



# SEISMIC HAZARD REVIEW OF THE SAN GABRIEL FAULT IN THE AREA OF CASTAIC DAM LOS ANGELES COUNTY, CALIFORNIA

## PROJECT DESCRIPTION

The San Gabriel fault is divided into two segments that have different active-tectonic behaviors. The southeastern segment, in the Bouquet Junction-Santa Clarita area, has evidence of Holocene activity with an oblique right-lateral and reverse slip rate of about 0.6 mm/yr. The northwestern segment, which passes close to the Castaic Dam and extends northwest to the Hungry Valley area north of the Ridge Basin, has no documented Holocene activity, although there is equivocal evidence of the fault cutting undated landslides and also cutting a late Quaternary stream terrace in Hungry Valley. Close to the dam, the east-dipping San Gabriel fault is overridden by a west-dipping reverse fault that may be the continuation of the Santa Felicia fault in the east Ventura Basin. In addressing the seismic hazard posed by the fault, existing evidence suggests that the probability of a damaging earthquake on the section of the San Gabriel fault close to the dam is real but lower than it is farther southeast.



**Aerial photograph of Castaic Dam in the San Gabriel Mountains.**  
Photograph courtesy of Wernher Krutein.

## SOLUTION

To more accurately determine the probability of a damaging earthquake occurring on the northwestern segment of the San Gabriel fault, *Earth Consultants International* recommended that the fault closest to the dam be trenched at two



**Google Earth image of the San Gabriel fault (arrows)  
cutting across the landscape near the Castaic Dam (upper middle).**

localities where it crosses valley floors that are underlain by Quaternary-aged alluvial deposits. The San Gabriel fault is well expressed across the geomorphic landscape and crosses a valley floor in the northeast corner of the Val Verde quadrangle. Trench excavations, combined with radiocarbon dating, should resolve the age of the most recent displacement on the fault, and confirm the timing between the west-dipping reverse fault and the east-dipping San Gabriel fault. The investigation was presented to the dam's owners and is pending approval.

