

## ‘EHUKAI AREA DESCRIPTION

The ‘Ehukai shoreline study area (transects 0 -117) is on the north shore of O‘ahu and is the site of world-famous big wave surf breaks including Rock Piles, Pipeline, and Rocky Point. ‘Ehukai is the southern portion of a continuous (4 mi long) beach composed of carbonate sand and characterized by occasional outcrops of limestone and basalt. The area is exposed to swells from the north Pacific in winter months and easterly tradewind waves year-round.

Large winter swell causes dramatic changes in shoreline position that largely recover the following season. Because of this, shoreline change rates at ‘Ehukai have high uncertainty due to short-term variations in shoreline position. Despite wide variations in beach width, the vegetation line has remained approximately stable since 1928. The high rate uncertainty and stable vegetation line suggest that the shoreline has remained approximately stable over the long-term or that seasonal variations are masking the true long-term change. These characteristics may also reflect shoreline stabilization by armoring that holds the vegetation line in place.

Much of the beach typically loses two-thirds of its summer-time width in winter (see Jan 1971 and Feb 1988 shorelines), especially from Rock Piles to Pipeline and at Rocky Point. Short-term erosion is a significant hazard to beach-front homes, especially in winter with run-up from large waves. A number of beach-front homes were destroyed during a massive winter 1969 swell.

Previous studies by Hwang (1981) and Sea Engineering (1988) found little net change in the vegetation line at Pūpūkea-Paumalū 1949 -1988. Hwang found the water line varied by over 100 feet in several locations.

For more information see: <http://www.soest.hawaii.edu/asp/coasts/oahu/index.asp>

<sup>1</sup> Hwang, D. (1981) "Beach changes on O‘ahu as revealed by aerial photographs", State of Hawaii, Department of Planning and Economic Development.

<sup>2</sup> Sea Engineering, Inc. (1988) "O‘ahu shoreline study", City and County of Honolulu, Department of Land Utilization.

Keywords:

O‘ahu; ‘Ehukai Beach Park; Rock Piles; Pipeline; Rocky Point