



# DEPARTMENT OF CONSERVATION

*Managing California's Working Lands*

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## CALIFORNIA PREPARES HARBORS FOR FUTURE TSUNAMIS

### *50<sup>th</sup> Anniversary of Deadliest Wave in State's History Coming Up*

SACRAMENTO – The 50<sup>th</sup> anniversary of the deadliest tsunami in California history is March 27. State and federal scientists and emergency managers are working to minimize loss of life and property the next time a big wave strikes, concentrating their current efforts on those whose livelihood depends on the sea as well as recreational boaters.

“Tsunamis have done a surprising amount of damage in California over the years,” said Dr. John Parrish, California’s State Geologist and head of the California Geological Survey (CGS). “But because they are relatively rare occurrences, the approach has been reactive rather than proactive. We’re trying to change that.”

The Great Alaska Earthquake, which triggered a tsunami that killed a dozen people in Crescent City and damaged many California harbors, occurred on March 27, 1964. A similarly sized earthquake and tsunami from around the Pacific Ocean could cause tens of billions of dollars in damage and put millions of lives at risk.

Specialists at CGS and the California Governor’s Office of Emergency Services (Cal OES), along with tsunami scientists from the University of Southern California’s Viterbi School of Engineering and Humboldt State University, are creating maps that identify the severity of dangerous tsunami conditions in and around California harbors. The maps will be the basis of tsunami response “playbooks” to which harbor personnel can turn in an emergency.

The effort is funded by the Federal Emergency Management Agency (FEMA) through the Cooperating Technical Partners (CTP) Program. The CTP is a collaboration between communities, state and regional agencies, universities, or Tribal Nations designed to increase public awareness leading to action to reduce the risk to life and property.

Pilot studies have been completed for harbors in Crescent City, Santa Cruz, Ventura and northern San Diego Bay, plus small boat marinas within the ports of Los Angeles and Long Beach. Harbormasters are providing details about their locales – for example, the height of pilings and how far from shore a craft must be

to reach a depth considered safe – that are woven into their site-specific playbook.

“Every tsunami is unique,” said Rick Wilson, who manages the CGS tsunami program. “The height and frequency of the tsunami surges and the ports that are impacted vary with the source. We’re calling our project a “playbook” because we want to give the harbormasters multiple options depending on the situation. In the last couple of tsunamis that have impacted California’s coast, the harbormasters have been on their own. Now they’ll have a course of action to follow in advance.”

The goals of the playbook include preventing vessels from bottoming out as water recedes during a tsunami, ensuring that docks don’t drift over pilings when the water rises, and giving the maritime community an idea in advance how long surges and strong currents are likely to last.

If boaters decide they want to take their vessels out of the harbor, the maps and playbooks can be used to help determine whether and where they will be safe.

“Offshore safety areas are important,” said Kevin Miller, tsunami lead at Cal OES. “But it is equally important for boaters to understand that they may have to stay offshore for up to 24 hours until tsunami activity dies down.”

In addition to assisting real-time tsunami response, the new maps also will improve existing and future dock construction.

“They’ll help us determine the appropriate pile heights and harbor reinforcement measures for our updated harbor design plan,” said Officer John Higgins of the Ventura Port District Harbor Patrol.

“Any steps taken now to make harbors more resilient based on the new maps will pay dividends in terms of shorter time and lower cost to get harbors back in operation after future tsunamis,” added Ed Curtis, a civil engineer with FEMA Region IX in Oakland.

Ultimately, this groundbreaking work not only will help California harbors, but also be used to develop guidance and standards for the rest of the nation. CGS and Cal OES are working with federal agencies and other coastal states through the National Tsunami Hazard Mitigation Program.

“This will provide harbors an even playing field when the nation faces another tsunami threat like the 1964 earthquake and tsunami,” Miller noted.

In 2009, CGS, Cal OES and the University of Southern California unveiled a new series of 130 maps for most of coastal California showing, in a worst-case scenario, how far inland tsunami waves could travel. The partners are working on the next generation of maps, which will be appropriate for land-use planning. Crescent City and Huntington Beach are the pilot communities for those maps.

“We cannot eliminate the risk and damage associated with tsunamis, but we’re taking significant steps toward being much better prepared,” Wilson said.

**For information about March 23-29 Tsunami Preparedness Week activities in your area, visit <http://tsunamizone.org>**

**For access to a new report for completed for California decision-makers visit <http://wsspc.org>**

**To find out if you live in, work in, or visit tsunami hazard areas, see [www.tsunami.ca.gov](http://www.tsunami.ca.gov) or <http://myhazards.calema.ca.gov/>**

**To find out more about how vulnerable your community is to tsunamis, visit <http://pubs.usgs.gov/sir/2012/5222/>**

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