

Date of Report:

BURNED-AREA REPORT
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 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)
- ☐ 2. Interim Report # _____
 - ☐ Updating the initial funding request based on more accurate site data or design analysis
 - ☐ Status of accomplishments to date
- ☐ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTIONA. Fire Name: Wigwan and Monument FiresB. Fire Number: MTBDF-003284, MTBDF-003305

C. State: Montana

D. County: Madison

E. Region: R1

F. Forest: Beadvehead Deerlodge

G. District: Madison

H. Fire Incident Job Code: P1L25C, P1L26Z

I. Date Fire Started: Monument 8/6/18, Wigwam 8/11/18

J. Date Fire Contained: Projected Containment in November

K. Suppression Cost: Wigwam \$2.8 Million, Monument \$3.5 Million

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 1.9 miles of dozer line and approximately 1 mile of hand line on Monument Fire. 7.33 miles of Dozer line and 1.6 miles of hand line on Wigwam Fire

2. Fireline seeded (miles): 1.9 miles of dozer line and approximately 1 mile of hand line on Monument Fire. 7.33 miles of Dozer line and 1.6 miles of hand line on Wigwam Fire

3. Other (identify): See Suppression reports available upon request

M. Watershed Number:

Wigwam, 100200071201, 100200030302, 100200070807

Monument, 100200070803, 100200070705

N. Total Acres Burned:

Wigwam

NFS Acres (3313 burn effects, 4404 burn perimeter) Other Federal () State () Private ()

Monument

NFS Acres (4927 burn effects, 6768 burn perimeter) Other Federal () State () Private ()

O. Vegetation Types: Conifer species include spruce, subalpine fir, lodgepole, Douglas Fir and whitebark Pine with approximately 40% dead across both fire areas. Meadows have a high forb component with a number of native and introduced grass species that generally did not burn across fire areas. Some meadows with a higher number of shrubs including sagebrush did burn at a lower intensity primarily within the Wigwam fire perimeter.

P. Dominant Soils:

The Monument and Wigwam fires are located in the northern part of the Gravelly Mountain range which is an area of complex geology composed primarily of various types of sedimentary rock. The table below lists the most common landforms in the Wigwam (704 & 524) and Monument (544 & 564) fire perimeters.

Map Unit	Landform	Parent Material	Soil Classification
704	Landslide Deposits	Complex landslide deposits over limestone, sandstone, and shale residuum	Fine-loamy, mixed, superactive Pachic Haplocryolls
524	Gentle Mountain Slopes	Limestone, sandstone, and shale colluvium	Loamy-skeletal, mixed, superactive Typic Eutrocrypts
544	Mountain slopes, steep	Cretaceous shale & sandstone	Loamy-skeletal, mixed, superactive Typic Eutrocrypts

546	Mountain slopes, steep	Limestone	Loamy-skeletal, mixed, superactive Eutric Haplocryalfs and carbonatic Typic Eutrocryepts
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The most dominant landform in the Wigwan fire perimeter is landslide deposits. These areas have complex, rolling topography, much like that found in glacial moraine deposits. Much of this landform is located in the Wigwan watershed and is vegetated with grass and smaller clumps of timber, including whitebark pine, spruce, and subalpine fir. Islands of unburned grass are interspersed with larger areas of primarily moderate burn severity. The picture below shows the general landscape within the fire perimeter.



Figure 1. Landscape Common in Wigwan fire perimeter

The Monument fire perimeter has a more dramatic landscapes consisting of moderate to steep mountain slopes with various sedimentary geology types including limestone, sandstone, and shale. The picture below show the fire effects and general steep landscapes commonly found in the Monument fire perimeter.

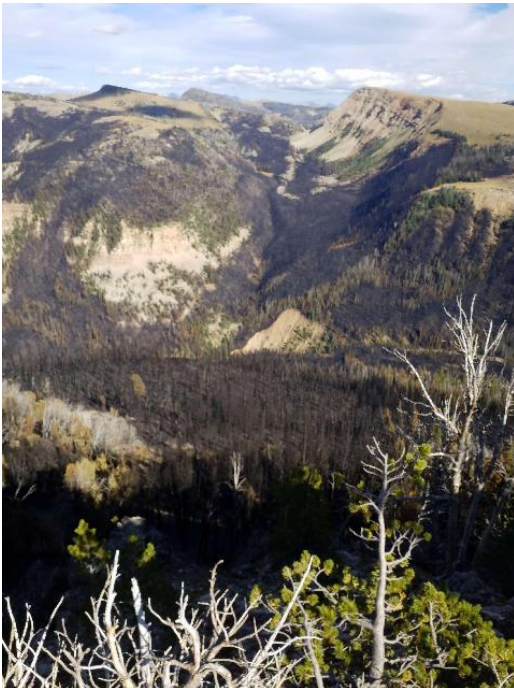


Figure 2. Landscape Common in Monument fire perimeter

Q. Geologic Types:

The most common geology type in the fire area is landslide deposits of Holocene and Pleistocene age. These deposits are up to 60 meters thick and are comprised of coarse, unconsolidated deposits of locally derived, angular pebbles, cobbles, and boulders associated with fine-grained matrix of silt and sand.

Other common geology types in the fire area include the Frontier and Muddy formations of Upper Cretaceous age, and the Mowry Formation, Thermopolis Shale, and the Kootenai Formation of Lower Cretaceous age. These formations are all comprised of various types of sedimentary rock including sandstone, limestone, mudstone, shale, bentonite, and siltstone.

R. Miles of Stream Channels by Order or Class:

Stream type	Wigwam	Monument
Perennial	4.4	8.2
Intermittent	6.7	4.2
Total	11.1	12.4

S. Transportation System

Trails: 0.1 miles with the Monument Fire perimeter

Roads: 0.1 mile of system trail and 1 mile of stock trail within the Wigwam fire perimeter and 0.2 miles within the Monument fire perimeter

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1262 (low) 1490 (moderate) 561 (high) **Wigwam Fire**
Burn Severity (acres): 564 (low) 3085 (moderate) 1278 (high) **Monument Fire**

B. Water-Repellent Soil (acres): Most high severity and some moderate portions have varying degrees of water repellency. North facing slopes were observed to have stronger hydrophobicity than south facing slopes. Soils with higher rock content had lower water repellency.

C. Soil Erosion Hazard Rating (acres):
18 (low) 2531 (moderate) 764 (high) Wigwam
357 (low) 1542 (moderate) 3028 (high) Monument

D. Erosion Potential: 3 tons/acre (based on Disturbed WEPP run near both fire locations)

E. Sediment Potential: 2.1 cubic yards / square mile (based on Disturbed WEPP run near both fire locations)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years): 1-3 years grass and forbs, 10-15 years shrubs, 20-50 years conifers

B. Design Chance of Success (percent): 70-90%, depending on site and treatment

C. Equivalent Design Recurrence Interval (years):50

D. Design Storm Duration (hours): 3

E. Design Storm Magnitude (inches): 2

F. Design Flow (cubic feet / second/ square mile): 90

G. Estimated Reduction in Infiltration (percent): 75 (high and moderate severity)

H. Adjusted Design Flow (cfs per square mile): 67.5

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Monument and Wigwam fires generally burned in remote landscapes with limited infrastructure in the way of fire effects. These pristine remote locations varied in topography with Wigwam having more gentle terrain with a mix of wet meadow benches and tree stringers which produced the greatest fire effects. Monument had much steeper terrain primarily in the Ruby Creek watershed where a small population of pure strain Westslope Cutthroat exist. Steep tree covered slopes burned in large swaths with high intensity some burned areas were also adjacent to archeological significant sites.

Although road networks were not common, some road networks adjacent to fire perimeters were affected and existing drainage structures will be inadequate for the increased runoff expected from the fire effects. Short segments of roads were burned over and hazard trees are a concern for public safety.

These remote landscapes had limited weed infestations prior to fire activities and these newly disturbed areas will be prime locations for weed spread and potential new sources of weed seed associated with suppression activities. A number of Canada thistle patches have been mapped adjacent to and within the fire perimeter along with houndstongue and other invasive species. The greatest concern is for spotted knapweed which has limited distribution in the Gravelly landscape but has some significant acres adjacent to the Monument fire perimeter.

Risk factors based on Matrix below

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

Human Life and Safety (HLS):

Probability of Damage or Loss: Possible, based on number of burned trees on trails, roads, and other public areas

Magnitude of Consequence: Major, High risk of injury from falling hazard trees in public areas

Risk Level: High, based on risk of falling hazard trees in public used areas

The threats from fire effects to the 290 Road, trails, and other public areas in the fire perimeter warrant the need for hazard tree felling and other safety treatments.

Property:

Threats to road 290 in Wigwam Fire and trail network

Probability of Damage or Loss: Very Likely, based on historical erosion effects

Magnitude of Consequence: Moderate, based on safety concerns and loss of infrastructure

Risk Level: Very high, if nothing is completed it is very likely damage or loss of infrastructure will occur

The threats from fire effects to the 290 Road in the Wigwam fire area warrant the need for drainage and safety treatments to protect human safety and infrastructure.

The threats from fire effects to the trail network and historic stock trail in the Wigwam fire area warrant the need for drainage and safety treatments to protect human safety and infrastructure.

Natural Resources:

Threats to Native plant communities in both Wigwam and Monument fire areas due to the establishment or spread of noxious weeds.

Probability of Damage or Loss: Very Likely - Based on moderate and high burn severity and proximity to known weed infestations.

Magnitude of Consequence: Major – Loss of native plant communities and spread of noxious weeds.

Risk Level: Very High – Primary risk comes from the existing infestations within and adjacent to burned area along with introduction of noxious weed seed from fire fighting resources. Invasive species detection surveys and treatment within and adjacent to the burned area is warranted.

Based on the risk of noxious weeds to native vegetation, money has been requested for both areas to survey potential noxious weed incursions and treat as needed. Access in the Wigwam fire area is much more convenient than the Monument project area but treatment importance may be higher in the Monument fire area where spotted knapweed infestations will expand into the fire perimeter. Survey and treatment costs for the Monument Fire area will be higher to account for access difficulty and emergency need.

Cultural and Heritage Resources:

Accelerated runoff from the steep slopes within the monument fire threatens to displace and bury known archeological resources.

Probability of Damage or Loss: Unlikely, based on fire effects

Magnitude of Consequence: Minor, from potential erosion in relatively flat areas

Risk Level: Very Low, based on site characteristics

Based on the proximity of low severity fire in the Teepee Basin area there is limited risk to cultural resources so no project work is identified.

B. Emergency Treatment Objectives:

Treatment objectives will include addressing the fire effects on FS road 290 which was burned over within the Wigwam fire perimeter and will be impacted by increased runoff from fire affected slopes above the narrow road corridor that did not burn.

Treatment objectives will be targeted at treating weed infestation adjacent to and within burned areas of both fires will be a priority to address potential spread and reduce seed banks of noxious weeds in these otherwise pristine settings. Application will need to be completed to ensure current infestations are addressed early and new infestations can be identified as new vegetation becomes established in burned areas.

Treatment objectives will address the threats from fire effects to the 290 Road, trails, and other public areas in the fire perimeter and include hazard tree felling and other safety treatments.

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

Land **75%** Channel **NA** % Roads/Trails **90** % Protection/Safety **95** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	75	70
Channel	NA	NA	NA
Roads/Trails	80	80	70
Protection/Safety	100	90	90

E. Cost of No-Action (Including Loss): \$750,000 loss of native vegetation, infrastructure, and potential to impact human safety.

F. Cost of Selected Alternative (Including Loss): \$85,561

G. Skills Represented on Burned-Area Survey Team:

☒ Hydrology ☒ Soils ☐ Geology ☒ Range ☒ Recteation
☐ Forestry ☐ Wildlife ☐ Fire Mgmt. ☒ Engineering
☐ Contracting ☐ Ecology ☒ Botany ☒ Archaeology
☒ Fisheries ☐ Research ☐ Landscape Arch ☒ GIS

Team Leader: Kevin Weiner

Email: kweinner@fs.fed.us Phone: 406-683-3857 FAX: 406-683-3855

H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

The area of the fire is relatively pristine and noxious weed free. There are known infestations of Canada

thistle, spotted knapweed, bull thistle, and houndstongue within and adjacent to burned areas. Noxious weed infestations of yellow toadflax, musk thistle, field scabious and hoary allysum are known along the access routes into the area. During initial attack there was significant cross country travel occurrence associated with the Wigwam Fire, it was noted that one such route traveled through a previously unknown infestation of spotted knapweed and continued for approximately 2 miles. Also, many resources assigned to the fire originated from major noxious weed epicenters. A weed wash station was implemented early on the incident but the potential for weed seed introduction was still present.

Introduction of noxious weeds to the fire areas is a concern for most of the area. The Wigwam fire has a main access route through the middle of the fire area and secondary routes along the east/southeast perimeter. The Monument fire has main access routes along the west, north, and south west perimeter and a motorized trail up Ruby Creek. The largest noxious weed infestation occurs in the Ruby Creek drainage and is approximately 50 acres of spotted knapweed less than ½ mile downslope from the fire perimeter. This infestation threatens to spread into the burned area. Treating the margins of the burn area adjacent to this infestation is difficult due to the remote setting and access issues, therefore treatment cost of treatment is higher.

Methods: As Early Detection/Rapid Response (EDRR) protocols and survey results direct, survey and treat noxious weeds with appropriate herbicides, as needed along fire access road corridors that provide routes invasive weed species could use to expand into the high and moderate burn severity areas.

Based on large number of access routes used by fire personnel for both fires and the adjacent noxious weed infestations that were identified we believe there is approximately 200 acres that will need to be accessed and treated across the two fire areas. Because access in the Monument fire area is more difficult the unit per acre cost will be higher to effectively treat this remote landscape. The following table breaks out the acres that will need to be assessed and treated for the two fire areas.

Description	Assessment Acres	Treatment Acres	Cost Per Acre	Total cost
Monument: EDRR along routes used by fire personnel	200	50	320	\$16,000.00
Monument: EDRR along fire perimeter proximate to large knapweed infestation	700	80	320	\$25,600.00
Wigwam: EDRR along routes used by fire personnel and along any dozer lines or handline	300	30	280	\$8,400.00
Wigwam: EDRR along margins of existing infestations or high risk areas where seeds could spread into mod or high burn severity fire area	300	40	280	\$11,200.00
Total	1500	200		\$61,200.00

Roads and Trail Treatments:

Road treatments will be focused on the 3 miles of the 290 road which has burn effects on both sides of the road but hydrologically connected burn effects primarily from the West side of the road. The road is a native bed road with a long history of maintenance and erosion problems and the existing infrastructure is not adequate to handle the expected hydrologically related burn effects. A number of belt bars have been installed historically but rolling dips would be better long term solution to account for burn effects. The cross drains and small intermittent and ephemeral crossings are currently undersized based on burn effects upslope of the crossing locations. All of these treatments are consistent with a storm patrol/prooing

prescription and cost appears to be similar so treatments are accounted for the in the cost request spreadsheet as such.

Trail treatments would work on the administrative parts of the B-D NF system network that links to a historical trail network not on the system (< ½ mile). Treatment would consist of adding and supplementing trail water bars and/or drainage dips to protect the current infrastructure from damage or loss from post fire runoff events. Hazard tree felling would be done in the vicinity of work crews conducting trail work.

Protection/Safety Treatments:

The 290 road has a short segment that was completely burned over that will need to have burnt hazard trees removed for forest service workers performing road work and public safety. The danger from falling trees within the work area is high given the fire severity and tree species burned. A number of trees have the ability to fall on the road and the moderate severity effects through this area make treatments a priority before roots begin to fail.

Informative hazard signs are available on the district so no new warning signs are not needed at this time.

I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Monitoring of weed treatments will be tracked through spatial weed treatment reporting databases such as FACTS and follow up treatments will be completed as necessary. Road treatments will be monitored for effectiveness through our normal maintenance cycle by the road crew and additional work will be completed to account for any unexpected fire effects and covered under the storm patrol costs.

Additional monitoring will be completed by the BAER Forest Service personnel to ensure treatments are completed as needed and effectiveness is tracked through implementation and the funding cycle.

Interim

Previously approved

PART VII - APPROVALS

1. /s/ Jeff Tomac (for): 10/29/2018
Forest Supervisor (signature) Date

2. /s/ Leanne M. Marten 11/08/2018
Regional Forester (signature) Date

