Post-Fire BAER Assessment

Burned Area Emergency Response (BAER) Information Brief

CentralWashingtonFireRecovery.info

Jolly Mountain Fire 2500-8 Summary

November 14, 2017
Okanogan-Wenatchee National Forest

FIRE BACKGROUND

The Jolly Mountain Fire began August 11, 2017 as a result of a lightning strike on the Okanogan-Wenatchee National Forest. The fire was reached at dusk by an engine crew hiking into rugged and steep terrain. Initial size up estimated the fire at over 100 acres. On August 12, the fire was observed from the air and estimated to have grown to over 300 acres. Due to the fire's complexity a Type 2 Incident Command Team was ordered.

The fire grew modestly for the next two weeks and on August 26 the Incident Command was transferred to another Type 2 team. The fire grew significantly on August 29, adding more than 4,000 acres. On September 3, continued threats from wildfire prompted Kittitas County Sheriff to order a level 3 evacuation (everyone must leave) of neighborhoods and recreational residences north of the Ronald community. A Type 1 Incident Management Team was ordered. The fire was transferred back to local Type 4 command on September 29, 2017

On October 23, 2017 the Central Washington Burned Area Emergency Response (BAER) team completed a report of their assessments of the burned area, and requested initial funding of about $125,720 for recommended emergency treatments. The report was submitted to the Pacific Northwest (Region 6) Regional Forester in Portland, Oregon.

FS-2500-8 BURNED AREA REPORT ANALYSIS

Physical characteristics of the burned landscape

Geology: The majority of the Jolly Mountain fire, in the central to southern portions, is underlain by interbedded continental sedimentary rock, and basalt rocks (typically interbedded with the continental sedimentary rocks.) The northwestern edge of the Jolly Mountain fire are underlain by foliated crystalline and massive crystalline rocks. In the southwestern corner of the fire, the geology consist of Tertiary volcanic rocks. Bedrock is comprised of volcanic rocks, primarily of middle to late Tertiary age.

There are about 1,600 acres of undifferentiated geology mapped throughout the fire, predominately in the southeastern portion. This geology group consists primarily of surficial deposits such as glacial till, alluvium, landslide deposits, and glacial outwash.

Dominate Soils: Soils are somewhat variable and range from moderately coarse textured to ashy soils with large amounts of internal surface rocks throughout their profile. Surface textures are generally sandy loams, fine sandy loams or loamy sand which are highly erodible.

Vegetation Types: The Jolly Mountain fire is dominated by a combination of whitebark pine/subalpine fir/big huckleberry in the higher elevations. The middle to low elevations transition from into Douglas fir/subalpine fir/grand fir to hemlock/Douglas fir. On the south slopes and lower elevations from 2,000-4,000 feet, ponderosa pine/Douglas fir/grand fir. Riparian areas are dominated by grand fir/bitter cherry/big leaf maple and beaked hazelnut.

Transportation System: 45 miles of trails and 173 miles of road.

ANALYSIS OVERVIEW

In early October, the U.S. Forest Service Remote Sensing Application Center (RSAC) in Salt Lake City, Utah, provided the BAER team with an initial Burned Area Reflectance Classification (BARC) map derived from the LANDSAT 7 & 8 scene acquisitions. The team conducted reconnaissance and field verification surveys to finalize a soil burn severity map for this fire.

BAER team assessment estimated that a total of 36,817 acres burned of which 25,857 acres burned on National Forest System (NFS) lands, 1,498 burned on State, and 9,462 burned on private lands. On National Forest lands BAER specialists classified 12,711 acres (49% of the burned area) at very low or unburned conditions, 9,129 acres (35%) burned at low severity, 3,794 acres (15%) at moderate burn severity and 224 acres (1%) at high burn severity.

Field assessments of the burned area indicated that approximately 18% of the burned area exhibited strong water-repellent conditions, which was attributed to all of the moderate and high soil burn severity areas.

The post-fire area has an estimated soil erosion potential of 9 tons per acre from a 25-year/24-hour storm event of 4.8 inches compared with a pre-fire erosion rate of 1 tons per acre. The increased erosion can result in downstream sediment delivery that bulks flows, resulting in increased flooding effects. This additional sediment may impact habitat for aquatic species.

Soil loss often impairs soil productivity in the short- and potentially long-term future. The burned area may require a recovery period of an estimated 5 years to re-establish vegetation. The highest concern for vegetative recovery and, in turn, hydrologic recovery is in the high severity burn areas.

IDENTIFIED VALUES AT RISK

The BAER team began assessing the area for post-fire emergencies on September 28, 2017 and identified the following post-fire threats to values at risk.

Threats to the values-at-risk below were analyzed by the BAER team for potential impacts from increased water flows, loss of water control, increased sediment delivery, increased potential for debris flow, establishment of invasive weeds, and habitat degradation for federally threatened species.

The team used a risk matrix (Probability of Damage or Loss and the Magnitude of Consequences) to evaluate the risk level for each value identified during the BAER assessment.

Human Life & Safety

Threats to life and safety and property exist in and below the areas of high and moderate burn severity above Cle Elum Lake, and the West and Middle Forks of the Teanaway posting a increased risk from flooding for travel across drainages on roads and trails, at dispersed and developed recreations sites.

Morgan Creek and Hex Creek drain into Cle Elum Lake and is expected to have increases in post-fire flows by ~230% and ~220% accordingly. It should be noted that the burned watershed upstream from the County Highway 903 and Forest Service (FS) dispersed camping is obstructed from view by the steep terrain

This fire burned in the Teanaway Community Forest (State/private lands) and NFS lands. There is a change in hydrologic conditions in areas below the high and moderate severity burn areas of the fire, where increased flows and erosion are possible Weather monitoring and coordination with cooperative management agencies is essential to provide public information for potential post-fire flooding events.

There may be an increased risk to water quality impairment, thus risks to public health from flooding, ash delivery, and sedimentation of water delivery systems at Recreation Residences leading to potential temporary issues with individual residence's water supply and damage to supporting infrastructure.

Threats to Property

Threats to property from changed post-fire conditions exist. Potential existing threats to County Road 903 at crossing of Morgan, Bell, and Dry Creeks and FS dispersed recreation sites located at the outflow of Morgan Creek are at increased risk for flooding and debris deposits.

Approximately 4 miles of Forest Service road within the burned area are at a high risk from damage from increased runoff and erosion.

Forest Service Trails within the burned area are at risk from increased water, erosion, sedimentation, and/or debris. Impacts include damage to the trail bed and/or loss of access due to severe erosion of the trail surface, or deposition of sediment or debris. Increased risk for temporary loss of access/egress exists on trails within the burned area.

Threats to Natural Resources

The risk to natural resources such as soil productivity and hydrologic function is intermediate due to the large acreage of low severity and unburned conditions. The potential for elevated erosion rates is low in Way Creek. In areas of moderate and high burn severity, increased risk

of erosion is very high in Hex, Morgan, an unnamed tributary to West Fork and high in Little Salmon La Sac Creek.

Impaired soil productivity is expected from loss of protective groundcover and increased risk of erosion. Accelerated erosion combined with the loss expected loss of the seed bank may impact plant species locally and result in a loss of species viability. Establishment and expansion of the invasive plant species into the burned area are a risk to become new infestations.

The probability is high that rates of soil erosion and sediment delivery to stream channels will be significantly higher from areas of moderate and high soil burn severity. This loss of water control, erosion and sediment delivery may impact critical habitat and populations of Steelhead and Bull trout within close proximity to the burn area.

RECOMMENDED EMERGENCY TREATMENTS

Objectives

1. Mitigate effects of changed post-fire watershed response on human life and safety, particularly where FS recreation facilities are at risk of damage.
2. Coordinate with partner agencies to mitigate the risk to human life and safety.
3. Mitigate the potential for loss or damage of trail infrastructure within the burn area.

Land Treatments

Early detection and rapid response to control new or expanding invasive weed infestations within the fire perimeter with spring and fall treatments on130 acres. Identified treatment areas are based upon known known invasive plant infestations and moderate to high burn severity.

Channel Treatments

N/A

Roads and Trails Treatments

Increased trail drainage structures of trials within burned area of increased runoff from adjacent and up-gradient burned areas to prevent trail failure or increased erosion.

Storm Patrol Response; maintain transportation system integrity and protect public safety using staged or contracted equipment to maintain functional drainage on roads during storm events.

Armored Rolling dips; Minimize damage to the road surface and template by hardening road surface and diverting water off the road at intermittent channels and strategic locations in order to minimize fill-slope deterioration.

Rip Rap Armor/Energy Dissipater; Protects upstream fill slopes and dissipates energy to minimize erosion and help prevent head cut on fill slopes.

Restore drainage; the investment in principle and secondary routes. Maintain important and/or critical administrative and public access.

Human Life and Safety Treatments

Jersey Barriers for closure of Morgan and Dry Creek Dispersed use areas.

Notification to North Fork Recreational Residences regarding post fire changed conditions potentially increasing runoff and sedimentation to water supply spring boxes.

ALERT (Automated Local Evaluation in Real Time) Support (if warranted). This line item is specific to supporting any necessary review and emergency permit processing for an entity to install a specific type of precipitation station capable of relaying data to National Weather Service and others to support forecasting related to local rainfall events.

Gate Installation near the Hex Mountain Trailhead to maintain public safety by restricting temporary access.

Open House with cooperating and other local agencies and entities to share finding and path forward related to Forest Service BAER assessment and treatments along with other agency responsibilities such as; National Weather Service (NWS), National Resources Conservation Service (NRCS), County Emergency Services, Collaborative Partners, as well as others)

Outreach / PIO support for public coordination and dissemination of BAER information and fielding public and partner requests along with interagency coordination. One open house to include partner and agencies with “jurisdiction” (NWS, County Emergency Services, NRCS, and others) to share findings and responsibilities to include website support.

MONITORING NARRATIVE

Effectiveness monitoring is proposed for; protection and safety treatments, road drainage, and trail stabilization treatments.