

THE ISLAND OF KAUAI, HAWAII'S PROGRESSIVE SHORELINE SETBACK AND COASTAL PROTECTION ORDINANCE

James F. O'Connell,* University of Hawaii Sea Grant College Program
Imaikalani Aiu, County of Kauai, Planning Department
Leslie Milnes, County of Kauai, Planning Department
Lisa Ellen Smith, County of Kauai, Planning Department

Introduction

Approximately two-thirds of coastal and Great Lakes states have some type of shoreline construction setback or construction control line requiring development to be a certain distance from the shoreline or other coastal feature (OCRM, 2008). Nineteen of 30 coastal states currently use erosion rates for new construction close to the shoreline. Seven states established setback distances based on expected years from the shoreline: the remainder specify a fixed setback distance (Heinz Report, 2000).

Following public hearings by the County of Kauai Planning Commission and Kauai County Council, the 'Shoreline Setback and Coastal Protection Ordinance' was signed by the Mayor of Kauai on January 25, 2008. After a year of experience implementing this progressive, balanced shoreline setback ordinance several amendments were recently incorporated into the Ordinance (#887; Bill #2319 Draft 3). The Kauai Planning Department is presently drafting several more amendments to improve the effectiveness of the Ordinance.

The intent of shoreline setbacks is to establish a buffer zone to protect shorefront development from loss due to coastal erosion - for a period of time; to provide protection from storm waves; to allow the natural dynamic cycles of erosion and accretion of beaches and dunes to occur; to maintain beach and dune habitat; and, to maintain lateral beach access and open space for the enjoyment of the natural shoreline environment. In addition, a primary goal of the Kauai setback ordinance is to avoid armoring or hardening of the shore which along eroding coasts has been documented to ultimately eliminate the fronting beach.

Hawaii's State-wide Setback Requirements

The State of Hawaii's Coastal Zone Management regulations and policies (HRS Ch. 205A) require that setbacks along shorelines be established that are no less than 20 and not more than 40 feet inland from the 'shoreline', and require that County Planning Departments adopt and enforce rules pursuant to these requirements (s.205A-43). However, the arbitrary 40-foot statewide setback simply does not work everywhere and has in many eroding regions allowed past development to occur in inappropriate locations leading to shoreline armoring and the loss and narrowing of sandy beaches throughout Hawaii (Eversole and Norcross-Nuu, 2008; Fletcher, 1997).

In response to this shortcoming, the County of Kauai has established shoreline setbacks at distances greater than those established in the statewide CZM regulations. The Kauai Ordinance also prohibits shoreline armoring and dune alterations without a variance.

Applicability of Kauai's Shoreline Setback Ordinance

Kauai's shoreline setback ordinance is applicable to all lands within the County of Kauai that are (a) abutting the shoreline, or (b) within 500 feet of the shoreline unless the applicant can demonstrate to the satisfaction of the Director of the Planning Department that the proposed improvements will not be affected by coastal erosion or hazards, excluding natural catastrophes.

Calculating the Shoreline Setback Distance/Area

The shoreline setback distance is established by first obtaining a Shoreline Certification from the state Department of Land and Natural Resources. The 'shoreline' is delineated at 'the upper reaches of the wash of the waves, other than storm and seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth, or the upper limit of debris left by the wash of the

waves'. The shoreline setback distance is measured from this Certified Shoreline. In addition, the public has the right of use of the area seaward of the Certified Shoreline.

Next the 'average lot depth' is calculated. This is obtained by adding the lengths of the two sides of a lot with a line drawn down the middle of the lot and dividing the sum by 3.

If the average lot depth is <160 feet, than the setback distance is a predetermined distance as outlined in Table 1 below:

| | | | | | | | |
|---------------------------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|
| If the average lot depth is: | 100 feet or less | 101 to 120 feet | 121 to 140 feet | 141 to 160 feet | 161 to 180 feet | 181 to 200 feet | More than 200 feet |
| Then the minimum setback distance is: | 40 feet | 50 feet | 60 feet | 70 feet | 80 feet | 90 feet | 100 feet |

If the average lot depth is >160 feet, than the setback distance is based on Table 2 below:

| | | |
|---|---|--|
| For structures with a building footprint that is: | Less than or equal to 5,000 square feet | Greater than 5,000 square feet |
| Then the setback distance is: | 40 feet plus 70 times the annual coastal erosion rate | 40 feet plus 100 times the annual coastal erosion rate |

Note that the setback for larger average lot depths (>160') requires that the annual coastal erosion rate be multiplied by 70 or 100 based on the size of the proposed structure (i.e. < or >5,000 square feet), plus 40 feet. The 70 and 100 multipliers in Table 2 are based on a study by Anderson (1978) for the Federal Insurance Administration that found that the base life of a single family wood residence ranged from 50 to 100 years, with the average at 70 years. However, the use of brick in a single-family home raised the life expectancy to an average of 104 years. If a new house is properly maintained every 10 years, and re-roofed every 30 years, it could last indefinitely (Hwang, 2005). Larger buildings may be constructed of more durable materials.

The 40 foot addition to the setback calculation in Table 2 is based on two principles: 1. a 20-foot safety design buffer; and, 2. a default storm event estimate of 20 feet (Hwang, 2005). On Maui, Hawaii, when structures are within 20 feet of the shoreline they are considered threatened. In North Carolina a 20 foot threshold determines when emergency measures can be considered. Thus, with a 20-foot margin of safety at the end of its useful life a structure is not at the shoreline but 20 feet away allowing consideration of emergency action, such as relocation. The 20-foot 'default storm event estimate' is based on the maximum recorded storm-induced erosion on Oahu, Hawaii resulting from the massive December 1969 which produced wave heights approaching 50 feet (State of Hawaii, DLNR, 1970 in Hwang, 2005).

Prohibited and Permitted Structures and Activities within the Setback Area

While there are exceptions like clearing drainage channels and the mouth of streams, the mining or taking of sand, dead coral or coral rubble, rocks, soils, or other beach and marine deposits is prohibited in the setback area. Furthermore, any primary coastal dune shall not be altered, graded or filled in any way except the addition of compatible sand, unless this application renders the build-out of allowable density unfeasible. In this latter situation, a variance is required to alter only that portion of the dune that is located landward of the shoreline setback area, and only to the extent necessary to construct on a minimum building footprint.

Variations

A shoreline setback area variance may be considered for a structure or activity otherwise prohibited by the Ordinance if the Planning Commission finds that it is, in part, necessary or ancillary to cultivation of crops, aquaculture, boating or maritime recreational facilities, and rebuilding of an existing dwelling unit with no enlargement and other considerations. Construction of a new dwelling unit can be considered where the setback does not allow for the minimum building footprint but must meet specific guidelines, such as reducing the size of the minimum buildable footprint to 1,500 square feet. The setback distance can also be reduced but never < 40 feet. Private and public facilities or improvements may also consider that may artificially fix the shoreline but not adversely affect beach processes.

Recent Amendments to the Ordinance

Public hearings were recently held to obtain testimony on amendments to the original Ordinance recently proposed by the Planning Department. These amendments were approved by the Planning Commission, somewhat modified and approved by the County Council, and on December 2, 2009 approved and signed into law by the Mayor of Kauai.

The original Ordinance required a Certified Shoreline – an approximate 6 month process if not appealed costing several thousand dollars - for ‘all’ proposed structures and activities on lands applicable to the Ordinance, even if the structures and/or activities were specifically allowed in the setback area. For example, allowed in the setback area are, in part, minor structures such as picnic tables, barbecues, movable lifeguard stands, and walkways for access, any of which must cost <\$125,000.

The approved amendments allow the Director of the Planning Department discretion in requiring a Certified Shoreline for ‘public improvements and facilities whose valuation does not exceed \$125,000, and repairs to lawfully existing private structures, including non-conforming structures, provided that the structure is not enlarged, nor its use or impacts to coastal processes intensified, the repairs are <50% of the replacement cost, and are permitted by building code, flood hazard regulations and special management area regulations.

In addition, unmanned civil defense facilities for warning the public of emergencies and disasters or for measuring geological or meteorological events, scientific studies, and structures to address an emergency declared by a public official authorized to declare an emergency were added to the list of permitted structures allowed within the setback area.

Language was also added that specifies that ‘all new structures or activities permitted in the setback area shall not adversely affect beach processes; artificially affix the shoreline; interfere with public access or public views to and along the shoreline; impede the natural processes and/or movement of the shoreline and/or sand dunes; or, alter the grade of the shoreline setback area’.

Proposed and Possible Future Ordinance Amendments

At the time of this writing, the Planning Department is working with the University of Hawaii Sea Grant College Program’s Kauai Coastal Processes Extension Agent in drafting language to amend the Ordinance to incorporate the use of long-term average annual shoreline change data (1927-2008) recently generated by the University of Hawaii’s Coastal Geology Group for Kauai. The proposed amendments suggest eliminating the preset setback distances as currently outlined in Table 1 of the Ordinance (see above) and requires the use of erosion rate data and the 70 and 100 year multipliers for all proposals.

References

Anderson, C.M., 1978, Coastal Residential Structures Life time Determination, prepared for the Federal Insurance Administration, Department of Housing and Urban Development.

Bernd-Cohen, T. and Gordon, M., 1999 State Coastal Program Effectiveness in Protecting Natural Beaches, Dunes and Bluffs, and Rocky Shores, *Coastal Management*, 27:187-217.

Eversole, D. and Norcross-Nuu, Z., 2008, Hawaii Sea Grant College Program Extension and Outreach efforts: Kauai Shoreline Setback Ordinance Amendments, in *Proceedings of Solution to Coastal Disasters*, Turtle Bay, Oahu, Hawaii.

Fletcher, C.H., Mullane, R.A., and Richman, B.M., 1997, Beach Loss along Armored Shorelines of Oahu, Hawaiian Islands, *Journal of Coastal Research*, v.13, p. 209-215.

Heinz Report, 2000, Evaluation of Erosion Hazards, prepared for the Federal Emergency Management Agency (<http://www.heinzcenter.org>)

Hwang, D. 2005, Hawaii Hazard Mitigation Guidebook, published by the HI Coastal Zone Management Program, funded in part by the HI Sea Grant College Program.

Leatherman, S.P., 1993, Modes of Shoreline Behavior: Erosion Rate Analysis using Geomorphic Principles, *Proceedings of International Coastal Symposium*, Hilton Head Island, S.C. (p. 218-223)

OCRM (Office of Coastal and Ocean Resources Management), 2008, (http://coastalmanagement.noaa.gov/initiatives/shoreline_ppr_setbakcs.html)

James F. O'Connell
University of Hawaii Sea Grant College Program
P.O. 141
Lihue, HI 96766, USA
Ph (808) 241-4921
james27@hawaii.edu