First Creek Fire: BAER Briefing

November 10, 2015

Okanogan-Wenatchee National Forest
215 Melody Lane
Wenatchee WA 98801

Fire Background

The First Creek Fire started on August 14, 2015 and burned 7,443 acres in the 25 Mile, Mitchell, Antilon, and First Creek watersheds of central Washington. Of the total fire area, 5,031 acres are National Forest System (NFS) lands and 1,690 acres are privately owned. Lands burned at moderate or high burn severity included approximately 5 percent of the 25 Mile subwatershed, 4 percent of the Mitchell Creek – Lake Chelan subwatershed, 15 percent of the Antilon Creek – Lake Chelan subwatershed, and 8 percent of the First Creek – Lake Chelan subwatershed.

Funding Approved:

A Burned Area Emergency Response (BAER) team in mid-October submitted a request for $41,800 in funding for risk-mitigation projects. Post-fire work includes projects to improve road drainage, install Automated Local Evaluation in Real Time (ALERT) storm warning systems, initiate storm patrols, and install burned area hazard signs and gates. The U.S. Forest Service Regional Forester approved projects and funding on October 28.

Post-Fire Hazards:

Surface erosion and mass wasting are inherent hillslope processes, typically accelerated by disturbance, principally wildfire or intense precipitation with high runoff events. Erosion generally is accelerated when effective ground cover and protective forest cover have been removed by wildfire, or when runoff has been locally concentrated. When such conditions occur, soils are exposed to erosive forces such as raindrop impact and overland flow, which can result in rills and gullies from the accelerated surface erosion. The steepest slopes are most prone, particularly where soils are shallow or are somewhat water-repellent – or where there is a subsurface restrictive layer. Soils developed in

volcanic ash and glacial till are easily detachable, because of their low cohesiveness and structure; such soils contain relatively low amounts of organic carbon and moderately thin topsoil horizons.

On the steepest of slopes, the risk of debris flows can be high. Shallow soils on steep slopes in first- and second-order headwater drainages are most prone – local examples include upper Maple Creek and Granite Slide and Slide Ridge. The probability of debris flows is typically related to hillslope steepness and landform morphology, upslope aerial extent and intensity of burned landforms, and the occurrence of notable precipitation; this can be exacerbated by the removal of the protective forest canopy and diminished root strength. Heavy precipitation and runoff in the area typically are associated with seasonal convective thunderstorms. Culmination of debris flows is usually associated with steep drainageways and channels where sediment is routed downslope.

Within and downstream of the First Creek burned area are increased threats to public life and safety on NFS roads. Forest Service Road 8410 is the main travel route in the burn area along Slide Ridge. Four culverts on FSR 125 (ML2) have been blocked and overtopped, and additional culvert blockage and failure are anticipated. Portions of road prism could be lost with culvert failures. FSR 119 is the access road to the communications site on top of Slide Ridge. A closed road, FSR 234, will remain closed. South Lakeshore Road (SR 23) provides one-way in/out access to forest land, private homes, and businesses along Lake Chelan. All roads in the burned area are at risk of falling rocks or trees blocking the roadway, blocked culverts, and debris flows that could leave sediment on the roadway or result in loss road portions.

The threat to Fields Point Landing is identified as intermediate for the southern loop of the parking area. One drainage with areas of moderate and high severity burn flows directly to the parking area and a nearby private residence. However, there is no threat to the pumphouse, which is located in a different area.

All NFS roads in the burned area may be affected from ravel, rock fall or trees blocking roadways, culverts blocked and overtopped (with or without embankment failure), debris flows depositing on the roadway, or damaged portions of the road prism.

At Snowberry Campground and Pot Peak Trailhead, the threat from flooding or falling trees is unlikely.

At-Risk Natural Resources, Infrastructure and Homes:

The increased threats to natural resources downstream of the burned area are a concern. The threat of loss of water control is exacerbated by a high proportion of high and moderate soil burn severity within the watersheds. The risk of flooding and erosion is increased as a result of the fire, creating hazards within and downstream of the burned area. Hazards may be worsened by a rain-on-snow event, where long-duration rainfall on snow-covered ground can produce high peak flows.

The pre-fire area along South Lakeshore Road appears to be at moderate risk of rockfall and other debris falling and/or rolling from Slide Ridge onto the road and residences below. The First Creek Fire has increased the likelihood of these falling hazards, along with flood surges and debris flows along the drainages that cross South Lakeshore Road. Other hazardous areas exist within and adjacent to the fire's perimeter.

Areas of specific concern include the alluvial fan below Maple Creek basin. At the head of the 700-acre basin on Slide Ridge, BAER team members found deep volcanic ash soils with low to moderate hydrophobic properties. This area also lacks soil structure and effective ground cover – all on steep and convergent slopes. These soil and slope

conditions increase the probability of sediment-rich floodwaters or debris flows that could deliver significant sediment to the road, private residences, and the lake below.

The BAER team found contiguous patches where soil burn severity was moderate to high. Notable patches include the upper slopes of Slide Ridge, the headwaters of Maple Creek, and several tributaries of 25 Mile Creek on the north end of the fire. The potential for accelerated erosion transporting sediment to these stream reaches is very high, and the cumulative bulking of materials eroding from these slopes (combined with the deposits that now exist in the channel) are very likely to increase the effect of runoff and flooding to the stream channel by an order of magnitude. Property and infrastructure such as roads below these drainageways are at risk of damage if a runoff event of sufficient magnitude occurs, particularly at the mouth of Maple Creek.

Private residences in the Morning Sun neighborhood, below the unnamed drainage north of Maple Creek, may also be at risk. Culvert failure is possible, and portions of the roadway could be lost. Emergency vehicles will not be able to reach residents if South Lakeshore Road is blocked.

Areas of additional concern include the 25 Mile Creek State Park and campground at the north end of the fire perimeter. Though the park is outside the fire perimeter, the campground is built on the mouth of 25 Mile Creek with several campsites adjacent to and on the floodplain of 25 Mile Creek.

The north end of the First Creek Fire severely affected slopes that drain into 25 Mile Creek. High-intensity precipitation on these slopes could cause flashy and/or sediment-laden streamflow that could put campsites at risk, especially those nearest the creek. Lake Chelan State Park, built on the alluvial fan of First Creek and at the northeast end of the First Creek Fire, is also outside the fire perimeter. The burned basins that drain into First Creek are relatively small and do not appear to be severely affected by the fire.

Soil loss caused by post-wildfire erosion in some areas will result in long-term loss of soil productivity. Natural recovery of ground cover vegetation is likely over the next 3-5 years, but in areas that were severely burned, pre-fire conditions may not be restored until a new forest stand is established.

Proposed Forest Service BAER emergency response projects for the First Creek Fire area include working and coordinating with agencies and others to provide early warning to residents related to hazards created by the altered watersheds above homes and along the travel corridor. The Forest Service is working with Chelan County, the Natural Resources Conservation Service, and the National Weather Service to provide detailed information about the increase in flood risk to those living below the fire area and about risks of traveling on South Lakeshore Road, FSR 8410, and FSR 119 within and downstream of the burn area. Post-fire work will also include signage, temporary area closures, fire closure signs, and installation of precipitation monitoring and ALERT stations.

Questions?

Check for updates on the BAER team website at CentralWashingtonFireRecovery.info or call the Okanogan-Wenatchee National Forest headquarters office at 509-664-9200.