Northern Region

Burned Area Emergency Response (BAER)

Post-Fire BAER Assessment

October 11, 2017 **BAER Information: (415) 881-1871**

SARTIN DRAW POST-FIRE BAER ASSESSMENT REPORT SUMMARY

FS-2500-8 Burned-Area Report: Watershed Analysis, Condition, and Response

The Sartin Draw Fire, which was ignited by lightning on August 30, 2017, is located on the Custer Gallatin National Forest (NF), 20 miles northeast of Ashland, in southeastern Montana. Driven by high temperatures, low relative humidity, and gusty winds, the fire spread quickly. Of the total 99,735 acres that burned, 8,415 acres were Forest Service System (NFS) land.

The Sartin Draw Fire burned across lower elevation grasslands and mixed shrub/grasslands as well as higher elevation forested uplands, generally leaving a mosaic pattern of burned and unburned landscape. The burned area includes a variety of vegetation types that included ponderosa pine, grasses, sage brush, and eastern Montana deciduous woody draw/riparian zone ecotypes.

The Custer Gallatin NF burned area was surveyed and assessed by a BAER team comprised of Forest Service scientists and specialists. The BAER team evaluated the burned watersheds to determine post-fire conditions, and identify values-at-risk such as threats to human life and safety, property, and critical natural and cultural resources. In addition to these critical values, other threats were also assessed, such as the risk for increased post-fire flooding, sediment flows, rock slides, hazard trees and noxious weed spread.

The BAER assessment team's analysis of the burned area and recommended emergency treatments are documented in a Forest Service (FS) Burned-Area 2500-8 assessment report. This report was submitted to the Northern Region (Region 1) Regional Forester by the Forest Supervisor for the Custer Gallatin NF for review and funding.

The following information is a summary of the BAER team's assessment report for the Sartin Fire:

- Portions of 2 sub-watersheds were analyzed and modeled to compare pre-fire conditions to post-fire predicted response: Liscom Creek, and Middle Beaver Creek.

- There are 0 miles of perennial stream, and 78.4 miles of intermittent/ephemeral streams.

- There are 3.5 miles of NF system roads, 4.7 miles of NF non-system roads, and 39.5 miles of NF trails.

- There are about 501 (6%) unburned acres, 5,876 (70%) acres of low soil burn severity, 2,036 (24%) acres of moderate soil burn severity and 2 (0%) acres of high soil burn severity.

- There are approximately 4,221 acres of water repellent (hydrophobic) soils. Hydrophobic soil conditions are common within moderate and high burn severity areas.

The different soil burn severity categories reflect changes in soil properties and are a key element BAER specialists use to determine if post-fire threats exist. The distribution of unburned, low, moderate, and high soil burn severity levels become a baseline for resource specialists to monitor changes in soil hydrologic function and vegetative productivity as the burned watersheds recover.

High and moderate soil burn severity categories often have evidence of severe soil heating and the consumption of organic material. Soil seedbank and water infiltration characteristics are reduced in areas that have burned at high or moderate severity. Natural recovery is slower where little or no vegetative ground cover remains, and increased surface water runoff will result in increased soil erosion at these sites. Areas of moderate soil burn severity may have viable roots and some soil cover, but may still be vulnerable to erosion on steep slopes. The low to very low soil burn severity areas still have good surface soil structure, intact fine roots and organic matter, and should recover more quickly once revegetation begins and the soil cover is re-established.

Water repellency was observed under areas burned with both low and moderate soil burn severity. Where observed in low severity burned areas, water repellency was likely not fire induced, and rather a by-product of pine tree litter naturally falling to the forest floor and leaching resins. Throughout the burn perimeter, surface soil structure and even surface was observed to be largely intact except for in the most severely burned areas. Char depth was generally shallow, and roots ranged from brittle and breakable under higher burn severity to pliable under low severity. These observations suggest that post-site conditions are conducive to accelerated erosion.

The Sartin Draw Fire was generally low to moderate burn severity on non-forested vegetation and moderate burn severity on forested vegetation. Grass root crowns were abundant in all low burn severity non-forested and open timber stands, indicating the ability of non-forested areas to recovery relatively rapidly from the burn.

Identified Values-at-Risk, Threats, and Emergency Conditions

Emergency post-fire conditions for the Sartin Draw Fire were identified by the BAER team for the following on-forest values-at-risk:

- Human Life and Safety: Other than those crossings of concern discussed below, there are no expected potential risks or threats to the safety of forest recreating visitors or Forest Service employees that warrant treatment under BAER authority. Generally, increased risk occurs within or directly down-slope from high and moderate soil burn severity areas. Potential threats can occur along roads, trails, trailheads, and other recreation areas. Hazard trees are perhaps the greatest concern to public safety within the burn perimeter.

- Property: Beyond the two crossings discussed under Cultural Resources, there is low risk of damage or loss to Forest Service (FS) System roads, trails, and associated infrastructure within the burned area resulting from post-fire increased run-off and erosion. Road drainage and surfacing were installed along Forest Road 4767 following the 2011 Mill Fire to address post-fire erosion concerns. These improvements remain in place and functional following the Sartin Draw Fire. Other FS roads within the burned area perimeter are primarily maintenance level 2 or motorized trails that exist as two tracks with limited to no drainage features. Accordingly no emergency stabilization treatment is warranted to protect road infrastructure within the FS fire perimeter.

- Natural Resources: There is a potential high risk to native vegetation and ecological integrity due to fire-induced noxious weed spread. Existing weed infestations are limited within and adjacent to the burned area. Known patches of spotted knapweed can be found to the east of the fire perimeter. Without detection monitoring and treatment, it is likely to have loss of native vegetation and ecological integrity as noxious weeds will proliferate throughout the burned area due to weed seed sources from weed infestations found in and adjacent to the burned area as well as having potential weed see transport via suppression vehicle activity.

  There is a potential low risk to soil productivity as a result of post-fire erosion in areas burned under moderate soil burn severity. Loss of ground and overstory cover may contribute to accelerated erosion within the burned area. Over the long-term, loss of surface soils can lead to decreased site productivity. While post-fire site conditions are conducive to accelerated erosion, there is a minimal likelihood of significant loss of soil productivity.

- Cultural/Heritage Resources: There is a high risk of damage or loss to two National Historic Register-eligible road-draw crossings constructed by the Civil Conservation Corps in the mid-1930's.

Emergency Stabilization Treatments

Treatment Objectives

BAER assessment team's emergency stabilization objectives for the burned areas are to protect, mitigate and reduce the potential for identified post-fire threats, including increased water runoff and soil erosion/sediment yield, for:

1. Human life, safety, and property within and downstream of the burned area;
2. Forest Service infrastructure and investments such as roads and trails;
3. Critical natural and cultural resources; and
4. Native and naturalized plant communities from new noxious weed infestations.

In addition to on-Forest efforts to reduce the threats to National Forest values and resources, the BAER team and the Forest warn users of Forest Service roads and trails of hazards present in the burned area, and communicate and coordinate with other agencies such as the Bureau of Land Management (BLM), National Resource Conservation Service (NRCS), National Weather Service (NWS), State of Montana, local counties, and cities to assist private entities and communities in achieving post-fire recovery objectives.

The following post-fire emergency stabilizations measures and treatments have been approved:

- Conduct early detection surveys and rapid response eradication with herbicide application on noxious weeds along areas disturbed by fire suppression activities, equipment concentration points, high and moderate soil burn severity areas near these fire suppression disturbed areas, and other high priority areas, to reduce the potential for impaired native vegetative recovery and the introduction and spread of invasive weeds. Address potential impairment to native and naturalized vegetation communities through changes in annual grazing strategies.

- Stabilize two historic stream crossings along Forest Road 4767 by installing an armored dip for protection at one crossing and adding spot surfacing across both crossings.

- Continue to communicate any potential risks to the public, community groups, and cooperating agencies.

- Continue to work and coordinate with interagency cooperators, partners, and affected parties and stakeholders.

- Assist cooperators, including local, county, state, and federal agencies with the interpretation of its Sartin Draw BAER assessment findings.

SPECIAL NOTE: *Everyone near and downstream from the burned areas should remain alert and stay updated on weather conditions that may result in heavy rains over the burn scars. Flash flooding may occur quickly during heavy rain events. BAER actions are intended to reduce, but cannot eliminate risks. Current weather and emergency notifications can be found at the* ***National Weather Service*** *(www.weather.gov/mso/) website.*

Northern Region-2017 Post-Fire BAER Assessment information is available at https://inciweb.nwcg.gov/incident/5627/.