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GUESTWORDS: By Kevin McAllister

Exposed With Every Storm

In the aftermath of three powerful winter storms, the status of Montauk's downtown beach has once again been thrust into the public spotlight.

While this commentary is about forward-looking coastal zone management, it's important to reflect on previous decisions to provide a clear vision for adaptive change. Namely, rejecting a structural approach to coastal erosion and recognizing the pitfalls of beach replenishment in order to move forward with coastal retreat.

The downtown Montauk stabilization project, the half-mile-long sandbag revetment, or seawall, was completed in the spring of 2016. Its architect, the United States Army Corps of Engineers, justified its construction as an emergency response to beach and dune erosion caused by Hurricane Sandy. Skirting town restrictions on the placement of hard structures in the coastal zone, the structure was craftily called a reinforced dune.

Touted as a temporary fix until a large-scale sand replenishment project materializes as part of the Army Corps' Fire Island to Montauk Point plan, the structure has steadily become a physically dominant and influencing feature on the beach. Each passing storm brings greater exposure and the gradual narrowing of the beach.

While the physical impacts have been largely incremental, the financial obligations to East Hampton Town and Suffolk County are acute. As co-sponsors, the town and county obligation is to cover the costs of ongoing maintenance — keeping a three-foot sand coverage atop the structure with grass plantings. With the initial estimate of $150,000 per year tossed, costs could exceed $1 million in 2018. The previous repair costs paid by the Army Corps approached $1.5 million.

Beaches and dunes are dynamic natural protective features that function as an interactive system. The system's stability is controlled by four primary factors: supply of sand, shape of the beach, ocean energy (currents, waves, and surge), and sea level rise. These four integrated influences form a dynamic equilibrium that determines shoreline resiliency.

Sand supply comes from several contributing sources: updrift beaches, dunes, bluffs, and submerged offshore ridges. Sediments are moved by waves and currents via onshore and offshore and longshore transport. Shoreline hardening structures disrupt sand supply and transport, ultimately destroying the beach.

Some believe the solution is beach replenishment — pumping sand from an offshore source. Is this the panacea for Montauk's beach erosion problems? If only it were that simple. On its face, pumping an artificial beach seems like a positive undertaking. The manufactured beach will slow down erosion, protect property by absorbing storm surges, and offer recreational space. And it's not a seawall.

But examine its flaws. In the big picture, a replenished downtown beach is a mere patch of sand when compared to the entire system, which extends extensively offshore and longshore. Beach replenishment is a Band-Aid solution.

What will the new beach look like? The compatibility of the dredged material with resident sediments is a critical factor. Gravel versus coarse sand versus fine grain — the life span of the beach and traditional recreational use hang in the balance.

The Army Corps claims a suitable borrow area exists near Napeague. But past experience with replenishment projects substantiates an uncertainty with dredged material. Its consistency will be known only when it comes out of the pipe.

Often glossed over, the ecological damage to the offshore ecosystem can be significant. Dredging obviously kills the organisms in the path of the dredge head. But the greater threat is the expansive dredge holes where mud and silt accumulate, altering the composition of fauna and flora on the bottom.

The massive depressions can cause water quality issues, like turbidity, when fine sediments are resuspended during storms. For a sense of scale, the 1.1-million-cubic-yard Quogue project would create a hole in the seafloor approximately 7 feet deep and 100 acres in size. Reoccurring dredging off Montauk would cause irreparable harm to productive fishing grounds.

Last, the cost: Replenished beaches disappear much faster than natural ones. The average life span of replenished along the Mid-Atlantic coast is three to four years. At its exorbitant cost, sand replenishment as a long-term prospect is both economically and environmentally unsustainable.

We now understand that hard structures, while appearing to stabilize the shoreline, ultimately destroy the beach. We also know that beach replenishment is costly and only temporary, and will become increasingly less feasible as the life span of beaches grows exponentially shorter with rising seas.

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Kevin McAllister is founder and president of Defend H2O, a nonprofit based in Noyac.

Guestwords

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Sea level rise is accelerating, and the frequency and intensity of winter storms are on the increase. The reality is that in the not-too-distant future we will be forced to retreat from the shoreline.

Moving out of harm's way — a daunting challenge, to put it mildly. But it's time that we demonstrate collective foresight and resolve in this endeavor. Our environment, economy, and coastal lifestyle depend on it.