

## BAER Analysis Brief: Duncan Fire 09/08/2014



The Duncan Fire started on July 16, 2014 and burned 12,691 acres of National Forest System lands north of Wenatchee, Washington, in the Entiat River watershed on the Entiat Ranger District. Within the total burn area, 2,921 acres (23%) were assessed at very low or unburned severity, 2,903 acres (23%) were low severity, 4,982 acres (39%) burned at moderate severity, and 1,890 acres (15%) burned at high severity.

On September 8 a Burned Area Emergency Response (BAER) request (2500-8) was submitted for \$285,299 in funding for hazard mitigation projects.

The BAER team identified numerous threats to human life, safety, and property in its assessment of post-fire conditions in the Duncan Fire burn area. These threats included blocked culverts on Forest Service roads and other potential road-related hazards that could result from post-fire rainfall and erosion in and below the burned area. Many roads in the area are at risk of falling rocks or trees blocking the roadway, flooding and debris flows, or washed-out sections of road.

Burned trees along trails also pose risks to users; trail treads, retaining walls, and drainage features were also identified as hazards or potential hazards. The trailhead at Silver Falls could be affected by blocked culverts, and the team noted that bridges along the trail could be threatened by burned debris carried downstream by heavy rains or flash flooding. Some of the structures and other features at Silver Falls Campground were damaged by the fire, and the area around the North Entiat Trailhead burned at moderate-to-high severity.

Though most of the slopes above the Riverside recreational tract were not severely burned, heavy rains could cause problems in the Jungle Creek area. Debris flows have already occurred in the Pope Creek area, and more are expected. Post-fire debris flows could increase dramatically, eroding stream channels and moving sediment and debris in the area. The BAER team cautioned that structures could be damaged and road access cut off.

In the area of the North Fork Campground, flooding and debris flows have already occurred from Pope Creek – even after light rainstorms. Similar debris flows from the North Entiat River are likely. Three Creek Campground may be at risk of post-fire effects, but the Cottonwood Campground, Spruce Grove Campground, and Cottonwood Guard Station are considered low-risk.

Entiat Valley Road (FSR 51), Shady Pass Road (FSR 5900), and many other Forest Service roads were damaged by the fire or are threatened by heavy runoff and debris flows. Blocked culverts could damage stream crossings or intersections, causing heavy sedimentation below the road. On August 14, on FSR 5902 where it crossed Pope Creek, rainstorms triggered runoff with moving sediment that scoured Pope Creek, moving the main channel back to historic channels and damaging the Entiat River Road (FSR 51). This event illustrated the potential for damage of historic recreation residences in the area.

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The Duncan Fire lies entirely within the Entiat River watershed. The BAER team expects that rainstorms and burned-area erosion will result in an initial flush of ash downstream, erosion in drainages and on steep slopes, flash flooding, and debris flows within the watershed. The severity of these effects will depend on storms – and on snowmelt – and will likely be worse with early fall storms. Once the vegetation on slopes becomes re-established, providing ground cover and reducing erosion, the storm effects will moderate.

The BAER team identified subwatersheds of particular concern, including Silver Creek, Pope Creek, Duncan Creek, and the North Fork.

Post-wildfire erosion will cause soil loss in the area, resulting in long-term loss of soil productivity. Natural recovery of ground cover is expected over the next 3-5 years in most areas, but under severely burned forest stands, the full function of pre-fire litter and duff will probably not be present until a new forest stand is established.

The Entiat River supports summer steelhead, spring Chinook and coho salmon, bull trout, redband/rainbow trout, westslope cutthroat, and Pacific lamprey. Increased erosion and sediment in the Entiat River is likely, and may risk some of the populations in the fishery, particularly bull trout and Chinook salmon. Post-fire conditions and weather-related incidents are less likely to pose risk to area steelhead. Road treatments are planned to protect other critical values in the area, and will also provide long-term benefits to the Entiat watershed and its fish populations.

Protective measures are planned for about a dozen campgrounds and numerous trail segments and bridges. Rainstorm monitoring will be improved with the installation of Automated Local Evaluation in Real Time (ALERT) stations to provide precipitation data for flood forecasting and early warning. Numerous closure and warning signs and some gates will be installed, and restroom facilities at recreation sites will be cleaned, closed, or moved to reduce risk of downstream contamination and health hazards. Some felling of hazard trees may also be necessary.

Many road and trail treatments are planned or already under way, and all risk-reduction activities will be monitored.

### **Questions?**

Check for updates on the BAER team website at [CentralWashingtonFireRecovery.info](http://CentralWashingtonFireRecovery.info) or call the Okanogan-Wenatchee National Forest headquarters office at 509-664-9200.