



US Army Corps
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Engineer Research and
Development Center

Wave Climate and Wave Response Study, Kawaihae Harbor, Island of Hawaii, Hawaii

Description

Kawaihae Harbor, located along the northwest coast of the Island of Hawaii, is one of two deep-draft ports serving the island. The harbor (see figure) accommodates commercial, military, and recreational users. In recent years, cargo volume handled at Kawaihae Harbor has expanded significantly in response to increasing population and development of West Hawaii. A 2650-ft long rubble-mound breakwater along an exposed coral reef protects the harbor from ocean waves. The harbor entrance is about 700 ft wide, facing northwest. Ocean wind waves and swell can attack the harbor complex from deep-water directions between southwest clockwise to west-northwest. Commercial piers are located along the northeast side of the harbor. Military facilities occupy the south corner of the harbor, and recreational vessels use the eastern end. Water depth is 40 ft in the Federal entrance channel and 35 ft in the harbor basin and commercial pier areas.



Aerial view of Kawaihae Deep-Draft Harbor, Hawaii

Issue

Because of Kawaihae Deep-Draft Harbor's present and projected commercial importance to the Island of Hawaii, the Harbors Division, Department of Transportation, State of Hawaii, has devoted special care to long-range planning. Needs to be addressed include increased cargo transportation and handling efficiency and reduced wave impacts in the harbor. The U.S. Army Engineer Research and Development Center, Coastal and Hydraulics Laboratory, is performing numerical (computer) model studies in support of long-term planning.

Supporting Technology

The numerical model is being validated with field measurements for short waves (wind waves and swell) and long waves (harbor oscillations) collected during January to April 2004. The validated model is being used to evaluate the technical feasibility of six alternative modifications to the harbor. Model results will be compared to experience in the existing harbor and to general criteria for operational acceptability.

Benefits

Model results will allow long-range planning for increased cargo transportation and handling efficiency and reduced wave impacts in the harbor.

Sponsors

U.S. Army Engineer District, Honolulu (HED); State of Hawaii Department of Transportation.

Point of Contact

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