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US Army Corps of Engineers
Philadelphia District

Public Notice

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In Reply Refer to: Environmental Resources Branch

MORDECAI ISLAND COASTAL WETLANDS RESTORATION PROJECT OCEAN COUNTY, NEW JERSEY

Pursuant to Section 404 of the Clean Water Act of 1977 and Section 10 of the Rivers and Harbors Act OF 1899, NOTICE IS HEREBY GIVEN that the Philadelphia District, U.S. Army Corps of Engineers (Corps) proposes the Mordecai Island Coastal Wetlands Restoration Project, Ocean County, New Jersey (Photo 1).

Mordecai Island has a topography composed of widespread areas of salt marsh and varying degrees of exposed sod or grass-covered slopes. The island's approximately 45 acres also support areas of common reed, bayberry, winged sumac, and eastern red cedar. Large areas of submerged aquatic vegetation, consisting primarily of eelgrass, are located off the southwestern edge of Mordecai Island.

The entire coastline of Mordecai Island has suffered from erosion; however, the western edge, adjacent to the New Jersey Intracoastal Waterway (NJIWW) navigation channel, has receded at a more substantial rate on the order of 3 - 6 ft. per year. Over the past 100 years, half the island has been lost through erosion. The navigation channel in its present position, running parallel to Mordecai Island at a distance of approximately 800 ft., was last dredged to a depth of 6 ft. in 1975.

Continued erosion (Photo 2) of Mordecai Island threatens an abundant diversity of natural wildlife habitats including open marsh, salt ponds, exposed mud flats, shrub-dominated areas and shallow water eelgrass beds. These habitats provide breeding, foraging, nesting and resting areas for many species of migratory birds, including shorebirds, wading birds, raptors and waterfowl. Over 20 species of birds have been observed on Mordecai Island. Two of these species, the American bittern and the black skimmer, are included on the New Jersey Department of Environmental Protection's (NJDEP) state endangered species list and the black-crowned night heron is considered threatened by NJDEP. In addition, Mordecai Island was designated as an Important Bird and Birding Area by the New Jersey Audubon Society in 2005. Furthermore, the widespread areas of eelgrass in the shallow tidal flats provide refuge for many young finfish and crustaceans. The continual erosion along the western edge of Mordecai Island threatens this rich diversity of natural habitats.

The main goal of the Mordecai Island Coastal Wetlands project is to preserve and protect Mordecai Island's diverse natural bird and marine habitats by stabilizing the shoreline and reducing future erosion. Since many of the finfish species found in the eelgrass are recreationally and commercially valuable, protecting their habitats would be both ecologically and economically important. Several shore protection measures were evaluated for erosion reduction of the western edge of Mordecai Island, and an offshore wave barrier was the selected plan.

Photo 1: Aerial Photo of Mordecai Island showing the close proximity of the Intracoastal Waterway and the breach in the island (October 2001).

Photo 2: Erosion on the shore of Mordecai Island (October 2001).

Since 2002, the Corps and one of the project's co-sponsors, Mordecai Land Trust, have been considering various alternatives to reduce the erosion to Mordecai Island. The no action alternative would allow the continued erosion of Mordecai Island. Over time, the size of the island and the available habitat on the island for wildlife would shrink. This option would not accomplish the project goals. Therefore, the following alternatives located on or near Mordecai Island were considered for the project:

- Articulated concrete
- Offshore wave barrier (breakwater)
- Geotube w/armor layer
- Vinyl sheet pile bulkhead
- Riprap revetment
- Biolog
- Wave absorbers
- Non-structural (no wake zone for boats)

Early coordination with the resource agencies (U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the New Jersey Department of Environmental Protection) resulted in the consensus that none of the harden structural alternatives would be acceptable and permissible from the agencies. Biologs would have a very short life span and could not adequately protect the island from wave erosion. Wave absorbers were also considered; however, they were deemed too experimental and they had no track record of performance in the field in an environment similar to that of Mordecai Island. Discussions will be initiated with the U.S. Coast Guard to pursue a no boat wake zone around Mordecai Island as part of the proposed solution to the wave erosion. This by itself would not solve the problem of the wave erosion on

Mordecai Island, but would prevent further acceleration of the problem. As a result of these early coordination meetings, the above listed alternatives were dismissed and only offshore wave barriers were considered as further viable alternatives. Table 1 summarizes the alternatives for this project

Table 1. Comparison of Alternatives for the Mordecai Island Restoration Project.

Alternative	Potential Issues / Support	Cost Estimates	Benefits	Conclusion
No Action	- Does not solve the problem.	$0	None	Not recommended.
Offshore Wave Barrier (breakwater)	-Requires deep borings and geotech analysis. -**Supported by resource agencies.**	$1800 /linear feet (l.f.).	- Reduce erosion to the island. - Can be used in deeper water - Durability: 20 years	Recommended.
Articulated Concrete	- Aesthetics - Environmental impact on island during construction. - Requires excavation of shoreline.	$650 - $1300 /l.f.	- Vegetation can grow in voids - Durability: 25 years	Not recommended.
Chevron Breakwater	- Possible boating hazard. -Large environmental footprint of structure.	$500 - $600 /l.f	-Allows littoral transport - Duration: 25+ years	Not recommended.
Geotube w/armor Layer	- Susceptible to debris/vandalism. - Environmental impact on shallow water habitat.	$150/l.f.	- Can be easily removed. - Beneficial use of dredged material. - Durability: 10+ years	Not recommended.
Vinyl Sheet Pile Bulkhead	- Possible wave reflection and scour. - Loss of transition habitat. - Environmental impact during construction.	$550 - $950 /l.f.	- Stops erosion directly to the island - Durability: 20 years	Not recommended.
Riprap Revetment	- Requires excavation of shoreline. - Environmental impact during construction.	$400/l.f	- Wave absorbing shoreline. - Durability: 15 years	Not recommended.
Biolog	- Short lifespan - Would not adequately protect island from wave erosion.	$10/l.f	- Biodegradable and low profile.	Not recommended.

To determine what type of wave barrier (breakwater) would be most effective at reducing erosion on Mordecai Island, a wave tank test of three wave barrier designs was conducted at the Davidson Laboratory of Stevens Institute in 2004. The preferred design (Figure 1) was the most effective design as it allowed less than 50% of the shortest waves and less than 70% of the longest waves to pass through the structure. These wave tank results indicate that the preferred design is 30% more effective than the Coastal Zone Management (CZM) regulation design. The preferred design is especially critical for shore protection, as it is desirable to achieve 80 to 90 % wave height reduction to reduce erosion. The preferred design was found to be 64% effective in wave reduction compared with 38% effective for the CZM regulation design.

In accordance with the National Environmental Policy Act, a Draft Environmental Assessment has been developed for this project. The Environmental Assessment concludes that the proposed action would not have a significant adverse impact on the environment. Therefore, a draft Finding of No Significant Impact has been prepared. The Environmental Assessment is being coordinated with the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the New Jersey Department of Environmental Protection.

In accordance with Section 401 of the Clean Water Act, Water Quality certification will be obtained from the New Jersey Department of Environmental Protection prior to construction of the Mordecai Island project. Based on the information gathered during the preparation of the Environmental Assessment, and the application of appropriate measures to minimize project impacts, it was determined in accordance with Section 307(C) of the Coastal Zone Management Act of 1972 that the plan complies with and can be conducted in a manner that is consistent with the approved Coastal Zone Management Program of New Jersey. A consistency determination from the New Jersey Department of Environmental Protection will be received prior to project construction.

The Environmental Assessment has shown that the proposed activity is not likely to jeopardize the continued existence of any species or the critical habitat of any fish, wildlife or plant, which is designated as endangered or threatened pursuant to Section 7 of the Endangered Species Act, as amended. Since there will be no discharge of fill into waters of the United States as a result of this project, a Section 404(b)(1) analysis under Section 404 of the Clean Water Act was not prepared for this project.

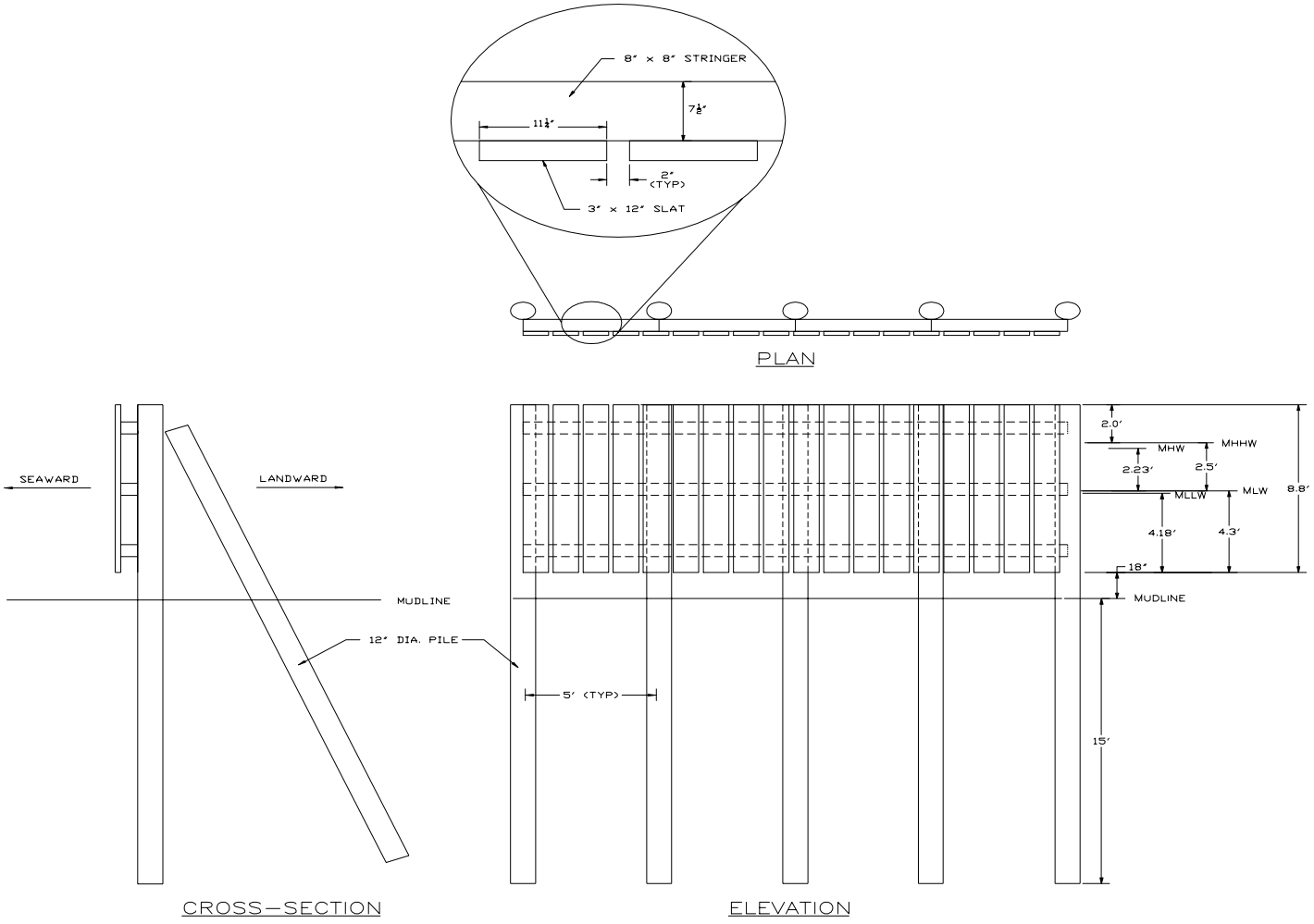

Figure 1. Preferred design: 3” x 12” slats separated by 2” gaps wave barrier.

In accordance with guidelines established under Section 106 of the National Historic Preservation Act of 1966, as amended, no impacts are anticipated to historic properties or other cultural resources. In a correspondence dated July 27, 2004 the New Jersey State Historic Preservation Office concurred with our findings that there are no historic properties within the project's area of potential effects.

The decision whether to accomplish the work proposed in this public notice will be based on an evaluation of the probable impact of the proposed work on the public interest. The decision will reflect the national concern for the protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonable foreseeable detriments. All factors, which may be relevant to the proposal, will be considered. Among those are conservation, fish and wildlife, general environmental concerns, economics, historic values, recreation, safety, water quality, aesthetics, and in general, the needs and welfare of the people.

The public and all agencies are invited to comment on this proposal. Copies of the draft Environmental Assessment are available upon request by calling Mr. Mark Eberle of the Environmental Resources Branch at (215) 656-6562. The public notice and Environmental Assessment are available for review on the Philadelphia District web page at www.nap.usace.army.mil.

Any person may request, in writing, to the District Engineer, within the comment period specified in this notice **(22 June 2006 through 22 July 2006)** that a public hearing be held to consider this proposal. Requests for a public hearing shall state, in detail, the reasons for holding a public hearing.

All comments on the work described in this public notice should be directed to Mr. Minas M. Arabatzis, ATTN: Environmental Resources Branch, U.S. Army Corps of Engineers, Wanamaker Building, 100 Penn Square East, Philadelphia, Pennsylvania 19107-3390 by **22 July 2006.**

for Charles P. MacIntosh
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