

Study Findings & Next Steps

The study concluded that the most significant resilience issues revolve around rising seas, drowning marshes, beach erosion, siltation and storm-related flooding.



Street flooding in Highlands

Dune creation and restoration, beach replenishment and installing off-shore wave attenuating features, such as oyster reefs or breakwaters, were selected to reduce erosion, like that which is impacting the base of the NWS Earle pier. Marsh restoration was proposed for several locations to limit future erosion and reduce upland impacts of flooding. Adding perimeter berms, planted with native maritime forest vegetation will create basins to help buffer surrounding development during times the marshes are holding excess floodwaters.

Further stormwater mitigation measures proposed in the plan included removing siltation from several creeks and marsh channels; installing more pump stations to direct excess flow into Sandy Hook Bay; and installing infrastructure improvements both along NJSH Route 36 and in Highlands Veterans Memorial Park to capture the runoff from the surrounding higher elevations.



Siltation in Many Mind Creek is inhibiting flow

Excerpt of the Ware Creek Concept Plan



While some resilience work has already begun, new funding opportunities and project leads are being sought to take additional concept plans through final design, permitting and implementation.



Windblown sand in Aberdeen

The complete Planning Study is available on the Monmouth County, NJ Division of Planning website at: VisitMonmouth.com

Invasive Phragmites overtaking the edges of the Flat Creek marsh



Veterans Memorial Park on Sandy Hook Bay



RARITAN/SANDY HOOK BAY COASTAL RESILIENCE PLANNING STUDY PROJECT OVERVIEW



Planning For Resilience in the NWS Earle Community

The Raritan/Sandy Hook Bay Coastal Resilience Planning Study (Study) continues the work of the 2017 Joint Land Use Study for Naval Weapons Station (NWS) Earle. The purpose of this Study was to select coastal resilience projects that could improve sustainability and resiliency from current and future coastal hazards and impacts of sea level rise for NWS Earle facilities, navi-

gational channels and mission; local US Army Corps of Engineers (USACE) projects; and the surrounding Bayshore municipalities.

The Study Area includes the entire Monmouth County southern Raritan/Sandy Hook Bayshore, north of NJ Route 36, between the western county boundary at Cliffwood Beach (Aberdeen Township) and Gateway National Sea-

shore—Sandy Hook Unit. The Study Area crosses eight municipalities: Aberdeen Township, Keyport Borough, Union Beach Borough, Hazlet Township, Keansburg Borough, Middletown Township, Atlantic Highlands Borough and Highlands Borough. The waterfront facilities of NWS Earle; USACE and Earle maintained navigational channels; and a number of proposed and exist-

ing USACE shore protection project sites are located within the Study Area.

The Study Project Team consisted of staff from the Monmouth County Division of Planning and the consulting firm of Michael Baker International, Inc. The study was funded through a grant from the Department of Defense, Office of Economic Adjust-

Study Area



RARITAN/SANDY HOOK BAY COASTAL RESILIENCE PLANNING STUDY

A Collaborative Effort

In order to build a collaborative atmosphere, the Monmouth County Division of Planning formed a Technical Advisory Committee (TAC) to assist in prioritizing sites, selecting suitable projects and informing concept plan development.

A wide variety of stakeholder groups were invited to participate. These included:

Monmouth County agencies, such as the Division of Public Works and Engineering, Office of Emergency Management, Mosquito Control Division, County Environmental Council, and the Park System; Federal agencies such as NWS Earle, US Army Corps of Engineers New York District, and New Jersey Sea Grant Consortium;

State representatives from groups within the NJ Department of Environmental Protection; the eight municipalities within the Study Area; representatives of local academia including Monmouth University and Rutgers University; and local non-profit and environmental groups with a related focus. The success of this study was directly

related to the impressive TAC members bringing their years of experience and invaluable insight to the table.

The Project Team engaged with the TAC throughout the study process and solicited their feedback through four TAC meetings, online interactive methods and e-mail.



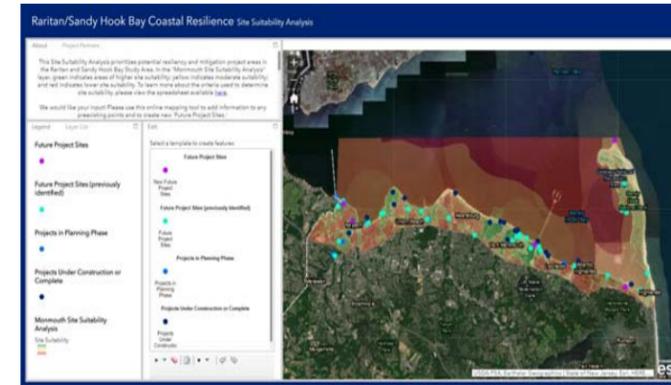
The Resilience Planning Process

The study process consisted of three phases: Data Collection, Site and Project Selection, and Concept Plan Development.

PHASE 1 - Data Collection

The Project Team reviewed the relative recommendations from the 2017 JLUS, assembled available background data, and prepared a draft list of priorities to be presented at the kick-off meeting in January 2019. TAC members participated in a mapping exercise to identify issues as well as ongoing, planned, or potential resilience projects within the Study Area. This information informed both site selection and project concepts. Having details of current projects, such as those being implemented by USACE, focused opportunities for compatible, complementary or extended projects, while an understanding of local issues

provided the starting point for new concepts. Data collection continued throughout the process and was a part of all subsequent TAC meetings.



Screen shot of the online priority selection tool

PHASE 2 - Site Selection

Suitability criteria crafted by the Project Team were unveiled during TAC Meeting #2, held in April 2019. The criteria ensured selected projects furthered the goals of JLUS and the operational mission of NWS Earle. Potential projects identified in Phase 1 were assessed using the criteria to determine basic suitability.

The Project Team presented an online priority site selection tool. All ongoing, planned, and potential projects identified were uploaded to the tool. Using an interactive mapping platform, TAC members were able to review the projects already incorporated and add more for inclusion in the analysis.

The results of the Site Suitability Analysis were revealed during TAC Meeting #3, held in June 2019. Together, the Project Team and TAC worked to combine highly-ranked and complementary projects into comprehensive coastal resilience solutions. This ultimately resulted in the identification of 11 resilience projects that moved forward to the concept plan stage.

PHASE 3 - Concept Plans

Complete concept packages included a resilience plan for each site; conceptual imagery for before and after comparisons; environmental constraints mapping to inform future permit needs; and lists of necessary materials with estimated quantities. An example for one site was presented at the June meeting for TAC members to offer feedback.

Concept plans were proposed for publicly owned lands. To offer the land owners/managers an opportunity for more in depth review and comment the Project Team held municipal specific meetings invit-

ing municipal TAC representatives, elected officials and key staff; the NWS Earle Community Plans and Liaison Officer; and County Park System and/or County Division of Engineering staff, as appropriate. In addition to further refining the plans, the Project Team was able to garner more information about local resilience issues and learn from other municipalities. Each participating municipality and the County Board of Recreation Commissioners adopted resolutions in support of the plan and the projects within their jurisdiction.



concept plans at this stage would require additional time to complete the study, it was deemed an important use of resources.

The last formal TAC meeting was held in October. The 11 concept plans were

Following a presentation in December, the Monmouth County Planning Board adopted a resolution at their January 2020 meeting accepting the final document on behalf of the County.

