Date of Report: July 24, 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: Pine Lodge Fire

B. Fire Number: NM-LNF-000249

C. State: New Mexico

D. County: Lincoln

E. Region: Region 3

F. Forest: Lincoln National Forest

G. District: Smokey Bear RD

H. Fire Incident Job Code: P3MBA5 (0308)

I. Date Fire Started: June 19, 2019

J. Date Fire Contained: 95% as of 07/19/2019

K. Suppression Cost: $6,400,000

L. Fire Suppression Damages Repaired with Suppression Funds (estimates): $45,000

1. **Fireline repaired (miles):** Dozer + handline = approximately 18 miles. All dozer lines were expected to be rehabilitated (waterbarred, brushed, berms pulled in). Hand piles (understory trees and brush) were left behind from preparation for burnout operations and these piles will be burned later by the Smokey Bear district fire personnel and seeded. 1 safety zone was seeded.
2. **Suppression Funds:** Portions of the Range fence were burned over by the Operations during the backburn. Total cost for range angle iron corners, nuts, locks and washers was $2117.43

. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
130600050501	Copeland Canyon-Seco Arroyo	28868	3852	13.3%
130600050502	Red Lick Canyon	10688	5221	48.8%
130600050503	Arroyo Serrano	23217	1750	0.3%
130600050504	Zeufeldt Arroyo	31170	97	0.3%
130600080501	Escondido Canyon	33801	3	0.009%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	12,887.8
OTHER FEDERAL (LIST AGENCY AND ACRES)	0 (No BLM)
STATE	1109.9
PRIVATE	798.3
TOTAL	14796

O. Vegetation Types: Pinon-Juniper woodland, as well as Ponderosa Pine, Mixed Conifer, and Spruce-Fir forest. One unit occurs in Subalpine Grassland.

P. Dominant Soils: Mollisols and alfisols

Q. Geologic Types: a mixture of alluvium, colluvium and residuum from limestone and igneous sources

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	0
INTERMITTENT	0
EPHEMERAL	75.1
OTHER (DEFINE)	0

S. **Transportation System:**
Trails: *National Forest (miles):* 10.4 *Other (miles):* 0
Roads: *National Forest (miles):* 16 *Other (miles):* 3.8

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unknown (clouds)						
Low/Unburned	6851		620	463	7934	
Moderate	5748		489	331	6568	
High	288		1	4	293	
Total	12888		1110	799	14797	

B. Water-Repellent Soil (acres): 7110 acres.

The acres of water-repellent soils is greater than the combined acres of the high-moderate burn severity areas. The reason is that all of the high burn severity, a majority of the moderate burn severity (about 4/5 of the acres) and some of the low burn severity observations were showing water repellency during the field soil burn severity assessment. This was confirmed with soil test plots. During drought conditions, there can be natural hydrophobicity when dry organic matter in the surface horizons create strong water repellency before any fire. This is more common in drier vegetation communities like pinon juniper.

C. Soil Erosion Hazard Rating: 4,569 (slight) 8,516 (moderate) and 280 (Severe)

D. Erosion Potential: 10.17 tons/acre Sediment Potential: 158 cubic yard/sq mile

F. Estimated Vegetative Recovery Period (years): 3 to 5 years

G. Estimated Hydrologic Response (brief description): The chance of design success for the hydrological modeling that was completed for the Pine Lodge BAER assessment is about 80%. The equivalent design recurrence interval that was used for the hydrological modeling was a 25 year interval, modeled for a 1 hour event, with a predicted storm magnitude of 2.2 inches. The design flow is expressed in cubic feet per second for the identified watersheds. The post-fire flows have been bulked by 25% to account for sediment and bed load bulking of the column.

Drainages & Pour Points	Pre-Fire	Post-fire	Post Fire
	25 yr / 1 hr	25 yr/ 1 hr	bulked (25%)
Third Cabin *	10	30	40
Rd Xing Wypt 389	190	380	480
Rd Xing Wypt 392	130	300	380
Brills Cabin Ruins	700	1100	1400
Copeland Cyn Rd Xing	125	160	200
Copeland HWY246	1400	1800	2300
Capitan Trail	70	160	200
Peachtree-Kelly**	1160	1200	1500
Peachtree Lower	1300	2100	2600

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Pine Lodge Fire started June 19, 2019, at the recreation residences along the Pine Lodge creek. It quickly spread into the Capitan Mountains Wilderness as well as the Capitan foothills on the Smokey Bear Ranger District located on the Lincoln National Forest (LNF). Fuel types were within primarily pinon juniper, into a good amount of ponderosa and some high elevation mixed conifer vegetative types. The north side of the Capitan Mountains are a unique east-west mountain range composed of an igneous and limestone mix. The higher elevation has mixed conifer, with the mid and lower slopes of the mountains composed of Ponderosa pine forests. The flats gently sloping away from the mountains consist of pinon-juniper habitat. The mountain slopes are steep, with talus slopes and boulder fields prominent. The upper slopes do not hold the water, but instead surface flow from rain cascades off the steep slopes and directly into the heads of the drainages. There are several springs at the foot of the Capitan Mountains that produce a small but steady amount of water. Pine Lodge creek and Copeland creek are officially ephemeral waters, but on the LNF are often considered perennial, as they flow 9 months out of the year. These are more accurately described as interrupted perennial flows, which due to karst and limestone formations allows for underground water flow. The streams retain deep pockets and pools of water that, although unconnected on the surface, do not dry up, and allow survival of aquatic biota.

Much of the Capitan Mountains is designated wilderness, and only accessible by foot traffic. The terrain has been described as rocky and challenging, with rolling hills at the foot of the mountains and steep cliffs and talus slopes in the upper reaches of the mountains. Elevations range from 5,400 to 10,083. Annual precipitation for the Capitans is about 19 inches, and the precipitation pattern is bi-modal with 70 percent of the precipitation

coming during the summer months and the remaining 30 percent coming as snow during the winter months. Those areas within the burn that experienced moderate to high severity burn pose the potential for accelerated erosion and loss of water control. This is especially true of the ponderosa pine flats and riparian stringers as well as the high elevation mixed conifer vegetation types that burned during the fire.

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

The Pine Lodge fire burned with 228 acres of high severity burn, 5748 acres of moderate severity burn, and 6851 acres as low and unburned severity. The fire burned in much of the 2004 Peppin burn scar, impacting areas that had started to recover from that landscape-scale stand-replacement fire. Little to no vegetative ground cover remains in the high severity burn areas of mixed conifer, ponderosa and pinon juniper habitats. Dropped needles and vegetative sprouting was noted in the moderate burn severity sites. Grass root collars remain intact within a majority of the moderate and low burn severity areas of the pinon-juniper vegetation type, and these areas have already started resprouting with onset of the monsoon season. The burned area will experience higher than normal erosion and overland water flow due to loss of vegetative cover, especially in the upper elevations with the steep terrain, until vegetative cover becomes re-established.

Post-fire conditions will impact the values at risk listed below. It has been determined from the BAER assessment and modeling that there are risks to public safety, property, infrastructure and natural resources. The following are values at risk, which potentially includes a public safety risk.

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):

Threats to life and safety exist along riparian areas and drainages in and below high and moderate severity burn. Road users, private landowners and recreational hikers will be exposed to increased risk of water flow and snags. Due to loss of vegetative ground cover in the high severity, there is a likelihood of increased overland flow and sedimentation. Monsoon storms are often severe, with heavy rainfall, and can easily rain over one inch per hour. This can cause flooding, sediment and debris flows. High winds can result in snags falling across the burned area, on trails and across roads. Caution/hazard signs are recommended for trailheads and roads that intersect the burned area. These are for the Forest Service employees and for visitors to be warned and aware of the hazards in accessing this area via the trailheads and roads as access points into the area. Threats to human life and safety inside the burned area, have a probability of Likely with a potential Major consequences for a Very High risk.

2. Property (P): The roads within the Pine Lodge burned area will be impacted by the predicted increased post-fire water flows at about 2.5 times the pre-fire flows. These roads are expected to be impacted by sedimentation and flooding. The engineering field reconnaissance identified several vulnerable sites that could compromise the integrity of the roads, posing a safety hazard. Many of these roads suffered post-fire effects from the Peppin fire, and with the current post-fire effects, these problems have resurfaced, and previous BAER treatments need to be reinforced. Post fire conditions could lead to further erosion and deterioration of the roads. In some case, a temporary closure of the roads is warranted for human health and safety concerns. The following roads were identified as having a high risk for safety or infrastructure integrity loss:

FSR 130: Also called Boy Scout Road. This is a level 3 road. The county maintains this road from Highway 246 to the Forest Service gate at the cabins. This road was observed to have only one weak point, just below cabin number 3, and will need armoring and a grade dip restructured and reinforced. The remainder of the road has no other weak points, even at stream crossings. All culverts appear to have been removed and replaced with rolling dips and stream crossings hardened after the Peppin Fire in 2004, and this was one of those sites. Over the intervening years the point has degraded, and will need to be reinforced to handle a predicted 50% increase in pre-fire flows from a moderate severity re-burn upslope of the site. This road was

assessed as having a Likely probability of damage or loss, with a Moderate chance of magnitude of consequences, placing this at a High risk.

FSR 5657: This is a level 2 road. It is the only access to the communication site, wilderness trailhead, dispersed camp sites, range allotment with infrastructure and private land inholding. The communication site is currently being used for emergency incidents, and is expected to continue to be needed for that purpose, along with normal business operations. The road was observed to have seven (7) vulnerable points along the road, and would require armoring, rolling dips and hardening of water crossings to protect against losing sections of this infrastructure to post-fire events. If a heavy rain event were to happen, a common occurrence during monsoon season, the predicted increased flows would compromise the road infrastructure, and could lead to a loss of the road and access to sites listed above. This road needs to be retained and stabilized to maintain communication site access, especially for unplanned emergencies. The road is located in and below moderate and high severity burn areas. The road was assessed as having a Likely probability of damage, with moderate consequences, giving a risk rating of High.

FSR 163: Also called Copeland Canyon Road. This is a level 2 road. This road provides single access to the north side of the Capitan Mountains, the Capitan Wilderness, a range allotment, range and wildlife water developments (trick tanks), wilderness trailheads, dispersed camping sites, and a private inholding. The road was observed to have several vulnerable points along the road treatments to prevent loss of sections of this infrastructure to post-fire events. If any large rain events were to happen, as is a common occurrence in monsoon season, the predicted increase in flows would compromise the road infrastructure and could lead to a threat to human life and safety through entrapment and destruction of the road out of the area. Forest Service employees, permittees, private landowners and other people will still need to access the area using this road, so a closure will not be effective. This road is located in and below the most continuous acres of high severity burn and otherwise surrounded by moderate severity burn. Many of the areas identified are in sites that have received BAER treatments in a previous fire, and the problems have resurrected, necessitation further treatment to retain the road. In addition, by hardening and armoring, the chance of sedimentation is reduced, thus reducing the sediment load increased into the streams and affecting natural resources, including aquatic biota. The road was assessed as having a Likely probability of damage, with a moderate magnitude of consequences, leading to a risk assessment of High. It has been recommended that this road be armored, install rolling dips and harden the water crossings..

FSR 5645: This road is recorded as a level 2 road. This road provides access to middle point of a wilderness trail, dispersed camping and eventually leads to BLM land. This road has been further compromised during the Pine Lodge fire suppression efforts as well as from the Peppin Fire suppression in 2004, which, although rehabbed through suppression funding, will be threatened by post-fire conditions, such as flooding, sedimentation and ash flows. There is a potential for entrapment during a heavy rain event, as well as flooding and sedimentation, as this is in and below high and moderate severity. The road was assessed of having a Likely probability of damage, with a Moderate magnitude of consequences, leading to a High Risk assessment. It is recommended that this road be closed to the public due to the threats.

3. **Natural Resources (NR):** Non-Native Invasive Species Early Detection and Rapid Response: After the Peppin fire in 2004, the area was documented to have 1843 acres of non-native invasive plant species (NNIS). This is still the case, and the Pine Lodge fire is expected to result in post-fire spreads of these NNIS. Multiple vectors for invasive plant spread will be evident in the post-fire environment and will include increased water flows, wind, animals, vehicles and sediment movement. Early detection of NNIS is the most economical means of weed management. This risk was ranked at a probability of Likely, with a magnitude of Moderate, making this rank as a High risk for NNIS spread, especially in post-fire bare soil conditions.
4. **Cultural and Heritage Resources:** N/A

B. Emergency Treatment Objectives: Land Treatments: The objective of non-native invasive plant species (NNIS) initial detection surveys is to prevent the establishment and locate the documented NNIS in the recently burned area. The objective of the NNIS rapid response treatment is to prevent the spread of NNIS in the recently burned area. Road and Trail Treatments: The objective of road stabilization is to lower the risk of damage to Forest Service infrastructure (system roads) by lowering the erosion of the road surface in and below high to moderate burn severity areas and to provide for human safety. The objective of the temporary road closure is to reduce risk to human life and safety. Caution/hazard signs at the entrances of the roads and trails that intersect the burned area are placed to reduce the risk to human life

and safety. These warn that the user is entering a burned area and warn against the increased potential for falling rock and debris, snags, and increased water flow. Storm inspection and response objectives during the monsoon season are to ensure the integrity of the BAER road treatments and provide a rapid response with repairs to alleviate any breach in road stabilization. Protection/Safety Treatments: The primary objective of the Burned Area Emergency Response (BAER) Team is to recommend prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to human life and property and prevent unacceptable degradation of natural resources. The highest priority of the BAER team is rapid implementation of any treatment regarding human life and safety. The objective of the temporary closure of the Pine Lodge burned area during the monsoon season is to reduce the risk to human life and safety, and to allow natural recovery of the area by preventing further disturbance across the landscape. An important objective of the BAER team is to share findings of the assessment and a final burn severity map to NOAA Weather Service, with the anticipated post wildfire watershed effects and associated threats to human safety. The information is utilized in the development of spot weather forecasts for the burned area. An additional objective is to work with partners for non-forest values at risk, including but not limited to: NRCS, the electric company and the state department of transportation.

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

Land 90% **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	90	95	95
Channel	N/A	N/A	N/A
Roads/Trails	90	95	95
Protection/Safety	90	95	95

E. Cost of No-Action (Including Loss): $1,956,054

F. Cost of Selected Alternative (Including Loss): $64,460

G Skills Represented on Burned-Area Survey Team:

☒ Soils ☒ Hydrology ☒ Engineering ☐ GIS ☐ Archaeology

☐ Weeds ☐ Recreation ☐ Fisheries ☐ Wildlife

☐ Other:

Team Leader:
Email:Rhonda Stewart **Phone(s)575-434-7222**

Forest BAER Coordinator:
Email:Rhonda Stewart **Phone(s):575-434-7222**

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

Skill	**Team Member Name**
Team Lead(s)	Rhonda Stewart
	Jennifer Hickman
Soils	Nori Koehler
	Maureen Yonovitz
Hydrology	Pete Haraden
Engineering	Tim Carroll
GIS	
Archaeology	
Weeds	

Skill	Team Member Name
Recreation	
Other	

H. Treatment Narrative: These proposed treatments summarize emergency response proposals to mitigate post-fire effects on the Pine Lodge burned area, based on the field surveys, soil hydrophobicity, hydrological modeling and the Burn Severity Map finalized July 18, 2019. Proposed treatments are necessary to address potential threats to life, safety, property, infrastructure, and natural resources and are associated with sites in and below high to moderate severity burns. Priority will be placed on implementation of any treatments that protect human life and safety

Land Treatments: A NNIS early detection and rapid response will be needed to deal with post-fire spread due to sedimentation and predicted soil movement. After the Peppin Fire in 2004, NNIS new establishments were numerous, and the rate of spread in the post-fire bare earth was accelerated. These existing infestations are expected to take advantage of the bare soil conditions from the Pine Lodge fire, which burned over the Peppin fire scar. The rapid detection will take 10 days, with 2 people, and is estimated at $5,000. Treatment: NNIS Early Detection/Rapid Response. $5,000 estimated cost.

Channel Treatments: There are no channel treatments proposed for the Pine Lodge burned area.

Roads and Trail Treatments: FSR 5657: The road was observed to have seven (7) vulnerable points along the road, and would require armoring, rolling dips and hardening of water crossings to protect against losing sections of this infrastructure to post-fire events. Treatment: Armor and grade dips at 4 points, armor water crossings at 3 points. Estimated cost: $14,500. FSR 130: This road was observed to have only one weak point and will need armoring and a grade dip restructured and reinforced. Treatment: Armor and rolling dip repairs at a single site. Estimated cost: $1,500. FSR 163: The road was observed to have several points along the road that will be vulnerable to post-fire events. Treatment: Armor and grade dips at 7 points and two points of hardened water crossings. $19,500 estimated cost. FSR 5645: Treatment: Closure and Gate. Estimated cost $5,000. Roads: Hazard/Caution Road Signs: The five (5) level 2 roads described above are recommended for installing hazard/caution signs as the roads enter NFS lands and intersect the burned area. Treatment: Five hazard/caution signs $3000 estimated cost. Storm Inspection and Response is recommended to check on the efficiency and status of the BAER treatments to the roads. A storm inspection will be conducted by 2 engineering personnel, of one day each, for a period of 7 days total. Treatment: Seven storm inspections and responses. $7,000 estimated cost.

Protection/Safety Treatments: The trails that access the described above are recommended for installation of hazard/caution signs at the trailheads where the trails will be going through high and moderate burned severity for safety awareness. There are hazard trees at some of the trailheads that could threaten the life or health of employees installing the signs, so these will be taken down prior to sign installment to facilitate safe working conditions during this BAER treatment. 10 signs at $100/each will be $1,100. Two people for four days for installation, hazard tree removal for safety and access into wilderness will be $2000. Treatment: Hazard/Caution trail signs. $3100 estimated cost. The BAER Team urges that a closure order be placed in the Pine Lodge burned area for the duration of the monsoon season. This is recommended for the health and safety of forest visitors as well as a caution warning for forest employees during the expected storms and wind events that occur with the monsoons. The Pine Lodge BAER team coordinated with the NOAA Weather Service, and provided them with the final Burn Severity Map as well as critical downstream Values at Risk. As a result, the NOAA Weather Service will be providing spot weather forecasts for the Pine Lodge Burn scar, concentrating on the Copeland Canyon-Seco Arroyo and the Red Lick watersheds. In addition, the BAER team coordinated with Natural Resource Conservation Service (NRCS), Otero County Electric Coop (OCEC) and the New Mexico State Highway Department of Transportation (NMDoT), providing them with finalized Burn Severity maps, and non-Forest identified Values at Risk. This coordination will continue as needed.

I. Monitoring Narrative:

There is no monitoring proposed for the Pine Lodge burned area.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

			NFS Lands			Other Lands				All
Line Items	Units	Unit Cost	# of Units	BAER $	Other $	# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
NNIS Rapid Detection and Emergency Response				$5,000	$0		$0		$0	$5,000
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$5,000	$0		$0		$0	$5,000
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										
Road Treatments				$35,500	$0		$0		$0	$35,500
Road Closure	ea	5,000	2	$10,000						$10,000
Storm Inspection & Response				$7,000						$7,000
Road Hazard/Warning Signs	ea	600	5	$3,000						$3,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road and Trails				$55,500	$0		$0		$0	$36,000
D. Protection/Safety										
Trail Hazard/Caution Signs	ea	265	10	$3,100	$0		$0		$0	$3,100
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$3,100	$0		$0		$0	$3,100
E. BAER Evaluation										
Initial Assessment	Report			---	$0		$0		$0	$0
	1			$0	$29,486		$0		$0	$29,486
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				$0	$29,486		$0		$0	$29,586
				$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

PART VII - APPROVALS

1. acting William Sapp — 24 July 19
Forest Supervisor — Date