Date of Report: 8/1/2019

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: Cellar

B. Fire Number: AZ-PNF-000961

C. State: Arizona

D. County: Yavapai

E. Region: 3

F. Forest: Prescott National Forest (PNF)

G. District: Bradshaw

H. Fire Incident Job Code: P3MFK9 (0309) [P]

I. Date Fire Started: July 14, 2019

J. Date Fire Contained: 7/29/2019

K. Suppression Cost: $6,368,645

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

1. **Fireline repaired (miles):** 1.3 miles dozer line
2. **Other (identify):**

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150701030106	Blind Indian Creek	30,579	6,901	22.6
150701030105	Milk Creek	25,420	304	1.2
150701030103	Crooks Canyon	11,978	300	2.5
150701020303	Upper Turkey Creek	16,401	7	~0

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	7,512

OWNERSHIP	ACRES
OTHER FEDERAL (LIST	0
AGENCY AND ACRES)	0
STATE	0
PRIVATE	0
TOTAL	7,512

O. Vegetation Types: PJ-Evergreen Shrub; Interior Chaparral

P. Dominant Soils: Typic Haplustalfs

Q. Geologic Types: Sedimentary; Schist

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	~30
EPHEMERAL	0
OTHER (DEFINE)	

*Some small perennial pools or very small perennial stretches exist that are not picked up in the NHD layer.

S. Transportation System:
Trails: *National Forest (miles):* 5.48 *Other (miles):* --
Roads: *National Forest (miles):* 8.04 *Other (miles):* Decommisioned, 3.26

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	1000	0	0	0	1000	13.3
Low	1937	0	0	0	1937	25.8
Moderate	3495	0	0	0	3495	46.5
High	1081	0	0	0	1081	14.4
Total	7513	0	0	0	7513	100

B. Water-Repellent Soil (acres): 3594

C. Soil Erosion Hazard Rating: Severe

D. Erosion Potential: 3.7 tons/acre **Sediment Potential:** 27,772 tons

F. Estimated Vegetative Recovery Period (years): 1-5 years

G. Estimated Hydrologic Response (brief description): A 60 minute/ 25 year return interval of 2.37 inches was utilized to predict post-fire storm impacts. The sub-watershed of Orejano Wash, a 3807 acres located in the middle of the fire which drains into Blind Indian Creek, was selected for modeling purposes. Pre-fire predicted discharge rates were 3941.24 cfs and post fire predicted rates were 7814.53 cfs. This is a 98.3% increase of pre-fire watershed discharge. Soils within the area have a natural high run-off rate and the fire had a combination of light, moderate, and high burn severity resulting in a high probability of post fire CFS increases in Blind Indian Creek where it exits the fire scar area and exits PNF shortly downstream.

PART V - SUMMARY OF ANALYSIS

Introduction/Background: The Cellar Fire started on July 14 and was officially contained July 29, 2019. The southwestern fire perimeter is located 4 miles northeast of the community of Wagoner, AZ. Vegetation within the fire perimeter primarily consisted of interior chaparral, semi-desert grasslands, Pinyon-Juniper grassland, Pinyon-Juniper evergreen shrub, and a small riparian component. The terrain within the southwest perimeter is rolling hills with areas of flat grasslands; the northeast is steeply sloping hills and valleys. Orejano Wash is the dominant drainage located parallel and close to the northwestern flank of the fire. This wash drains southeast into Blind Indian Creek prior to exiting NFS lands toward Wagoner and the Hassayampa River.

Burn Severity is variable across the fire with soil burn severity in the southwestern portion predominantly low and moderate and the northeastern portion high and moderate. Low burn severity consisted of approximately 1937 acres, moderate burn severity consisted of 3495 acres, and high burn severity consisted of 1081. Low burn severity is generally associated with grasses and litter within shrubs. Canopy cover of shrub and trees are normally intact. Pockets of unburned areas are also associated with the low burn severity on the southwestern portion of the fire. Erosion rate increases would be minimal on flatter slopes but rates on slope gradients, especially very steep slopes, are expected to have an observable increase in erosion rates. Water repellant soils were not noted on low burn severity sites. Moderate burn severity is normally affiliated with Pinyon-Juniper evergreen shrub and interior chaparral. Tree canopy is predominantly scorched and shrubs along with their litter component have been consumed by the fire. However, the interspaces within moderate burn severity are affiliated with rock outcrops or minimal burn activity affiliated with surface litter or sparse grass cover. Water repellant soils were noted on approximately 75% of sites subjected to moderate burn severity. Areas of high burn severity are predominantly restricted to the headwaters of the fire and affiliated within dense shrub cover. These areas shrub cover and surface litter were fully consumed in a continous pattern. Water repellant soils were noted on approximately 90% of high burn severity sites. Post-fire erosion levels on moderate and high burn severity sites are expected to increase near or above threeshold levels. Within the burn perimeter, the majority of Blind Indian Creek is intact and was subject to an understory burn. Some portions of the floodplains had a moderate burn severity that will kill off many overstory trees. This in turn will supply a needed large woody debris component to the stream. The Cottonwood overstory has been slightly impacted and the majority of the vegetation on the bank/channel interface has not been burnt. Average, overall, post-fire soil loss rates are expected to increase from 1.24 tons/acre to 3.69 tons/acre. This is above established threeshold levels of 2.0 tons/acre.

Modeled peak flow within a 3,807 acre sub-watershed along the western edge is expected to increase from 3941.24 cfs to 7814.53 cfs based on a 60 minute/25 year return interval. Increased post fire flows and erosion predictions are very likely. However, the dominant drainage of Blind Indian Creek is mostly intact and is expected to attenuate and function properly with an increase of flows and sediment production. Flooding and sediment movement is expected to occur within the forest closure area and is probable but will be dissipated off forest within the Blind Indian Creek Drainage. The Prescott National Forest and the Yavapai County Flood Control District have been sharing information as the fire progressed and BAER information bacame available; the Flood Control District has informed property owners in the areas of the increased risk of flooding.

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. The fire footprint and drainage of the fire scar are located within the the southwest corner of the Prescott National Forest. The community of Wagoner is 4 miles downstream of the burn scar. Peak flows of the burned area should disipate but not altogether atenuate prior to reaching the Hassayampa River. Yavapai flood control is engaging with appropriate entities downstreatm of the fire off of Forest Service lands.
   Areas on Forest Service lands associated with the burn scar or potential post-fire flooding events has undergone an administrative closure. The probability of Forest Service usuage within the closure during a design storm event is *Unlikely* and the magnitude of consequence is *Major*. **RISK: Intermediate.**
   b. Forest Service Route (FSR) 682 crossing of Blind Indian Creek and the crossings/roads prisms of FSR9251A, 9251B, and 9249A of Orejano wash are located within or just downstream of a sub-watershed within the fire scar. This sub-watershed burned in a mixture of severity types and flooding and sediment delivery is expected to be exacerbated at these crossings. These crossing are within the closure order and signage will be placed throughout the area. The probability of route usage during a design storm event is *Unlikely* and the magnitude of consequence is *Major*. **RISK: Intermediate**.
   c. A small portion of FS trail 211 lies at the base of a small sub-watershed. This sub-watershed burned in a mixture of severity types and flooding and sediment delivery is expected to be exacerbated at these crossings. These crossings are within the closure area and signage will be placed throughout the area. The probability of trail usage during a design storm event is *Unlikely* and the magnitude of consequence is *Major*. **RISK: Intermediate**.

2. **Property (P)**FSR 682 crossing of Blind Indian Creek and the crossings of FSR9251A, FSR9251B, and 9249A of Orejano wash are located within or just downstream of a sub-watershed within the fire scar. This sub-watershed burned in a mixture of severity types and flooding and sediment delivery is expected to be exacerbated at these crossings. Increase flow would have little impact to the present condition of these crossings or road systems located within the drainage because an established road prism or footprint is non-existent. The probability of route damage during a design storm event is *unlikely* and the magnitude of consequence is *Minor* (No route prism is established or present within channel). **RISK: Low**.
   b. FS Trail 211 crosses Blind Indian Creek and the North Fork of Blind Indian Creek. The sub-watersheds draining onto trail crossings were subjected to a mixture of burn severities which is expected to exacerbate flooding and sediment delivery at these crossings. Increase flow would have little impact on the present condition of these crossings or trail system located within the drainage. The probability of route damage during a design storm event is *Possible* and the magnitude of consequence is *Minor*. **Risk: Low**

3. **Natural Resources (NR):**
   a. Predicted soil loss is expected to increase from 1.25 tons/acre to 3.69 tons/acre which is above thresholds levels of 2 tons/acre. Probability of accelerated soil loss is *Likely* and the magnitude of risk is *Major* because it is above threeshold levels. Risk to soil productivity impairment is **Very High**. However, these extremely high levels of soil loss are expected to be short-term (2-3years) and expected shrub re-establishment would decrease these accelerated levels.
   b. Hydrological response for a selected 3807 acre watershed located in the middle of the fire is expected to have measurable increase of post-fire discharge. The probability of stream degredation is *Possible* during a design storm event and the magnitude of consequence is *Minor*. **Risk: Low**
   c. There are no known occurrences of federally listed species within or adjacent to the fire area that could be affected by fire impacts. There are no designated or proposed critical habitats for federally listed species within or adjacent the fire area. There are no known bald or golden eagle nest sites within or adjacent the fire area that could be affected by fire impacts. Only one Forest Service sensitive species for the Prescott NF is known to occur within and adjacent

the fire area. The lowland leopard frog occurs in Blind Indian Creek and Cellars Spring Creek though with limited distribution and abundance. Therefore, the probability of damage or loss to wildlife, fish and rare plants resources is *Possible* and the magnitude would be *Minor.* **Risk: Low**.

d. There are two documented salt cedar (*Tamarix* spp.) populations within the Cellar fire boundary. However, salt cedar was observed in a many drainages within the fire perimeter. It is also likely other invasive and/or noxious weeds are present and that fire suppression efforts have spread within the burned area. The BAER risk assessment is **Low**, it is *possible* that weed species occur in the area, the consequence would be *minor* because it would most likely result in a localized effects.

e. There are two historical mines located centrally within the fire perimeter surrounded by moderate burn severity. These mines consist of an adit (horizontal opening) and a prospect which is an excavation done by hand or equipment. No tailings are present at each site. Risks of post fire impacts to water quality from mine spoils is *unlikely* with a magnitude of consequence of *minor.* **Risk: Very Low**.

4. **Cultural and Heritage Resources:**

a. There are 7 sites located within the Cellar Fire boundary. There are no known sites in the high severity areas. The high severity areas are the most susceptible to erosion, and are located on the steeper slopes at the northeast end of the fire. Steep slopes have a low probability of containing archaeological sites. There is very little chance that post fire natural processes, such as erosion, will have an adverse effect on heritage resources. Post fire impacts to heritage resources is *unlikely* with a magnitude of consequence of *moderate,* therefore the post fire risk to heritage resources is **Low**.

B. Emergency Treatment Objectives: Protection of human life and safety.

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

Land NA **Channel** NA
Roads/Trails NA **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*
Land	NA		
Channel	NA		
Roads/Trails	NA		
Protection/Safety	90%	95%	98%

E. Cost of No-Action (Including Loss): Increase risk of loss of life or injury during high flow events.

F. Cost of Selected Alternative (Including Loss): Click here to enter text.**Skills Represented on Burned-Area Survey Team:**

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

Team Leader: David Moore
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Forest BAER Coordinator: David Moore
Email:david.moore@usda.gov **Phone(s):**928-443-8179

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

Skill	Team Member Name
Team Lead(s)	David Moore, Chad Yocum (Training)
Soils	David Moore
Hydrology	Chad Yocum
Engineering	Richard Polanco/Chad Yocum
GIS	Tom Potter
Archaeology	John Rose
Weeds	Francisco Anaya
Recreation	Jason Williams, Susan Johnson
Minerals	Francis Alvarado
Wildlife/Fisheries	Albert Sillas
Range	John Kava
Other	Public Relations: Debbie Maneely

H. Treatment Narrative: Land Treatments: No treatment

Channel Treatments: No treatment

Roads and Trail Treatments: No treatment.

Protection/Safety Treatments: Area closure: there is a Forest closure in effect for the burn scar and the area with increased risk of flooding caused by the fire scar. This closure will last until after the probability of monsoon occurrence (September 30). The objective of this treatment is to prevent the public from entering the flood prone areas and areas with unstable rock and soil until after the increased threat of monsoon. Safety of public access will be re-evaluated to determine if the Forest closure needs to be extended.

Forest road 9251B and a portion of 9251A are currently Level 2 roads that are located immediately within a channel bottom with no road characteristics. Management actions will investigate appropriate road designation to account for post-fire public safety (i.e. unstable soils, falling rock, and flooding), road infrastructure needs, and resource protection).

I. Monitoring Narrative: Monitoring of the area will occur prior to closure suspension to determine if the closure order needs extension due to continued post-fire hazards. Forest road 9251B and a portion of 9251A will be analyzed for appropriate road designation of Level 1, Administrative Use Only or current designated operative use of Level 2 designation – high clearance road. If the level 1 designation does not occur prior to rescinding, these roads will be evaluated to determine if longer closure orders need to be placed.

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										
				$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										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road and Trails				$0	$0		$0		$0	$0
D. Protection/Safety										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$0	$0		$0		$0	$0
E. BAER Evaluation										
Initial Assessment	Report			---	$9,500		$0		$0	$9,500
				$0	$0		$0		$0	$0
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				$0	$9,500		$0		$0	$9,500
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				$0	$9,500		**$0**		**$0**	**$9,500**
Previously approved										
Total for this request				**$0**						

PART VII - APPROVALS

1. Dale A. Dart — 1 Aug. 2019

Forest Supervisor — Date