most of the previously identified weed infested sites adjacent to burned areas were travelled through to get to the burned areas.

4. **Cultural and Heritage Resources:**No known sites occur within the burned area on NFS land, so no BAER survey was done. However, several pre-historic sites have been identified on National Wildlife Refuge land immediately adjacent to the Forest Service portion of the burn. It is likely that cultural sites exist in the burned area on NFS land.

B. Emergency Treatment Objectives:

The objectives of the emergency treatments proposed in this document are to manage identified unacceptable risks from "imminent post-wildfire threats to human life and safety, property, and critical natural resources on National Forest System lands" (FSM 2523.02). The timely application of the proposed treatments is expected to substantially reduce the probability of damage to the BAER critical values identified in the section A above. Recommended emergency treatment objectives include the following:

Land Treatments

1. Foster the recovery of native plant communities, including sensitive species, in the burned area by minimizing the proliferation of noxious weed populations **(L1a).**
2. Retard the spread of invasive weeds as a result of suppression repair activities—primarily dozer lines. **(L1b)**

Channel Treatments

1. No channel treatments proposed

Road and Trail Treatments

1. Protect trail investments from becoming impassible and damaged due to increased post-fire run-off within and directly downslope of areas of moderate and high soil burn severity (**RT13)**

Protection and Safety Treatments

1. Protect human life and safety of forest visitors by raising awareness of the risks present in a post-fire forested mountain setting by installing informational and warning signs at trail portals into and adjacent to the burned area (**P1b**)
2. Protect Forest Service infrastructure and human life/safety in areas where people are encouraged or prone to congregate (**P3a)**

Monitoring and Coordination

1. Monitor the effectiveness of recreation development treatments and facilitate any needed maintenance of treatments during the first year following the fire. (**M1**)

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

Land 90% Channel NA
Roads/Trails 70% Protection/Safety 90%

D. Probability of Treatment Success

Table 2: Probability of Treatment Success

	1 year after treatment	***3 years after treatment***	***5 years after treatment***
Land	70	50	50
Channel	NA	NA	NA
Roads/Trails	90	90	100
Protection/Safety	70	70	70

E. Cost of No-Action (Including Loss): Greater than $100,000

F. Cost of Selected Alternative (Including Loss): $49,147**Skills Represented on Burned-Area Survey Team:**

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

Team Leader: Cara Farr
Email:cara.farr@usda.gov **Phone(s):** 503-808-2937

Forest BAER Coordinator: Angela J Coleman
Email:angela.j.coleman@usda.gov **Phone(s):** 907-288-7728

Team Members:*Table 3: BAER Team Members by Skill*

Skill	Team Member Name
Team Lead(s)	Cara Farr, Dave Callery, Angela Coleman (t)
Soils	Cara Farr
Hydrology	Angela Coleman and Dave Callery
Engineering	
GIS	Dorothy Thomas
Archaeology	Sherry Kime (t)
Weeds	Betty Charnon (t) and Dan Mico (t)
Recreation	Jesse Labenski (t)
Other	David Pearson (Fisheries & Subsistence) (t)

H. Treatment Narrative:Land Treatments:

EDRR – BAER (L1a): Treatments under BAER include EDRR within the burned area around the cabins and developed campsites to prevent the spread of weeds into the native plant community. Two separate treatments are included for the cabin sites and reed canarygrass along the powerline. **$8,395**

EDRR of 3 Forest Service cabin sites (Trout, Juneau and Romig cabins) totaling 6 acres – 2 days of 2 person crew at $510/ day = $1,020, herbicide and supplies = $200, 1 day District Ecologist = $425 Total - $1,645

EDRR of existing Reed canarygrass in powerline corridor (18 acres) – detection survey and chemical treatment along 0.74 miles of powerline corridor south of the Russian River campground. 18 acres at $375/ acre = $6,750

EDRR – Suppression Repair (L1b): EDRR will be completed on 92.2 acres (31.7 miles) of area disturbed by fire suppression activities. The P-code is anticipated to remain open and cover an initial treatment in spring 2020. The fall treatment of detection surveys and chemical treatment as stated in the Kenai Peninsula Invasive Plant Treatment Project EA is included. 10 days of 2 person crew at $510/ day = $5,100, herbicide and supplies = $350, 1 day District Ecologist = $425 Total - **$5,875**

Trail hillslope protection (L6): One segment of trail crosses the burned area downslope of a section of low to moderate severity burn. Work will be completed to spread slash material on the hillslope above the trail. Hazard trees that pose a risk to worker safety will be addressed as a part of the treatment as well as ancillary trail drainage improvements. **$25,832**

Channel Treatments: NA**Roads and Trail Treatments:** NA

Protection/Safety Treatments:

Hazard warning signs (P1): Proper signage at trailheads, along the trail and at recreation use areas are needed to provide warning of post-fire hazards to recreating public and employees completing administrative activities. Potential threats to the public and agency personnel include hazard trees and loose rock along trails and at recreation facilities, and areas of damaged or eroded trails. Purchase and install 10 hazard warning signs for installation at access points to the fire. **$1000**

Public Safety Cabin and Camp Sites (P3): Several burned trees surround public use cabins and designated campsites within the burned area. Additionally a large pit was exposed by the fire that needs covered or filled. This treatment would fell the hazard trees that are at risk of falling in these congregated use areas. **$5670**

I. Monitoring Narrative:

Level I monitoring to assess the effectiveness of recreation development treatments and facilitate any needed maintenance of treatments during the first year following the fire. No level II or III monitoring proposed.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Line Items	Units	Unit Cost	# of Units	BAER $	Other $
A. Land Treatments					
EDRR - BAER (L1a)	acres	350	24	$8,395	$0
EDRR - Suppression (L1b)	acres	64	92.2	$5,875	$0
Trail hillsope protection (L6)	acres	7,381	3.5	$25,832	
Insert new items above this line!				$0	$0
Subtotal Land Treatments				$40,102	$0
B. Channel Treatments					
Insert new items above this line!				$0	$0
Subtotal Channel Treatments				$0	$0
C. Road and Trails					
Insert new items above this line!				$0	$0
Subtotal Road and Trails				$0	$0
D. Protection/Safety					
Warning Signs (P1)	each	100	10	$1,000	$0
Cabin and Campsite Safety	each	5,670	1	$5,670	$0
Insert new items above this line!				$0	$0
Subtotal Protection/Safety				$6,670	$0
E. BAER Evaluation					
Initial Assessment	Report			$17,500	$0
Insert new items above this line!				--	$0
Subtotal Evaluation				$17,500	$0
F. Monitoring					
Effectiveness Monitoring	Days	$475	5	$2,375	$0
Insert new items above this line!				$0	$0
Subtotal Monitoring				$2,375	$0
G. Totals				$49,147	$0
Previously approved					
Total for this request				**$49,147**	

PART VII - APPROVALS

1. _____ 9-27-19
Forest Supervisor Date