

## **TSUNAMI**

### **GENERAL SITUATION**

A tsunami is a traveling ocean wave of extremely long length and period, generated by disturbances associated with earthquakes, volcanoes, or major sub-marine landslides.

Warnings of impending tsunamis are generated by the USCGS (US Coast and Geodetic Survey) Seismic Sea Wave Warning System (SSWS) and the Alaskan Regional Tsunami System. They issue both seismic sea wave advisories, when an earthquake of significant magnitude has occurred in an area susceptible to tsunami generation, and seismic sea wave warnings, when tide stations confirm the generation of a tsunami. These advisories are transmitted by NOAA Satellite to the California Office of Emergency Services. These warnings are evaluated by the Warning Control Officer and Director of CalOES and if necessary statewide warning is issued to the local Sheriff, along with the estimated time of arrival of the wave.

The Ventura County Sheriff's Department has responsibility to alert the coastal areas. If it is decided that an evacuation is necessary, the Sheriff will notify the Police Departments of Oxnard, Ventura, Port Hueneme, the California Highway Patrol and the County Office of Emergency Services. These jurisdictions will decide whether or not their population will be alerted. Evacuation of the coastal areas is voluntary. The alerting agencies can only warn people of the hazard without forcing evacuation. Re-entry into the area, however, can be controlled.

All of the coastal areas in Ventura County are susceptible to tsunamis. A tsunami from the north pacific could move down the Santa Barbara Channel and affect the northerly coastal areas; a seismic sea wave from the south pacific or from South America could strike the County coastal areas from the south to southwest; and a tsunami generated along one of the faults within the Santa Barbara Channel could affect much of the County coastal areas. The Channel Islands do not provide adequate protection.

The worst recorded tsunami to hit California was in 1812. An earthquake occurred in the Santa Barbara Channel, and the resulting waves are reported by some disputed sources to have been up to 15 feet above sea level in Ventura. Again, wide spread damage and some loss of life occurred in 1964 following the Alaskan earthquake. Tsunamis from the earthquake also destroyed a number of towns in Alaska and damaged the Los Angeles-Long Beach harbors as well as harbors in Ventura County. The historic record indicates that there is a small probability of occurrence of a major tsunami in Ventura County. Statistically, it has been over 170 years since the last major tsunami.

The immediate or primary effects of a tsunami are easily visualized but the secondary effects can be unanticipated. Water systems can be contaminated, power disrupted, transportation systems blocked or dislocated, increased occurrence of fires from broken oil and gas tanks or lines, flooding from blocked rivers, and possible damage to personal property along coastal areas.

**SPECIFIC SITUATION**

The uncertainty of local effects makes the definition of the hazard zone difficult, but the east-west trending faults in the Santa Barbara Channel area seem to intensify the hazard parallel to them, thus increasing the possibility of high waves in the north and south areas. The hazard zone includes all areas of the County up to 20 feet above sea level and within 1 mile of the mean high tide line. Areas of exception are: east of Point Mugu and north of the Ventura River where the zone includes all areas up to 30 feet above sea level and up to 50 feet above sea level, respectively. The basis for the location of the hazard zone on the Oxnard plain is the estimated 15 foot high wave of 1812. The hazard zone in this region is extended up to 20 feet in elevation to allow for the probable subsidence of the Oxnard plains area, as well as a probable rise in sea level since 1812. The generally recommended areas of evacuation are all areas below the aforementioned elevations or within 1 mile of shore (whichever is of the greatest inland extent), and 2 miles inland on the Ventura River, and Calleguas Creek (a tsunami can generate a wave moving upstream in flowing water and travel further inland).

ATTACHMENT 1, THREAT SUMMARY 9

