

Colville National Forest
Burned Area Emergency Response (BAER)
 Post-Fire BAER Assessment



BAER Information: (415) 881-1871

STICKPIN POST-FIRE BAER ASSESSMENT REPORT SUMMARY



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

The Stickpin Fire was reported on August 11, 2015, and burned about 53,950 acres along the Kettle Crest between Curlew and Orient communities. Hot, windy conditions combined with very dry fuels caused the fire to grow quickly. Stickpin Fire is the largest fire of the Kettle Complex which also includes the Renner Fire and Graves Mountain Fire. Approximately 48,500 acres burned on the [Colville National Forest](#). The remaining acres burned on state and private lands.

A [Forest Service \(FS\) Burned-Area Report](#), which included the BAER assessment team's analysis of the burned areas within the Stickpin Fire and recommended emergency treatments, was recently submitted to the Pacific Northwest Region and its Washington Office by the Forest Supervisor for the Colville National Forest:

- ✓ 8 sub-watersheds were analyzed and modeled to compare pre-fire conditions to post-fire predicted response: Lone Ranch Creek, Little Boulder Creek, East Deer Creek, North Fork Boulder Creek, South Fork Boulder Creek, Saint Peter Creek, Long Alec Creek, and West Deer Creek watersheds.
- ✓ There are 117 miles of intermittent streams and 75 miles of perennial streams within the burned areas.
- ✓ There are 135 miles of roads and 52 miles of trails within the burned area.
- ✓ There are 23,655 acres of water repellent soil.
- ✓ There are 14,635 acres of high soil burn severity (30%), 11,597 acres of moderate soil burn severity (24%), and 22,253 acres of low/unburned soil burn severity (46%) on National Forest System lands.

The different BAER soil burn severity categories are areas and classes of impaired soil functions and are the key element BAER specialists use to determine if threats exist, whether fire-caused changes in soil characteristics exist that affect the soil hydrologic function, and at level. The identified soil burn severity levels in the burned areas of a wildfire 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 classes have evidence of severe soil heating. Across the Stickpin burned area, these generally occur in a patchy distribution, with some concentrated zones of high burn severity. Soil seedbank and water infiltration characteristics are impacted in areas that have burned at high or moderate severity, especially where there were extended or multiple burning periods. 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. 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.

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

Threats to the values-at-risk identified below result from the potential for increased water flows, loss of water control, increased sediment delivery, increased debris flows, the establishment of invasive weeds, falling hazard trees, and rock-fall. Emergency post-fire conditions for these identified values-at-risk were assessed by the BAER team.

Human Life and Safety – There is a high risk to forest visitors and FS employees within and adjacent to the burned areas along roads, trails, and near recreation sites due to the increased threat of falling trees, rocks, flash floods, and debris flows.

Very low to high risk is possible for private residents and homes and other areas downstream from 7 burned watersheds within the Stickpin Fire perimeter. The potential for flash flooding, debris flows, falling rocks and trees poses the threat loss of ingress and egress to landowners if road systems are impacted. Several private residences exist adjacent to the wildfire with primary ingress and egress routes that cross areas which may be impacted by post fire conditions.

Property: Homes, Buildings, Utility Lines – Damage to homes is possible due to moderate and high severity burned areas that are located above the homes. Homes near stream channels should have a site specific assessment completed by the Natural Resources Conservation Service. Utility lines along roads that are located within and downstream from the Stickpin burned areas could also be impacted from increased water, debris, and sediment flows,

Property: Campgrounds – The Deer Creek Campground was destroyed by the fire. All remaining trees in the campground are considered hazards to the public and FS employees.

Property: Roads – Post-fire watershed conditions threaten life and safety of vehicle users on Boulder Creek Road, and Highways 21 and 395. Portions of the highways downslope of high and moderate soil burn severity areas increase the risk from debris flows, water run-off, and erosion during rain storm events. These events can plug culverts, erode roadbeds, and block traffic behind the storm-damaged areas.

Property: Trails – Intermediate to very high risk is expected to FS trails within the fire perimeter. Trails located within and downslope of moderate and high soil burn severity areas increase the risk from debris flows, increased run-off, and erosion from steep slopes during rain storm events resulting in deterioration of trail conditions. Erosion risk is low for the Deer Creek Summit Trail, but hazard trees are likely due to the amount of moderate to high soil burn severity areas along the trail. Kettle Crest North, Leona Loop, Ryan Cabin, Stickpin, Big Lick, Profanity, Taylor, Long Alec, and Boulder Deer Summit trails and trailheads are at a very high risk of increased erosion. There are an increased risk to forest visitors from hazard trees along Curlew Summit trail and the north and south areas of Deer Creek Summit trail.

Natural Resources: Ecosystem Stability and Vegetation Recovery – A substantial risk is expected to native and naturalized plant communities along roads, hand lines and dozer lines used during fire suppression activities due to the threat from spread of noxious weeds and invasive plant species. The slower natural regeneration following moderate to high soil burn severity also leaves some burned areas at risk. Known noxious and invasive weed populations are expected to aggressively compete with native species for space and nutrients in these moderate and high soil burn severity areas.

Natural Resources: Water Quality – An emergency threat exists to the water quality of streams and creeks due to ash flows and increased sediment and soil erosion. There are many domestic and agricultural intakes that may have impaired water quality during the first few storms that generate erosion from burned hillslopes. Diversions and pumps/intakes are unknown, but if present, may be damaged by degraded water quality affected by elevated levels of turbidity. Threats to water quality can potentially impact beneficial uses that include domestic water supply systems.

The Orient Community water system and weir is at very high risk due to relatively large areas of moderate and high soil burn severity within the headwaters of the East Deer drainage.

Natural Resources: Soil Productivity and Hydrologic Function – The risk of accelerated erosion and mass wasting is very high in certain sub-watersheds due to the complete combustion of the forest canopy and ground cover in moderate to high intensity burned areas. Soils found within the fire perimeter consist of moderately-well to well-drained soils formed in volcanic ash in the higher elevation forested areas. Volcanic ash soils also exhibit high erodibility.

Cultural Resources – The Stickpin burned area encompasses a range of heritage resources sites. Threats exist to critical cultural resource values from vandalism and looting due to the burning removal of ground vegetation covering.

Emergency Stabilization Treatments

Treatment Objectives

The BAER assessment team's emergency stabilization objectives for the Stickpin burned area are to:

- Reduce threats to human life and safety for users of roads and to protect the road infrastructure in high and moderate soil burn severity areas in Lone Ranch Creek, Little Boulder Creek, North Fork Boulder Creek, South Fork Boulder Creek, Saint Peter Creek, Long Alec Creek, and West Deer Creek.

- Reduce the loss of soils and resulting productivity for soils with high loss potential.
- Reduce culvert failure and road surface washout to protect road safety and road infrastructures.
- Reduce threats to human health and safety through the reduction of soil loss to minimize downstream sediment affects to the Orient Community water supply.
- Reduce threats to human life and safety by reducing soil erosion impacting the Boulder Creek Highway.
- Reduce threats to human life and safety by installing warning signs and conducting road storm patrols.
- Reduce threats to human life and safety to visitors using the FS campgrounds and trails within the Stickpin fire perimeter and protect the trail infrastructure downslope of high and moderate soil burn severity areas from debris flows, increased runoff, and erosion from steep slopes during rain storm events.
- Control the expected invasion and spread of noxious weeds within the burned area, especially along and adjacent to Forest roads and dozer lines used by fire suppression equipment and in existing weed populations.
- Reduce accessibility and visibility of archaeological site locations which makes them more susceptible to vandalism, artifact looting, and unauthorized recreational activity.

In addition to on-Forest efforts to reduce the threats to National Forest values and resources, the BAER team and the Forest will warn users of FS roads and trails of hazards present in the burned area, and communicate and coordinate with other agencies such as the National Resources Conservation Service (NRCS) to assist private entities and communities including private residents, domestic water suppliers and public utilities to achieve post-fire recovery and protection objectives.

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

- Stabilize the transportation roads system and water drainage structures to prevent damage resulting from soil erosion and storm water run-off, public safety hazards, and improve the safety of forest visitors and employees.
- Storm-proof roads and close portions of trails to the public as warranted until properly stabilized.
- Conduct storm patrols to monitor roads, trails and drainage structures at-risk, maintain and/or repair any damage to road and trail surfaces, remove sediment and debris from drainage and treatment structures within the burned area.
- Reduce the potential for impaired vegetative recovery and the introduction and spread of invasive weeds by conducting detection surveys and rapid response eradication efforts where feasible.
- Protect water supply systems by capping a spring box, and pumping a campground toilet.
- Mulch hillslopes to minimize soil erosion threats to at-risk downstream water sources and roads.
- Protect high risk cultural resources sites from damage and vandalism by establishing temporary ground cover until regeneration occurs naturally.
- Mitigate hazard trees at BAER treatment locations to provide for worker safety.
- Install burned area warning signs on roads and trails to caution forest visitors entering and recreating within the burned area.
- Install gates on certain road systems to protect for public safety during periods of expected moderate to high rainfall events.
- Continue to communicate 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, state, and federal agencies with the interpretation of BAER assessment findings to identify potential post-fire impacts to communities and residences, domestic water supplies, and public utilities (including hydropower facilities, power lines, roads, and other infrastructure).
- Consider temporary forest closures to protect public users of Forest Service System lands and recreation sites.

SPECIAL NOTE: *Everyone near and downstream from the **Stickpin Fire** burned area should remain alert and stay updated on weather conditions that may result in heavy rains over the burn scar. Flash flooding may occur quickly during heavy rain events. Current weather and emergency notifications can be found at the **National Weather Service, Spokane Office** (<http://www.wrh.noaa.gov/otx/>) website.*

Colville NF Post-Fire BAER Assessment information is available at <http://inciweb.nwcg.gov/incident/4646/>.

