

HALE'IWA AREA DESCRIPTION

Hale'iwa is located on the north shore of O'ahu. The shoreline is composed of carbonate sand, limestone, and engineered revetments. The area is exposed to winter swells from the north and northwest, and persistent easterly tradewind waves year-round. The beach is divided into four littoral cells by rocky headlands and Hale'iwa Boat Harbor.

The beach fronting Hale'iwa residential area and the west half of Hale'iwa Ali'i Beach Park (transects 0-50) has experienced low rates of accretion since 1910 at an average 0.2 ft/yr. The highest rates of accretion (up to 0.6 ft/yr, around transect 17) occur fronting a channel in the nearshore reef suggesting that it is a source of sand to the beach. Seawalls front many homes along the beach to protect from temporary erosion and inundation from large winter swells.

Hale'iwa Boat Harbor, including the outer breakwater and groins, was constructed in the 1960's. Rates are calculated for the modern beach since that time, 1967-2006. For the east half of Hale'iwa Ali'i Beach Park (transects 51-62) data show the beach has experienced low rates of erosion at an average -0.2 ft/yr. Limestone outcrops and the breakwater may be helping to stabilize the beach.

Rates calculated for Hale'iwa Beach Park (1967 - 2015, transects 63-87) show the beach has experienced high rates of erosion at an average -1.9 ft/yr. The highest rates of erosion are located behind a small breakwater fronting the beach park pavilion (see transect 81, up to -2.6 ft/yr). However, recent data (2015) suggest that the beach here may show signs of stabilization (transects 69-87), perhaps as it begins to equilibrate to the surrounding structures. Yet, little or no beach remains at high tide between transects 79 - 87. Hwang (1981) found that erosion has occurred here despite two sand fill projects in 1970 and 1974, thus the potential for ongoing erosion remains.

A small beach south of Pua'ena Point (transects 88-92) has experienced low rates of erosion at an average -0.2 ft/yr. The remaining beach at Pua'ena Point is perched above high water on a limestone platform.

Previous studies by Hwang (1981) and Sea Engineering (1988) found the beach at Hale'iwa residential area and in the west half of Hale'iwa Ali'i Beach Park was stable or accreting from 1949 - 1988. In the east half of Ali'i Beach, these studies found erosion to the vegetation line but accretion to the water line. At Hale'iwa Beach Park, Hwang (1981) found accretion in the south and erosion in the north of the beach, 1967 - 1975, but notes that their results were influenced by artificial sand fill projects in the early 1970's.

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

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

² Sea Engineering, Inc. (1988) "O'ahu shoreline study", City and County of Honolulu, Department of Land Utilization.

Keywords:

O'ahu; Hale'iwa Beach Park; Hale'iwa Boat Harbor; Ali'i Beach Park; Puaena Point