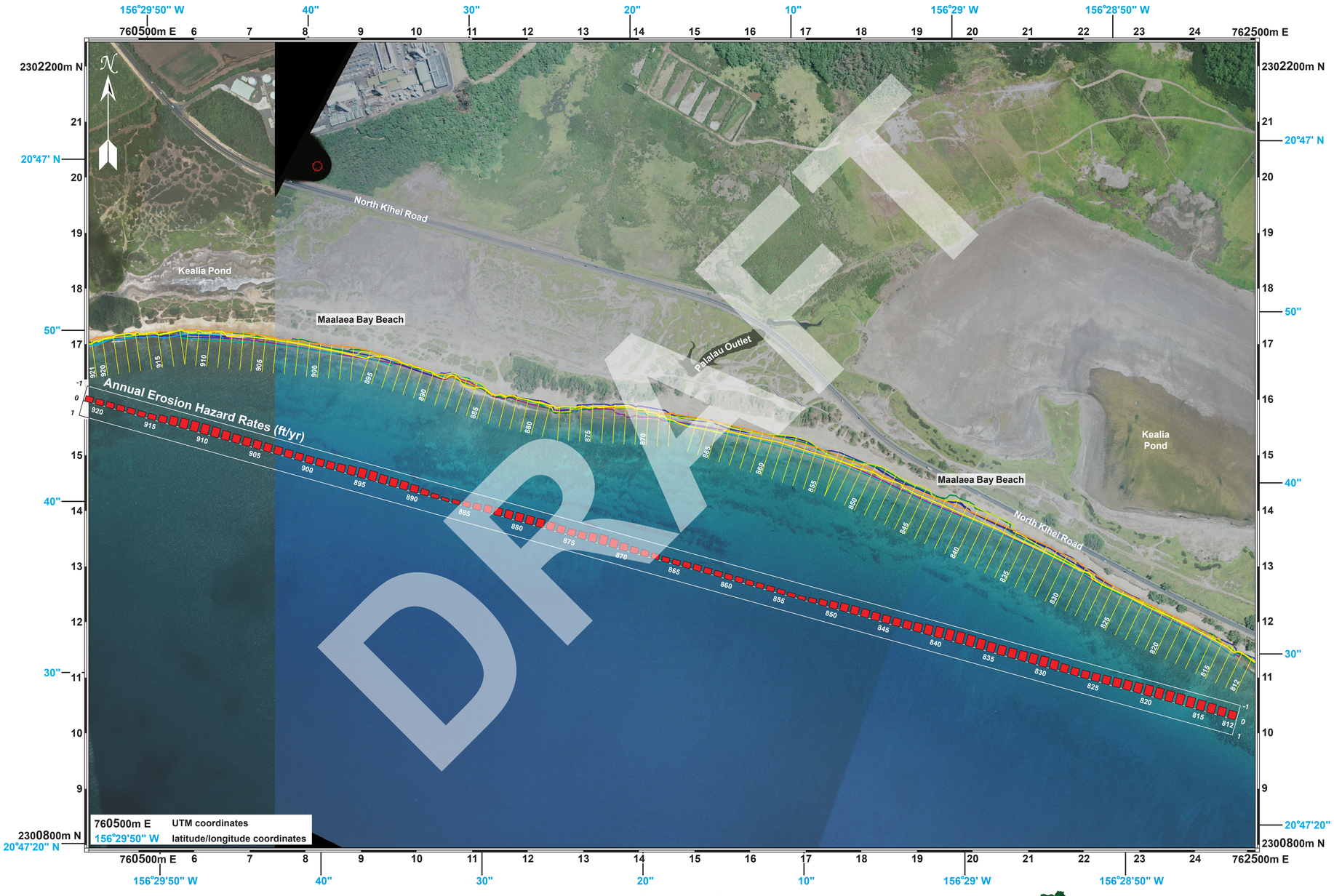
Kealia Pond, Maui, Hawaii

Annual Erosion Hazard Rates



Scale 1:3000

100 0 100 200 300 400 Meters

300 0 300 600 900 1200 Feet

TRANSECT	AEHR (ft/yr)
812	-0.536
813	-0.588
814	-0.626
815	-0.656
816	-0.681
817	-0.695
818	-0.702
819	-0.701
820	-0.692
821	-0.667
822	-0.630
823	-0.589
824	-0.545
825	-0.511
826	-0.490
827	-0.496
828	-0.545
829	-0.627
830	-0.671
831	-0.667
832	-0.639
833	-0.626
834	-0.625
835	-0.636
836	-0.672
837	-0.729
838	-0.755
839	-0.738
840	-0.697
841	-0.640
842	-0.577
843	-0.537
844	-0.513
845	-0.507
846	-0.504
847	-0.521
848	-0.532

TRANSECT	AEHR (ft/yr)
849	-0.518
850	-0.468
851	-0.378
852	-0.289
853	-0.242
854	-0.248
855	-0.289
856	-0.319
857	-0.322
858	-0.323
859	-0.334
860	-0.346
861	-0.354
862	-0.372
863	-0.389
864	-0.378
865	-0.333
866	-0.320
867	-0.355
868	-0.394
869	-0.404
870	-0.461
871	-0.559
872	-0.625
873	-0.565
874	-0.472
875	-0.441
876	-0.474
877	-0.529
878	-0.546
879	-0.542
880	-0.542
881	-0.532
882	-0.503
883	-0.459
884	-0.410
885	-0.341

TRANSECT	AEHR (ft/yr)
886	-0.248
887	-0.201
888	-0.272
889	-0.375
890	-0.477
891	-0.528
892	-0.543
893	-0.562
894	-0.617
895	-0.620
896	-0.570
897	-0.509
898	-0.483
899	-0.469
900	-0.465
901	-0.474
902	-0.496
903	-0.514
904	-0.526
905	-0.540
906	-0.547
907	-0.555
908	-0.584
909	-0.642
910	-0.657
911	-0.660
912	-0.640
913	-0.584
914	-0.457
915	-0.365
916	-0.348
917	-0.366
918	-0.367
919	-0.364
920	-0.367
921	-0.372

HISTORICAL SHORELINES

- 1910 T-sheet
- Feb 1950
- Nov 1949
- Oct 1960
- Mar 1975
- Jul 1987
- Mar 1988
- May 1997
- April 2007

Erosion rate measurement locations (shore normal transects)

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

For situations in which there is coastal armoring or rocky shoreline seaward of any vegetation, the vegetation line is drawn along the seaward side of the rock or armoring. If there is no sandy beach in these areas, both the vegetation line and the SCRF are delineated along the mean high water line.

Movement of the SCRF is used to calculate erosion rates along shore-normal transects spaced every 20 m (66 ft) along the shoreline. The 1987 SCRF is not used in the calculation of the Annual Erosion Hazard Rate (AEHR). It is used in determining seasonal uncertainty.

ANNUAL EROSION HAZARD RATES (AEHR)

- 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 through time are used to calculate shoreline change rates (ft/yr) at each transect location.

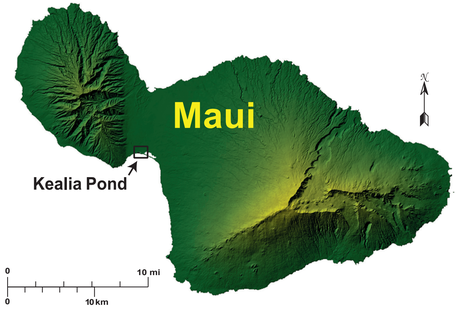
Annual erosion hazard rates (AEHR) are shown on the shore-parallel graph. Red bars on the graph indicate a trend of beach erosion, while blue bars indicate a trend of accretion. Approximately every fifth transect and bar of the graph is numbered. Where necessary, transects have been purposely deleted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

The Single Transect (ST) method (Genz et al., 2009) is used to calculate erosion hazard rates for the study area. The rates are smoothed alongshore 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/coasts/erosion/index.php

Genz*, A.S., Frazer, L.N., and Fletcher, C.H. (2009) Toward parsimony in shoreline change prediction (II): Applying basis function methods to real and synthetic data. Journal of Coastal Research, vol. 25, no. 2: 380-392.

AREA DESCRIPTION

The Kealia Pond study area (transects 812 – 921) encompasses the west half of Maalaea Bay Beach fronting Kealia Pond and North Kihei Road. The area is exposed to south swells in summer months. Easterly trade winds blow offshore in this area year-round. The Kealia study area has experienced low to moderate erosion rates since 1910, with an average AEHR of -0.5 ft/yr.



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