

# Response to Post-Fire Flood Threat: California 2003

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**D**uring October and November 2003, wildfires burned more than 700,000 acres in southern California. Once the wildfires were contained, government officials turned their attention to effects of the wildfires on watersheds in the burned areas. The destruction of vegetation and the impacts of the fires on soils, combined with the geology in the burned areas, created conditions under which the threat of flooding, erosion, and debris flows was greatly increased. The severity of this threat was realized on December 25, 2003, when heavy rains in the burned areas of San Bernardino County caused significant debris flows. The flows resulted in 15 deaths and widespread property damage, and many of the county's flood control basins were filled with debris.

## **Local Warning System and Response**

Local officials immediately realized the need to identify risks and coordinate response efforts. Management of flood control and flood warning systems is the responsibility of emergency services and public works departments in the affected counties. However, as the Christmas Day storm showed, the severity and widespread nature of the wildfires created conditions that exceeded the capacity of existing systems.

In San Bernardino County, county and city officials formed the Flood Area Safety Task Force (FAST) to identify specific threats, identify needs for protective measures, and develop response procedures. Ultimately, the FAST developed a Concept of Operations that the county Operational Area intends to use for future flood events. San Diego County conducted an immediate, comprehensive assessment of erosion risks, which was used to prioritize installation of emergency protective measures. The county also implemented a paging system to warn residents in high hazard areas of imminent danger.

## **State and Federal Support**

State and federal agencies provided additional funding, as well as technical and operational support, coordinated by the California Governor's Office of Emergency Services and the Federal Emergency Management Agency (FEMA). Recognizing that post-fire conditions differed from typical flood threats, the California Department of Water Resources initiated efforts to outline resources, authorities, and mechanisms for response. Federal agencies, including FEMA, the Natural Resources Conservation Service, the Corps of Engineers, and the Forest Service, met extraordinary needs by funding and implementing emergency protective measures. Federal agencies assisted with efforts to upgrade local warning systems and identify hazards, the U.S. Geological Survey (USGS) installed additional rainfall and stream gauges, and FEMA and the USGS prepared flood hazard and debris flow maps.

## **Lessons Learned**

The threats posed by flooding, erosion, and debris flows following wildfires require a fundamentally different approach to preparedness and response. Due to the rapid occurrence of these events, advance identification of risks, effective warning systems, and coordinated response efforts are essential. For an event of the magnitude of the 2003 fires, state and federal assistance can be expected, but the rapid occurrence and extreme nature of these events places a premium on effective preparedness at the local level.

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