



File Code: 2520; 5180; 6520**Date:** October 28, 2020**Route To:****Subject:** Initial BAER Request Badger Fire**To:** Forest Supervisor, Sawtooth NF

This letter is in reply to the updated initial request for Burned Area Emergency Response (BAER) funding for the Badger Fire. The standards for approving emergency actions are found in FSM 2520-2020-1.

Our Regional BAER Program Manager has worked with your Forest BAER Team Leader to evaluate the request based upon the direction in FSM 2520-2020-1. Predicted post fire events justify emergency response measures to manage unacceptable risks to critical values.

The approved treatments below are to reduce post fire risks to critical BAER values on National Forest lands.



Funds are currently available for this project but could be restricted later, if the need arises, due to Agency apportionment limitations. If this occurs, you will be contacted by the regional Budget Officer regarding specific spending restrictions and procedures.

As a reminder, you are required to account for accomplishments in the appropriate databases of record and provide an accomplishment report after the project is completed.

MARY
FARNSWORTH



Digitally signed by MARY
FARNSWORTH
Date: 2020.10.29
08:55:05 -06'00'

FRANK R. BEUM
Acting Regional Forester, Intermountain Region

Enclosure

cc: shawn.robnmett@usda.gov, thomas.steward@usds.gov, randy.thompson@usda.gov,
mary.farnsworth@usda.gov, veronica.boultinghouse@usda.gov, jeff.bruiggink@usda.gov,
cara.farr@usda.gov, SM.FS.ASC_Acct_Ops@usda.gov

Date of Report: October 19, 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 #
 - & Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Badger

B. Fire Number: ID-STF-000351

C. State: Idaho

D. County: Cassia & Twin Falls

E. Region: 4

F. Forest: Sawtooth

G. District: Minidoka

I. Date Fire Started: September 12, 2020

J. Date Fire Contained: October 15, 2020

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

- 1. **Fireline repaired (miles):** Dozer Line: 38.4; Hand Line: 0.5
- 2. **Other (identify):** Road Repair: 3.5

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
1704021101	Headwaters Goose Creek	248,084	7,662	3.09%
1704021104	Lower Goose Creek	235,811	577	0.24%
1704021203	Dry Creek	53,500	6,994	13.07%
1704021102	Upper Goose Creek	117,155	137	0.12%
1704021206	Rock Creek	196,195	25,367	12.93%
1704021103	Middle Goose Creek	89,831	24,619	27.41%
1704021202	Big Cottonwood Creek	93,556	7,413	7.92%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	72,282
OTHER FEDERAL (BLM)	13,577
STATE	1,146
PRIVATE	3,184
TOTAL	90,190

O. Vegetation Types:

Vegetation Type	Burn Severity	Acres
Aspen	Unburned	701
Aspen Conifer Mix	Unburned	760
Barren/Developed	Unburned	24
Bitterbrush	Unburned	11
Dwarf Sagebrush	Unburned	1242
Forest Shrubland	Unburned	184
Grassland	Unburned	92
Juniper	Unburned	266
Lodgepole pine	Unburned	558
Mountain Sagebrush	Unburned	2445
Mountain Mahogany	Unburned	85
Mountain Shrubland	Unburned	401
Riparian	Unburned	65
Subalpine Fir	Unburned	386
Wyoming Sagebrush	Unburned	86
Aspen	Low	2148
Aspen Conifer Mix	Low	1631
Barren/Developed	Low	26
Bitterbrush	Low	107
Dwarf Sagebrush	Low	5411
Forest Shrubland	Low	716
Grassland	Low	1792
Juniper	Low	904
Lodgepole pine	Low	360
Mountain Sagebrush	Low	11241
Mountain Mahogany	Low	133
Mountain Shrubland	Low	1827
Riparian	Low	259
Subalpine Fir	Low	512
Wyoming Sagebrush	Low	1506
Aspen	Moderate	1380
Aspen Conifer Mix	Moderate	1679
Barren/Developed	Moderate	20
Bitterbrush	Moderate	125
Dwarf Sagebrush	Moderate	1466
Forest Shrubland	Moderate	825
Grassland	Moderate	765
Juniper	Moderate	1148
Lodgepole pine	Moderate	325

Mountain Sagebrush	Moderate	15059
Mountain Mahogany	Moderate	146
Mountain Shrubland	Moderate	2375
Riparian	Moderate	221
Subalpine Fir	Moderate	1021
Wyoming Sagebrush	Moderate	1916
Aspen	High	487
Aspen Conifer Mix	High	1570
Barren/Developed	High	1
Bitterbrush	High	5
Dwarf Sagebrush	High	37
Forest Shrubland	High	742
Grassland	High	13
Juniper	High	3
Lodgepole pine	High	546
Mountain Sagebrush	High	1321
Mountain Mahogany	High	49
Mountain Shrubland	High	875
Riparian	High	89
Subalpine Fir	High	2036
Wyoming Sagebrush	High	37

P. Dominant Soils:

Dominate soils are 214-2C Moderately Dissected with Conifers 6000 To 7500 Feet, 213-2C Weakly Dissected with Conifers Below 7500 Feet, and 465-2C Strongly Dissected Canyon Lands Smooth Slopes with Conifers which combined account for just over 70% of the burned area.

214-2C; This landtype has a moderate slope dissection with more drainageways, many of which have only seasonal flow. The open sage grass slopes are generally smooth with bedrock outcroppings along the ridgelines and sharp slope breaks. The clumps of conifer trees are generally intermixed with aspen. There are patches of buckbrush, serviceberry, and frequently snowberry occurs on this landtype.

The dominant soil in this landtype is Typic Argiborolls, loamy skeletal frigid, cold phase. This soil makes up about 55% of the unit. This soil occurs on slopes that range from 5 to 35 percent. This soil frequently has a thin organic layer on the surface. The surface soil has a very dark grayish-brown color, loam texture, weak, fine, sub-angular blocky structure, 25% gravel, 30% cobble, 5% stones, and is neutral. The sub-surface layer has a dark brown color, loam texture, moderate, medium, angular blocky structure, wet sticky, wet plastic, 20% gravel, 25% cobble, 10% stone, and is mildly alkaline.

The sub-dominant soil is Lithic Argiborolls, loamy skeletal frigid, cold phase. This soil makes up about 35% of the landtype. This soil occurs on slopes that range from 5 to 50%. Bedrock outcrops make up about 10% of the mapping unit. Other inclusions occur along the drainageways. The soil productivity potential for range and reforestation is moderate. Shallow to bedrock soils have a lower productivity potential.

213-2C; This landtype has a gently rolling topography. There are patches of conifers, mostly lodgepole pine, intermixed with aspen and mountain shrubs. Outcrops are frequently visible along the slope breaks and ridges. These areas generally have clumps of aspen and lodgepole pine at the base of these outcrops, where snow accumulations occur. The snow supplies an adequate supply of water during the growing season. The hot, dry, west and south aspects have a sagebrush-grass vegetative cover.

The dominant soils that occur on this landtype are Typic Cryoborolls, Loamy Skeletal. This soil makes up about 55% of the mapping unit and occurs on slopes that range from 10 to 45 percent. This soil profile generally has a 1 to 2-inch organic layer. The surface horizon has a very dark grayish-brown color, loam texture, weak, fine, sub-angular blocky structure, 25% gravel, 10% cobble, slightly acid. The subsurface layer has a yellowish-brown color, loam texture, moderate, medium, angular, blocky structure, 30% gravel, 20% cobble, 5% stone, and is neutral. This soil occurs on slopes that range from 5 to 45 percent.

The co-dominant soil is the Typic Haploborolls, Loamy Skeletal. This soil makes up about 35% of the mapping unit and occurs on slopes that range from 5 to 40 percent. The remaining portion of the soils of this landtype is Lithic Cryoborolls, loamy skeletal. This soil makes up about 5% of the mapping unit and occurs on slopes that range from 10 to 45 percent. Bedrock outcrops make up about 5% of the mapping unit. These may have soils that have an accumulation of clay in the B Horizon which will have a slight influence on management decisions.

465-2C; This canyon land mapping unit has very steep slopes. The strong dissection has an influence on the vegetative patterns that exist on the landtype. The east and north aspects generally have a conifer cover. The south and west aspects have a sagebrush and grass vegetative cover. The tree covered areas are frequently areas where the snow accumulates from wind movement. The white appearance on the hillside is the limestone parent material that has been exposed from sheet erosion. The bedrock outcroppings are common along the upper levels of the slope. Talus slopes frequently occur at the base of the bedrock outcrops.

The dominant soil for this landtype is Typic Haploborolls, loamy skeletal. This soil makes up about 55% of the mapping unit and occurs on slopes that range from 15 to 70 percent. This soil typically has a thin organic deposit on the soil surface. The surface layer is a very dark grayish-brown in color, loam texture, weak, fine, subangular, blocky structure, 35% gravel, 10% cobble, and is mildly alkaline. The subsurface layer is a yellowish-brown color, loam texture, weak, fine, subangular blocky structure, 45% gravel, 15% cobble, 10% stone, and is moderately alkaline

The codominant soils are Typic, Cryoborolls, loamy skeletal. This soil makes up about 25% of the mapping unit and occurs on slopes that range from 20 to 60 percent. The other soil is a Lithic Cryoborolls, loamy skeletal. This soil makes up about 10% of the mapping unit and occurs on slopes that range from 20 to 75 percent. The remaining 10% of the mapping unit is made up of bedrock outcrops.

Q. Geologic Types:

The Cassia mountains consist chiefly of late Paleozoic rocks, primarily silicified limestones and orthoquartzites that have been overlain by lava flows of the Snake River Formation. Drainage patterns are to the west and north from the weakly to moderately dissected plateau. The drainages are canyon-like formations with steep headwalls and escarpments, smooth side slopes, and narrow valley bottoms. The south east part of the Badger Fire burned area is basalt capped with volcanic ash that results in fine textured soils that are highly erodible.

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	93.30
INTERMITTENT	96.09
EPHEMERAL	0
OTHER (DEFINE)	N/A

S. Transportation System:

	USFS Miles	BLM Miles	County Miles	Total
Trails	81.49	0.00	0.00	81.49
Roads	155.40	6.48	7.33	169.21

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	7,340	527	11	144	8,022	9%
Low	28,611	5,386	301	1,320	35,617	39%
Moderate	28,518	7,516	790	1,573	38,398	43%
High	7,812	147	44	146	8,150	9%
Total	72,281	13,576	1,146	3,184	90,187	100%

B. Water-Repellent Soil (acres): 36,330

C. Soil Erosion Hazard Rating:

Big Cotton Wood Creek Watershed		
Landtype	Infiltration	Erosion Haz.
214-2C Moderately Dissected with Conifers 6000 To 7500 Feet	Moderate	Mod/Low
213-2C Weakly Dissected with Conifers Below 7500 Feet	Moderate	Moderate
211-2 Weakly Dissected Sage-grass With Less Than 10% Trees Below 7500 Feet	Moderate	Moderate

Dry Creek Watershed		
Landtype	Infiltration	Erosion Haz.
212-1 Mod. Dissected Sagebrush and Grass with Less Than 10% Trees Below 6000 Feet	Moderate	Mod/Low
213-2C Weakly Dissected with Conifers Below 7500 Feet	Moderate	Moderate

Headwaters Goose Creek Watershed		
Landtype	Infiltration	Erosion Haz.
215-2C Strongly Dissected with Conifers 6000 To 7500 Feet	Moderate	Mod/High
263-2C Moderately Dissected Canyon Lands with Smooth Slopes with Conifer Below 7500 Feet	Moderate	Mod/High
213-2C Weakly Dissected with Conifers Below 7500 Feet	Moderate	Moderate

Upper and Lower Goose Creek Watersheds		
Landtype	Infiltration	Erosion Haz.
214-2C Moderately Dissected with Conifers 6000 To 7500 Feet	Moderate	Mod/Low

Middle Goose Creek Watershed		
Landtype	Infiltration	Erosion Haz.

261-2A Weakly Dissected Canyon Lands with Aspen Below 7500 Feet	Moderate	Moderate
265-2C Strongly Dissected Canyon Lands Smooth Slopes with Conifers	Moderate	Mod/High
265-2J Strongly Dissected Canyon Lands Smooth Slopes with Juniper Above 6000 Feet	Moderate	Mod/High

Rock Creek Watershed		
Landtype	Infiltration	Erosion Haz.
266-1 Strongly Dissected Canyon Lands with greater than 20% exposed	Mod/Slow	Mod/High
263-2C Moderately Dissected Canyon Lands with Smooth Slopes with Conifer Below 7500 Feet	Moderate	Mod/High

D. **Erosion Potential:** Moderate

E. **Sediment Potential:** Moderate

F. **Estimated Vegetative Recovery Period (years):** Grass/Forbs: 1 - 3
 Shrubs: 8 - 10
 Conifers: 15

G. **Estimated Hydrologic Response (brief description):**

1. Equivalent Design Recurrence Interval, (years): 10 year RI
2. Design Storm Duration, (hours): 1-hour
3. Design Storm Magnitude, (inches): 0.90
4. Design Flow, (cubic feet/second/square mile): all design flows were zero
5. Estimated Reduction in Infiltration, (percent): See Soils Report
6. Adjusted Design Flow, (cfs per square mile): see hydro report; range from 1.8 – 42.1 cfs/mi²

PART V - SUMMARY OF ANALYSIS

Introduction/Background:

The Badger Fire occurred on the Cassia Division which is one of five divisions located on the Minidoka Ranger District. The fire started along side Forest Service Road 536 on September 12, 2020. The cause is still under investigation, but evidence points that the start was human caused since there was no lightning that occurred in the area prior to and on the day the fire started. The fire continued to moderately grow in a northerly direction during the first six days due to sustained winds from 15-25 mph. Then on September 18, critical fire weather conditions occurred due to 15-20 mph winds from the southwest, with gusts to 35 mph ahead of a storm front. Prior to the storm front the fire was around 42,000 acres but grew extensively when the strong winds blew over the fire causing an evacuation of all residents who resided in the Rock Creek Canyon area. A type 2 incident management team, under the guidance of Great Basin Incident Management Team 5, Sam Hicks (IC), took over the fire the same day. At the peak of the incident 462 staff consisting of engines, crews, dozers, water tenders, aircraft, and operation overhead worked on the fire. The fire was declared 100% contained on October 15, 2020 a the final acreage was 90,190.

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):

Post-fire watershed conditions threaten the life and safety of visitors using the Forest Service roads and trails within the fire perimeter. Portions of these roads and trails lie in narrow, canyon bottoms that can easily trap storm runoff in portions of the profile and cross section for each transportation feature. The roads and trails that are of most concern traverse through high/moderate severity burned slopes. Normal storm frequencies and magnitudes can now more easily initiate rill and gully erosion on the severely burned, over-steepened slopes. These “minor” events can activate floods in the smaller tributary drainages that intersect these transportation features, putting the safety of users at risk.

Possible Probability of Damage or Loss (Likely) /Magnitude of Consequences (Moderate): **Risk - High**

2. Property (P):

The watersheds burned in the Badger Fire will show the effects of the fire due to increased runoff rates, erosion, sediment, and debris transport creating a future concern for trails, roads, culverts, and channels along the drainage paths of the burned watersheds in that they may be plugged, overtopped or washed away more frequently than in its pre-fire condition. There is also increased danger to structures that remain in the flood path due to the increased risk for debris slides and flooding. Failure of these drainage features can increase the likelihood of loss or damage to the system roads and trails contained within the burned perimeter.

Possible Probability of Damage or Loss (Likely) /Magnitude of Consequences (Moderate): **Risk - High**

3. Natural Resources (NR):

A major vegetation issue identified post fire included threats to the ecological integrity native plant communities from the introduction and expansion of noxious and invasive plant species. The burned area, now lacking desired vegetation that can normally compete with invasive species, is vulnerable to the spread of existing noxious and non-native seed sources (cheatgrass). Even in the low intensity burn areas, it will take at a minimum one growing season for native vegetation to reestablish and begin competing with invasive species. Therefore, the risk is very high to potentially adversely affect hundreds of acres of public lands if they are not monitored and treated effectively.

Possible Probability of Damage or Loss to Native Vegetation Communities from noxious/invasive species (Very Likely) /Magnitude of Consequences (Moderate): **Risk - Very High**

B. Emergency Treatment Objectives:

The goal of the burned area emergency rehabilitation is to:

- Reduce threats to personal injury and/or human life of visitors using select system roads, trails, and campgrounds.
- Control expected invasion of noxious weeds within the area, especially along and adjacent to Forest roads and dozer lines used by fire equipment and in existing populations within the fire boundary.
- Protect and mask exposed cultural sites and subsurface deposits.
- Minimize damage to key system roads and trails within the fire boundary.
- Identify appropriate monitoring activities that estimate the effectiveness of emergency stabilization treatments and identify necessary maintenance and continuation of other approved BAER activities.

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

Land: 85%

Channel: N/A

Roads/Trails: 90%

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	70	80	80
Channel	N/A	N/A	N/A
Roads/Trails	75	85	95
*Protection/Safety	80	70	60

*Initially, it's predicted visitors will heed the warning signs, but complacency is expected after the initial year unless there is a damaging event.

F. Cost of Selected Alternative (Including Loss): (Not Estimated)

It is assumed the primary treatments (noxious weed, EDRR BAER, and road and trails drainage treatments) would be successful in reducing resource values lost through No-Action between 70 to 80 percent.

G. Skills Represented on Burned-Area Survey Team:

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

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

Skill	Team Member Name
<i>Team Lead(s)</i>	Shawn Robnett
<i>Soils</i>	Thom Stewart
<i>Hydrology</i>	Mark Dallon
<i>Engineering</i>	Kevin Duchow
<i>GIS</i>	Brandt Hines
<i>Archaeology</i>	Kandi Voss
<i>Weeds</i>	Thom Stewart
<i>Recreation</i>	David Ashby, Susan James, Steve Frost
<i>Range</i>	Justin Gibson, Chris Gee

H. Treatment Narrative:

Land Treatments:

Noxious Weed Treatment Narrative:

Purpose of Treatment: The objective of these treatments are to continue to treat known noxious species (Table 1), and identify and control the expected noxious/invasive species spread using spot herbicide spraying and seeding to accelerate the recovery of the sagebrush bunchgrass community. To identify new infestations of noxious weeds in burned areas. Effectively treat noxious species and reduce the spread within the Badger Fire area. The spread of noxious and non-native plant species could result in a reduction in the diversity of the native plant communities, and loss of soil productivity that would affect forage for wildlife and livestock in the area, and scenic beauty and overall recreational experiences. EDRR treatment implemented within the next growing season could reduce the risk of introduction and spread of noxious species in the burned area.

Herbicide Treatment:

General Description: Forest Service and County Cooperative Weed Management Area treatment efforts will continue in the area and include an emphasis on managing the potential for introduction and spread of noxious weed species in the burned area, and rehabilitated suppression activity areas. EDRR for the burned area would be an integral part of the SNF weed management program. EDRR treatments would be annual spring/summer treatments with follow up in the fall. This treatment will take place in accordance with the Forest Noxious Weed Management Plan. The amount of treatment is based on known populations and EDRR monitoring areas of where vegetation burned at moderate and high intensity, and suppression activities occurred within and adjacent to areas of known noxious/invasive plant species populations, areas of concentrated recreation, and at risk sage-grouse habitat. These activities, or the resulting removal of the surrounding native vegetation from the fire, could result in an introduction and/or increase in the noxious/invasive plant species populations.

Location (Suitable) Sites: EDRR treatment will be focused on monitoring suppression activities areas, areas of concentrated recreation and sage-grouse habitat at risk of weed invasion or expansion within the fire boundary.

- 67 acres from suppression activities
- 109 acres of concentrated recreation
- 371 acres of sage-grouse habitat at risk of weed invasion or expansion

Design/Construction Specifications: The SNF program management personnel will conduct systematic EDRR surveys of the dozer and hand lines, helispots, drop points, camps, staging areas, and cross-country travel areas associated with suppression activities. EDRR surveys will also focus on concentrated recreation areas (trails, trail heads, campgrounds) and sage-grouse habitat within the fire boundary. Surveys would be done by vehicle, ATV and foot. The personnel will select herbicide, application rate, and application timing based on specific weed species found. EDRR treatments would be annual spring/summer treatments with follow up in the fall.

The expansion of existing noxious plant species and the introduction of new species into the burn area will be targeted using appropriate treatment. This treatment will take place in accordance with the Forest Noxious Weed Management Plan and Environmental Analysis under the direction of the Minidoka District Ranger.

Seeding Treatment:

General Description and Locations: On Hudson Ridge which is bisected by the 500 road there are existing infestations of Russian Knapweed, White Top, Canada thistle, Musk thistle, scotch thistle, cheatgrass, and burbuttercup immediately adjacent to the road. EDRR provided by other program funds will be used to treat along the 500 road. The seeding will be used adjacent to the EDRR treated area where the fire burned at high severity in the drier sites and in pre fire phase 3 Pinyon-Juniper. These areas include pre fire native vegetation where the highest risk of invasive plants was identified and the areas are adjacent to known invasive plants. The treatment includes 173 acres of broadcast seeding with low sagebrush, bluebunch wheatgrass, Idaho fescue and Sandberg's bluegrass to accelerate the rate of re-establishment of native shrub and grasses to prevent the expansion of noxious and invasive species. The areas are based on low sage communities that experienced moderate and high soil burn severity, the overall popularity and public use in the area, and the existing noxious and invasive species present along the road that bisects the area.

Along the Trapper Creek drainage in the lower portions of Squaw Creek, little Squaw Creek, and along the #535 road up Rodeo Creek there are existing populations of bull thistle, Canada thistle, scotch thistle, burdock, white top, gypsy flower, rush skeleton weed, cheatgrass, and bulbous bluegrass. Based on the amount of moderate and high intensity burn of Juniper with depleted understory, the existing noxious and invasive weeds, and the overall popularity and amount of public use in this area approximately 157 acres within the burned area was identified for broadcast seeding with low sagebrush, bluebunch wheatgrass, Idaho fescue and Sandberg's bluegrass to accelerate the rate of re-establishment of native shrub and grasses to prevent the expansion of existing noxious/non-native plant species.

This seeding treatment complements other treatments being completed by our partners in the burned area. The state of ID, BLM and conservation groups are planning to seed areas within the burn area to limit invasive plants and provide recovery to desired plant communities.

Channel Treatments: None

Road and Trail Treatments:

General Description: The watersheds burned in the Badger Fire will show the effects of the fire via increased runoff rates, erosion, sediment, and debris transport creating a future concern for the surfacing and fills for roads and trails and associated drainage structures. The effects will be most prevalent in and below the areas of high and moderate burn severity. These effects could result in filling the ditches, plugged culverts and potentially overtopped or washed away road surfaces and fill slopes.

Several road and trail stabilization treatments have been prescribed for both transportation systems within the Badger Fire that will be directly impacted by post fire events. These treatments are necessary to mitigate the predicted effects that will occur to the transportation system and infrastructure and protect the investment of the transportation system from the expected increased post-fire runoff.

Drainage Stabilization Specifications:

Reshape Road - Provide positive drainage to ditches and culverts by in-sloping or out-sloping as directed by the Engineer. Repair large ruts in the middle of the road or trail cross section that channel water downgrade

Rolling Drain Dips (with or without armor) – Construct rolling dips per Forest Service standards for both roads and trails.

Ditch Cleaning – All drain ditches along the length of the travel ways shall have all existing silt and debris removed and either hauled away or spread out such that the material cannot reenter the drainage structure during a runoff event.

Remove Culverts - Culverts will be removed and have the excavated hole laid back to match the surrounding stream banks in order to pass the increased flows and debris that are anticipated from future storm events.

Culvert Cleaning – Remove any blockages from inlet, outlet and inside barrel. Straighten bent or replace inlets. Catchment-basins shall have all existing silt and debris removed and either hauled away or spread out such that the material cannot reenter the drainage structure during a runoff event.

Cross Drain Culvert Replacement/upsizing – Cross drain and small stream culverts need to be replaced as some are damaged or undersized. They will need to be replaced with corrugated metal pipes (CMP) to ensure ditch relief is maintained so that over toping of the road and failed fill slopes do not become an issue.

Hazard Tree mitigation – Hazard trees will be felled that are within reach of all sites where drainage work will be needed. Most of the hazard trees along the main roads have been mitigated however the lower volume roads and internal trails will have there could still be some standing.

Location (Suitable) Sites for Roads:

All roads within the fire perimeter are to some degree going to be affected by the effects of the fire. The roads that are most in jeopardy are listed in the table below.

NFSR #	NAME	MILES
70500	Oakley-Rogerson	13.11
70515	Rock Creek	7.33
70527	Dry Creek	13.70
70533	Trapper Creek Road	12.98

70538	FS Spring	3.90
70671	Little Piney (Monument Peak)	5.29
	Total	56.31

Location (Suitable) Sites for Trails:

All trails within the fire perimeter that intersect with High and Moderate Burn Severity.

NFSR #	NAME	MILES
007	Cottonwood Creek	2.34
004	3rd Fork Single Track	2.17
006	Harrington Fork	5.28
878	Cold Spring Canyon	1.08
236	2nd Fork	2.13
015	Trout Creek	1.64
920	Telephone Canyon	1.71
010	Trapper Creek	1.45
867	Jones Creek	1.03
238	Whalstrom Hollow	1.19
886	Birch Springs, Jeep Trail	1.51
002	Martindale	0.72
237	First Fork	0.09
008	Sawmill	0.68
807	Dry Fork	1.25
877	Badger Gulch-Beaver Damn Pass	0.89
868	Little Piney Access	1.17
869	Little Piney Spring	0.42
883	Monument Peak East	0.56
884	Third Fork Trapper Creek	0.70
245	Phantom Falls	0.32
924	Red Bluff	1.26
915	Porcupine East	0.21
917	High Loop	0.52
235	Rim View	1.75
004	3rd Fork ATV	0.12
	Total	32.19

Storm Patrols:

General Description: Roads within the Badger Fire cross drainages and side channels located in watersheds that have areas of a large percentage of high burn severity. These crossings now have the potential for increased runoff and debris flows. The predicted increased flows are a direct cause from the lack of vegetation to slow down the water flow and/or from hydrophobic soil conditions that can prevent surface water infiltration. These flow increases pose a threat to the existing crossings which may result in plugging culverts or exceeding their maximum flow capacity. If these flows plug drainage structures, the result could be massive erosion and debris torrents further down the drainage due to the failure of the fill slope.

Also, there is an immediate and future threat to travelers along these roads within the burned area due to the increased potential for rolling and falling rock and trees from burned slopes and increased potential for debris flows. With the loss of vegetation normal storm frequencies and magnitudes can more easily initiate rill and gully erosion on the slopes and it is likely that this runoff will cover the roads or cause washouts. These events make for hazardous access along steep slopes and canyon bottoms, putting the safety of users at risk.

Storm Patrol Specifications:

Immediately upon receiving heavy rain or spring melt the FS will send out patrols to identify road hazard conditions – obstructions such as rocks, sediment, washouts – and plugged culverts so the problems can be corrected before they worsen or jeopardize motor vehicle users.

Locations where heavy equipment is necessary to mechanically remove any obstructions from the roads and culvert inlets and catch basins shall be identified and passed on to the C&M Crew.

All excess material and debris removed from the drainage system shall be placed outside of bank-full channel where it cannot re-enter stream channels.

Storm Patrol Locations:

Refer to the roads table on page 12 under *Road and Trail Treatments* to view the roads most susceptible of being damaged due to higher than normal storm runoffs. The patrols should first focus on those Forest Service roads listed that receive the most traffic and are of more value to the transportation system. Due to the vast distance between each of the roads to be patrolled the team could also check where the highest rain intensities occurred when a storm passes through the fire area and concentrate their efforts on those areas receiving the most precipitation.

Protection/Safety Treatments:

Hazard Warning Signs

General Hazard Warning and Route Marker Signs Description: The purpose of “Burned Area Warning Signs” is to reduce the risks to human life and safety by alerting motorists and trail users of existing threats while traveling the authorized routes within the areas susceptible to flooding, debris flows, hazards trees, and all other risks attributable to post fire events on the landscape.

The trail route marker signs are needed to safely direct motorists to their destination without taking a wrong turn, especially during emergency or severe weather conditions. These signs are located at intersections of trails which help inform the traveler of their current location enabling them to correctly take their intended destination when trying to rapidly leave the area.

Hazard Warning Sign Specifications:

Roads: “Burned Area” warning signs along the roads shall measure, at a minimum, 30 inches by 36 inch and consist of 0.08” aluminum, sheeted in high intensity yellow with black letters, which is shown in the photo below. The “BURNED AREA” lettering shall be a minimum of 5 inches in height and all remaining lettering shall not be less than 3.5 inches in height.

Trails: “Entering Burned Area” warning signs along the trails shall measure, approximately, 2.5 feet by 1 foot and consist of 0.08” aluminum, sheeted in high intensity yellow with black letters. The “ENTERING BURNED AREA” lettering shall be a minimum of 2 inches in height.

Route markers shall consist of carsonite posts and shall include the trail number included on the previous marker prior to the fire and installed per Forest Service standards.

Location of Burned Area Warning Signs for Roads:

Locations for “Burned Area” warning signs will be located at all points of entries by use of forest system roads into the burned areas. These locations are as follows:

- On FSR 70533 Trapper Creek at Forest Boundary
- On FSR 70527 Dry Creek Road at Boundary
- On FSR 70500 at edge of fire on Oakley Side
- On FSR 70538 at edge of fire on FS Spring side
- On FSR 70528 at intersection with 70527
- On FSR 70515 up Rock Creek Road
- On FSR 70893 at edge of fire
- On FSR 70671 at edge of fire

Location of Burned Area Warning Signs for Trails:

Locations for “Entering Burned Area” warning signs on NFS Trails:

- Harrington Fork Trailhead
- Rimview Trailhead
- 3rd Fork Trailhead
- Upper Wahlstrom Hollow
- Middle 3rd fork trail as trail enters fire area
- Junction of trails 241 and 163
- 920 trailhead (old 500 road)
- South Porcupine Springs road (538) a trail junction
- 538 road at FS Flat trail
- 538 road at junction with trail 918 (2 signs)
- Junction of 870 and 869 trails
- Lower Trout Creek trail as enters burn area
- 876 Trail as enters burn area
- Cottonwood Canyon Trail as enters burn area from below
- Sawmill trail 008 as trail enters burn area on upper end

Recreational Site Hazard Mitigation

General Recreational Site Hazard Mitigation Description: This treatment narrative is specific to addressing human health and safety risks within developed and designated recreation sites resulting from the Badger Fire and identified in the BAER assessment. These sites are affected by varying degrees of burn severity.

Within the fire area there are seven developed recreation sites and dozens of designated dispersed sites. Five of the seven developed sites have significant damage including destroyed and damaged restrooms.

Proposed treatments at 5 sites include the installation of concrete barriers at the entrance of each campground that is now closed. The barriers are to limit access to burned campgrounds where hazards of rolling rocks, falling trees and materials from burned facilities pose a threat to the public. Treatments also include abandoning concrete toilet vaults which pose a threat to people and wildlife

who can fall through the large holes. These holes are now exposed because the restrooms that sat on top of them were completely burned to the ground. The abandoning includes pumping, collapsing and filling in the toilet vaults.

Location of Recreational Site Hazard Mitigation: The recreational sites include the following campgrounds: Schipper, Birch Creek, Harrington, Steer Basin, and Father and Sons CG.

I. Monitoring Narrative:

Road and Trail Hazard Warning Signs: Regularly inspect the warning signs for visibility and when able ask visitors if they saw and read the signs and if they understood the warnings listed.

Recreational Site Hazard Mitigation: District and SO personnel will monitor the sites when in the vicinity of the described sites and check for signs of hazards after extreme weather events to ensure mitigation measures done previously are remaining effective.

Road and Trail Drainage Stabilization: Inspect and monitor the road and trails after spring run-off and precipitation events to ensure existing drainage structures are effective and ready to handle the next precipitation event.

Noxious Weeds: The Sawtooth NF weed management program personnel would monitor noxious weed infestations treated with herbicide. Field personnel will GPS occurrences and size of areas of infestation, photo points, and use transect protocols to record relative abundance or coverage to build species trend (stable, increasing) data for area.

Seeding: Monitoring transect would be established in identified areas to quantitatively measure the establishment of native and non-native plant species and native species richness. The District would continue treatments of noxious species until the native plants establish enough to outcompete the non-native species.

Seeding Implementation Monitoring: Would be conducted by the implementation team personnel at the treatment sites or staging area.

- * Was the treatment implemented as designed?
- * Were the correct species and amount of pure live seed applied?
- * Were sensitive or no-seed areas avoided?
- * Visually inspect aerial seeding to ensure approximately 5-8 seeds per square foot are applied.

Seeding Effectiveness Monitoring: Would be conducted by District personnel one and five years post implementation and annually by EDRR field crew during field season.

- * Monitor units for seed germination in the spring of 2021
- * Determine seed establishment in areas seeded and compare with unseeded areas.
- * Monitor for noxious weed establishment and cheatgrass invasion.
- * The use of transects will be used to monitor vegetation establishment and species richness.
- * Determine if additional noxious weed treatment or seeding is necessary.

PART VII - APPROVALS

1. Kirk Flannigan _____ 10/21/2020 _____
Forest Supervisor Date