

Shoreline Signature and Grain Size East and West of Two Inlets: Mattituck Inlet and Goldsmith Inlet, Long Island, New York

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Jetties are shore-normal structures built to stabilize the location of an inlet, maintain depth in the inlet channel, and afford wave protection to vessels. Interruption of longshore sediment transport by jetties and sediment bypassing to the downdrift beaches are issues of concern at most inlets. Most studies have documented only updrift advance and downdrift recession of the shoreline at jetties. In the present study at Mattituck Inlet and Goldsmith Inlet, we have documented four interesting characteristics of the shoreline and nearshore that seem not to have been reported before. These are: (1) coarsening of the sediment in the nearshore and sub-tidal beaches downdrift of the two inlets; (2) steepening of the nearshore slope downdrift (probably related to Characteristic 1; (3) presence of multiple longshore bars updrift of the inlets, and lack of bars downdrift; and (4) greater undulations in the shoreline downdrift of the inlets as compared to updrift sides. The sediment along the north shore of Long Island is heterogeneous, and these characteristics may be explained by the blocking function of the jetties, capture of finer material in the flood tidal shoals, and possible jetting of finer material to the offshore. Lag deposits then tend to remain on the downdrift sides of the jetties, where the existing sediment is winnowed by longshore transport under wave action.