

# **Klamath National Forest**

## **July 2015 Storm Report**

*August 2015*

**Klamath National Forest Service  
1711 South Main Street  
Yreka, California 96097**

## **I. Background**

The KNF experienced a series of localized convective storms between 5, and 9 July 2015. This report provides a summary of these storms' impacts to Klamath National Forest (KNF) roads in the Happy Camp/Oak Knoll and Salmon/Scott River Ranger Districts.

In the Salmon/Scott District, road segments and drainage crossings on the headwaters of the South Music Creek were surveyed during Storm Patrols. In the Happy Camp/Oak Knoll District, road segments and crossings in the Walker, Grider, and Beaver Creek drainages were surveyed during Storm Patrols.

National Oceanic and Atmospheric Administration (NOAA) RADAR Data was reviewed to confirm the storm event dates (Attachment X). NOAA RADAR Data (Attachment 1) was then matched with National Weather Service and RAWS rainfall data collected between 5 and 9 July 2015. Precipitation data collected between 7 and 9 July 2015 at the Bald Mountain, Slater Butte and Oak Knoll gauges ranged from 0.1 inches to 1.19 inches per hour. A rainfall rate of 1.19 inches per hour was recorded at the Oak Knoll (KNF Work Center) gauging site on 7 July. This record corresponded to a NOAA Reflectivity Mosaic return exceeding 60 dBZ for duration of about 30 minutes over the Oak Knoll Gauging Station (Attachment 3).

## **II. Observations**

The early July 2015 storms eroded hillslope and channel material from the moderate to severely burned areas of the Walker, Grider and Beaver Creek drainages in the Happy Camp/Oak Knoll District; and Music Creek Drainage in the Scott/Salmon District. Storm flow materials consisted of boulders, logs, rocks, gravel, sandy and silty-clay soils, and ash eroded from upland slopes, and scoured channels, draws and gullies. Areas underlain by granitic rock in Music, Grider, and Walker Creeks produced sandy sediment along with larger rock fragments and boulders.

Storm Patrols were conducted during and after the July storms in order to prevent and repair damage affecting water quality, and to detect and correct road drainage problems. Road crews began to immediately clear clogged culverts, drainage crossings and road surfaces during these Storm Patrols. A total of thirty-four locations in the Happy Camp/Oak Knoll District (Attachments 2, 3, 4, and 5) were observed during Road Patrols, and additional locations in the Scott/Salmon District (Attachment 6) were observed during a Road Patrols.

Many of the KNF Road features such as rolling dips - most with rock armored outlets, out sloped surfaces, and cross drains functioned well to contain or disperse storm flows and prevent road damage. Storm Patrols observed drainage crossings and culverts filled with storm flow material from upland slopes and drainages. At these locations, storm flows were channeled through rolling dip features and across road surfaces. Two roads in the Walker Creek drainage (Figures 3, 4 and 5), and two roads in the South Music Creek drainage (Figures 7 and 8) experienced minor erosion damage as storm flow eroded armor and road fill material from outlets at the drainage crossings. Approximately 5 cubic yards of road fill was eroded from each of the four sites. Locations where road surfaces experienced erosion damage will be repaired and fortified by armoring.

Storm Patrols also observed storm flow material deposited onto road surfaces. Debris fan deposits (Figure 6) were identified on many road sections. Cross drains and rolling dips features functioned well to channel storm flows across road surfaces rather than along road lengths (Figure 1). Out sloped surfaces passed storm flow materials across road surface and down the cut bank side of the road prism (Figure 2). Approximately 2400 cubic yards of deposited storm flow material was cleared and hauled to spoil sites.



Figure 1. Walker Creek, KNF Road 46N64, Marker Point 22. Road dip contained debris flow and prevented stream diversion down the road.



Figure 2. Runoff from high-severity burn washed over outsloped road surface without causing road failures.



Figure 3. Walker Creek, KNF Road 46N64, Marker Point 9. Storm flow materials deposited at the crossing.



Figure 4. Walker Creek, KNF Road 46N64, Marker Point 9. Storm flow materials cleared from the crossing, and eroded road fill and armoring at crossing outlet.



Figure 5. Walker Creek, KNF Road 46N64, Marker Point 8. A 500 pound boulder clogged culvert inlet and storm materials deposited on the road bed, and eroded road fill and armoring at crossing outlet.



Figure 6. Walker Creek, KNF Road 46N64, Marker Point 6. Storm Debris Fan deposited on road surface and flowing across the shoulder.



South Music Creek, KNF Road 40N54. Storm flow materials deposited at the crossing.



South Music Creek, KNF Road 40N54 Music Creek Trailhead. Storm flow materials deposited at the crossing.