Date of Report: July 16, 2021

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 (entries denoted by #2)
☒ Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Telegraph Fire

B. Fire Number: AZ-TNF-001255

C. State: AZ

D. County: Gila and Pinal

E. Region: 3

F. Forest: Tonto

G. District: Globe

H. Fire Incident Job Code: P3N14V (0312)

I. Date Fire Started: June 4, 2021

J. Date Fire Contained: July 3, 2021

K. Suppression Cost: $35,000,000

L. Fire Suppression Damages Repaired with Suppression Funds (estimates):
1. **Fireline repaired (miles):** 11 miles
2. **Other (identify):**

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150501000405	Alamo Canyon-Queen Creek	19,613	4358	22%
150501000401	Arnett Creek	19,913	17,249	87%
150601030602	Bloody Tanks Wash	13,179	6,146	47%
150501000309	Box Canyon-Gila River	23,171	2,596	11%
150501000703	Cottonwood Canyon	13,863	381	3%
150400070302	Cutter Tank	16,020	2,994	19%
150501000704	Deep Well Tank	13,999	87	1%
150501000205	Devils Canyon	22,821	17,006	75%
150601030701	Haunted Canyon	11,426	1.24	0%
150501000207	Lower Ranch Creek	20,960	6,507	31%
150501000204	Lyons Fork	12,356	12,356	100%

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150601030601	Russell Gulch	13,439	8,606	63%
150501000105	Silver Creek	17,297	13,439	78%
150501000402	Silver King Wash-Queen Creek	20,841	1,531	7%
150501000106	Upper Dripping Spring Wash	32,713	21,717	66%
150501000206	Upper Mineral Creek	22,637	22,107	98%
150601030604	Upper Pinal Creek	28,581	7,101	25%
150601030703	Upper Pinto Creek		5,798	
150400070301	Upper Ranch Creek	26,817	17,619	66%
150501000302	Walnut Canyon	11,885	5,462	46%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	94,528
OTHER FEDERAL (LIST AGENCY AND ACRES)	
BIA – SAN CARLOS	13,158
BLM	18,013
STATE	42,248
PRIVATE	17,156
TOTAL	185,102

O. **Vegetation Types:** PIPO/JUDE2/QUGR, Pinyon Juniper Woodland, Interior Chaparral, Sonoran Desert Grassland

P. **Dominant Soils:** Udic Argiustolls, Lithic Ustorthents, Ustic Haplagrids, Lithic Haplastalfs, Aridic Haplastalfs

Q. **Geologic Types:** Granite, 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
PERRENNIAL	2.37
INTERMITTENT	121
EPHEMERAL	1142
OTHER (DEFINE)	2.88

S. **Transportation System:**
Trails: *National Forest (miles):* 40.2 *Other (miles):* 90.8 (State)
Roads: *National Forest (miles):* 253.5 *Other (miles):* 11.9 (AZ Trail)

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
		BLM	BIA				
Unburned	11,903	4,666	1,392	8,887	4,640	31,488	

Soil Burn Severity	NFS	Other Federal (List Agency)		State	Private	Total	% within the Fire Perimeter
		BLM	BIA				
Low	44,179	11,776	8,185	27,654	7,864	99,658	
Moderate	37,488	1,504	3,549	5,692	4,621	52,854	
High	958	67	32	14	31	1,102	
Total	94,528	18,013	13,158	42,248	17,156	185,102	

B. Water-Repellent Soil (acres): Low - 40,004; Mod - 26,669; High - 66,674

C. Soil Erosion Hazard Rating: Slight – 15,102; Mod – 86,094; High – 21,614

D. Erosion Potential: 10.2 tons/acre

E. Sediment Potential: 289 tons/square mile

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

G. Estimated Hydrologic Response (brief description): Areas of moderate and high severity were characterized by complete absence of vegetative ground cover. Approximately 93,343 acres within the Telegraph Fire are estimated to have moderate to strong water repellency between the soil surface and a depth up to 0.25 inches. The majority of soils within the burned area have a hydrologic soil group D, indicating high potential for runoff when thoroughly wet and water transmission through the soil is somewhat restricted. Additional effects of the fire will cause more runoff, accelerated sheet and rill erosion throughout the fire areas, as well as the potential for rock fall and debris slides.

The Telegraph Fire burned with primarily low severity in the Sonoran desert and Sonoran grassland ecosystem types, but included significant areas of moderate and smaller areas of high soil burn severity in the chaparral, ponderosa pine, evergreen oak and pinyon juniper vegetation types. Large, contiguous, areas of moderate soil burn severity are contributing to the elevated watershed response. Areas of particular concern include the Bloody Tanks Wash, Russel Gulch, Upper Pinto Creek, Upper Mineral Creek watersheds. Many modeled sub-basins had increases from 0 cfs pre fire at least 100 cfs or over 100% increases. In some cases (Mineral Creek, Pinto Creek above the US 60 bridge, Copper Springs Canyon, Upper Bloody Tanks sub-basins) the two-year storm is modeled to produce flows that were modeled to occur in a 100-year event pre fire. According to the USGS analysis, the primary areas of concern for debris flows are in the Silver Creek watershed on the southern boundary of the Tonto and some smaller areas along Pinal Creek, Russel Gulch, and Lyons Fork. Stream segments with elevated risk of debris flows are found throughout the portions of the burn scar with moderate and high soil burn severity. Most watersheds are estimated to produce debris-flow volumes between 10,000 and 100,000 m^3. Although modeled results from Icehouse and Kellner Canyons indicate minimal runoff and debris flow risk these areas are within the 2017 Pinal Fire burn scar and the current modeling may underestimate risk in these areas.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

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 human life and safety is very high within and down gradient from burned areas due to expected increases in runoff, debris flows, and rolling rocks, particularly along channels and where FS roads or trails cross channels. The probability of damage or loss was rated as possible to likely with a major magnitude of consequences due to the potential for loss of life or injury to humans. Forest Service users could be at risk on roads, trails, and dispersed rec sites within, and adjacent to, the burn area.

   The Ellis Vein Mine site is a former copper mine that was remediated in 2017 under a CERCLA Non-Time Critical Removal Action to address the release of hazardous substances (copper and arsenic) from Upper Pinto Creek and to ensure overall protection of human health and the environment. The total original cost of the remediation in 2017 was $309,216. The soil burn severity at and above the site is high and moderate. Modelled erosion rates at the site are 19.7 tons per acre for moderate severity and 37 tons per acre for high compared to 0.4 tons per acre-per year pre-fire. Modeled flows for the area above the site show very significant increases for the 1 yr and 2 yr events (from 0 cfs pre fire to 100-200 cfs post fire) and extreme (from 0 to >200 cfs) for the 5 year event. Debris flow hazard above the site is 60-80% likelihood for the 5 year return interval events. These data demonstrate that there is very likely probability of damage or loss to the site and given that failure of the consolidation cells could uncover the waste rock contained within, presenting a threat to human health, the environment, and the resource itself the magnitude of the consequence is major. The team assessment rated the risk for the Ellis repository as very high. The probability of damage or loss was rated as very likely (nearly certain occurrence, 90%-100%) with a major magnitude of consequences due to the potential for release of hazardous materials.

   (#1) Potential risk and concern was identified at the former Henderson Ranch/Blue Gate Repository, nearest to Pinto Creek in the Upper Pinto Creek HUC12. The hyperconcentrated flow to that point was calculated using the Reed-Schaffner equation. This equation takes into account; the fraction of the sub-watershed with moderate and high soil burn severity, total drainage area of the subbasin, channel relief ratio, and average elevation. The Henderson Ranch/Blue Gate Repository is at extreme risk for the 10 year return interval and high risk for the 5 year return interval. A rating of extreme risk is anything that is greater than 2,000 cfs/sq mi. The site was originally remediated in 2017 under CERCLA due to the potential for contamination transport from the source material (waste rock) to the surrounding environment and the risk to human receptors from arsenic in the waste rock. In total, 620 cubic yards of waste rock was consolidated at the repository. The original cost associated with the Non-Time Critical Removal action in 2017 along with the one other site that was done at the same time was $621,573. The concern for the site is that the waste consolidated at the repository could potentially be uncovered by increased runoff or debris flows resulting in a release of hazardous material and damage to the constructed features (resource). The BAER team assessment rated the risk for the Henderson Mine as very high. The probability of damage or loss was rated as very likely (nearly certain occurrence, 90%-100%) due to a very significant increase at the 1 year event, and an extreme increase at the 2 and 5 year events. The magnitude of consequences was rated as major due to the potential for release of hazardous materials.

   (#2) It is anticipated that some form of area closure will be necessary over the next several weeks or months to address risk to human life and public safety from post-fire conditions. Of particular concern is access to NFS land provided by FSR 651, 112, and 899. FSR 651 has an existing that is in a state of disrepair. FSR 651 is a highly accessible road for communications tower owners, cabin owners, and recreation. FSR 112 also has an existing gate that is in a state of disrepair. It provides access to a major road back to town. FSR 899 does not have an existing gate. FSR 899 provides access to a private residence and to NFS lands. The probability of damage or loss for these critical values was rated as likely to very likely due to increases at the 2 year event. The magnitude of consequences was rated as major due to the potential for loss of human life.

2. **Property (P):** The need for road stabilization treatments on the Pinal Mountain System of roads exists to due to the potential threat of increased runoff and erosion, and this need will continue through the monsoon season on the Pinal Mountain System of roads exists to due to the very likely threat of

increased runoff from the Telegraph Fire. The roads identified are located within the burn scar of the Telegraph Fire or in a potentially affected watershed and have a moderate to low initial investment but are critical to reaching communications equipment, private inholdings, and Forest Service lookout towers on Pinal Mountain on the Globe Ranger District. A total of 12.3 miles of road have been identified as being at high or very high risk within the Telegraph burn scar.

a. (#1) FS roads are at risk of damage to property value. FSR 651 (Pinal Mountain Road) has one native surface low water crossing and is a critical route to reach the communication and Forest Service facilities on Pinal Peak. Hydraulic modeling suggests a potential for a 68% increase in runoff in a two-year event and 30% increase for a five-year event resulting in a very high-risk rating in the Upper Russel Gulch and Sulfide Del Rey Watersheds where FSR 651 intersects. The risk rating for FSR 651 was very high due because probability of damage or loss was rated as very likely (nearly certain occurrence, 90%-100%), while the magnitude of consequences was rated as major because the road is maintenance level 3 with significant O&M investment.
b. (#1) The need for road stabilization treatments prior to, and between, storm events on the Pinal Mountain System of roads exists to due to the very likely threat of increased runoff from the Telegraph Fire.
    a. **FSR 112** is a level III road that accesses Pioneer Pass Campground and Trailheads. This road also accesses a NWS weather station that may be tied to the burn scar warning system. 4.3 miles of FSR 112 are being proposed for treatment.
    b. **FSR 651** is a level III road that accesses a Forest Service lookout tower, recreation areas, and communications towers including those owned by the FAA that provide critical communication that benefit Forest Service operations. This road also accesses FSR 580 where more communications equipment is located on Madera Peak and the Ellis Vein CERCLA Site. 4.6 miles of FSR 651 are being proposed for treatment.
    c. **FSR 580** is a level II road that accesses communication equipment, flash flood warning system equipment, and the Ellis Vein CERCLA Site. 0.8 miles of FSR 580 are being proposed for treatment.
    d. **FSR 221** is a level II road near the city of Globe. The Forest Service maintain a portion of this road that has private residences along the corridor. This road also has a grouted double 3-foot culvert that would be a substantial investment to replace. 2.6 miles of FSR 221 are being proposed for treatment.
c. (#2) Recreation resources within the Telegraph burn area provide hiking, biking, horseback riding, motorized recreation, picnicking, and developed or dispersed camping opportunities for Arizona communities. These recreation resources include the Arizona Trail and the Pinal System Trails. For the Pinal System Trails, the probability of damage or loss to the East Mountain, Toll Road, Check Dam, and Bobtail Ridge Trails is very likely, and the magnitude of consequences is moderate due to investment and recreation value. The probability of damage or loss to the Sixshooter Canyon National Recreation Trail is possible, while the magnitude of consequence is major because of the high investment and recreation value.

3. **Natural Resources (NR):**Significant loss of hydrologic function is anticipated due to post fire conditions. Areas of heightened concern include Russel Gulch, Rock Tank Canyon, Toll Road Channel, Copper Springs Canyon, Mud Wash, and Solitude Gulch. Debris flow hazard for these channels is at least 40% likely for the 5-year return interval and in most cases 60-80% likely. In all channels, the pre to post fire increase in flows is Very Significant to Extreme (from 0 cfs pre fire to 100-200 for very sig or >200 cfs for extreme) putting long-term hydrologic function at risk because these amounts exceed the pre-fire 100 or even 500 year flows in a 1 or 2 year event.
    b. (#1) Fire suppression activities on the Telegraph fire are expected to promote the spread of invasive species. Existing populations of weeds within, and near, the fire perimeter will proliferate further outside of their current zone of colonization, due to soil disturbance and habitat degradation. The risk to native plant communities was rated as very high based on the critical value table assessment. The probability of damage or loss was rated as Likely due to the likelihood that suppression activities could result in the spread of invasive species in the next growing season. The magnitude of consequence was rated as Major because

the potential for the spread of high priority Class A weeds, such as sweet resin bush, tree of heaven, buffelgrass, and fountaingrass, would essentially be an irreversible impact.

4. **Cultural and Heritage Resources:**CCC checkdams along channels are currently filled with sediment and are at risk of damage from flood events and debris flow. These checkdams are eligible for the National Register.

B. Emergency Treatment Objectives: Protect human life and safety, and NFS BAER critical values.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land:
Channel: Moderate
Roads/Trails:
Protection/Safety: Moderate

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	High	High	High
Roads/Trails			
Protection/Safety	High	High	High

E. Cost of No-Action (Including Loss): Possible loss of human life and or injury, loss of soil productivity and hydrologic function, damage to NFS roads and trails systems, damage to cultural resources.

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: Minerals, PIO, AZGFD

Team Leader: Mike Martinez
Email: michael.a.martinez@usda.gov **Phone(s)** 602-499-5818

Forest BAER Coordinator: Kelly Mott Lacroix
Email: kelly.mottlacroix@usda.gov **Phone(s):** 480-601-6218

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

Skill	**Team Member Name**
Team Lead(s)	Mike Martinez
Soils	Mike Natharius, Dio Silva
Hydrology	Kelly Mott Lacroix, Alex Makic, Edgar Martinez
Engineering	Ernesto Maldonado
GIS	Theresa Nallick
Archaeology	Molly Ray
Weeds	Ryan Nicholas
Recreation	Matt Quinn
Wildlife	Camden Bruner
Minerals	Chad Harrold
PIO	Cathleen Thompson

Skill	Team Member Name
AZGFD	Kelly Wolff

H. Treatment Narrative:

Land Treatments:

To ensure effective and timely delivery of BAER treatments for the Telegraph fire, we are requesting funding to support an Implementation Team Lead. We are considering Forest Service resources and Administratively Determined (AD) hires as potential solutions. To capture our predicted need, we have developed a cost estimate based on a GS-12 at $500/day x 80 days = $40,000 for salary. We also estimated an additional cost of $18,000 if we recruit an off-Forest resource. Altogether we estimate a cost of up to $58,000 to cover the cost of an implementation team lead, most likely through a fire resource order. Update 7/8/2021-Approved in Initial Request. (#2) The Forest decided to fill the implementation lead through a Resource Order rather than a 120-day detail. As of the date of Interim #2, the implementation lead has made significant progress on implementation tasks. We anticipate we will reduce the amount requested for this line item in subsequent interim requests, as necessary.

(#1) To minimize the potential spread of invasive weed species into native plant communities, we propose to conduct Early Detection and Rapid Response, including spot treatments with chemical herbicides, across 124 acres of lands affected by fire suppression activities. The estimated cost for supplies and treatment across 124 acres is a total of $27,400, which we anticipate would be accomplished through a modification of an existing agreement with Northern Arizona University. Need additional information including detailed treatment map.

Channel Treatments: Remove floatable debris from channels that threaten hydrologic function, human life and safety, and other NFS BAER critical values. Remove floatable debris from approximately 19 miles of stream channels including: Russel Gulch, Rock Tank Canyon, Toll Road Channel, Copper Springs Canyon, Mud Wash, and Solitude Gulch to protect hydrologic function, human life and safety, and other critical values. We anticipate this work would be accomplished through the deployment of hand crews. Costs are based on an estimate of $12,000/day for a 20-person hand crew that can clear approximately 2 - 3 miles of channel per day. Status Update 7/8/2021 Majority of channel clearing accomplished by suppression repair crew. May be additional associated with storm response. (#2) All channel clearing work was accomplished with fire crews, and the funding request for $90,000 is withdrawn.

Roads and Trail Treatments: To prevent damage to the Pinal Mountain road (FSR 651) and ensure that its stays open, armoring the low water crossing with aggregate is the recommended treatment. This will help provide a more stable and durable surface that also allows for water to drain from the native surface road. The initial proposed cost for this treatment is $16,364. Additional details are contained an Individual Treatment Specification sheet. (#2) Upon further evaluation, this treatment is no longer considered necessary and the funding request for $16,364 is withdrawn.

To ensure that critical roads stay open, road stabilization treatments may be required in the next year as needed prior to, and between, damaging rain events. Based on prior years rainfall events we are assuming four major storm events in the next year and two days work for each event. Based on this estimate, our initial requested amount is $59,764. Additional details are contained an Individual Treatment Specification sheet.

(#2) Stabilization treatments are recommended for portions of the Pinal System Trails. Stabilization treatments are recommended for East Mountain trail and Sixshooter Canyon trail, and would include installation of rolling dips, water bars, rock spillways, and armoring. Trail stabilization provides drainage and stability to reduce trail damage where moderate or high burn severity and steep slopes (>15%) are expected to cause increased runoff and erosion. Estimated cost for stabilization work is $36,608, and is anticipated to be accomplished with conservation corps crews such as ACE and AZCC. Additionally,

$2000 for materials and supplies is estimated for timber ties, rebar, tools, and log water bars. More detailed information is presented in the treatment map and cost breakdown sheet included as attachments to the Recreation Specialist Report.

Protection/Safety Treatments: Administrative closure of targeted areas is the primary proposed treatment for managing unacceptable risk to human life and safety on NFS lands. (#2) To support closures, we recommend installation of 16 warning signs and 3 gates. Warning signs are recommended at key Forest entry points as identified on the sign treatment map at a cost of $2,120. Gates are recommended on FSR 651, 112, and 899 as identified on the gates treatment map at a cost of $42,000.

Ellis Vein Mine Site - The proposed actions for the emergency stabilization of the Ellis Vein Mine Site include mobilization to the site and barrier removal, minimum roadwork necessary to reach the site, replacing the burned straw wattles used for erosion control, furnishing and installing new geotextile fabric for erosion control, and removing the fill on the inside of a meander bend that is causing downcutting directly adjacent to the lower consolidation cell and using that fill to create a berm to protect the consolidation cell from runoff and debris within the channel. The initial estimated cost for these emergency stabilization measures is $140,991. Additional details are contained in an Individual Treatment Specification sheet.

(#1) Henderson Ranch/Blue Gate Repository - The proposed emergency actions for Henderson Ranch/Blue Gate Repository include hand seeding the repository, installing straw wattles uphill of the site, and installing geotextile fabric on top of the consolidation cell, The initial estimated cost for these proposed actions, including administrative costs is $21,190. Additional details are contained in an Individual Treatment Specification sheet.

I. Monitoring Narrative:(#2) Monitoring methodologies will be determined by resource based on site and program specific considerations, and consistent with recommendations presented in the relevant specialist reports. Overall Telegraph BAER implementation reporting will be provided on the BAER Final Accomplishment Report Form template.

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											
Implementation lead salary	rate/day	500	80	$40,000	$0			$0		$0	$40,000
Implementation lead travel	cost/day	225	80	$18,000	$0			$0		$0	$18,000
EDRR (awaiting more info)	acres	~~221~~	~~124~~	~~$27,400~~							
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$58,000	$0			$0		$0	$58,000
B. Channel Treatments											
Remove floatable debris	rate/day	12,000	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											
FSR 651	job	16,364	0	$0	$0			$0		$0	$0
Storm inspection response	events	14,941	4	$59,764	$0			$0		$0	$59,764
Trail stabilization	miles	8,800	4	$36,608				$0		$0	$36,608
Trail work M&S	job	2,000	1	$2,000							
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road and Trails				$98,372	$0			$0		$0	$96,372
D. Protection/Safety											
Ellis Vein Repository		140,991	1	$140,991	$0			$0		$0	$140,991
HR/BG Repository		21,190	1	$21,190	$0			$0		$0	$21,190
Warning signs	sign	133	16	$2,120							
Gates	gate	14,000	3	$42,000							
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Protection/Safety				$206,301	$0			$0		$0	$162,181
E. BAER Evaluation											
Initial Assessment	Report			---	$101,604			$0		$0	$101,604
Subtotal Evaluation				$0	$101,604			$0		$0	$101,604
F. Monitoring											
				$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				$362,673	$101,604			**$0**		**$0**	**$418,157**
Previously approved				$386,309							
Total for this request				**-$23,636**							

PART VII - APPROVALS

1. THOMAS TORRES Digitally signed by THOMAS TORRES Date: 2021.07.16 14:48:05 -07'00'

Forest Supervisor Date