



**US Army Corps
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Engineer Research and
Development Center

New York District: Town of Hempstead, Long Island, New York

ISSUE

The demonstration location is on the Long Beach barrier island, NY, just west of Jones Inlet, in the town of Hempstead. Jones Inlet ([Figure 1](#)) has reached a stage of maturity where its ebb shoal is well formed, and impoundment at the updrift inlet jetty is essentially complete. At this stage of inlet development, there is both significant sediment bypassing the inlet and moving onshore via the ebb shoal bridge and shore attachment, coupled with high erosion rates inside the ebb-shoal due to inlet processes and isolation from sand supply.

Hempstead, NY, recreational beach is located downdrift of Jones Inlet, within the inlet ebb shoal. This is also the location of prior storm overwash events that inundated streets, reducing access to homes and transportation routes. Ongoing loss of beach in this area has reduced storm damage protection and affected recreational beach use. Via a locally cost-shared Section 933 Authority, approximately 2 million cu yd of dredged material from the maintenance of Jones Inlet channel has been placed at this location since 1984. This practice is



intended to continue in the future; however, the time intervals between channel dredging operations are unpredictable, and often beach erosion proceeds to critical conditions between dredge cycles. Recent Jones Inlet channel condition surveys indicate that no maintenance dredging will be required for navigation in the coming year, which means that conditions at Hempstead Park will continue to worsen.

Approximately 3,000 ft to the west of the erosional area is an accretionary buildup of sand at the point of the ebb shoal attachment. The attachment feature has grown markedly in the last 5 years. This demonstration project will document how the local municipality uses the ebb shoal attachment feature as the primary borrow source for sand to be placed in the high-erosion area. Placement of backpassed sand will extend the storm damage protection capability of the beachfront by rebuilding eroded dune and sand berm. Existing park facilities will be protected from undermining by erosion and from wave attack. Recreational use of the town park will be extended.

RSM DEMONSTRATION PROJECT GOALS

The goal of this RSM demonstration program is to develop an accretion/erosion management plan for the problematic area along the Long Beach Island, NY, region.

SUMMARY

The Hempstead sediment management plan seeks unique solutions, using realistic capabilities at Hempstead as follows:

- Purchasing equipment (beach scrappers, trucks, bulldozer) and obtaining permits for movement of sand above the mean high water line.
- Obtaining state funding for dredge sediment management and reconstitution of the westerly inlet throat and associated revetment.
- Augmenting in-place sediment handled under channel maintenance dredging and Section 933, and working in concert with proposed future shore protection projects in this locale, including the recommendations of the Long Beach Island, NY, feasibility report.
- Using backpassing, bypassing, silt trucking, capture of wind-blown sand, and dredging flood shoal material as possible components of a multiyear approach to proactively and reactively accommodate their dynamic environment.

Benefits of this demonstration from the viewpoint of RSM include:

- Minimizes use of offshore sand borrow sites, thereby extending the usage time of finite offshore resources, and minimizing environmental impacts to the offshore borrow sites.

- Minimizes or eliminates use of upland sand sources (quarries), which reduces emergency fill costs and extends lifetime of upland sand resources.
- Extends storm-protective capabilities of the beach and recreational beach usage during multiyear intervals between navigational channel maintenance dredge operations.
- Obtains multiple uses of sediment already in the littoral system.
- Develops intercommunity and interagency working groups for sediment management issues.
- Increases predictability of resource use for town planners.
- Provides a model for other communities to develop sediment management plans.
- Provides sample procedures for other communities to identify equipment and methods of purchase.
- Provides a framework for intercommunity loan of sediment-moving equipment.
- Places the sediment movement operation in the context of inlet and offshore resources and processes.
- Develops stockpiling locations and sites for future sediment uses.

STATUS

This Corps RSM project team is working with representatives from the Town of Hempstead, state, and county to promote efficient sediment usage by:

- Providing technical expertise on coastal and inlet processes and documentation of all phases of the sand management operation.
- Implementing a seasonally phased construction approach that will allow for efficient recovery of excess material and will maximize the longevity of fill following placement. In this phased approach, beach scrappers will be used to recover sand off the beach face during accretive months. The recovered sand will be stockpiled above mean high water, near the borrow site and the designated placement location during the winter's high sand loss months. In spring, the stockpiled material will be placed into the high erosion area.
- Evaluating the volume of material available in the Jones Inlet flood tidal shoal, and the feasibility of using this material as a source for Hempstead. Present estimates of available sand volume from the ebb tidal shoal attachment area are 20,000 to 30,000 cu yd augmented by 4,500 cu yd currently stockpiled near the Jones Beach Coast Guard station, and an additional 2,000 cu yd from the City of Long Beach.

The New York District has completed a draft report documenting the Town of Hempstead's sand management practices. The draft report is currently under New York

District review. Benefits of this demonstration from the viewpoint of RSM include:

- Minimized use of offshore sand borrow sites, thereby extending the usage time of finite offshore resources, and minimizing environmental impacts to the offshore borrow sites.
- Minimized or eliminated use of upland sand sources (quarries), which reduces emergency fill costs and extends lifetime of upland sand resources.
- Extended storm-protective capabilities of the beach and recreational beach usage during multiyear intervals between navigational channel maintenance dredging operations.
- Enabled multiple uses of sediment already in the littoral system.
- Developed intercommunity and interagency working groups for sediment management issues.
- Increased predictability of resource use for town planners.
- Served as a model for other communities to develop sediment management plans.
- Provided sample procedures for other communities to use to identify equipment and methods of purchase.
- Provided a framework for intercommunity loan of sediment-moving equipment.
- Provided placement of the sediment movement operation in the context of inlet and offshore resources and processes.

- Developed stockpiling locations and sites for future sediment uses.

LESSONS LEARNED

This demonstration program has the potential for national applicability because many inlets in the United States share the downdrift signature of Jones Inlet.

KEY WORDS

Erosion, ebb-shoal, accretion, berm

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Figure 1. Jones Inlet, NY [back to text](#)