

Date of Report: 7/13/2020

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 #2
 - Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Bush

B. Fire Number: AN-TNF-001581

C. State: Arizona

D. County: Gila and Maricopa

E. Region: Southwestern Region

F. Forest: Tonto NF

G. District: Mesa and Tonto Basin

H. Fire Incident Job Code: P3M6M6

I. Date Fire Started: 6/13/2020

J. Date Fire Contained: est. 7/4/2020

K. Suppression Cost: 9,400,000.0

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

- 1. Fireline repaired (miles):
- 2. Other (identify):

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150601030910	Cottonwood Creek-Salt River	14754	4	0.03
150601050311	Hardt Creek-Tonto Creek	17417	2823	16.21
150601050402	Slate Creek	18390	12223	66.47
150601050403	Packard Wash-Tonto Creek	23721	7680	32.38
150601050406	Lambing Creek-Tonto Creek	33398	20076	60.11
150601050407	Sycamore Creek	11885	4905	41.27

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150601050409	Ash Creek-Tonto Creek	13919	2117	15.21
150601050501	Rock Creek	13861	11370	82.02
150601050503	Bumblebee Creek-Tonto Creek	17966	7898	43.96
150601050504	Mills Canyon-Tonto Creek	21348	7557	35.40
150601060102	Buckhorn Creek-Salt River	18337	7999	43.62
150601060103	Salt River-Apache Lake	29454	12380	42.03
150601060108	Salt River-Canyon Lake	18188	1203	6.61
150601060109	Cane Spring Canyon	8107	6824	84.17
150601060110	Cottonwood Creek	32628	27173	83.28
150601060112	Jones Canyon	12000	3728	31.06
150601060113	Salt River-Saguaro Lake	12344	24	0.19
150601060302	Bulldog Canyon-Salt River	39444	631	1.60
150602030601	Upper Sycamore Creek	39506	16347	41.38
150602030602	Rock Creek	9851	9691	98.37
150602030603	Mesquite Wash	12666	12372	97.68
150602030604	Middle Sycamore Creek	32885	12394	37.69
150602030605	Lower Sycamore Creek	26696	5753	21.55

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	192,412
OTHER FEDERAL (LIST AGENCY AND ACRES)	
STATE	
PRIVATE	43
TOTAL	192,455

O. Vegetation Types:

Elevation within the Bush Fire footprint ranges from 1,663 to 7,648 feet. This range of elevation covers many unique ecosystems including Sonoran Desert, Semi-Desert grassland, Juniper grassland, Pinyon-Juniper woodland, Interior Chaparral, and Ponderosa Pine forest. Dominant vegetation types in the Sonoran Desert include Saguaro Cactus, Yellow Paloverde, and Jojoba. Semi-Desert grassland, which often exhibits poor soil condition, is dominated by woody species including Mesquite and Acacia. The characteristic species of the chaparral ecosystem are Mountain Mahogany, Manzanita, and Sonoran scrub oak. Pinyon-juniper woodlands include single leaf Pinyon pine, Alligator Juniper, and Redberry Juniper. The Ponderosa Pine ecosystems have an over story dominated by Ponderosa Pine with alligator juniper and Arizona white oak in the understory.

P. Dominant Soils:

Soil temperature and moisture regimes vary greatly across the elevational gradient within the Bush Fire footprint, and include aridic hyperthermic, aridic thermic, ustic thermic, and ustic mesic. This paired with the geologic diversity in the area leads to a wide range of soil classifications. The Sonoran Desert is dominated by Ustic Haplargids ranging from shallow to deep, including several different particle size classes and occurring primarily on granite. The semi-desert grasslands are dominated by Aridic Haplustalfs, which are primarily deep, occurring on granite or sandstone. Soils in the Pinyon Juniper woodland and Chaparral systems vary between Typic Haplustalfs and Typic/Lithic Argiustolls. These soils are typically shallow to moderately deep, occurring on granite, schist, and sandstone. Finally, the Ponderosa Pine forests are dominated by Udic Argiustolls which are typically moderately deep, occurring on schist and granite.

Q. Geologic Types: Granite, Alluvium, and 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
PERENNIAL	5.58
INTERMITTENT	222.39
EPHEMERAL	1591.1
OTHER (DEFINE)	

S. Transportation System:

Trails: National Forest (miles): 83.9

Other (miles):

Roads: National Forest (miles): 299

Other (miles): 27.25

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	18,340			59	18,399	9.4
Low	80,278			139	80,417	41.3
Moderate	86,981			319	87,300	44.7
High	8,963			28	8,991	4.6
Total	194,562			545	195,107	100

B. Water-Repellent Soil (acres): 56,822

C. Soil Erosion Hazard Rating: 77,017

D. Erosion Potential: 1.23 tons/acres

E. Sediment Potential: 1.23 tons/acre

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

G. Estimated Hydrologic Response (brief description):

Sixteen HUC 12 watersheds have more than 25% of their area within the burn area and 5 HUC 12 watersheds have more than 75% of their area within the burn area. Hydrologic response from the burn scar will be significant (>100% increase) for 72% of the sub-watersheds modelled in the 2-year storm event and 66% of modelled sub-watersheds for the 10-year storm. For the 2-year storm event 23 of the 108 sub-basins modelled

(21%) have increases of greater than 500% and an additional 32 sub-basins (30%) have increased from no runoff pre-fire to some amount of runoff post fire. For the 10-year storm event 30 of the 108 sub-basins modelled (28%) have increases of greater than 500% and an additional 5 sub-basins (5%) have increased from no runoff pre-fire to some amount of runoff post fire. A number of stream reaches and watersheds on the interior of the burn area have a greater than 50% likelihood of producing debris flows at modest 15-minute rainfall intensities between 12 and 24 mmh-1. The stream segments with the greatest likelihood of debris flows (>60%) occur in the southeastern portion of the burn area in the vicinity of Browns Peak and Four Peaks. Most watersheds are estimated to produce debris-flow volumes between 10,000 and 100,000 m3. The three largest Upper Sycamore, Middle Sycamore and Cottonwood creek in the southern half of the burn area are estimated to produce debris-flow volumes between 10,000 and 100,000 m3.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Bush Fire burned 195,107 acera of Sonoran Desert, Semi-Desert Grasslands, Pinyon Juniper grasslands, Interior Chaparal and Ponderosa pine forest on the Tonto National Forest. Forest Service Infrastucture, and cultrual Resources are extensive in the in the area. There are established camp grounds or recreation sites in the burn perimeter and down stream of the burn area. Dispresed recreation and camping is also extensive in the burned area. Forest Service Road 626 that leads to a Forest Service Mt.Ord Radio repeater had areas of low, moderate, and high soil burn sevurity in areas adjecent to the fire.Increased soil ersion in the areas has the potential to make road impassable due to increased sedimentation being depostied on roads and trails or increased erosion of the road. With increased erosion rate the occurrence of increase rolling rock, tree fall and other debris moving down hill can he increased due to the removal of the soil matrix that is holding them in place. Debris flow modeled by the USGS predicted the probablittly of debris flows at the high elvations between 60-90%. Not only do these debirs flow pose a significant theat to the life and safety of individual in the area. Debris flow could destrory available road making it difficult for people to leave the a hazard area, but also make it difficult for recuers to enter into an area. Due to the loss of vegetative cover and change in soil properties changes are expected in the watershed response when compared to pre-fire conditions. These changes include increased peak flows, potential hyper concentrated flow, and debris flows. These change in watershed response pose a risk to individuals inside the burn area and to within same watershed, but outside the burn area.

This asesment was completed remotely using resources inventories, remote sensing and appropriate models with limited ground truthing. If needed additional on the ground assessments can be completed once the COVID-19 Environment improves

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):** Risk to life and Safety is very high within and down gradient from the burned area due to increased runoff debris flows and rolling rocks. Forest Service users will be at risk on Roads, trails, and campsites in the burn area and at adjacent area describe in the specialist report.
- 2. Property (P):** Forest Service Road 626 leads to the summit of Mt. Ord and the Mt. Ord Forest Service radio repeater. This repeater service as a critical communication resource for multiple districts on the

Tonto NF. Preventing the loss of this road is critical to maintain communication capabilities of multiple districts on the Tonto National Forest.

- 3. **Natural Resources (NR):**
- 4. **Cultural and Heritage Resources:**

B. Emergency Treatment Objectives: Ensure Human Life and Safety

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

Land: 0
 Channel: 0
 Roads/Trails: 60%
 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			
Channel			
Roads/Trails			
Protection/Safety	70	80	100

E. Cost of No-Action (Including Loss): Possible Loss of Human life and or injury

F. Cost of Selected Alternative (Including Loss): N/A

G. Skills Represented on Burned-Area Survey Team:

- Soils
- Hydrology
- Engineering
- GIS
- Archaeology
- Weeds
- Recreation
- Fisheries
- Wildlife
- Other:

Team Leader:

Email: mark.casillas@usda.gov **Phone(s)** 505-842-3253
michael.a.martinez@usda.gov 602-225-5252

Forest BAER Coordinator:

Email: kelly.mottlacroix@usda.gov **Phone(s):**602-225-5210

Team Members: Table 7: BAER Team Members by Skill

Skill	Team Member Name
Team Lead(s)	Andy Casillas Mike Martinez
Soils	Rob Ballard David Watson
Hydrology	Kelly Mott Lacroix Alex Makic
Engineering	Michelle Tom
GIS	
Archaeology	Clint Dalton
Weeds	Ryan Nicholas
Recreation	Kelly Finely Devin Quintana
Other	Kelly Kessler Wildlife

H. Treatment Narrative:

Following current guidance related to the COVID-19 environment. Treatments are being limited to those that protect Human life and Safety. Response actions for human life and safety included collaboration with

multiple partners including NOAA, Gila County and Maricopa County along with Closure Gate and Warning Signs.

Land Treatments: Treatments for Land, Channel, Roads, and Trails that protect natural resources, cultural resources, and Forest Service Infrastructure will be implemented once the COVID-19 environment improves and a brief reassessment is completed.

Channel Treatments: N/A

Roads and Trail Treatments: To help protect life and safety and BAER critical infrastructure, road treatments on Forest Service Road 626 are recommended. Forest Service Road 626 leads to a Forest Service radio repeater at the summit of Mt. Ord. This repeater serves as a critical communication link for multiple districts on the Tonto National Forest. Proposed treatments include installing reinforced, armored rolling dips, re-establishing ditches, cleaning sediment and debris from existing culvert inlets, reinforcing existing culvert outlets, installing BAER signs, grading and hardening segments of damaged road, and reinforcing eroded shoulders and slopes along edge of roadway. These treatments will provide adequate road drainage and reduce potential damage to road infrastructure. The cost for the proposed treatment is \$88,999. At the time of this report work on hardening Forest Service road 626 has begun.

Proposed treatments are located along the first 3.7 miles of Mt Ord Road (FSR 626) beginning at the first cattle guard (MP 0.4) and ending at its intersection with Old Mt Ord Road (FSR 27). Location sites are as follows:

- 2 locations - remove debris and sediment from existing culverts inlets
- 10 locations – install reinforced, armored rolling dips with rock spillways
- 2 locations – reinforce culvert outlets – install diffusers, backfill around culvert outlets, and add
 - riprap to first location and boulders/gabion baskets to second location
- 2 locations – reinforce slopes along edge of road
- 2 locations – install one BAER sign at each location
- 1 location - establish ditch adjacent to cattle guard. Reinforce eroded areas around cattle guard.
- Spot grading and hardening of roadway. Total length of grading and hardening is
 - approximately 1.25 miles
- Re-establish/clean ditches (approximately 1.25 miles)

Protection/Safety Treatments: Installation of 1 heavy Duty Gate where Forest Road 143 meets Highway 87. Three Standard gate will be installed where Forest Road 143 meets Highway 188, on Forest Service road 524 meet Forest Service road 491, Forest Service road 385 meets Highway 87 and Forest Service Road 3532 meets Highway 87 The purpose of these gate is prevent the public being able to access the burn area, established and dispersed recreation site and established and dispersed camping areas that are expected to experience increased flooding and debris flows. Installation of Warning and Closure signs will occur at entry points of the closure area and in adjacent areas that may see increased flooding and debris flows as identified during assessment. The cost for gate and signs to protect human life and safety totals \$107,235. At the time of this report specification work for the gates is complete and contracting for installation has been initiated. The purchase orders for additional signs has been submitted and already available signs are being installed by district staff.

I. Monitoring Narrative:

To be determined

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	
A. Land Treatments									
				(b) (5)		(b) (5)		(b) (5)	\$0
									\$0
<i>Insert new items above this line!</i>									
<i>Subtotal Land Treatments</i>									
									\$0
B. Channel Treatments									
				(b) (5)		(b) (5)		(b) (5)	\$0
<i>Insert new items above this line!</i>									
<i>Subtotal Channel Treatments</i>									
									\$0
C. Road and Trails									
Mt Ord road Hardening	ea	(b) (5)				(b) (5)		(b) (5)	\$88,999
									\$0
<i>Insert new items above this line!</i>									
<i>Subtotal Road and Trails</i>									
									\$88,999
D. Protection/Safety									
Warning signs	ea			(b) (5)		(b) (5)		(b) (5)	\$10,200
Warning signs	ea			(b) (5)					\$20,250
Heavy Duty Closure Gate	ea			(b) (5)					\$43,315
Standard Gate (Single)	ea								\$12,830
Standard Gate (Double)	ea								\$20,640
<i>Insert new items above this line!</i>									
<i>Subtotal Protection/Safety</i>									
									\$107,235
E. BAER Evaluation									
Initial Assessment	Report			(b) (5)		(b) (5)		(b) (5)	\$0
<i>Insert new items above this line!</i>									
<i>Subtotal Evaluation</i>									
									\$0
F. Monitoring									
				(b) (5)		(b) (5)		(b) (5)	\$0
<i>Insert new items above this line!</i>									
<i>Subtotal Monitoring</i>									
									\$0
G. Totals									
				\$196,234	\$0	\$0		\$0	\$196,234
Previously approved				\$98,999					
Total for this request				\$97,235					

PART VII - APPROVALS

THOMAS TORRES

Digitally signed by THOMAS TORRES
Date: 2020.07.21 15:23:37 -07'00'

1. _____ Date

Forest Supervisor