**Six Rivers National Forest**

# Burned Area Emergency Response (BAER)

**Post-Fire BAER Assessment**

**BAER Information: (415) 881-1871**

## NICKOWITZ POST-FIRE BAER ASSESSMENT REPORT SUMMARY

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

The Nickowitz Fire started by lightning on July 31, 2015, and burned about 7,750 acres on steep-sloped, heavily timbered lands within the Blue and Bluff Creek watersheds on the Six Rivers National Forest (NF). Most of the burned area had not experienced a large fire since 1927, and like most of California's forests, has been affected by multiple years of drought.

A Forest Service (FS) Burned-Area Report, which included the BAER assessment team's analysis of the burned area within the Nickowitz Fire and recommended emergency treatments, was recently submitted to the Pacific Southwest Region (Region 5) Regional Forester by the Forest Supervisor for the Six Rivers NF. Below is a summary:

- 4 sub-watersheds were analyzed to compare pre-fire conditions to post-fire predicted response: Bluff Creek, East Fork Blue Creek, Lower Blue Creek, and Middle Blue Creek watersheds.
- There are about 11 miles of intermittent streams, 11 miles of perennial streams, and 33 miles of ephemeral streams within the burned areas.
- There are about 21 miles of national forest system roads, and no designated trails within the burned area.
- There are 30 acres of mostly weakly and moderately water repellent soil. Water repellency is present, though not typically continuous across higher soil burn severity patches, and varies in degree based on soil texture and, to a lesser extent, aspect. Water repellency is not expected to exacerbate water run-off due to the minimal acres of water repellent soils and large areas of connected low soil burn severity soils. Little-to-no hydrophobicity was observed in unburned and very low areas within the fire perimeter, which comprises over 50% of the Nickowitz Fire.
- There are 5,811 acres with high hazard rating for soil erosion, 1,162 acres with moderate rating for soil erosion, and 775 acres with low hazard rating for soil erosion. BAER specialists anticipated no measurable effects for erosion potential; therefore, erosion, sediment and hydrologic models were not run and analyzed due to overall low soil burn severity levels for the Nickowitz burned area.

- There are about 55 acres of high soil burn severity (1%), 385 acres of moderate soil burn severity (5%), and 7,310 acres of low/unburned soil burn severity (94%).

Predominantly low soil burn severity exists across the areas where fires burned with a steady downhill backing spread, with limited spotting and occasional single tree torching. In these areas fuel consumption was limited to surface litter and smaller diameter vegetation.

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 Nickowitz Fire consumed a wide variety of vegetation but in a predominantly enriched mixed conifer forest of the Klamath Siskiyous. Mixed evergreen species include California Red fir, Coastal Douglas-fir, Port Orford cedar, White fir, Incense cedar, Jeffrey pine, Canyon live oak, Golden chinquapin, and Tanoak. The shrub and grass component consists of Evergreen huckleberry, Alder, Oregon Grape, Salal, Idaho fescue, and Bear grass.

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

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

Human Life and Safety – There are increased risks to human life and safety of recreating public and agency personnel from hazard trees, when traveling on roads affected by the burned areas. Fire-damaged road segments and post-fire impacts increase both the risk and the possibility of loss of ingress and egress. Specific routes of concern include: FS Road12N11 (gated road from ridgetop to lower mid-slope position that has moderate and low vegetation burn severity adjacent on both sides of the road); FS Road 14N02 (ridgetop road that accesses Forks of the Blue Trailhead); and FS Road 13N01 (ridgetop loop road that connects G-O road to Highway 96).

Property: Roads – There are increased risks of damage to FS Road 13N01 at milepost 28.9 from accelerated flow and sediment delivery affecting the road prism and drainage structures. This is due to a ditch relief culvert with a down drain structure that is located within the moderate soil burn severity area where, due to excessive heat caused by the fire, the culvert unraveled. Consequences of not replacing would be an increase in gully erosion and potential sedimentation into Nickowitz Creek.

Natural Resources: Ecosystem Stability and Vegetation Recovery – There are high risks to native plant diversity and intact or naturalized native plant communities from the threat of introduction and spread of noxious and non-native invasive plants from existing populations within and adjacent to areas of high and moderate soil burn severity. There is also a high risk from noxious weed seed imported by fire suppression equipment and activities.

Areas of moderate to high soil burn severity have lost vegetation barriers which served to reduce, if not prevent, the spread of non-native invasive plants into new areas. These areas also have altered habitat conditions including fire-damaged soils that favor invasive plant seed establishment. Displacement of native species by non-native invasive plant species can result in a loss of viability for sensitive plant species native to the burned area. Encroachment by non-native invasive plants can also result in degradation of range and recreational values, reduction of water availability to native plants, and can negatively impact the plant community and ecology.

Natural Resources: Hydrologic Function & Water Quality – No critical BAER values were identified to be at-risk.

Natural Resources: Soil Productivity – No critical BAER values were identified to be at-risk.

Cultural Resources – No critical BAER values were identified to be at-risk.

**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 runoff on steep slopes, falling hazard trees and rocks, and the spread of noxious weeds:

1) Reduce, threats of personal injury or to human life of forest visitors and FS employees by raising awareness through posting hazard warning signs on roads to communicate the hazards of falling burned trees.

2) Protect forest visitors and FS employees by communicating risks to cooperating agencies and community groups.

3) Protect FS infrastructure and investments such as roads by repairing road drainage structures damaged by fire and minimize sedimentation within the burned area.

4) Treat invasive plants, which are a threat to native or naturalized ecosystems, by minimizing the expansion of existing weed populations in the burned area where soil and/or vegetation was disturbed as a result of fire suppression activities.

In addition to on-Forest efforts to reduce the threats to National Forest resources, the BAER team and the Forest will warn users of FS roads of hazards present in the burned area, and communicate and coordinate with Native American tribes and other agencies such as the National Weather Service, National Resource Conservation Service (NRCS), and local counties to assist private entities and communities including private residents and businesses to achieve post-fire recovery objectives.

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

- Conduct early detection surveys and rapid response (EDRR) eradication efforts of noxious weeds and non-native invasive plant species, where feasible to 1) reduce the potential for establishment of non-native invasive plant infestations in native or naturalized communities particularly establishment of infestations in highly susceptible burned areas or dozer lines, 2) prevent spread of existing infestations, and 3) decrease rate of spread of non-native invasive plant density from existing infestations. This land BAER treatment will occur two times in 2016 when plant emergence and flowering allow accurate identification of target species when they are most visible. Inventory and treatment will also occur at 16 intersections (totally approximately 1 acre) of newly constructed dozer line with existing National Forest transportation system roads. Additional treatment sites are likely to be identified following the more comprehensive survey of the burned areas in 2016.
- Stabilize FS Road 13N01 at Mile Post 28.9, by removing and replacing a ditch relief down drain on a spiral culvert to prevent road structure damage resulting from increased sedimentation and fill-slope soil erosion and storm water runoff, and reduce public safety hazards.
- Install burned area hazard warning signs at 4 locations to caution forest visitors traveling on roads and recreating within the burned areas.

## Coordination, Communication, and Consultation

Over the next year it is critical that the Forest Service and its cooperating agencies continue to coordinate with each other to inform the public and private land owners of the potential threats resulting from post-fire conditions and watershed response by:

- Continuing to communicate risks to the public, community groups, and cooperating agencies.
- Continuing to work and coordinate with Native American tribes, interagency cooperators, partners, and affected parties and stakeholders with the interpretation of BAER assessment findings to identify potential post-fire impacts to forest visitors and downstream communities, private landowners, and businesses.
- Continuing to coordinate with and inform local tribes regarding burned area conditions that may affect tribal activities in the burned area, including any post-fire increased hazards, potential for changes in traditional cultural uses and resources, and the timing of BAER implementation activities to minimize potential conflicts with traditional cultural activities.
- Communicating to local law enforcement and emergency management services about particular roads and routes that provide ingress and egress throughout the burn area may become compromised, and may result in loss of access by emergency response vehicles.

**SPECIAL NOTE**: *Everyone near and downstream from the **Nickowitz 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, Eureka Office** (http://www.wrh.noaa.gov/eka/) website.*

***Six Rivers NF Post-Fire BAER Assessment information is available at http://inciweb.nwcg.gov/incident/4600/.***