Date of Report: 10/4/2019

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: Sheridan

B. Fire Number: AZ-PNF-001190

C. State: Arizona

D. County: Yavapai

E. Region: 3

F. Forest: Prescott National Forest (PNF)

G. District: Chino Valley

H. Fire Incident Job Code: P3MLN2 (0309) [P]

I. Date Fire Started: August 5, 2019

J. Date Fire Contained: 10/15/2019 (projected)

K. Suppression Cost: $4,175,000

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

1. **Fireline repaired (miles):** 1.5 miles dozer line and 3.5 miles handline
2. **Other (identify):** 15 miles of chipping, installation of 1 spring exclosure, miscellaneous fence repair, 12 illegal trail signs and seeding of 5 pullout areas

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150302030205	Cottonwood Canyon	35825	11476	32%
150602010701	Humphrey Wash	11820	1056	9%
150302030202	Smith Canyon	28187	99	<1%
150602010702	Stringtown Wash-Pine Creek	12544	1231	10%
150302020301	Upper Boulder Creek	14901	963	6%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	21693
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0
PRIVATE	40
TOTAL	

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

P. Dominant Soils: Lithic Haplustalfs

Q. Geologic Types: Granite; Basalt

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	118.9
EPHEMERAL	0
OTHER (DEFINE)	

*Some small perennial pools or very small perennial stretches exist that are not picked up in the NHD layer and perennial roundtail chub habitat exist just downstream from the burned area.

S. Transportation System:
Trails: *National Forest (miles):* 26.5 *Other (miles):* --
Roads: *National Forest (miles):* 43.7 *Other (miles):*

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		6765	0	18	6783	31%
Low		4361	0	22	4383	20%
Moderate		7732	0	0	7732	36%
High		2836	0	0	2836	13%
Total		21693	0	40	21734	100%

B. Water-Repellent Soil (acres): 8635

C. Soil Erosion Hazard Rating: Moderate

D. Erosion Potential: 1.43 tons/acre **Sediment Potential:** 31,155 tons

F. Estimated Vegetative Recovery Period (years): 3-10 years

G. Estimated Hydrologic Response (brief description): Estimated Hydrologic Response (brief description): A 60 minute/ 5 year, 10 year, and 25 year return interval was utilized to predict post-fire storm impacts. Storm events were 1.41 inches, 1.70 inches, and 2.09 inches, respectably. Small headwater

watersheds of Cottonwood Wash (2018.5 acres), Cottonwood Canyon (1330.4 acres), and Stinson Wash (1145.1 acres) were modeled for predicting post-fire flow increase within the burned area. These small headwater drainages are inputs to Cottonwood Canyon and were chosen based on Soil Burn Severity percentages and road or trail intersections. See table 5 below for modeled predicted flow increases. Where road stream intersections exists within the burn scar, post fire increased flows from small watersheds throughout have a high probability of road surface impacts. 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 Cottonwood Canyon where it exits the fire scar area and exits PNF shortly downstream where it flows into Sycamore Creek.

Table 5: Flow increase with the burned area.

	Cottonwood Wash HW	Cottonwood Canyon HW	Stinson Wash
Acres	**2018.5**	**1330.4**	**1145.1**
5YR Pre (cfs)	897.28	559.09	531.63
5YR Post (cfs)	1704.57	1404.8	1407.72
% Change	**89.97**	**151.27**	**164.79**
10YR Pre (cfs)	1446.88	897.78	859.85
10Yr Post (cfs)	2507.25	1989.78	1967.09
% Change	**73.29**	**121.63**	**128.77**
25YR Pre (cfs)	2350.56	1469.65	1389.22
25YR Post (cfs)	3721.1	2897.74	2775.85
% Change	**58.31**	**97.17**	**99.81**

PART V - SUMMARY OF ANALYSIS

Introduction/Background: The Sheridan Fire began August 5, 2019 on a secluded basalt mesa top named Cedar Mesa within the Chino Valley Ranger District. The fire is located Northwest of Prescott in a popular recreation area primarily with hunters and OHV users.

Vegetation within the fire perimeter primarily consists of interior chaparral, Pinyon-juniper evergreen shrub, and Ponderosa Pine-Evergreen Oak. The majority of the fire is affiliated with moderately steep gradients on moutain and hill landforms. In addition, a large portion of the fire is affiliated with very steep gradients. The origins of the burn occurred within a mesa top. Predominant parent material consists of granite.

Moderate and High burn severity are in mosaic patterns within the fire and are concentrated within the center north – south location. Light burn severity is primarly located within the eastern and northern portions of the fire. Light burn severity is normally affiliated with an understory burn with charred black ash. Moderate and high burn severity had similar conditions due to the nature of how shrub species burn. Moderate burn severity areas where subject to fire within the shrub canopy with complete leaf consumption but the skeletal formation of the shrub species has been retained. High burn severity areas were subject to complete canopy cover consumption with non-consumed material limited to the basal soil interface. Pre-burn fire conditions exhibited weak to medium hydrophobicity. Moderate burn severity areas normally had medium hydrophobicity white high burn severity had strong hydrophobicity. Average, overall, post-fire soil loss rates are expected to increase from .27 tons/acre to 1.43 tons/acre. This is below established threeshold levels of 2.0 tons/acre.

Peak flow was modelled for three drainages within the central burned area. For a 60 minute/25 year return interval storm event, flow for these drainages is expected to increase 58.31, 97.17, and 99.81% (Table 5). Increased post fire flows and erosion predictions are likely. The modelled post-fire streamflow responses will be complarable within and downstream of the burns scar. Most small drainages within the burned area have

some bedrock control, intermittent to perrenial pools, and small alluvial reaches. Over 30% of Cottonwood Canyon 6th level watershed burned, much of that in high and moderate severity within the headwaters of the subwatershed. However, the dominant drainage of Cottonwood Canyon is predominantly intact, is bedrock controlled, and is expected to attenuate flows and function properly with the predicted increase of flow and sediment production. However, on many of its tributaries, flooding, sediment and debris movement, and some downcutting in headwater floodplains is expected to occur. This will attenuate but not all together disipate as increase flow goes through and exits Cottonwood Canyon to its confluence with Sycamore Creek.

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

Table 6: 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 west central area of the Prescott National Forest; east and south of the YOLO ranch and mostly south of the Camp Wood area. Peak flows of the burned area should disipate but not altogether atenuate prior to reaching the Santa Maria River. Areas on Forest Service lands associated with the burn scar or potential post-fire flooding events has undergone an administrative closure until October 24th. Prior to rescinding of the forest closure, warning signage informing the public of post-fire hazards will be installed. The probability of Forest Service usuage within the ***administrative closure*** period during a design storm event is *Unlikely.* The probability of Damage or Loss to public safty during post closure ***with no mitigative measures*** is *Likely and* the magnitude of consequence is *Major*. **During Administrative Closure** the **RISK is Intermediate. Post Fire conditions without any mitigative measures the RISK is Very High.**

b. Approximately 44 route miles of roads are located within the burn scar of the fire. Multiple low water crossings exist within or just downstream from the burn area. An example of post fire Human Life and Safety concerns that underwent hydrologic modeling include: Forest Service Route (FSR) 665 crossing of Cottonwood Wash and the crossings FSR705 of Stenson Wash and FSR705 of Cottonwood Canyon are of high concern. These sub-watershed burned in a mixture of severity types and flooding, sediment delivery, and road scour is expected to be exacerbated at these crossings. These crossings are within the closure area which will be lifted October 24th. The probability of route usuage within the ***administrative closure*** period during a design storm event is *Unlikely.* The probability of Damage or Loss to public safty during post closure ***with no mitigative measures*** is *Likely and t*he magnitude of consequence is *Major*. **During Administrative Closure** the **RISK is Intermediate. Post Fire conditions without any mitigative measures the RISK is Very High.**

c. Approximately 27 route miles of roads are located within the burn scar of the fire. Multiple low water crossings exist within or just downstream from the burn area. An example of post fire Human Life and Safety concerns that underwent hydrologic modeling include: A small portion of FS trail 010 (Shivers Trail), FS trail 011 (Sheridan Mountain), and FS Trail 133 (BT Butte); all lie at the base of small sub-watersheds. The sub-watersheds burned in a mixture of severity types; however, flooding, sediment delivery, and route scour is expected to be exacerbated at these crossings. These crossings are within the closure area which will be lifted October 24th. The probability of route usuage within the ***administrative closure*** period during a design storm event is *Unlikely.* The probability of Damage or Loss to public safty during post closure ***with no mitigative measures*** is *Likely and t*he magnitude of consequence is *Major*. **During**

Administrative Closure the **RISK is Intermediate. Post Fire conditions without any mitigative measures the RISK is Very High.**

d.

2. Property (P):

a. Multiple low water crossings exist within or just downstream from the burn area. Forest Service Route (FSR) 665 crossing of Cottonwood Wash and the crossings FSR705 of Stenson Wash and FSR705 of Cottonwood Canyon are of high concern. The area burned in a mixture of severity types and flooding, sediment delivery, and road scour 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 damage during a design storm event is *Likely* and the magnitude of consequence is *Moderate*. **RISK: High**.

b. Stream crossings of FS trail 010 (Shivers Trail), FS trail 011 (Sheridan Mountain), and FS Trail 133 (BT Butte) lie at the base of a small sub-watersheds. The sub-watersheds burned in a mixture of severity types and flooding, sediment delivery, and route scour 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 damage during a design storm event is *Likely* and the magnitude of consequence is *Moderate*. **RISK: High**.

3. Natural Resources (NR):

a. Predicted soil loss is expected to increase from .27 tons/acre to an average of 1.43 tons/acre which is below threshold levels of 2 tons/acres. However, areas affiliated with moderate and high burn severity on steeper slopes are expected to increase to 3.26-3.82 tons/acre. Probability of soil damage is *Possible* with some areas susceptible to a Magnitude of Consequence of *Moderate* but the average soil loss rates are expected to have a *Minor* rating. **Risk: Low to Very Low**

b. Hydrological response for three selected watersheds located in the middle of the fire are expected to have measurable increases of post-fire discharge (table 5). Most drainages within the fire scar and downstream of the fire scar will have comparable responses. The probability of stream degradation is *Likely* during a design storm event and the magnitude of consequence is *Minor*. **Risk: Low**

c. The golden eagle is a federally protected species under the Bald and Golden Eagle Protection Act and is known to occur within the perimeter of the Sheridan Fire (see map enclosed). With a *Likely* probability of damage or loss to golden eagles nesting habitat and a *Minor* magnitude of consequences to only one nest site, there is a **Low risk** to golden eagles from the Sheridan Fire.

d. There are no other known occurrences of federally listed terestrial species, other then the golden eagle, 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. Therefore, the probability of damage or loss to other sensitive terestrial wildlife is *Unlikely* and the magnitude would be *Minor.* **Risk: Very Low**.

e. The were four known sensitive species with in the burn parimter; Arizona Phlax, Flagstaff Beard Tongue, four sites of Broadleaf Lupine, AND three sites of Senator Mine Alum Root. Therefore, the probability of damage or loss of rare or sensitive plants resources is *Possible* and the magnitude would be *Minor.* **Risk: Low**. .

f. There are no known occurrences of federally listed aquatic 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 aquatic species within or adjacent the fire area. Three Forest Service sensitive aquatic species (Roundtail chub, Sonora sucker, and Lowland leopard frog) are known to occur within Cottonwood Canyon. Given the high probability of flooding and sediment/debris movement in the subwatershed, the probability of damage or loss to aquatic resources is *Likely* though the magnitude would be *Mino*r. Risk: **Low**.

g. There are three documented salt cedar (*Tamarix* spp.) populations within the Sheridan fire boundary. However, salt cedar was observed in a many drainages within the fire perimeter and

adjacent. Bull Thistle and Hardhead (thistle) were also observed 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.

h. There are three known mines within the burn perimeter. The Juniper mine, primarily a lead mine, is located south of county road 68 just off Camp Wood Brush Road; Camp Wood Sillimanite Group Mine is just north of Shivers Trap Road; and the Energy Reserve Group mine, primarily a Uranium mine located near South Mesa Road. The areas surrounding these mines burned at moderate or low intensity. Therefore, the probability of damage, loss, or sediment laden runoff to or form the site is *Possible* and the magnitude would be *Minor.* **Risk: Low**. .
Risk: Very Low.

4. Cultural and Heritage Resources:
PENDING.

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 7: 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: Chad Yocum
Email:david.moore@usda.gov **Phone(s)**928-443-8179

Forest BAER Coordinator: David Moore
Email: chad.yocum@usda.gov **Phone(s):**928-443-8082

Team Members:*Table 8: BAER Team Members by Skill*

Skill	**Team Member Name**
Team Lead(s)	Chad Yocum (Training), David Moore
Soils	David Moore
Hydrology	Chad Yocum
Engineering	Richard Polanco/Chad Yocum
GIS	Tom Potter
Archaeology	John Rose

Skill	Team Member Name
Weeds	Francisco Anaya
Recreation	Jason Williams/David Moore
Minerals	Francis Alvarado
Wildlife/Fisheries	Noel Fletcher, Albert Sillas
Range	
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 be in effect until October 24th to mitigate post fire risks associated with Human Life and Safety. The administrative closure will be lifted October 25th to provide for a very popular hunt located within a Game Management Unit which encompasses the fire area. To retain mitigation measures to warn the public of hazardous conditions, signage has been identified at 32 locations affiliated with approximately 70 miles of trails and roads. Installation of signage will be conducted prior to lifting the administrative closure on October 25th.

Road and Trail Signage: A total of 32 warning hazardous signs will be installed on FS Roads and Trails. The signs will warn the public of hazardous road conditions due to flooding, falling rocks, and unstable soils. This is intended to mitigate the potential loss of human life and safety. Sign and installation cost is projected to be $250/sign. Total request for 32 signs is $8,000.
The following table provides a guideline of route signage needed.

Route	Total Signs
FS 665	2
FS 705	2
FS 918	1
FS 95	1
FS 95D	1
FS 9867B	1
FS 9869B	1
FS 9872B	1
FS 9879	2
FS 9913	1
FS-702	2
FS-9886B	1
FS-9921	2
Trail 10	2
Trail 11	2
Trail 13	1
Trail 133	2
Trail 22	2
Trail 8	3
Trail 9	2
Total	**32**

I. Monitoring Narrative: Post-fire route condition will be monitored along with effectiveness of public warning signage. Forest force account will be utilized.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

			NFS Lands				Other Lands				All
		Unit	# of		Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$		units	$	Units	$	$
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											
Warning signage	signs	250	32	$8,000	$0			$0		$0	$8,000
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Channel Treatments				$8,000	$0			$0		$0	$8,000
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				$8,000	$9,500			**$0**		**$0**	**$17,500**
Previously approved											
Total for this request				**$8,000**							

PART VII - APPROVALS

1. /s/ Mary Rasmussen-Flores — 4 October 2019
   Acting Forest Supervisor — Date