Forest Service

Bridger-Teton National Forest

340 North Cache Street
Jackson, WY 83001

File Code: 2520
Route To:

Date: June 12, 2019

Subject: Interim Burned Area Report and Request

To: Intermountain Regional Forester- Nora Rasure

Dear Ms. Nora Rasure:

Enclosed is a Burned Area Emergency Rehabilitation Authorization interim request for the Roosevelt Fire on the Bridger-Teton National Forest. The fire has burned approximately 61,511 acres, about 50,652 of which are on National Forest System lands.

The Roosevelt Fire burned primarily in the Hoback River, South Hoback River, Muddy Creek, North Fork Beaver, Fishermen Creek, and Chall Creek drainages. Values at risk include native vegetation communities near areas infested with noxious weeds, the Noble Basin road network, FS Roads 30700 and 30759, trails, and a spring development that is utilized by the public.

This Interim BAER request would provide for Early Detection Rapid Response Invasive treatments. There are four different known occurrences of noxious weeds on NFS managed lands within the burn area: Canada thistle, butter and eggs (yellow toadflax), nodding plumeless thistle (musk thistle) and Scotch cottonthistle (Scotch thistle) and two noxious weed on adjacent private land - spotted knapweed and cheatgrass. Cheatgrass is a declared noxious weed in Sublette County, Wyoming and known as a detrimental invasive throughout its range. The known populations of invasive plant species within and adjacent to the fire perimeter have a high probability to spread based on the level of disturbance and individual species post-fire behavior.

The total cost of the proposed treatments is $23,000.

If there are any questions, please contact Trevlyn Robertson, Hydrologist, Bridger-Teton National Forest (307) 886-5317.

Sincerely,

PATRICIA M. O'CONNOR
Forest Supervisor

USDA-FOREST SERVICE FS-2500-8 (6/06)

Date of Report: 6/04/2019

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[ ] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[X] 2. Interim Report # 1
[X] Updating the initial funding request based on more accurate site data or design analysis
[X] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Roosevelt

B. Fire Number: WY-BTF-001823

C. State: Wyoming

D. County: Sublette and Lincoln

E. Region: Intermountain (4)

F. Forest: Bridger-Teton

G. District: Big Piney and Greys River

H. Fire Incident Job Code: P4L43N 0403

I. Date Fire Started: 9/15/2018

J. Date Fire Contained: estimated to be 10/10/2019

K. Suppression Cost: $23,300,000 (as of 10/06/2019)

L. Fire Suppression Damages Repaired with Suppression Funds (NFS lands only)
1. Fireline waterbarred (miles): 0.3 handline, 44 of dozer line
2. Other (identify): 11 helispots/bases, 5 drop points

M. Watershed Numbers:
170401030303, 140401010302, 170401030302, 170401030304, 170401030509, 140401010301, 170401030301, 140401010303

N. Total Acres Burned:61,511 NFS Acres (50,652; 82%) Combination of State, BLM and Private (10,859; 18%)

O. Vegetation Types:
Sage/grass range lands; Mountain Big Sagebrush, Salix/Carex riparian areas; Aspen; Lodgepole pine; Douglas-fir; Spruce-fir; Whitebark pine

P. Dominant Soils:
Soils in the Roosevelt Fire area are dominantly Argic Cryoborolls, fine-loamy, mixed – Typic Cryoboralfs, fine, montmorillonitic – Argic Cryoborolls, loamy-skeletal, mixed (Teton Soil Survey, Bridger West Soil Survey).

Q. Geologic Types:
Major geologic formations include the Hoback Formation which is composed of interbedded sandstone and claystone with lenses of conglomerate; the Wasatch formation composed of sandstone and conglomerate; and the Gannet group which includes limestone, shale sandstone. Slumps, scarps and landslides are common throughout the fire area in the lower Hoback watershed. The Middle Beaver and South Beaver drainages are characterized by large outwash terraces with gentle slopes. The upper Hoback drainage is composed of steep mountain slopes with visible scarps, slumps and undulating terrain.

R. Miles of Stream Channels by Order or Class: (64) Perennial (154) Intermittent

S. Transportation System: Trails: 26.6 miles Roads: 86.5 miles

PART III - WATERSHED CONDITION

A. Burn Severity: 10,022 acres (unburned) 9,113 acres (low) 20,870 acres (moderate) 2,516 acres (high)

B. Water-Repellent Soil (NFS acres only): 23,387 acres (moderate + high burn severity)

C. Soil Erosion Hazard Rating (Burned NFS acres only):
5% (low) 16% (moderate) 78% (high)

D. Erosion Potential: tons/acre: 1.0 tons/acre

E. Sediment Potential: cubic yards/square mile: 700 yds^3/mi^2

PART IV - HYDROLOGIC DESIGN FACTORS

C. Equivalent Design Recurrence Interval, (years): 25 year

D. Design Storm Duration, (hours): 1 hour

E. Design Storm Magnitude, (inches): 1.1 inches

F. Design Flow (cubic feet / second/ square mile): 32

G. Estimated Reduction in Infiltration, (percent): 63%

H. Adjusted Design Flow, (cfs per square mile): +20
Please note that the 100-year flow event should be used for designing any in-channel structures that may be necessary in interium requests, not necessarily the rainfall/runoff modeling reported here. (see: USGS StreamStats at: https://streamstats.usgs.gov/ss/ to model any particular watershed).

Pre- & post-fire modeling results for selected watersheds for the 25-yr, 1-hr storm (1.1 inch/hour).

Modeling of the 25-year, 1 hour storm = 1.1 inches

Sub-Watershed	Area (mi²)	Pre-Fire Total Runoff (acre-ft)	Pre-Fire Peak Time (hours)	Pre-Fire Peak Flow (cfs)	Pre-Fire Peak Flow (cms)	Post-Fire Total Runoff (acre-ft)	Post-Fire Peak Time (hours)	Post-Fire Peak Flow (cfs)	Post-Fire Peak Flow (cms)	Increase in Cfs	Fold Increase in Cfs	Fold Increase in cms	Percentage Increase
South Fork Hoback River	9.3	4.6	1.1	79.0	6.5	8.7	1.1	130.0	14.0	55	1.6	1.6	47%
Jamb Creek	2.6	3.1	1.1	54.0	20.8	7.2	0.6	113.0	43.5	22.7	2.1	2.1	57%
Coyote Gulch Trib	4.0	1.6	1.1	28.0	7.0	10.4	0.7	154.0	38.5	31.5	15.0	2.0	85%
				Average =	12.1			Average =	32.0	19.9			63%

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Potential Values and the associated criticality of their threat is listed in Table 1 below.

Table 1. Potential values at risk and criticality

Potential Value	Critical	Non-Critical	Notes
Heritage Resources		X	Details provided in Heritage Report
Naturalized Ecosystems (Noxious & Invasives)	X		Throughout moderate & high soil burn severities
Soil Productivity & Hydrologic Function	X		Throughout moderate & high soil burn severities
Water Quality & Fisheries	X		Throughout moderate & high soil burn severities
FS Road Prisms	X		Drainages along FS Roads 30700 and 30059, 30748-49, 30057-59, and 10143
Non-Motorized Trail Prisms	X		Drainages along FS Trails 2129, 2130-31, 2136, and 2049
Hazardous Condition Warning	X		Districts will address with appropriate signage and gates at identified public access points
Hoback Ranches Subdivision			FS will notify landowners of the increased risk of flooding and other hazards. Coordinate with the NWS to install and early warning system for flooding and debris flows in the fire area.
Upper Hoback Private Inholdings			FS will notify landowners of the increased risk of flooding and other hazards. Coordinate with the NWS to install and early warning system for flooding and debris flows in the fire area.
Kismet Radio Tower			FS will notify the BLM of the increased risk of mass wasting and other potential hazards. Coordinate with the NWS to install and early warning system for flooding and debris flows in the fire area.

The removal of vegetation and increased soil hydrophobicity due to fire have the potential to decrease slope stability. This can result in numerous types of landslides. Based on review of the local geology and the types of historic landslides that have occurred in the fire perimeter, the most likely to occur would be slumps and debris flows or a combination of thereof. These may potentially impact a significant distance downslope from the point of initiation.

From a hydrologic standpoint, an emergency condition does exist. The amount and location of high and moderate burn severities create a likely potential for unacceptable loss USFS roads and trails, soil & site productivity, and water quality.

The burned area includes native plant habitat important to grizzly bears, wolves, sage-grouse, ungulates (elk, deer, moose, antelope) and other wildlife species; also the Upper Hoback River is an eligible Wild and Scenic River. The burn area includes roads and adjacent private land with known invasive plant occurrences. Likely transmission vectors includes dozerlines that went through known infestations. All documented invasive species within and adjacent to the burn area have high seed viability, are spread by vehicles and animals and are known to increase post-fire. The overall resiliency of existing native plant communities is considered high and recovery following natural successional pathways is expected, especially areas of low soil burn severity; however there is substantial and documented concern for expensive long-term post-fire treatments and negative impacts due to invasives if left unchecked in areas of moderate to high soil severity and areas disturbed by suppression activities.

Potential Values and Values at Risk

Risks were evaluated and assigned based on Interim Directive No.: 2520-2018-1 guidance.

Table 2. Risk assessment table displaying results of critical values risk evaluation

Critical Value	Critical Value Type	Probability of Damage	Magnitude of Consequence	Risk
Heritage Resources	Cultural & Heritage Resources	Unlikely	Minor	Very Low
Soil Productivity & Hydrologic Function	Natural Resources	Likely	Moderate	High
Water Quality & Fisheries	Natural Resources	Likely	Moderate	High
FS Roads & Motorized Trail Prisms	Property	Likely	Moderate	High
Nonmotorized Trail Prisms	Property	Likely	Moderate	High
Naturalized Ecosystems (Noxious & invasives)	Natural Resources	Very Likely	Moderate	Very High
Hazardous Condition Warning	Human Life & Safety	Very Likely	Major	Very High

Table 3. Off National Forest Values That May Be of Risk

Hoback Ranches Subdivision	Human Life & Safety; Property			
Upper Hoback Private Inholdings	Human Life & Safety; Property			
Kismet Radio Tower	Human Life & Safety; Property			

B. Emergency Treatment Objectives:

- Nonmotorized Trails – Decrease the potential for low to moderate intensity, short to moderate duration precipitation/snow melt events to result in damage or loss of high value infrastructure (FS Trails 2129, 2130-31, 2136, and 2049).

- Invasives – Weeds and native vegetation recovery; Reduce the risk from expansion of existing weed seed beds into burned areas and to allow burned plant communities to recover more rapidly.

- Roads – Decrease the potential for low to moderate intensity, short to moderate duration precipitation/snow melt events to result in damage or loss of high value infrastructure (FS Roads 30700 and 30059, 30748-49, 30057-59, and 10143)

- Signs – Inform the public of the dangers present within the burned area to reduce the risk of injury or death resulting from an increase in hazard trees throughout the area.

- Gates – Close the area to the public temporarily until the danger from hazard trees and road failures decrease which will reduce the risk of injury or entrapment.

- Water Quality – Rebuild the burned fencing around the spring development to protect against potential contaminents due to livestock and wildlife use of the spring.

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

Invasives **90%** (prior to seed) Channel **N/A%** Roads & Motorized Trails **70%** Protection/Safety(signs and gates) **90** %

D. Probability of Treatment Success

Table 4. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Invasives	90	75	N/A
Channel	N/A	N/A	N/A
Roads/Trails	80	80	70
Protection/Safety	75	50	N/A

E. Cost of No-Action (Including Loss):
Cost of No–Action Alternative assumes that a low to moderate intensity, short to moderate duration precipitation/snow melt event occurring over the areas proposed for treatment would result in the loss of the FS Roads 30700 and 30059, 30748-49, 30057-59, and 10143. It would also result in the loss of FS Trails 2129, 2130-31, 2136, and 2049. There is currently a relatively low amount of noxious/invasive weeds in the area. Not acting quickly to maintain control of the existing infestations, would be a significant loss of future plant communties. The potential injury or loss of life from hazards within the burn perimeter resulting from inadequate signage notifying public users and not implementing temporary closures would far exceed any request for sign or gate funding. The risk of livestock and wildlife impacting the water quality of the spring that is meant for local recrational use is high without the protection of a fence.

F. Cost of Selected Alternative (Including Loss): Refer to Table 6 – Treatment Cost Summary

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology [X] Soils [] Geology [] Range [] Forestry [] Wildlife [] Fire Mgmt
[] Engineering [] Contracting [] Ecology [X] Botany [X] Archaeology [X] Fisheries
[] Research [] Landscape Arch [X] GIS

Team Leader:
Trevlyn Robertson, Hydrologist, Bridger-Teton NF trevlynrobertson@fs.fed.us Phone: 307-886-5317

Core Team Members:
- Brad Higginson – Hydrology
- Cindy Stein - Trails
- JP Schubert - Archeology
- Rose Lehman - Invasives
- Chris McCollister – GIS/Avalanche
- Eric Winthers - Soils

Part VI – Emergency Stabilization Treatments and Source of Funds

H. **Treatment Narrative:**

Natural Resources Treatments:

Invasives

There are four different known occurrences of noxious weeds on NFS managed lands within the burn area: Canada thistle, butter and eggs (yellow toadflax), nodding plumeless thistle (musk thistle) and Scotch cottonthistle (Scotch thistle) and two noxious weed on adjacent private land - spotted knapweed and cheatgrass. Cheatgrass is a declared noxious weed in Sublette County, Wyoming and known as a detrimental invasive throughout its range. The probability of damage or loss from invasive plant is considered to be very likely, and the magnitude of consequences is determined to be moderate. So the risk is very high that invasive plant species will have a negative impact as a result of the fire. Post-fire conditions are particularly favorable to noxious weed establishment and spread, so treatments following Early Detection/Rapid Response (EDRR) is warranted to attempt to minimize or mitigate their spread. The known populations of invasive plant species within and adjacent to the fire perimeter have a high probability to spread based on the level of disturbance and individual species post-fire behavior.

To optimize for early detection and efficiency of survey, aerial surveys using a helicopter is optimal for this size of an area. A helicopter would be subcontracted by Sublette County Weed and Pest (SCWP) and this type of survey has been used in the past on previous fires and has proved effective for spotting early infestations. SCWP will also use ground survey; ORV, horseback, truck or by foot. We will base initial treatments areas off of previous weed data and then move to new survey areas once they are located. Depending on workload and weed timing, SCWP will commit crews to this area. Most of the survey will need to be conducted in late June through August due to the fire intensity and elevation. SCWP crews will be present in the Roosevelt area during the optimum times to both locate and treat.

a. Estimate of areas needing EDRR by activity/burn severity. Does not include other areas that might have a high likelihood of introduction/spread but not easily assessed such as specific sites adjacent to private property or aspect (e.g. southern aspects for cheatgrass):

	Number	Miles	Acres
**Dozerlines	NA	43.9	88.8
**Helispots	11	NA	.32
**Drop points	5	NA	.14
***Moderate Soil Burn Severity	NA	NA	20,871
***High Soil Burn Severity	NA	NA	2517
Totals	**16 sites**	**43.9 miles**	**23,477.26 acres**

*All treatment areas are located within the fire perimeter.
** Suppression related acres
***EDRR – Native and Naturalized Ecosystems acres

Natural Resources and Property Treatments:

Roads Treatments:
BAER funds are appropriate for treatment of anticipated fire erosion events on roads but not to improve roads to standards over pre-fire conditions. The objective of the proposed road treatments are to stormproof the road investments from accelerated erosion, sediment transport, and sediment deposition on travel routes and reduce the sediment transfer from the routes while maintaining access to the Forest for administrative, private lands access, and public use. Wildfire accelerated surface flows down roads are probable and if not treated will cause significant surface erosion and failure in localized areas.

Noble Basin
The area known as Noble Basin includes Coyote Gulch (FS30058) and Muddy Spur (FS30749) and includes portions of the Under Rim Road (FS30059). This area has very erosive soils with silt loam and silty clay loam surface textures. Past work in this drainage (Muddy Creek Watershed Project) involved installing a culvert, several hardened crossings at key stream crossings and rolling dips to control erosion from the roads. This road system is recommended to be closed to full sized vehicle travel and to remain open to ATV/UTV traffic due to the soft roadbeds and erosive soils. Installation of additional rolling dips, water bars and maintenance of existing drainage structures is recommended. Gates or other structures to restrict full size vehicles from entering Noble Basin would be require at 2 locations along the rim at 30058C, 30749 and 1 location at the South Hoback junction on road 30059. Storm patrol of these roads will be needed during the fall and spring/summer of 2019. There are approximately 12.5 miles of roads within the Noble Basin area with moderate and high soil burn severity. These miles of road will require drainage features such as rolling dips and waterbars. Construction of the drainage features would be best accomplished by medium sized excavator with a six way blade. Cost estimates area as follows: rental of excavator: $10,000/month; operator: $5,000/month. Overall cost per mile $1,200.

Upper Hoback Road and South Hoback Road (FS Roads 30700 and 30059)
Implement storm proofing at 15 culverts starting at the Forest Boundary south to the gated closure on FS Road 30700. Install 5 armored dips and clear debris upstream of those culverts. Armor the intake and outtakes of the culverts if needed along with cleaning the catchment basins of the intakes. Storm patrol of these roads will be needed during the fall and spring/summer of 2019.

Update:
The storm proofing at the 15 culverts was completed the week of October 8, 2018. Culverts were cleaned out, drainage was improved, and some of the intakes were hardened for protection against possible increased overland flows. 5 hardened dips were also installed at select locations to allow for possible overflow. Total cost for this portion of the storm proofing was $2,618.50. Utilized the Sublette County Road Crew to implement the work and was able to secure material at no cost for the hardened dips from the County Pit.

View of constructed hardened dip.

Up close view of the dip along with the cleaned out culvert to allow for possible increased flows.

Trails

BAER funds are appropriate for treatment of anticipated fire erosion events on trails but not to improve trails to standards over pre-fire conditions. The objective of the proposed trails treatments are designed to prevent the uncontrolled channeling and resultant damage of water across roads and trails. These treatments are also designed to reduce erosion and further watershed degradation by controlling run-off drainage within the trail prism. Wildfire accelerated surface flows down trails are probable and if not treated will cause significant surface erosion and failure in localized areas.

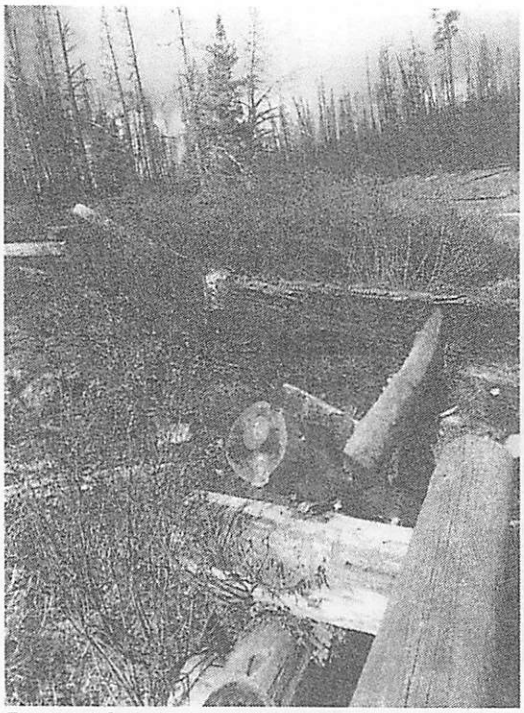
Cross-drains and water bars will protect the tread that currently exists and will help protect from runoff during fall storm activity. This treatment need was identified for 10 miles of FS Trails 2129, 2130-31, 2136, and 2049 within the moderately and highly burned areas. Hazard trees would need to be identified and cut down to provide for a safe work area for the trail crew to implement the treatments

Protection of Water Quality Treatments:

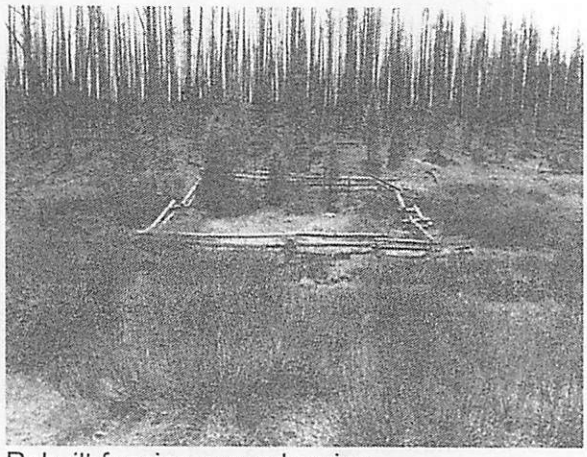
Rebuild the fencing around spring at the end of FS Road 10360. Fencing was burned during the fire and needs to be replaced to ensure protection of water quality. The spring provides water to local recreationists within the area.

Update:

The fencing around the spring has been rebuilt to the standards outlined by the district Wildlife Biologist. The fencing was completed 5/30/2019.



Burned fencing pre-construction



Rebuilt fencing around spring.

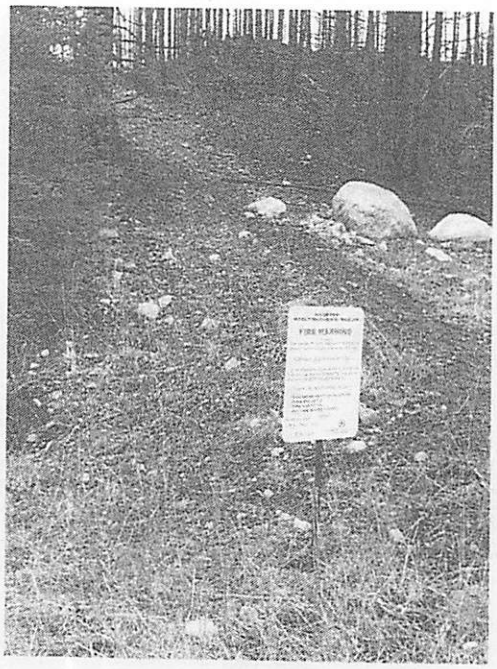
Protection/Safety Treatments:

Signs

Post warning signs at road and trail portals to notify public of increased hazards as a result of post wildfire conditions.

Update:

Several warning signs were posted along the Upper Hoback Road to notify users (mainly late fall hunters) of the potential hazards from the fire conditions. More will be posted in the spring as areas become more accesiable and safety conditions are assesed. 4 signs installed along the Upper Hoback road and 1 sign installed on the South Hoback road. Total cost to date $850.00.



Photos of the signs that were utilized to notify the public of the potential safety hazards within the Roosevelt fire perimeter.

Gates

Install gates at identified access points to allow for temporary closure of those areas to protect public safety from hazard trees and road failures.

Update:

One gate was installed the week of October 8, 2018 at the junction of the Upper Hoback road and the South Hoback road. This gate was used to temporarily close an area due to concern of the Upper Hoback road traveling through a high burn severity area that also had steep slopes with unstable soil types. The public was allowed to continue to access this area via foot or atv. Total cost was $394.00 for the installation. Local fire resources installed the gate during patrolling.

Installed gate at the junction of the Upper and South Hoback road.

Table 7. Treatment Cost Summary

Line Item	Units	Cost per acre	# of Units (acres)	BAER $	Total $
Natural Resouces					
EDRR - Land Treatments					
EDRR - Native and Naturalized Ecosysytems		*8 hours of aerial survey, 7 days of horseback sprayer, 4 days of UTV spray crew, and 5 days of 4 man backpack spray crew.			
Moderate Soil Burn Severity			20,871		
High Soil Burn Severity			2517		
Interim Request	job		23,388	$20,858	$20,858
EDRR - Suppression		*two hours of aerial survey and spray with UTV crew			
Dozerlines			88.8		
Helispots	11		0.32		
Drop points	5		0.14		
Interim Request	job	24	89.26	$2,142	$2,142
Natural Resources and Property					
Upper Hoback and South Hoback Road - This request has already been approved	1	$1,125	4	$4,500	$4,500
Noble Basin Area	1	$1,200/mile	12.5	$15,000	$15,000
Storm Patrol - estimate for necessary cleaning	1	$5000/week	1	$5,000	$5,000
Trail Stabilization	1	$3,029	10 miles	$30,292.00	$30,292.00
Protection and Safety					
Hazard Signs	1	$170	20	$3,400	$3,400
Gates	1	$394	5	$1,974	$1,974
Water Quality Protection					
Rebuild fence around developed spring	1	$1,000	2 days	$2,000	$2,000
BAER Evaluation					
Team Salary	9	$464	50		$23,200
Travel	7	$228	45		$9,044
Monitoring	Included within the cost of the treatments				
Totals					
Previously approved					$62,166
Total for this request					**$23,000**

Non-Forest Service Treatments: The following recommendations are made to reduce risks to infrastructure not directly owned or managed by the US Forest Service.

National Weather Service

Coordinate with the local National Weather Service in Riverton to provide them the finalized BARC map to assist with an early warning system for flash flooding and debris flows within the Roosevelt fire area.

I. **Monitoring Narrative:**

Implementation monitoring is proposed and will occur as the treatments are installed or put in place. Inspectors will monitor all contracted treatments to ensure proper implementation. The cost of the implementation monitoring is included in the treatment costs.

PART VII - APPROVALS

Forest Supervisor (signature) — Date: 6/7/19

Regional Forester (signature) — Date