

LIME BELT FIRE: FS-2500-8 Burned Area Report Summary



October 26, 2015

Okanogan-Wenatchee National Forest
215 Melody Lane
Wenatchee WA 98801



Fire Background

The Lime Belt Fire started on August 14, 2015 and burned 11,483 acres of National Forest System lands on the Tonasket Ranger District of the Okanogan-Wenatchee National Forest. The fire, part of the Okanogan Complex, began as three lightning-caused fires that burned together, about 3 miles northeast of Conconully on USFS and BLM lands. The fire burned a total of 133,438 acres on federal, state, and private lands around the communities of Omak, Conconully, Tonasket, and Okanogan.



On October 15 a Forest Service Burned Area Emergency Response (BAER) team completed its assessment of the burned area. The team's report recommended emergency treatments and requested initial funding of \$40,900 for emergency treatments; the report was submitted to the Pacific Northwest (Region 6) Regional Forester in Portland, Oregon.

FS-2500-8 Burned Area Report: Analysis

Physical characteristics of the burned landscape:

Geology: Principal bedrock materials of the Schalow Mountain area consist of foliated crystalline rocks including gneiss and schist, characterized as land types derived from continental glacial influence such as glaciated mountain slopes and meltwater canyons. The Buck Mountain area of South Fork Salmon Creek is underlain by massive crystalline igneous rocks in the valley bottom and foliated crystalline rocks on the upper valley walls.

Soils: Volcanic ash-cap soils, rock outcrops, and rubble lands.

Vegetation: Ponderosa pine, Douglas-fir.

Transportation System: 2.8 miles of trails and 30 miles of roads – 10.6 miles Maintenance Level (ML)1 and 13.6 miles ML2 and 5.6 miles ML3.

Analysis Overview:

On September 12 the U.S. Forest Service Remote Sensing Application Center (RSAC) in Salt Lake City, Utah, provided the BAER team with an initial Burned Area Reflectance Classification (BARC) map derived from a LANDSAT 8 scene acquisition. The team then conducted reconnaissance and field verification surveys to finalize a soil burn severity map for this fire.

On September 20 the BAER team began field verification assessments of the 11,438 acres of burned National Forest System (NFS) lands; they identified 1,178 acres (10% of the burned area) at very low severity or unburned, 4,753 acres (42%) at low severity, 3,870 acres (34%) at moderate severity, and 1,683 acres (15%) at high severity.

Field assessments of the burned area indicated that approximately 3,500 acres exhibited strong water-repellent tendency; this acreage was associated with the high soil burn severity areas and about half of the moderate burn severity areas.

The post-fire area's estimated soil erosion potential is 15 tons per acre from a 25-year/1-hour storm event of 0.76 inches precipitation, compared with a pre-fire erosion rate of 0.30 tons per acre. This increased erosion could cause downstream sediment delivery that bulks flows, resulting in increased flooding effects. This additional sediment can also impair critical habitat for Threatened and Endangered (T&E) species. The associated loss of soil can negatively affect soil productivity in both the short- and long-term future.

Of the basins on NFS lands in the fire area, the South Fork Salmon River headwaters area below Buck Mountain was most affected by the fire. Smaller tributary headwaters in the Schalow Mountain area also experienced high severity fire effects. Based on field reconnaissance, high severity burn conditions were identified in the upper basin of South Fork Salmon Creek and the northeast-facing drainages off Funk Mountain. A few private residences are located above Conconully Reservoir and Sugarloaf Campground in the Schalow Mountain area.

The team estimated that the burned area will require a recovery period of 3-5 years to re-establish vegetation. The major concern for vegetative recovery and hydrologic recovery is in the high severity burn areas.

Identified Values at Risk

Threats to the values at risk below were analyzed by the BAER team for negative effects of increased water flows, loss of water control, increased sediment delivery and debris-laden flows, establishment of new populations of invasive plants, and habitat degradation for federally threatened species.

Threats to Public Safety:

The team identified a high threat to public safety from flooding and debris-laden flows, along with contiguous patches of moderate or high soil burn severity. Notable locations include the upper slopes of Salmon Creek, and the potential for accelerated erosion and sediment transport to stream reaches is very high. Property and infrastructure (such as roads below these drainageways) could sustain damage from a runoff event of sufficient magnitude, particularly within the upper reaches of Salmon Creek.

Threats to Property:

Forest Service roads, bridges and culverts, recreation sites, private homes, and other structures in valley bottoms adjacent to or in flood-prone areas or near stream channels are at increased risk of flooding and debris flows.

Sugarloaf Campground, which is adjacent to Sugarloaf Lake, includes four campsites with picnic tables, fire rings, and a toilet facility. There is no on-site water or garbage service; groomed snowmobile routes exist on FS Roads 4235 and 4200. A few hiking trails are located within the affected fire area (Beaver Lake, Schalow, and Sugarloaf Lake); the access road to the campground was also affected by the fire.

Additional surveys may be needed to determine whether hazard trees exist within the campground before it can safely be opened for public use – and this activity is not allowed within a BAER team's responsibility/authority. Approximately 6.85 miles of groomed snowmobile routes are located within or along the perimeter of the fire area. Of those snowmobile miles, 2.7 burned in moderate to high severity. The hiking trail to Beaver Lake, Trail #356, experienced 0.38 miles of moderate severity burn. Schalow Trail #361 included 0.36 miles of moderate severity burn.

Threats to Natural Resources:

Soil productivity in the ash-cap and till soils is generally moderate to high; it was assessed as low to moderate in the colluvium. Area soils are capable of supporting fully stocked stands of forest ecotypes. Ash-cap and till soil types are fairly resilient, with a natural ability to recover (i.e. reestablish effective ground cover and vegetation) from disturbance within a relatively short timeframe (less than 5 years).

Many of the slopes dominated by rock outcrops however are sparsely vegetated by comparison, and also less resilient. The volcanic ash mantle of these soils inherently exhibits weak to moderate hydrophobic tendencies, depending on their moisture status. When dry, the topsoil can be moderately repellent to the infiltration of water at the surface, to a depth of about 6 inches. When moist, these soils are less repellent. Hydrophobic tendencies increase runoff potential and can exacerbate the amount and rate of runoff.

When effective ground cover has been depleted, such as after intense wildfire, runoff can become rapid and erosion accelerated, resulting in soil loss that diminishes soil productivity and increases sedimentation.

T&E Species and Critical Habitat:

Unknown at this time.

Threats to Cultural and Heritage Resources:

There are two cultural sites in the fire area, neither of which is at risk from post-fire flooding or erosion. One site, the Buck Mountain Lookout in Okanogan County, sustained minimal fire damage to the wooden tower; it is managed by the Washington Department of Natural Resources. The other site is a lithic scatter in an area of low to unburned severity.

Recommended Emergency Mitigation Treatments

Emergency Treatment Objectives:

- Reduce the potential for accelerated surface runoff damaging Forest Service roads within and directly downstream of the fire areas in headwaters directly affected by the fire.
- Reduce the potential for road-related surface/mass erosion and accelerated sediment delivery to downstream high-value fisheries habitat, private water supplies, and private dwellings.
- Reduce the potential for debris bulking.
- Reduce the potential for roads to act as a conduit for overland flow and increased sediment loading.
- Reduce road-related hazards in or near moderate and high severity areas.

Land Treatments:

No land treatments proposed.

Channel Treatments:

No channel treatments proposed with this request.

Roads and Trails Treatments:

- Remove three culverts and install drainage dips on FS 4200.
- Danger tree mitigation on two miles of FS Road 100 (Level 3) within one tree height of each side of the road.

Protection/Safety Treatments:

- Send Coordination Letters to County Commissioners, County Engineer, and NRCS about potential increased runoff and sediment delivery onto lands under their jurisdictions.
- Work with agencies including the National Weather Service to expedite installation of an Automated Local Evaluation in Real Time (ALERT) system to provide real-time rainfall and flow/stage data to NOAA to evaluate the potential for flooding in specific areas and prompt early warnings.
- Install warning sign at Beaver Lake Trailhead.
- Manage closures of groomed snowmobile routes on FS Roads 4235 and 4200.
- Pump and sanitize toilets at Sugarloaf Campground.
- Install two gates on FR42 with signs at proposed gate locations.