

NET SHORE-DRIFT DIRECTIONS ALONG THE ESTUARINE COAST OF DELAWARE

Md. Khalequzzaman¹, S.M. Amin², and Polly Bass¹

¹ Dept. of Geology & Physics, Georgia Southwestern State University, Americus, GA 31709

² Dept. of Geography & Earth Science, Bloomsburg University of Pennsylvania, Bloomsburg, PA 19174

Most areas along the estuarine coast of Delaware are highly developed, and are experiencing land loss due to wave erosion. The rates of shoreline erosion vary from 0.43 m/year to 3.4 m/year.

Localized progradation has occurred in a few areas, such as Broadkill Beach, and Slaughter Beach with rates that ranged between 1.1 m/year and 3.5 m/year. A basic understanding of net-shore drift directions provides the coastal planner a very effective tool with which to assess the impact of proposed coastal uses or construction at a local and regional level. Geomorphic features and sedimentological parameters were studied along a 25-mile stretch of estuarine coasts between Bowers Beach and Broadkill Beach to determine net-shore drift directions. It was determined that the net-shore drifts are to the south from Bowers Beach and to the north from Broadkill Beach, respectively. These two opposite drifts converge in Slaughter Beach area, making it a zone of accumulation.

The beach width gradually increases both from north (South Bowers Beach) and south (Broadkill Beach) to Slaughter Beach. The beach slope is inversely related to the beach width. The mode, median, and mean grain size of sediments collected from the beachface and swash zone increase both from north and south to the zone of accumulation. While the geomorphic features observed at various study locations conform with the features suggested by other researchers for similar settings, the sedimentological parameters do not conform with these models, which implies that a site-specific model that takes into account the observed variability will have to be developed.