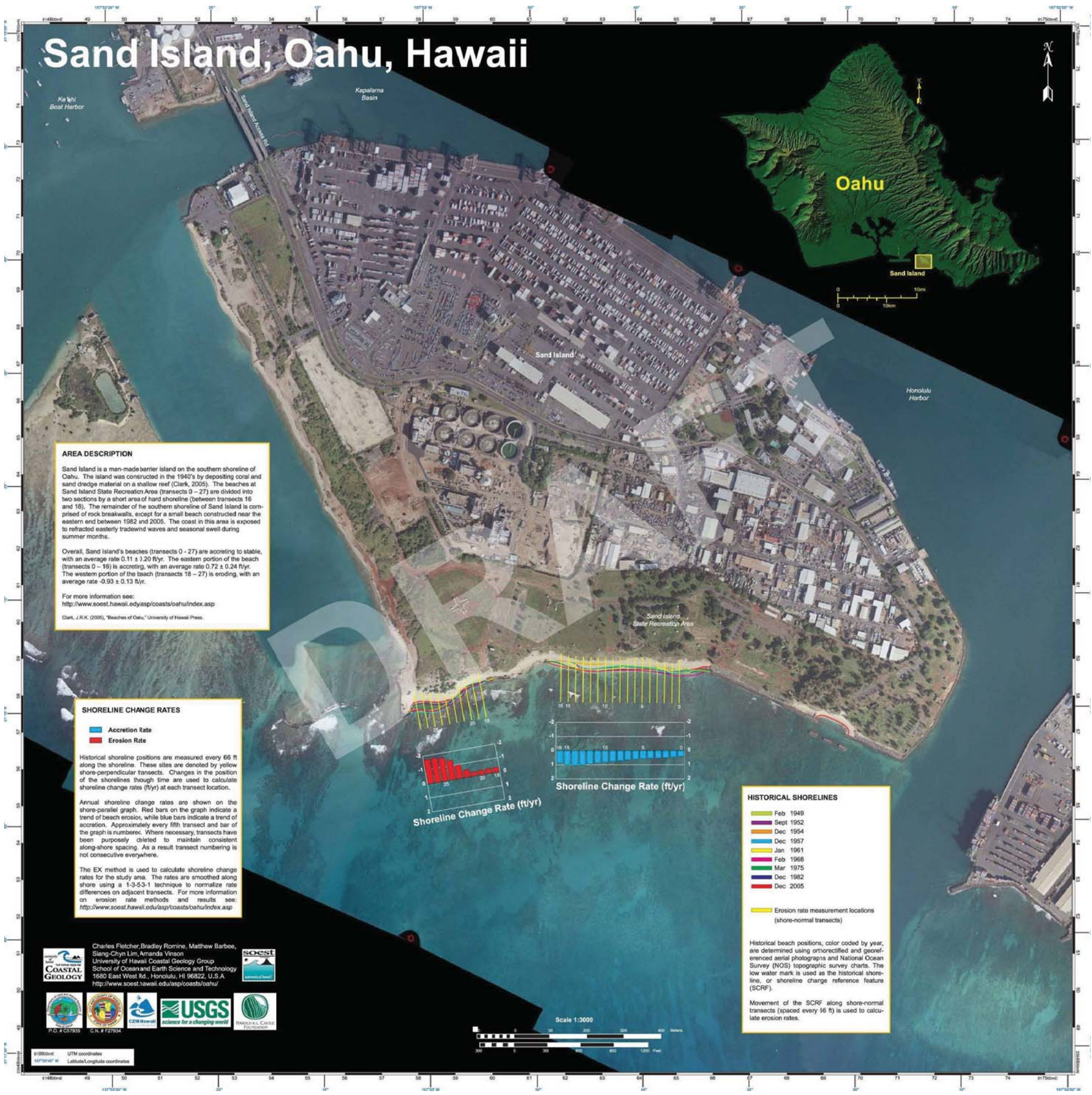
Sand Island, Oahu, Hawaii



AREA DESCRIPTION

Sand Island is a man-made barrier island on the southern shoreline of Oahu. The island was consructed in the 1940's by depositing coral and sand dredge material on a shallow reef (Clark, 2005). The beaches at Sand Island State Recreation Area (transects 0 – 27) are divided into two sections by a short area of hard shoreline (between transects 16 and 18). The remainder of he southern shoreline of Sand Island is comprised of rock breakwalls, except for a small beach constructed near the eastern end between 1982 and 2005. The coast in this area is exposed to refracted easterly tradewind waves and seasonal swell during summer months.

Overall, Sand Island's beaches (transects 0 - 27) are accreting to stable, with an average rate 0.11 ± 0.20 ft/yr. The eastern portion of the beach (transects 0 – 16) is accreting, with an average rate 0.72 ± 0.24 ft/yr. The western portion of the beach (transects 18 – 27) is eroding, with an average rate -0.93 ± 0.13 ft/yr.

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

Clark, J.R.K. (2005), "Beaches of Oahu," University of Hawaii Press.

SHORELINE CHANGE RATES

Accretion Rate
Erosion Rate

Historical shoreline positions are measured every 66 ft along the shoreline. These sites are denoted by yellow shore-perpendicular transects. Changes in the position of the shorelines though time are used to calculate shoreline change rates (ft/yr) at each transect location.

Annual shoreline change rates are shown on the shore-parallel graph. Red bars on the graph indicate a trend of beach erosion, while blue bars indicate a trend of accretion. Approximately every fifth transect and bar of the graph is numbered. Where necessary, transects have been purposely deleted to maintain consistent along-shore spacing. As a result transect numbering is not consecutive everywhere.

The EX method is used to calculate shoreline change rates for the study area. The rates are smoothed along shore using a 1-3-5-3-1 technique to normalize rate differences on adjacent transects. For more information on erosion rate methods and results see: *http://www.soest.hawaii.edu/asp/coasts/oahu/index.asp*

HISTORICAL SHORELINES

- Feb 1949
- Sept 1952
- Dec 1954
- Dec 1957
- Jan 1961
- Feb 1968
- Mar 1975
- Dec 1982
- Dec 2005

Erosion rate measurement locations (shore-normal transects)

Historical beach positions, color coded by year, are determined using orthorectified and georeferenced aerial photographs and National Ocean Survey (NOS) topographic survey charts. The low water mark is used as the historical shoreline, or shoreline charge reference feature (SCRF).

Movement of the SCRF along shore-normal transects (spaced every 66 ft) is used to calculate erosion rates.

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UTM coordinates
Latitude/Longitude coordinates

DRAFT