

Forest Service and Bureau of Land Management

Burned Area Emergency Response (BAER) Post-Fire BAER Assessment



BAER Information: (415) 881-1871

ERSKINE POST-FIRE BAER ASSESSMENT REPORT SUMMARY



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

On July 10, 2016, the [Erskine Fire](#) started at the base of Cook Peak from an unknown source (under investigation) on [Bureau of Land Management](#) (BLM) land and subsequently burned onto the Kern River Ranger District of the [Sequoia National Forest](#) (NF). The fire rapidly spread to 35,711 acres in one day and had a devastating impact on the communities of Squirrel Valley, South Lake, and Kelso Creek Valley. The fire progression was extreme due to strong winds and flashy fuels. A total of 285 homes were destroyed with two confirmed fatalities. By July 2, the wildfire burned approximately 22,210 acres of Forest Service land, 17,326 acres of BLM land, while the remaining acres burned on private lands for a total of approximately 48,020 acres.

The fire burned within the Piute Mountains south of Lake Isabella in the Piute Mountain area and the Kelso Creek drainage between 2,500 and 5,900 foot elevations. The average slope of the burned area is 39%. The vegetation includes a mix of oak woodland, sagebrush, chaparral, and mixed forest at the highest elevations.

This burned area was surveyed and assessed by an interagency BAER team comprised of Forest Service and BLM scientists and specialists. The BAER team evaluated the burned watersheds to determine post-fire conditions, values-at-risk such as human life and safety, property, and critical natural and cultural resources, emergency determination on those values and the potential for increased post-fire flooding, sediment flows, rock slides, and hazard trees. The team also recommended emergency stabilization treatments and actions to reduce the risks to those values.

The BAER assessment team's analysis of the burned areas within the Erskine Fire and recommended emergency treatments are documented in a separate Forest Service (FS) Burned-Area Report. This report

was submitted to the Pacific Southwest Region (Region 5) Regional Forester by the Forest Supervisor for the Sequoia NF. The following is a summary of the BAER team's burned area analysis for the Erskine Fire:

- 7 watersheds were analyzed and modeled to compare pre-fire conditions to post-fire predicted response: Isabella Lake-South Fork Kern River, Middle Kelso Creek, Isabella Lake-Kern River, Upper Kelso Creek, Erskine Creek, Lower Kelso Creek, and Black Gulch-Kern River watersheds. The highest change was found in the Lower Kelso Creek watershed which had a 112% increase in water run-off for a 2-year, 6-hour design storm.
- There are 357 miles of ephemeral streams, 173 miles of intermittent streams and 15 miles of perennial streams.
- There are 115 miles of roads and 59 miles of trails.
- There are 27,067 (57%) acres with high and very high hazard ratings for soil erosion, 8,462 (18%) acres with moderate ratings for soil erosion, and 5,830 (12%) acres with low hazard ratings for soil erosion.
- There are about 26,961 (56%) acres of unburned/low soil burn severity, 20,716 (43%) acres of moderate soil burn severity and 344 (1%) acres of high soil burn severity.
- There are 16,451 acres of water repellent (hydrophobic) soils (34% of the burned area). Hydrophobic soil conditions were common within moderate and high burn severity (50-60%) areas and rare in the low burn severity (20%) area. Hydrophobic conditions are expected to exist in approximately 34% of the burned area.

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 identified 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 have evidence of severe soil heating and the consumption of organic material. Soil seedbank and water infiltration characteristics are also impacted 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. 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.

The Erskine Fire consumed a wide variety of vegetation that included a mix of oak woodland, sagebrush, chaparral, and mixed forest at the highest elevations. The high and moderate soil burn severity classes have evidence of severe soil heating in a patchy distribution – increased water run-off and accelerated soil erosion are likely. Some of these areas do have good needle-cast potential, which is expected to improve groundcover. The low to very low soil burn severity classes still have good soil structure and contain intact fine roots and organic matter with hydrologic function unaltered.

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, debris flow occurrence, rock fall, and incursion of invasive

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

- Human Life and Safety: Threats and risk for the general public to be impacted by rolling rocks, flooding, debris flows, landslides, hazard trees, and loss of ingress/egress access.

There are potential impacts to life and safety of Forest visitors and employees entering the burned area. Generally, increased risk occurs within or directly down-slope from high and moderate soil burn severity areas.

- Property: Threats to Forest Service system roads and trails, and water diversion and conveyance infrastructure from the risk of hazard trees, debris flows, rock fall, and tread destabilization.

Threats to private residences and structures down-slope from high and moderate soil burn severity areas from an increased risk from potential debris flows and other post-fire processes.

- Natural Resources: Threats to water quality for domestic and agriculture uses, native or naturalized plant communities from invasion of noxious weeds, and soil productivity from accelerated erosion, and hydrologic function from erosion due to unauthorized off-highway vehicle (OHV) access.
- Cultural/Heritage Resources: Threats to sites susceptible to weathering, erosion, looting, vandalism, and off-highway vehicle (OHV) impacts.

Emergency Stabilization Treatments

Treatment Objectives

The 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 soil erosion/sediment yield and water run-off on steep slopes, to:

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 will 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, National Resource Conservation Service (NRCS), National Weather Service, California Department of Transportation, and counties to assist private entities and communities including private residents, domestic water suppliers, hydroelectric infrastructure managers, and public utilities to achieve post-fire recovery objectives.

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

- Reduce the potential for impaired vegetative recovery, and the introduction and spread of invasive weeds by conducting early detection surveys and rapid response eradication of 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.
- Storm-proof and stabilize approximately 4 miles of Forest Service System transportation roads with improved water drainage structures and features to prevent damage resulting from post-fire watershed conditions such as soil erosion and storm water run-off, public safety hazards to improve the safety of forest visitors and employees. Conduct storm patrols to monitor roads and drainage structures within the burned areas.
- Storm-proof and stabilize burned area hiking trails with improved water drainage structures and features to prevent damage resulting from post-fire watershed conditions. Close trails, and/or install hazard warning signage along trails affected by the fire as part of an area closure. Conduct post-storm inspection of problem areas with emergency repairs if needed.
- Install burned area warning signs to caution forest visitors recreating within the burned areas.
- Planting of native seeds (e.g., deer brush) to stabilize archeological deposits within the cultural-heritage site boundaries. Lop-scattering down and woody debris to obscure those deposits from public view.
- Consider continuing temporary forest, road and trail closures with signage to protect public users of Forest Service System lands and recreation sites.
- 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, county roads, and other infrastructure).

SPECIAL NOTE: *Everyone near and downstream from the **Erskine Fire** burned areas 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, San Joaquin Valley/Hanford Office** (www.wrh.noaa.gov/hnx/) website.*

Erskine Post-Fire BAER Assessment information is available at <http://inciweb.nwcg.gov/incident/4852/>.

