Title : Grain-Size Analysis of Sediments at Bangsaen Beach, Saensuk Subdistrict, Mueang Chonburi District, Chonburi Province

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ABSTRACT

Coastal erosion has long been a major problem affecting the Bangsaen Beach, located in Saensuk Subdistrict, Mueang Chonburi District, Chonburi Province. The objective is to establish sediment compatibility criteria for future beach nourishment projects in response to increasing coastal erosion. A total of 18 sediment samples were collected across the beach profile and analyzed by using sieve analysis and statistical parameters according to the Folk & Ward (1957) method. The Overfill Factor and Equilibrium Beach Profile models were used to integrate and confirm the most suitable nourishment characteristics for the Bangsaen Beach. The results indicate that the native beach sediment consists of coarse sand, moderately sorted, sub-rounded shape, and a symmetrical skewness, suggesting an equal proportion of grain sizes. In addition, the mesokurtic distribution pattern suggests a near normal distribution of grain sizes, reflecting moderate sorting. According to the Folk (1954) classification, the sediment is categorized as slightly gravelly sand, comprising 13.40% gravel, 86.58% sand, and 0.02% mud. To determine the borrow material, sediment from the intertidal zone was specifically analyzed as it represents the natural equilibrium state under direct wave energy. The native material is classified as very coarse sand, based on the principle of selecting borrow material, sediments that are coarser than the native material are generally suitable for beach nourishment. Fill material should be within the very fine pebble to reduced sand loss. The fill material must maintain a moderately sorted or better classification. Selecting the recommended borrow material ensures highly suitable compatibility (Quadrature1), achieving a cost-effective 1:1 fill ratio. This material allows the beach profile to reach equilibrium with reduced sediment loss, resulting in a steeper slope and increased beach

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width. This approach effectively mitigates shoreline retreat, enhances coastal stability, and ensures the long-term ecological sustainability of the nourishment project.

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