

Threat Assessment 7 Tsunami

General Situation

Tsunamis, though infrequent in the State of California, are very dangerous and can result in the loss of thousands of lives and billions of dollars in property damage. Tsunamis can strike the coastline with as little as 15-20 minutes warning up to several hours of warning.

Near source, or locally generated tsunamis, are possible at many points along the California Coast. These occur if a large earthquake displaces the sea floor. The first waves may reach the coast within minutes after the ground shaking stops. There is no time for authorities to issue a warning. People on the beach or in low coastal areas need to be aware of the tsunami risk and be prepared to move to higher ground as soon as they are able after a strong earthquake and stay there until told by officials that the danger is passed.

A distant source, or regional/Pacific wide, tsunami may be generated by very large earthquakes in other areas of the Pacific Ocean and may reach our coastline many hours after the earthquake occurred.

The Palmer Alaska Tsunami Warning Center is responsible for gathering information on earthquakes which may generate tsunamis and alerting state and local officials who may order an evacuation.

A tsunami is not one wave, but a series of waves. The time that elapses between passage of successive wave crests at a given point usually is from 10 to 45 minutes.

Tsunamis in California

Since 1812, 14 tsunamis with wave heights higher than three feet have struck the California coast. Six of these waves were destructive.

Researchers now believe that the risk from a locally generated (nearshore) tsunami is high south of Monterey to Palos Verdes; and moderate south of Palos Verdes to San Diego.

The Tsunami Threat to Southern California

The Working Group on California Earthquake probabilities of the Southern California Earthquake Center (SCEC) has identified the Palos Verdes, Santa Cruz Island and Santa Rosa Island faults as active and potentially able to generate a tsunami. There is also suggestive evidence of episodes of vertical displacement capable of conventional tsunami generation associated with the offshore extension in the Palos Verdes fault.

The impacts of an earthquake on the Palos Verdes fault and the resulting tsunami may affect the Ports of Los Angeles and Long Beach. Recent field surveys and modeling have projected a 13 foot (4 meter) tsunami that would cause extensive damage and flooding along flat coastlines such as those in Santa Monica Bay. Communities located between the ocean and other water bodies, such as wetlands, river inlets, or salinas, are at very high

risk, because of the possibility of overland flow, and simultaneous tsunami attack from multiple directions.

The destruction of land in Southern California and the continued development in areas exposed to coastal and riverine inundation have increased the risk of property damage and loss of life from future tsunami. Even in locales where the tsunami hazard may be small, development in areas subject to inundation increases the overall risk. The rapid arrival of waves from a local event and the long duration of tsunami wave action also intensifies the risk from near shore events. Future tsunami may cause economic losses in coastal communities. There may be additional risk is posed by the potential release of toxic pollutants due to the failure of marine oil-transfer facilities and terminals.

Emergency Response Actions

Emergency response actions applicable to all hazards are included in **Part Two Annexes, Checklist Actions for each Section.**

Note: For more detailed information and maps, refer to the City's Local Hazard Mitigation Plan.