

Snyder, Noah (1993). "Effects of the October 30, 1991 Storm on the Dune Area of Seawall Beach, BMMCA, Phippsburg, Maine". Honors Theses.

Seawall Beach is a 2.2 km long, undeveloped, south facing barrier spit. It is located south of Bath, ME, near the mouth of the Kennebec River. The beach consists of well-sorted, fine-grained quartz sand which is constantly being reworked within the Kennebec River sand transport system. Morse Hill, a rocky headland, forms a natural division on the beach.

The storm of October 30, 1991 caused major beach and property damage along the Eastern Seaboard from Maine to North Carolina. Significant and measurable dune overwash deposits of sand and cobbles can be found in many locations including Hunnewell Beach, Maine (adjacent to Seawall Beach), the beaches of Southern Maine, New Hampshire, and the north shore of Massachusetts.

Detailed topographic mapping (1:600) of the dune area on Seawall Beach was undertaken to determine the extent of overwash deposits, the line of maximum storm wave penetration into the dune area, the vegetation and scarp edges, and the elevation of the current and relict frontal dune ridges. In addition, sediment samples were taken to compare storm overwash deposits with dune and berm sands. Also, the ongoing beach study of beach and dune changes was continued by surveying beach profiles at different stages in the yearly cycle.

Unlike other local and regional beaches, minor overwash deposition occurred at Seawall Beach as a result of the October 1991 storm. The only measurable overwash was a sandy fan deposit approximately 100 m² with a maximum thickness of 10 cm. The lack of overwash can be explained by the presence of a well-developed frontal dune ridge which dissipated wave energy along most of the beach. The ridge averages 1.5 m in height above the berm, although it is virtually nonexistent near the overwash fan. When the ridge is well-developed, the storm waves were largely unable to breach it, defining a relatively stable shoreline equilibrium position. A 15.2 m³ unit volume of sediment was excavated from the berm and frontal dune ridge on the eastern section of the beach. The western section suffered minor scarping of the ridge and erosion of the berm. The storm of December 12, 1992 continued the erosion, scarping the frontal dune ridge over the entire beach.

The recent sequence of storms including December 4, 1990, October 30, 1991 and December 12, 1992 has flattened the protective berm and beachface, and brought Seawall Beach into a phase of frontal dune ridge erosion. The frontal dune ridge is now the only protection from the backdune washover by storm waves, however it may be destroyed in the event of another major storm. The shoreline position, currently being cut back, will not re-equilibrate until eolian transport builds a new frontal dune ridge out of a storm scarp face.