Date of Report: July 20, 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 # 4

☒ Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Bighorn

B. Fire Number: AZ-CNF-000413

C. State: Arizona

D. County: Pima/Pinal

E. Region: 3

F. Forest: Coronado

G. District: Santa Catalina

H. Fire Incident Job Code: P3M50C

I. Date Fire Started: June 5, 2020

J. Date Fire Contained: Est. 8/10/20

K. Suppression Cost: as of 7/13/2020, $43,807,337

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

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

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
1505030108	Canada del Oro	167,396	42,318	25
1505020305	Alder Wash -San Pedro River	191,012	31,660	17
1505030203	Tanque Verde Creek – Rillito River	203,586	25,858	12
1505020303	Redfield Canyon-San Pedro River	165,785	19,400	12

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES (as of 7/16)
NFS	107,836
OTHER FEDERAL (LIST AGENCY AND ACRES)	
STATE	5,682
PRIVATE	6,074
TOTAL	119,592

O. Vegetation Types: upper Sonoran desert shrub mix, semi-desert grassland, oak/juniper/pinyon mix, chaparral, Ponderosa pine/mixed conifer

P. Dominant Soils: Lithic Ustochrepts, Typic Ustochrepts, Lithic Torriorthents, Typic Dystrochrepts, Ustochreptic Camborthids

Q. Geologic Types: TKg – intrusive rocks, Qtsp – sedimentary deposits, pCgr – intrusive rocks

R. Miles of Stream Channels by Order or Class: Not determined at this time

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	10.5
INTERMITTENT	506.5 (NHD flowline)
EPHEMERAL	
OTHER (DEFINE)	

S. **Transportation System:**
Trails: *National Forest (miles):* **121** *Other (miles):*
Roads: *National Forest (miles):* **67.7** *Other (miles):* **13.7**

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	7571	0	1122	953	9646	8
Low	56883	0	3424	3223	63530	53
Moderate	34829		1080	1394	37303	31
High	5079	0	0	86	5165	4
Rock Outcrop	561	0	0	0	561	0
Unknown	3948	0	56	418	3948	3
Total	107836	0	5682	6074	119592	100

B. Water-Repellent Soil (acres): 61,273

C. Soil Erosion Hazard Rating: 5165 acres High; 37303 acres Moderate; 63530 acres Low ; 9646 acres Unburned.

D. Erosion Potential: 18 – 26 tons/acre

E. Sediment Potential: 1257 – 1954 cubic yards/square mile

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

G. Estimated Hydrologic Response (brief description): Debris laden flash floods. In watersheds with greater than 25 percent burned area, potential for 100-year runoff events from 10 to 25 year rainfall events. Most watershed may show a post fire runoff response at least two times greater than a pre-fire event form the same amount of rainfall.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

A. Describe Critical Values/Resources and Threats (narrative): (see Appendix X for the summary list and matrix determinations complete during this assessment phase)

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):**
2. **Property (P):**
3. **Natural Resources (NR):**
4. **Cultural and Heritage Resources:**

B. Emergency Treatment Objectives: Human life and safety

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land: 80%
Channel: 80%
Roads/Trails: 70%
Protection/Safety: 80%

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			

E. Cost of No-Action (Including Loss): Not determined for this interim

F. Cost of Selected Alternative (Including Loss): Not determined for this interim.

G. Skills Represented on Burned-Area Survey Team:

☒ Soils ☒ Hydrology ☒ Engineering ☒ GIS ☐ Archaeology
☒ Weeds ☐ Recreation ☐ Fisheries ☒ Wildlife
☒ Other; PIO, X Special Uses

Team Leader: Gregory A. Kuyumjian

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Forest BAER Coordinator: Christine Thiel
Email:chris.thiel@usda.gov **Phone(s):** 520-388-8351

Team Members:*Table 7: BAER Team Members by Skill (as of June 22, 2020)*

Skill	Team Member Name
Team Lead(s)	Greg Kuyumjian, Christine Thiel
Soils	Kristen Meier, Jennifer Varin (t)
Hydrology	Grant Loomis, Greg Christensen (t)
Engineering	Edwin Monin
GIS	Robert Arlowe, Kevin Carns (t)
Archaeology	
Weeds	Emma Williams
Recreation	
Other	PIO Cathleen Thompson SUPs Alysa Hansen (t) **Bonnie Woods, Wildlife**

H. Treatment Narrative:

Land Treatments: Pump, sanitize and secure three double vault toilets at the three campgrounds (Barnum Rock, Lizard Rock (lower) Group Site, Black Rock Flat) around Rose Canyon Lake which may be subject to elevated inflows.

Construct an earthen diversion berm for drainage protection above the Palisades Wastewater Sewage Lagoon.

EDRR for areas disturbed or impacted by suppression and suppression rehab activities, to include 12 miles (19 acres) of dozer lines, 20 miles of handline/trails (7 acres), 28 miles of roads (41 acres) and 106 acres associated with camps, drop points, staging, safety zones, etc. Total 173 acres
Detection surveys of annual and perennial invasive species that establish with summer rains should be accomplished during late summer and early fall of 2020. For species that establish with winter rains, or with delayed post-fire emergence response, detection surveys should occur during the late spring and early summer of 2021. Early detection treatments will include documentation, mapping and hand pulling/herbiciding small, localized weed occurrences at the time of inspection. New weed occurrences will be pulled to root depth, placed in sealed plastic bags, and properly disposed or sprayed with appropriate herbicides approved in the existing forest wide exotic plant management NEPA decision.

Pump, sanitize and lock 9 additional double vault restrooms potentially subject to runoff events; Sabino Canyon Restrooms 3-6, Gordon Hirabayashi, Chihuahua Pine, Lower Bigelow TH, Marshall Gulch (Lower), and Peppersauce Campground.

Pump, sanitize and lock 3 additional double vault restrooms subject to runoff event. These are located at Sabine Canyon 6 which has a total of 4 with 1 submitted above in Interim #3. COR needed to administer the contract to pump these and the previously approved vault toilet treatments. COR cost ($1400) included in the pumping cost ($3600) to cover administration of the IDIQ contract to pump all previously approved vault structures (12) and the three additional vaults in this interim.

Channel Treatments: Vegetation removal above lower water crossing structures and above the lower Sabino Dam Spillway to prevent debris dams from accumulating, breaching, and inundation of Forest Service downstream values at risk. The lower Sabino Dam is a Forest Service structure in close proximity to the Santa Catalina Ranger Station.

The Forest completed this approved work on 07/16/2020 using force account resources.
Vegetation removal above the Gibbs Wash Bridge to prevent debris dam development and breaching resulting in potentially taking out the existing bride on this "Control Road" (FSR 38, ML3) span. FSR 38 is the only other road egress for the communities and critical infrastructure surrounding Mt. Lemmon, if the Catalina Highway is compromised by post fire events,
Vegetation removal above the Stratton Wash Bridge to prevent debris dam development and breaching resulting in potentially taking out the existing bride on this "Control Road" (FS 38, ML3) span. FS 38 is the only other road egress for the communities and critical infrastructure surrounding Mt. Lemmon if the Catalina Highway is compromised by post fire events,

Roads and Trail Treatments: Emergency warning and closure signs at selected intersections and access points within and around the current and projected fire perimeter. All signage will meet Regional guideline for size and text. Signage unit cost includes 10% for COR and 15% for CO support for a total add on of 25%
Addition signs to the east for areas burned after initial 2500-8
Replace 7 plastic culverts (4 burned, 3 subject to an unknown level of heat) between Catalina Highway and Rose Canyon Dam. Road integrity (FRS 9, ML4) is critical for any emergency related to keeping the reservoir drained to capture post fire runoff events and any immediate need to keep reservoir spillway clear of debris.
Install debris guards (12 manufactured from cattleguards)) to protect culvert inlets on roads; to Rose Canyon Dam, Bear Wallow to MT. Bigelow (FSR 2, ML3) and road to Mt. Bigelow.

Replace two additional heat damaged plastic culverts on road access to the Palisades Sewage Lagoon

Install closure gates (9) and a large boulder barrier (1) – listed as 10 gates, on road locations to maintain closure and discourage use within the burned area closure.

Rip Rap armoring will be performed at the inlets and outlets of culverts that are undersized for the expected flows they will be subjected to (4 culvert protections). Additionally, rip rap armoring will be placed along the paved Ski Run road in areas that will subject to higher than normal flows and will be prone to erosion and compromise of the roadway where existing culverts are undersized and plugged (approximately 8 locations). Roads are critical access to communications infrastructure, US Air Force repeater station, the occupied Mt. Lemmmon Observatory (University of Arizona), use by law enforcement, access to Forest service facilities, access to private inholdings and SUP rec residenses.

The BAER signs contract has been awarded and is expected to be completed by 7/24. All vegetation that was obstructing the Lower Sabino Dam spillway has been removed. The crew is currently completing vegetation removal at all of the Sabino Low water crossings. It is expected by the latter half of next week the crew will mobilize up to the Rose Canyon Reservoir Road to perform culvert replacements and installation of debris racks.

Acquire and install 14 trail gates to add emphasis on trail closures to high use trails with water features, pools, waterfalls, etc. that have high use in a desert system where water features are scare. These water features are below burned areas can be prone to flash flooding without warning.

Storm Inspection and response. Assuming 8 events requiring post event site inspection, two teams of two assessors (needing four 4 X 4 vehicles) plus an engineer per event. Estimated cost also assumes some overtime as thunderstorms may occur later in the day.

Charouleau Gap Gate Installation; extra logistical work and support needed due to difficult access on West Charouleau Gap Road. Supplies and equipment will need to be "walked in" to the site via trackhoe. This gate needed to further close off extreme 4 by 4 use area below large area of high burn severity now prone to rapid debris laden flash flooding.

Removal of burned vegetation and debris within the drainage ditch adjacent to FSR 11 for a distance of 6000 feet. Culverts expected to get plugged by transported woody material potentially blocking or washing this access to critical infrastructure and connector to primary access to Tucson.

Protection/Safety Treatments: Closure orders, signage, Potential processing of emergency special use permit(s) for installation and maintenance of ALERT by Pima County Flood Control District.

Two ALERT stations have been installed by the Pima County flood control district.

I. Monitoring Narrative:

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS Interim #4

			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										
Vault; pump, sanitize, secure	each	1667	3	5000.01	$0		$0		$0	$5,000
				0	$0		$0		$0	$0
Insert newitems above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$5,000	$0		$0		$0	$5,000
B. Channel Treatments										
				$0	$0		$0		$0	$0
Insert newitems above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treatments				$0	$0		$0		$0	$0
C. Road and Trails										
Trail Closure Gates	each	1,200	14	$16,800	$0		$0		$0	$16,800
Culvert pipe updated cost	foot	15	285	$4,275	$0		$0		$0	$4,275
Storm Inspection and response	days	8	2,488	$19,900	$0		$0		$0	$19,900
Gate Charouleau Gap Installation	job	1	6,400	$6,400	$0		$0		$0	$6,400
Remove burned woody debris FS	foot	2	6,000	$12,000	$0		$0		$0	$12,000
Insert newitems above this line!			0	$0	$0		$0		$0	$0
Subtotal Road and Trails				$59,375	$0		$0		$0	$59,375
D. Protection/Safety										
				$0	$0		$0		$0	$0
Insert newitems above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$0	$0		$0		$0	$0
E. BAER Evaluation										
Initial Assessment	Report			---	$111,000		$0		$0	$111,000
				$0	$0		$0		$0	$0
Insert newitems above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				$0	$111,000		$0		$0	$111,000
F. Monitoring										
				$0	$0		$0		$0	$0
Insert newitems above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$0	$0		$0		$0	$0

PART VII - APPROVALS

1._____

Forest Supervisor Date