Date of Report: 8/13/2020

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: Lump Gulch Fire

B. Fire Number: MT-CES-000049

C. State: Montana

D. County: Jefferson

E. Region: 01 - Northern

F. Forest: 15 - Helena-Lewis and Clark

G. District: Helena

H. Fire Incident Job Code: PNM6NP 1502

I. Date Fire Started: 6/13/2020

J. Date Fire Contained: September 30, 2020 (estimated)

K. Suppression Cost: Approximately $1,500,000

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

1. **Fireline repaired (miles):** None to date
2. **Other (identify):**

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
100301011309	Last Chance Gulch	13,697	89	1%
100301011305	Lump Gulch	27,891	1,109	4%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	896
BLM	27
STATE	5

OWNERSHIP	ACRES
PRIVATE	270
TOTAL	1,198

O. Vegetation Types: Mix of ponderosa pine, lodgepole pine, Douglas fir forest

P. Dominant Soils: Soils on the Lump Gulch fire are derived from granitic parent materials and are classified as loamy sands or sandy loams, with small areas of sandy clay loams. Granitic soils are highly erodible when the forest floor has been disturbed or removed. Alfisols and Inceptisols are the dominant soil types within the fire perimeter. While Alfisols are likely to be found in areas that have a relatively low slope or are convex, Inceptisols are often found on or at the bottom of steep slopes, where soil is continually being removed and deposited, respectively. Mollisols are also present in discrete meadows and grass-dominated areas.

Q. Geologic Types: Geology across the Lump Gulch fire is predominantly granitic rock; ridges are dominated by granitic outcrops and bedrock is shallow on upper slopes. Landforms are primarily rolling uplands with some areas of mountain slopes. Slopes range from 10-40%.

R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERENNIAL	1.3
INTERMITTENT	2.4
EPHEMERAL	0
OTHER	0

S. **Transportation System:**
Trails: *National Forest (miles):* 0.90 *Other (miles):* 0
Roads: *National Forest (miles):* 0.67 *Other (miles):* 0.98

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	BLM	State	Private	Total	% within the Fire Perimeter
Unburned	259	13	5	218	495	41%
Low	278	12	0	35	326	27%
Moderate	358	2	0	18	377	32%
High	0	0	0	0	0	0%
Total	896	27	5	270	1198	100%

B. Water-Repellent Soil (acres): Zero. Soils burned at low to moderate intensity, and any high severity burn was highly localized. Because hydrophobic conditions gradually lessen with each wetting event, it is likely any hydrophobicity that developed as a result of the fire has already begun to break down. This is supported by the presence of moist soil to a depth of 6-10” during field reconnaissance.

C. Soil Erosion Hazard Rating: Moderate

D. Erosion Potential: Soil erosion potential averages approximately 1.9 tons/acre for the first two years following the fire, based on ERMiT modeling.

E. Sediment Potential: Approximately 50% of sediment would be delivered to the channel, based on modeled sediment delivery ratio of 0.548 for the main drainage in the burn area (WEPP-PEP model, Little Buffalo Gulch)

F. Estimated Vegetative Recovery Period (years): Grasses are expected to recover within one to three years. Fine roots were still intact across much of the fire, and regrowth was already evident at the time of the assessment. Revegetation is occurring at a rapid rate; approximately 20-25% of bare areas observed exhibited some level of understory regrowth only 2 months after ignition. Overstory mortality was more extensive, and shrubs and conifers are expected to recover in twenty years or longer.

G. Estimated Hydrologic Response (brief description): The Lump Gulch fire moved quickly, driven by high winds, and caused extensive overstory mortality, but soil burn severity was low to moderate and fine root survival was high. The early season timing of the fire meant that soils were still somewhat moist, and rainy conditions following the fire have since enabled rapid regrowth of grass cover in much of the burn area. High intensity rain events immediately following the fire enabled rapid containment but also caused localized overland flow and mobilization of debris, requiring road clearing on the Lump Gulch county road. Potential damaging events of concern in the future are peak flows in 2021 due to spring runoff and early summer thunderstorms. However, soil burn severity mapping and hydrologic modeling results suggest that recovery will be rapid over the coming year. The expected future hydrologic response is therefore minimal increases in overland flow or peak flows in Little Buffalo Gulch.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

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):**
   - **a.** There is high risk to any members of the public accessing the burn area via trails due to extensive dead standing trees and snags. The Brooklyn Bridge trail that runs through at the north end of the fire is a popular recreation area in close proximity to the city of Helena. The trail is currently under an administrative closure due to nearby logging activities but the risk of standing dead trees is expected to persist into future years. The probability of damage or loss is *possible* and the magnitude of consequences *major*, resulting in *high risk*. **The recommended treatment is hazard signage at main trailheads/access points.**

2. **Property (P):**One culvert was identified on NFS land, a small poorly designed log culvert that nevertheless appeared to be functioning well with no signs of scour or clogging despite recent rain events. Hydrologic modeling indicated that probability of damage or loss is *unlikely*. Due to the cost of replacement with a more appropriate structure, the magnitude of consequences is *moderate*, resulting in *low risk*. The crossing accesses a private residence/bed and breakfast, so removal was not considered. **No treatment is recommended.**

3. **Natural Resources (NR):**There is high risk to native plant communities from the threat of noxious weeds and invasive plant species. Known noxious weed and invasive plant populations exist within and immediately adjacent to the burn area. The probability of damage or loss is *likely* and the

magnitude of consequences is *moderate*, resulting in *high risk*. **The recommended treatment is weed detection monitoring and herbicide application.**

4. **Cultural and Heritage Resources:**Sites that were determined "eligible" for listing to the National Register or that were not evaluated for listing were identified as "potential values at risk". Within the Lump Gulch fire, recorded cultural resources include 0 Eligible sites and 5 Unevaluated (managed as Eligible) sites.

   a. 24LC1509, a stone structure, is in an area of low burn severity. The probability of damage or loss is *unlikely*, and the magnitude of consequence is *moderate*, resulting in *low risk*. **No treatment is recommended.**

   b. 24LC1510 is a mine site with a grave just outside the fire perimeter. The probability of damage or loss is *unlikely*, although the magnitude of consequence would be *major* due to the grave, resulting in *intermediate risk*. **No treatment is recommended.**

   c. 24LC2059/24JF2057 is one site, located on the county line. It is a large mining camp partially within the fire perimeter. The probability of damage or loss is *unlikely* and the magnitude of consequence would be *moderate*, resulting in *intermediate risk*. **No treatment is recommended.**

   d. 24JF2056 is a rock cairn located within the fire perimeter. The probability of damage or loss is *unlikely*, and the magnitude of consequence would be *minor*, resulting in *very low risk*. **No treatment is recommended.**

B. Emergency Treatment Objectives: Two unacceptable risks were identified, due to the threat of invasive weeds to native plant communities, and the threat of hazardous post-fire conditions to members of the public. Treatment objectives therefore include minimizing the expansion of invasive weeds within and adjacent to the burn area, and raising public awareness of hazardous conditions through warning signs.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land: 80%
Channel: N/A
Roads/Trails: N/A
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	90	80	80
Channel	N/A	N/A	N/A
Roads/Trails	N/A	N/A	N/A
Protection/Safety	90	90	90

E. Cost of No-Action (Including Loss): Weeds non-BAER treatment cost is estimated at up to $46,000, based on backpack spraying cost for acres with moderate burn severity on NFS lands. No cost estimate is placed on potential loss of life that would be mitigated by hazard signs.

F. Cost of Selected Alternative (Including Loss): Weed detection ($1,639) + weed treatment ($4,112) + hazard warning signs ($300) = $6,051

G. Skills Represented on Burned-Area Survey Team:

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

☒ Soils ☒ Hydrology ☐ Engineering ☒ GIS ☒ Archaeology
☐ Other:

Team Leader:
Email: Kate Condon **Phone(s)**: (406) 495-3724

Forest BAER Coordinator:
Email: Scott Nagel **Phone(s):** (406) 495-3723

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

Skill	Team Member Name
Team Lead(s)	Kate Condon
Soils	Allison Torres
Hydrology	Anne Dunckel
Engineering	N/A
GIS	Jennifer Frazer
Archaeology	Jennifer Ryan
Weeds	Megan Dawson
Recreation	N/A
Other	N/A

H. Treatment Narrative:

Land Treatments:

Weed detection monitoring and herbicide ground application are recommended along road corridors, trail heads, trails, dozer line, and hand line accessing the Lump Gulch Fire where known weed infestations are documented. Weed presence was documented on all road and trail access utilized by suppression equipment, including Canada thistle, musk thistle, bull thistle, leafy spurge, and cinquefoil. Detection monitoring will be prioritized in the fire area adjacent to known weed infestation and areas of heavy fire suppression activity such as dozer lines.

The following resources are requested for weed detection monitoring: one GS07 technician ($263 per day) for three days; one GS05 technician ($136 per day) for five days; one 4-wheel drive pickup truck for 200 miles ($0.85 per mile). The weed detection monitoring component of this request totals $1,639.

Land-based herbicide application with truck and UTV would occur early in the first growing season post-fire. All work will be accomplished using ground-based equipment and will include the following: five miles (34 acres) of truck or UTV access herbicide application at $28 per acre; two miles (15 acres) of backpack access herbicide application at $129 per acre; and herbicide for a total 49 acres, costing $25 per acre. The weed treatment portion of this request totals $4,112.

Channel Treatments: N/A

Roads and Trail Treatments: N/A

Protection/Safety Treatments:

Warning signage along the Brooklyn Bridge Trail is recommended at each entrance into the burn perimeter to warn of post-fire risks and help maintain public safety. A total of two signs are requested at an estimated cost of $150 each.

I. Monitoring Narrative:

Weeds treatment: Treatment sites will be evaluated annually for the next three years to ensure control methods are meeting resource objectives and to inventory for new invaders. Weed

specialist/technicians will visit chemically treated sites after treatment; this is especially important for weed populations that are sprayed to ensure efficacy of herbicide application. Initiate follow-up treatments if additional non-native species or new infestations are discovered. Control will be considered successful upon determination that all noxious weeds have been controlled have not spread beyond their pre-fire locations.

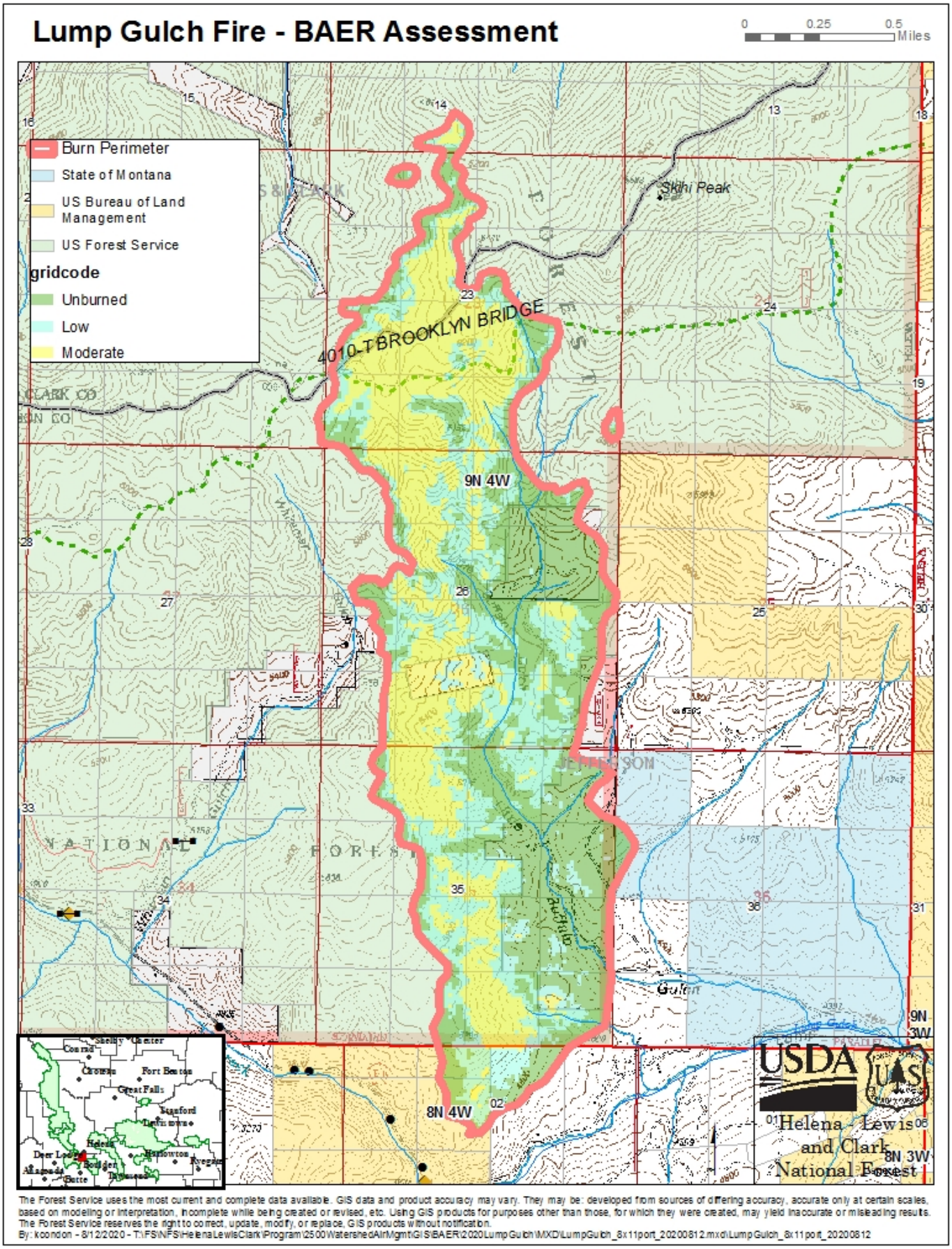
Warning Signs: District and SO personnel will monitor or check signs after events to ensure that they are legible and will be effective for the future.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

			NFS Lands				Other Lands				All
		Unit	# of		Other		Fed		Non Fed		Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$		$
A. Land Treatments											
WEED DETECTION											
GS07 Technician	Days	263	3	$789	$0		$0		$0		$789
GS05 Technician	Days	135	5	$675	$0		$0		$0		$675
4-Wheel Drive Pickup	Miles	0.85	200	$170	$0		$0		$0		$170
WEED TREATMENT											
Truck/UTV herbicide applica	Acres	28	34	$952	$0		$0		$0		$952
Backpack herbicide applicat	Acres	129	15	$1,935	$0		$0		$0		$1,935
Herbicide	Acres	25	49	$1,225	$0		$0		$0		$1,225
Subtotal Land Treatments				$5,746	$0		$0		$0		$5,746
B. Channel Treatments											
				$0	$0		$0		$0		$0
Subtotal Channel Treatments				$0	$0		$0		$0		$0
C. Road and Trails											
				$0	$0		$0		$0		$0
Subtotal Road and Trails				$0	$0		$0		$0		$0
D. Protection/Safety											
Hazard warning signs	Each	150	2	$300	$0		$0		$0		$300
Subtotal Protection/Safety				$300	$0		$0		$0		$300
E. BAER Evaluation											
Initial Assessment	Report	$6,714		---	$0		$0		$0		$0
Subtotal Evaluation				$0	$0		$0		$0		$0
F. Monitoring											
				$0	$0		$0		$0		$0
Subtotal Monitoring				$0	$0		$0		$0		$0
G. Totals				$6,046	$0		**$0**		**$0**		**$6,046**
Previously approved											
Total for this request				**$6,046**							

PART VII - APPROVALS

1. _____
Forest Supervisor Date


Lump Gulch Fire - BAER Assessment
0 0.25 0.5 Miles
Burn Perimeter
State of Montana
US Bureau of Land Management
US Forest Service
gridcode
Unburned
Low
Moderate
4010-T BROOKLYN BRIDGE
Skihi Peak
9N 4W
8N 4W
9N 3W
8N 3W
USDA
Helena - Lewis and Clark National Forest
The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. They may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those, for which they were created, may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify, or replace, GIS products without notification.
By: kcondon - 8/12/2020 - T:\FS\NFS\HelenaLewisClark\Program\2500WatershedAirMgmt\GIS\BAER\2020LumpGulch\MXD\LumpGulch_8x11port_20200812.mxd\LumpGulch_8x11port_20200812