



Department of Conservation California Geological Survey

Seismic Hazards Mapping Act Fact Sheet

The Seismic Hazards Mapping Act (SHMA) of 1990 (Public Resources Code, Chapter 7.8, Section 2690-2699.6) directs the Department of Conservation, California Geological Survey to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides and amplified ground shaking. The purpose of the SHMA is to reduce the threat to public safety and to minimize the loss of life and property by identifying and mitigating these seismic hazards. The SHMA was passed by the legislature following the 1989 Loma Prieta earthquake.

Staff geologists in the Seismic Hazard Mapping Program (Program) gather existing geological, geophysical and geotechnical data from numerous sources to compile the Seismic Hazard Zone Maps. They integrate and interpret these data regionally in order to evaluate the severity of the seismic hazards and designate Zones of Required Investigation for areas prone to liquefaction and earthquake-induced landslides. Cities and counties are then required to use the Seismic Hazard Zone Maps in their land use planning and building permit processes.

The SHMA requires site-specific geotechnical investigations be conducted identifying the seismic hazard and formulating mitigation measures prior to permitting most developments designed for human occupancy within the Zones of Required Investigation.

The Seismic Hazard Zone Maps identify where a site investigation is required and the site investigation determines whether structural design or modification of the project site is necessary to ensure safer development. A copy of each approved geotechnical report including the mitigation measures is required to be submitted to the Program within 30 days of approval of the report. A Certified Engineering Geologist or Registered Civil Engineer with competence in the field of seismic hazard evaluation is required to prepare, review and approve the geotechnical report. The Act requires peer review and this individual may be either local agency staff or a retained consultant.

It must be noted that the Department of Conservation does not have authority to approve or disapprove the geotechnical reports; rather the data are utilized for future updates as well as to monitor the effectiveness of the SHMA. In addition, cities and counties are to incorporate the Seismic Hazard Zone Maps into their Safety Elements. Both the Act and the Natural Hazard Disclosure Statement also require sellers of real property to disclose to buyers if property is in a seismic hazard Zone of Required Investigation.

Seismic Hazard Zone Maps

The Program will ultimately map California's principal urban and major growth areas. Each map covers an area of approximately 60 square miles and utilizes a scale of 1-inch = 2,000 feet. The maps are distributed in two forms - Preliminary and Official. The Preliminary form consists of a 90-day public comment period for technical review and comment. Once the public review period has ended, the Department of Conservation then also has 90 days to revise the maps, as appropriate, and issue the Official Maps to affected cities, counties and state agencies approximately six months after the Preliminary Release.

Types Of Seismic Hazards

Liquefaction

Liquefaction occurs when loose, water-saturated sediments lose strength and fail during strong ground shaking. Liquefaction is defined as the transformation of granular material from a solid state into a liquefied state as a consequence of increased pore-water pressure. The process of zoning for liquefaction combines Quaternary geologic mapping, historical ground-water information and subsurface geotechnical data. The liquefaction hazard Zone of Required Investigation boundaries are based on the presence of shallow historic groundwater (< 40 feet depth) in uncompacted sands and silts deposited during the last 15,000 years and sufficiently strong levels of earthquake shaking expected during the next 50 years.

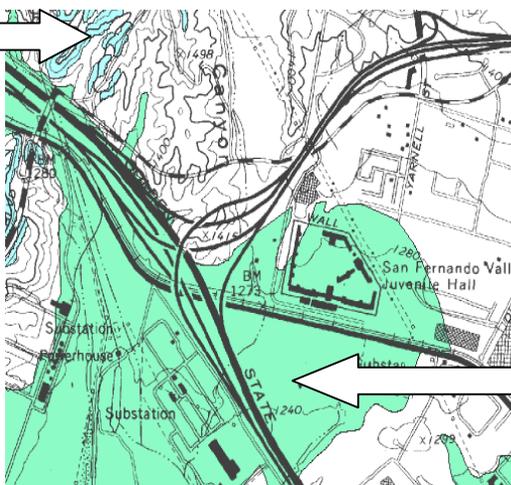
Earthquake-Induced Landslides

Landslides tend to occur in weak soil and rock on sloping terrain. The landslide hazard Zone of Required Investigation boundaries generally indicate steep hillslopes composed of weak materials that may fail when shaken by an earthquake. The process for zoning earthquake-induced landslides incorporates expected future earthquake shaking, existing landslide features, slope gradient and strength of hillslope materials.

It must be noted that a single earthquake capable of causing liquefaction or triggering landslide failure will not uniformly impact the entire zoned area. However, the inclusion of mitigation measures throughout the zoned area will help limit the devastating impacts from an earthquake in the higher risk areas.

Portion of a Seismic Hazard Zone Map

Zones of Required Investigation for Earthquake-Induced Landslides. (Shown as blue on Maps)



Zones of Required Investigation for Liquefaction. (Shown as green on Maps)

Additional Information

Visit our website at www.conservation.ca.gov to view and download Seismic Hazard Zone Maps, Evaluation Reports and Special Publications 117 and 118 or contact Candace M. Hill, Associate Planner at (916) 322-2718, chill@conservation.ca.gov or SHMP, 801 K Street MS 12-31, Sacramento, CA 95814.

*The Department of Conservation's mission is to protect Californians and their environment by:
Protecting lives and property from earthquakes and landslides; Ensuring safe mining and oil and gas drilling;
Conserving California's farmland; and Saving energy and resources through recycling.*