



**CALIFORNIA DEPARTMENT OF CONSERVATION  
CALIFORNIA GEOLOGICAL SURVEY**

[www.conservation.ca.gov](http://www.conservation.ca.gov)

**PUBLICATION RELEASE  
SPECIAL REPORT SERIES**

**JULY 2012**

**The Oak Creek Post Fire Debris and  
Hyperconcentrated Flows of July 12, 2008  
Inyo County, California:  
A Geologic Investigation**

by:

David L. Wagner, Jeremy T. Lancaster, and Margie B. DeRose

On July 12, 2008, remnant moisture from hurricane Bertha moved from the Gulf of Mexico across the southwestern United States bringing tropical moisture to the Eastern Sierra Nevada. Rainfall intensities as high as 97 mm/hr (3.8 in/hr) occurred for a period of 39 minutes on the recently burned Oak Creek watershed north of Independence, in Inyo County, California. The storm generated debris and hyperconcentrated flows debouched on the alluvial fan surfaces of the North and South forks of Oak Creek, generating several avulsions. Flows ran out 6 to 7 km (3.8 to 4.4 mi) from the mountain front damaging or destroying 50 residential structures, severely damaging the historic Mt. Whitney Fish Hatchery, and disrupting traffic on State Highway 395 for nearly a week.

In the study published under California Geological Survey Special Report 225, geologic mapping of Quaternary surficial deposits and measurements of channel scour and flow super-elevation were used to estimate the areal distribution, debris yield, and flow velocity from this event. Although slopes were extensively rilled, most of the estimated 1.5 million cubic meters (~2.0 million yd<sup>3</sup>) of transported sediment was scoured from channels and deposited over an area of more than 3 km<sup>2</sup>, mostly on Holocene age alluvial fans. Three surges moved down the North Fork of Oak Creek at maximum estimated velocity of 5.4 m/sec (~12 mi/hr) and were one to three meters high.

This report is currently available as a free download. A limited number of printed copies will be available soon at the locations below.

Price..... \$30.00  
Shipping and handling..... \$8.00

*(Check, money order or credit card number must be included with order)*

801 K Street, MS 14-34  
Sacramento, CA 95814  
Phone: (916) 445-5716  
Fax: (916) 327-1853

345 Middlefield Road, MS 520  
Menlo Park, CA 94025  
Phone: (650) 688-6327  
Fax: (650) 688-6329