

**Date of Report:****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: Nogal Canyon****B. Fire Number: NM-N5S-000114****C. State: New Mexico****D. County: Lincoln****E. Region: Southwestern****F. Forest: Lincoln National Forest****G. District: Smokey Bear****H. Fire Incident Job Code: P3 PKc3 (0308)****I. Date Fire Started: 04/12/2022****J. Date Fire Contained: est, 04/30/2022****K. Suppression Cost:****L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

1. Fireline repaired (miles): 1.7
2. Other (identify): N/A

**M. Watershed Numbers:***Table 1: Acres Burned by Watershed*

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
130500030502	Nogal Creek	24,102	420	1.7%

**N. Total Acres Burned:***Table 2: Total Acres Burned by Ownership*

OWNERSHIP	ACRES
NFS	371

OWNERSHIP	ACRES
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0
PRIVATE	49
TOTAL	420

O. Vegetation Types: Pinyon Juniper, Ponderosa Pine, Mixed Conifer

P. Dominant Soils: Pachic Argiboralls, Typic Argiustolls, Lithic Argiboralls, Pachic Udic Haploborolls

Q. Geologic Types: Granite, Alaskite, and mixed alluvium

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	0
INTERMITTENT	1.3
EPHEMERAL	3.2
OTHER (DEFINE)	0

S. Transportation System:

Trails: National Forest (miles): .31

Other (miles):

Roads: National Forest (miles): 1.2

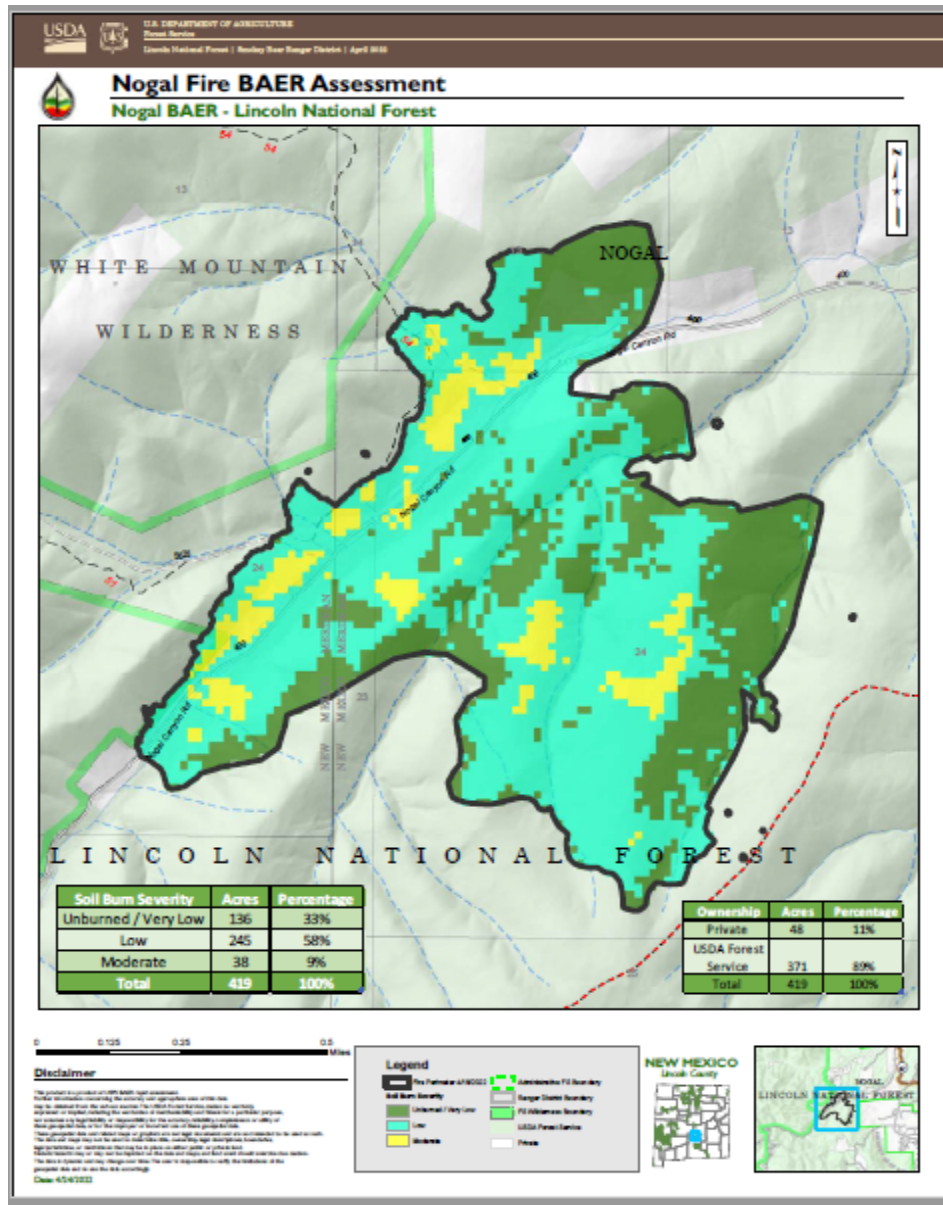
Other (miles): 0

### **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
Unburned	126			10	136	33
Low	216			29	245	58
Moderate	28			10	38	9
High	0			0	0	0
Total	370			49	419	100



**B. Water-Repellent Soil (acres): 274 acres or 62%**

**C. Soil Erosion Hazard Rating: Slight = 5 acres (1%), Moderate = 258 acres (62%), Severe = 156 acres (37%)**

**D. Erosion Potential:**

Terrestrial Ecological Units with the highest erosion potential were analyzed and identified on National Forest System lands across the assessment area utilizing ArcGIS Pro. Units with high erosion potential meet all the following criteria A) rate moderate or severe for soil erosion hazard, B) classify as moderate soil burn severity, and C) classify as a C or D hydrologic soil group. Moderate soil burn severity conditions within the steep terrestrial ecological units 3054, 3404, and 3344 (40-80% and 40-120% gradients) are the greatest concern for soil erosion; the area of moderate soil burn severity identified with a severe soil erosion hazard rating in these units comprises 33 acres (~8%) of the burn area. For the first year following fire containment, moderate soil burn severity in 3054 is modeled to lose 9.5 tons/acre, 3404 is modeled to

lose 13.31 tons/acre, and in 3344 is modeled to lose 16.47 tons/acre. For comparison, 103 tons/acre is roughly the equivalent of 2/3 inch of soil depth across an acre area.

#### **E. Sediment Potential:**

The modeled post-fire sedimentation rate averaged across the fire perimeter is approximately 6.49 tons per acre, following a significant storm and runoff event that is predicted to have a 10% probability of occurrence. Map unit 6 spans 5 acres of riparian systems with mixed coniferous forest and river wash (1% of the fire area) and is modeled to lose a mean of 0.42 tons/acre. Unit 3404 spans 91 acres of mixed conifer forest (22% of the fire) and is modeled to lose a mean of 6.40 tons/acre. Unit 3054 spans 66 acres of mixed conifer forest (16% of the fire) and is modeled to lose on average 4.72 tons/acre. Map unit 3344 comprises 258 acres of Ponderosa Pine and mixed conifer forests (61% of the fire) and was modeled to lose an average of 7.07 tons/acre.

#### **F. Estimated Vegetative Recovery Period (years): 2-5 years**

#### **G. Estimated Hydrologic Response (brief description):**

The two modeled sub-basins had peak flow increases from pre-burn conditions of 27% and 7% for a 50% chance precipitation event and an 18% and 5% for a 20% chance precipitation event.

There is an estimated low risk of flash flooding due to hyper-concentrated flows in the area with the homes that are within the burn scar from flash floods for 1, 2, 5, and 10 year precipitation events. There is an estimated low risk of flash flooding due to hyper-concentrated flows at FSR400 immediately downstream of the burn scar boundary for 1 and 2-year precipitation events and a moderate risk for 5 and 10-year precipitation events.

## **PART V - SUMMARY OF ANALYSIS**

### **Introduction/Background**

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

The Nogal Canyon fire burned with no acres of high severity burn, 38 acres of moderate severity burn, 245 acres as low and 136 acres of unburned severity. The fire was heavily wind-driving, burning down the canyon. Vegetative ground cover does remain in the low and unburned areas of the mixed conifer and ponderosa pine habitats. Dropped needles and vegetative sprouting was noted in the burned areas. Grass root collars remain intact within a majority of the moderate and low burn severity areas of the ponderosa and pinon-juniper vegetation type, and these areas have already started resprouting. The burned area will experience some 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 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 moderate severity burn. Road users, private landowners and recreational hikers will be exposed to a slight increased risk of water flow, debris and snags. Due to loss of vegetative ground cover in the moderate severity burn, there is a likelihood of some 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, large dispersed camp sites 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. An unknown mine adit was located during the assessment. Mine was closed with a rudimentary gate and wire. Despite the burn the mine adit did not become more visible to the public. No treatment is recommended at this time. Location was shared with forest staff who will conduct a further investigation of the site.

- Property (P):** There are two roads within the Nogal Canyon burned area, and one continues below the burn scar. These roads will be impacted by the predicted increased post-fire water flows at higher flow rates than the pre-fire flows. These roads are expected to be impacted by possible sedimentation, flooding and ashflow. There are two roads that provide access points for entering the burn scar. Post fire effects could pose a safety hazard. BAER treatments recommend hazard/warning signs to be installed. The following roads were identified as having a risk for human health and safety:

**FSR 400:** Nogal Canyon Road. Inside the burned area, this is .9 miles of an operational maintenance level 3 road made of improved native material. It is the access over the top of Nogal Pass, and access to several private land holdings. Beginning termini is at the Pennsylvania Road (FSR 5628) intersection with County Road 15.

**FSR 5628:** Pennsylvania Canyon Road. Inside the burned area, this is a .3-mile-long operational maintenance level 2 road made of native material. Beginning termini is at the intersection with FSR 400, and ending termini is dead end.

There are two (2) trail sections, with a combined .31 miles within the Nogal Canyon burned area. Pennsylvania Canyon Trail #51 and Tortolita Canyon Trail #54 fall directly within but not below the burn scar, and will be impacted by post-fire effects. These are recommended for trail caution/hazard signs.

Several dispersed camping sites are located within the Nogal Canyon burned area, including one large dispersed camping complex at the intersection of FSR 400 and FSR 5628. The large complex is recommended to be signed with caution signs to warn of post-fire hazards in the area.

- Natural Resources (NR):** Non-Native Invasive Species Early Detection and Rapid Response: The Nogal Canyon area is documented to have a few acres of non-native invasive plant species (NNIS). The Nogal Canyon fire is expected to result in some post-fire spread 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 NNIS management. This effort is focusing on the early detection for NNIS.
- Cultural and Heritage Resources:** There were no cultural resources within the perimeter of the Nogal Canyon Fire. One site listed on the NRHP is near the northeast perimeter, however, fire did not enter the site boundaries. a multi-component site (prehistoric/historic) composed of two previously recorded sites is located within 1 mile down stream of the burned area. No

treatments are recommended at this time. See Monitoring narrative for recommended monitoring of down stream sites.

## B. Emergency Treatment Objectives:

The primary objective of this Burned Area Emergency Response Report is to recommend treatments 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). These treatments are expected to substantially reduce the probability of damage to identified BAER critical values. Below, the objectives are the proposed treatments are included

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

Land: 98

Channel: 90

Roads/Trails: 90

Protection/Safety: 100

## D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
<b>Land</b>	95	95	95
<b>Channel</b>	N/A	N/A	N/A
<b>Roads/Trails</b>	N/A	N/A	N/A
<b>Protection/Safety</b>	95	100	100

## 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: PIO

**Team Leader:** Mark (Andy) Casillas

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**Forest BAER Coordinator:** Rhonda Stewart

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**Phone(s):** 575-434-7222

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

Skill	Team Member Name
<b>Team Lead(s)</b>	Andy Casillas, Jennifer Hickman (trainee)
<b>Soils</b>	Eric Robertson, Jalene Weatherholt (Trainee)
<b>Hydrology</b>	Kelly Mott Lacroix, Kevin Carns (trainee)
	Kyle Paffet (trainee)
<b>Engineering</b>	Andres Bolanos (trainee)
<b>GIS</b>	Taci Ugraskan
<b>Archaeology</b>	Scott Hays-Strom
<b>Weeds</b>	David Baker
<b>Recreation</b>	Christina Thompson

Skill	Team Member Name
Other	PIO - Cathleen Thompson, PIO (Trainee) - Laura Rabon PIO (Trainee) - Jessica Richardson Wildlife - Larry Cordova Wildlife - Taylor Joray

## H. Treatment Narrative:

### Land Treatments:

NNIS early detection and rapid response will be needed to deal with suppression spread due to ground disturbing activities such as dozer line and use of road as improvised line. After the Nogal Canyon fire, NNIS new establishments could occur, and the rate of spread in the post-fire bare earth could be accelerated. The rapid detection will take 5 days, with 2 people, and is estimated at \$3,000.

Treatment: NNIS Early Detection/Rapid Response. \$3,000 estimated cost

### Channel Treatments: N/A

### Roads and Trail Treatments: N/A

### Protection/Safety Treatments:

The purpose of "Burned Area Warning Signs" is to reduce the risks to human life and safety by alerting hikers, campers and other visitors of existing threats while traveling the within the areas susceptible to flooding, debris flows, hazards trees, and all other risks attributable to post fire events on the landscape. Road Warning signs will be placed on all roads entering into the burn area. This will include one where the 400 road intersect the southwest portion of the fire perimeter, one where the 400 road intersect the northeast portion of the fire perimeter, and one where the 5628 road intersects the fire perimeter. Two additional side will be placed at the intersection of the 400 and 5628 where they can clearly see as people pull into the dispersed camping area from either direction. Trail Warning sign will be place where trail 51 and 54 intersect the fire perimeter and 3 around the perimeter of the dispersed camping area. See treatment map for location specific.

### General Description:

## I. Monitoring Narrative:

Monitoring will include a multi-component site (prehistoric/historic) composed of two previously recorded sites. This site is not located within the burn but is downstream from the burned area and could be affected by increased flows. Regular monitoring and inspection after heavy rain and flood events will monitor any damage to the burial and artifact disturbance. No funds are requested at this time because monitoring will be completed by a full-time employee and charged to NFSE.

**PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS**

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands				All Total \$
			# of Units	BAER \$		# of units	Fed \$	# of Units	Non Fed \$	
<b>A. Land Treatments</b>										
EDRR (Supresion)	EDRR	600	5	\$3,000	\$0		\$0		\$0	\$3,000
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Land Treatments</b>				\$3,000	\$0		\$0		\$0	\$3,000
<b>B. Channel Treatments</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Channel Treatments</b>				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Road and Trails</b>				\$0	\$0		\$0		\$0	\$0
<b>D. Protection/Safety</b>										
Road Warning Sign	Signs	3,800	5	\$19,000	\$0		\$0		\$0	\$19,000
Trail Warning Sign	Signs	71	5	\$355	\$0		\$0		\$0	\$355
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Protection/Safety</b>				\$19,355	\$0		\$0		\$0	\$19,355
<b>E. BAER Evaluation</b>										
Initial Assessment	Report			---	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				---	\$0		\$0		\$0	\$0
<b>Subtotal Evaluation</b>				\$0	\$0		\$0		\$0	\$0
<b>F. Monitoring</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<b>Subtotal Monitoring</b>				\$0	\$0		\$0		\$0	\$0
<b>G. Totals</b>				\$22,355	\$0		\$0		\$0	\$22,355
Previously approved										
Total for this request				\$22,355						

**PART VII - APPROVALS**

1. \_\_\_\_\_  
 Forest Supervisor Date