

SUMMARY

Solano County is the most northeastern of the ten counties composing the San Francisco Bay region. Physiographically, central and eastern Solano County are part of the Sacramento Valley. The flat valley floor terminates abruptly to the west along the foothills and frontal scarps of the California Coast Ranges. Landslide activity in Solano County commonly coincides with the mountainous and hilly western sectors.

Numerous, small, spatially dispersed debris flows occurred during the night of February 2nd, 1998, particularly in the Allendale and Mt. Vaca 7.5 minute quadrangles. In most instances no structures were damaged. Debris accumulated on numerous small roads, necessitating removal, but no detailed accounting of this activity is available. Debris flows did cause some damage to the Sandy Beach area of Vallejo, where a complex of small houses is at the base of a steep cliff. These homes are raised on pilings above the water of San Francisco Bay, and a narrow pathway provides access to the homes for both utilities and foot traffic. Loose debris cascading down the bay-facing scarp covered the pathway and ruptured local gas and electric lines. A mass of debris flowed in an open space between houses. At this location eroding piles indicated that such a flow may have occurred in the past, destroying a previously standing structure.

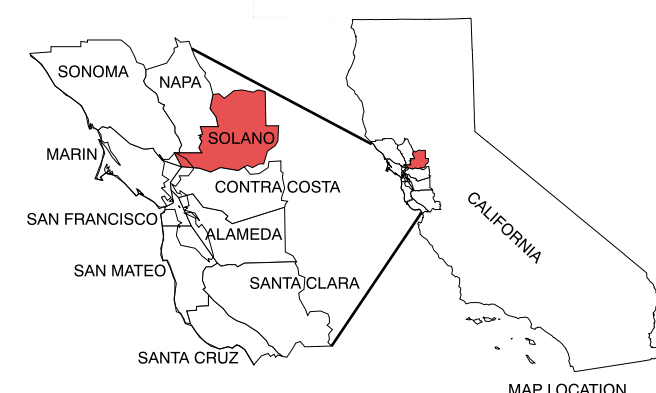
Two rotational slides caused the bulk of the property damage in Solano County. The first was a large, perennial, deep-seated slump-earth flow that affects Interstate 80. The highway traverses the toe of this large slide for about 2,000 feet. Dewatering wells have been installed, and as many as 150,000 gallons of water per day have been pumped from the slide mass. Maintenance of the highway is ongoing.

Only three houses were red tagged in Solano County. "Tagged" structures are those that have been either condemned (red) or in need of significant repair (yellow). Municipal and county building inspection departments are commonly responsible for such determinations. The houses are adjacent and occupy the fill part of a cut-and-fill engineered slope in Vallejo. The deep-seated rotational-failure surface cuts the driveway of each lot. The city street that traverses the crown of the landslide was undamaged. The offset is everywhere less than one meter. The homes were rotated several degrees away from the downslope direction.

The County Office of Emergency Services provided damage estimates of \$13.5 million for both private and public property. However, this included flood damage. Landslides themselves probably accounted for about \$5 million; most of this cost involves efforts to keep Interstate 80 operational.

EXPLANATION

● Location of damaging landslide. The number identifies the landslide in the database. Data on file with authors, USGS, Menlo Park, California and Golden, Colorado.



MAP SHOWING LOCATIONS OF DAMAGING LANDSLIDES IN SOLANO COUNTY, CALIFORNIA, RESULTING FROM 1997-98 EL NIÑO RAINSTORMS

By
David G. Howell and Jonathan W. Godt

1999



Digital data prepared using ARC/INFO 7.1.2 running under Solaris 2.6 on a UNIX workstation. Map formatted using Adobe Illustrator 8.0 running under Mac OS 8.6.

Shaded relief base derived from Graham, S.E., and Pike, R.J., 1997. Shaded Relief Map of the San Francisco Bay Region, California, U.S. Geological Survey Open-File Report 97-745-B.

Any use of trade, product or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

This project was supported in part by an appointment to the U.S. Geological Survey Earth Science Internship Program administered by Oak Ridge Associated Universities.

This map was produced on request, directly from digital files, on an electronic plotter. It is also available as a PDF file at <http://greenwood.cr.usgs.gov>

For sale by U.S. Geological Survey Information Services Box 25286, Federal center, Denver, CO 80225.