

**Montauk Point, New York
Hurricane and Storm Damage Reduction Study
Final Feasibility Report and Environmental Impact Statement**

REPORT SUMMARY

STUDY INFORMATION

Study Authority: The Montauk Point feasibility study was conducted under the authority of a resolution adopted by the Committee on Environment and Public Works of the U.S. Senate on May 15, 1991.

Resolved by the Committee on Environment and Public Works of the United States Senate, that the Secretary of the Army is hereby requested to review the report of the Chief of Engineers on Fire Island to Montauk Point, New York, published as House Document Number 86-425, 86th Congress, 2nd session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time, with a view to preserving, restoring, and protecting Montauk Point and vicinity, including the historic Montauk Lighthouse and associated facilities, from erosion, environmental degradation, and coastal storm damage.

A second resolution, also dated May 15, 1991 authorized the study of interim emergency protection works until a comprehensive project was formulated, designed and constructed:

Resolved by the Committee on Environment and Public Works of the United States Senate, that the Committee recognizes that unacceptable cultural and historic impacts would result from loss of historic property to structures in the vicinity of the Montauk Lighthouse, Montauk, New York and in recognition, the Secretary of the Army is requested to review the report of the Chief of Engineers on Fire Island to Montauk Point, New York, published as House Document Number 86-425, 86th Congress, 2nd session, and other pertinent reports, to determine what interim emergency protection works can be carried out to serve as protection for the lighthouse and bluff until a comprehensive study determines the best environmental, cultural and economical plan to enhance and protect this important resource.

Policy Exemption for Private Non-Profit Land Owner: The MHS is a private, non-profit association that is not part of any state or local government. This land is held open, for use by all on equal terms, regardless of origin or home area. Existing Corps policy (ER 1165-2-130, ER 1165-2-123) indicates that there is no Federal interest in protection of a property owned by a single private non-profit entity. However, although the MHS is clearly a single, private landowner, they must, by deed restriction and State charter, act as a public entity akin to agencies of State and local governments. The MHS must accomplish a public education mission to stay in operation, must follow Federal National Historic Preservation requirements for maintenance work, and membership and enjoyment of the benefits of the facility and educational programs are open to all, with no restriction, for a fee. Under the deed and charter, the MHS cannot structure and constrain uses of the property, nor can anyone who cares to join the MHS and enjoy the benefits of the facility and water resources project be excluded.

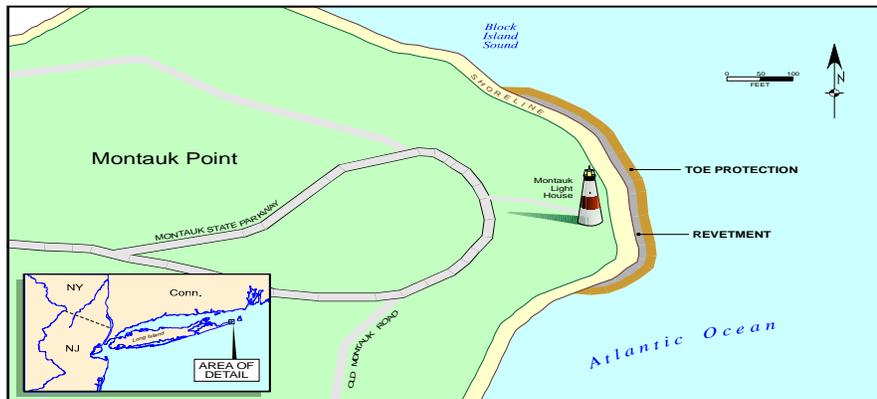
In light of these facts, a waiver to the single landowner policy from the Assistant Secretary of the Army (Civil Works) was granted on June 29, 2005, allowing the completion of the feasibility

study with a view towards pursuing a cost-shared construction project for Montauk Point, New York.

Study Sponsor: New York State Department of Environmental Conservation (NYSDEC).

Study Purpose and Scope: The purpose of this project is Hurricane and Storm Damage Reduction. The Feasibility Report is a complete decision document that provides the basis for recommending the potential implementation of a project.

Project Location/Congressional District: The study area is located at Montauk, in the Town of East Hampton, Suffolk County, New York, between the Atlantic Ocean and Block Island Sound at the easternmost end of the south fork of Long Island (see figure). The study area extends far enough southwest and northwest to fully evaluate downdrift effects, in order to prevent any adverse impacts, and make sure the project is environmentally sustainable. The critical area of study consists of the fronting bluff, covering about 900-feet of shoreline. The project protects the entire historic Montauk Point Lighthouse Complex situated on a 70-foot high bluff underlain with glacial till. The Congressional District is NY-01, Representative Timothy Bishop.



Prior Reports and Existing Water Projects: The following actions and reports have been undertaken or prepared with a goal of protecting the study area:

- 1946 A 700-foot stone revetment was constructed at the bluff toe, with vegetative plantings along the upper half of the cliff (New York District, 1944). This entire seawall has completely failed and is now 10 to 70-feet seaward of the existing bluff toe.
- 1960s Department of Transportation places rubble over the edge of the bluff just to the south of the lighthouse. After the October 1991 storm, the rubble slides down the slope, due to scouring of the bluff toe.
- 1971 The first terracing project is constructed along the bluff slope.
- 1972 U.S. Coast Guard places gabions along about 280 feet of the point above the failed 1946 seawall along the toe of the bluff. It is significantly damaged by the Halloween Storm of 1991.

- 1980s Additional terracing and beach grass plantings continue through the 1970s and 1980s. Terracing efforts subsequently deteriorate due to the impacts of major storms in the early 1990s.
- 1990 The Montauk Historical Society and the New York State Department of Parks and Recreation construct a revetment along Turtle Cove, south of the lighthouse. The revetment subsequently settles during the October 1991 storm and is no longer adequate as a shore protection structure.
- 1992 After severe erosion due to the Halloween Storm of 1991 (The Perfect Storm), a new revetment is constructed by the U.S. Coast Guard landward of the old revetment. An emergency construction effort commences along about 300 feet of shoreline. The Montauk Historical Society constructs a 150-foot long structure along the eastern section of Turtle Cove.
- 1993 US Army Corps of Engineers New York District Reconnaissance Report

Federal Interest: The purpose of the project is to ameliorate the adverse impacts associated with potential hurricane and storm damage to the Montauk Point Lighthouse, while preserving the cultural, historic and social fabric of the facility. The District's NED Plan will result in protection to the structure, while minimizing impacts to the human environment, as required by NEPA. In addition, the NED plan will meet the goals and objectives of many programs, statutes, and policies on an institutional, public, and technical level. The non-Federal sponsor, NYSDEC, supports the project and is willing to share the costs.

The total benefits of this project are \$1,580,000 and the annual costs are \$890,000, which results in a benefit to cost ratio of 1.8 to 1, with net benefits of \$690,000. With recreational benefits limited to be no more than the storm damage reduction benefits, the benefits are \$1,080,000 and the annual costs are \$890,000, which results in a BCR of 1.2 to 1 with net benefits of \$190,000.

STUDY OBJECTIVES

Problems and Opportunities: A review of records for the project area indicates approximately 200 feet of bluff face has eroded since the construction of the Lighthouse, which is currently less than 100 feet from the bluff face. In addition, two structures are even closer to the bluff's edge, the World War Two era constructed Fire Control Tower, is less than 50 feet from the edge of the bluff, and the concrete walkway for visitor access is less than 20 feet from the edge of the bluff (USACE 1993). Of the projects to control erosion problems at Montauk Point, only two are currently providing protection, terracing of the 1970s and 1980s and the 1990 and 1992 revetments.

In the absence of Federal action, the study area will be subject to continued erosion of the shoreline. Because the present shore protection measures were not designed to withstand major storm events over a substantial duration, i.e. lack of buried toe, inadequate stone size, insufficient overtopping protection, it is expected that the revetment now in place will fail in the foreseeable future. As a result of future projected revetment instability and subsequent bluff erosion, the historic structure, a functioning lighthouse, as well as the associated artifacts within the vicinity, will be in critical danger if a long-term protection plan is not implemented. Opportunities exist to complement, enhance and augment local efforts in a collaborative planning environment.

Planning Objectives: The following specific objectives were identified:

- Protect Montauk Point and vicinity, including the historic lighthouse and associated facilities from erosion, environmental degradation and coastal storm damage;
- Reduce the threat of future bluff instability by protecting against wave attack and erosion from ocean impacts;
- Provide an economically justified approach for bluff protection at Montauk Point;
- Prevent the aggravation of erosion in adjacent areas; and
- Maximize net benefits.

Planning Constraints: The formulation and evaluation of alternative plans was constrained by a variety of considerations including technical, economic, environmental, regional and social, and institutional constraints. Examples of institutional constraints include: an insistence by the State Historic Preservation Office that the lighthouse not be relocated; and the fact that there is a single private (non-profit) owner of most of the property involved, which is against Corps' policy for participation in providing protection.

ALTERNATIVES

Plan Formulation Rationale:

Plan formulation was accomplished in accordance with the Economic and Environmental Principals and Guidelines for Water and Related Land Resources Implementation studies and applicable regulations and laws. Each potential solution was evaluated with regard to engineering, economic, environmental and social criteria. Engineering criteria was based on a 50-year project life and period of analysis. The feasibility study formulated and designed long-term protection for the lighthouse complex and surrounding area. The plans should minimize the total cost of achieving a given level of design protection including investment, operations, maintenance, and replacement, and the overall economic impact on the surrounding area. Alternative plans were assessed and compared for acceptability based on overall ecosystem benefits and the potential impacts on the human environment. Public and interagency coordination has been conducted throughout the planning process. Criteria for evaluating preliminary alternatives also included appropriateness to site conditions and compliance with State and Local laws and ordinances including the New York State Coastal Zone Management criteria.

Key Assumptions: For this project, key assumptions include a 50-year project life, if left unprotected, the slope adjacent to the lighthouse will continue to erode, and the state and local interests will continue to repair damaged areas of the revetment to a low level of protection. The local interests can only afford to maintain the existing structure, due to the lack of funds necessary to provide for the full level of protection. In addition, the without project future condition includes failure of the existing revetment in the near future and direct storm damages to the lighthouse complex in 8 – 10 years. An estimate for sea level rise was included. Terracing and vegetative stabilization will continue. State and local interests only wanted to protect the lighthouse complex. Other areas of the State Park were not a concern for protection. The State did not want to address environmental restoration opportunities.

Management Measures and Alternative Plans: A range of structural and non-structural measures were examined and used to formulate six preliminary Alternative Plans. These plans were potentially economically and technically feasible, would meet the planning criteria and would not appear to have significant adverse effects on environmental and cultural resources were identified for further evaluation. The alternatives included:

- Alternative 1 - No Action Plan
- Alternative 2 - Stone Revetment
- Alternative 3 - Offshore Breakwater with Beach Fill
- Alternative 4 - T-groins with Beach Fill
- Alternative 5 - Beach Fill
- Alternative 6 - Relocation of the Lighthouse

Alternatives 2 through 4 were developed at the same storm design for comparative evaluation. They were designed to withstand a 73-year return period storm. This level of design is commensurate with a project evaluation over a 50-year period, because over 50 years there would be a 50% risk of a 73-year or greater storm event.

Based on the advantages and disadvantages of each of the alternatives discussed, including an evaluation of environmental quality, other social effects, regional economic development, and national economic development (see Table 1), as well as the estimated costs of construction and periodic nourishment required as well as benefits provided with the potential alternatives (see Table 2), the selected plan for protection of Montauk Point and the lighthouse complex and bluff is the stone revetment. The stone revetment alternative has the lowest annual cost and highest net benefits of the alternatives considered. Revetments are a proven method of shore protection in this area and have a record of acceptance by state and local agencies. In addition, by re-using some of the stone already on site in the existing structure, cost savings will be realized. Environmental impacts are insignificant as are impacts to fishing and surfing interests. Of the potential alternatives discussed above, the stone revetment alternative is the plan that maximizes net benefits.

Table 1: Plan Evaluation Matrix

	Environmental Quality	Other Social Effects	Regional Economic Development	National Economic Development
Alternative 1 - No Action Plan	-	-	-	-
Alternative 2 - Stone Revetment	0	0	+	+
Alternative 3 - Offshore breakwater with beach fill	-	-	+	-
Alternative 4 - T Groins with Beach Fill	-	-	+	-
Alternative 5 - Beach fill only	-	-	+	-
Alternative 6 - Relocation of Lighthouse	-	0	0	-
+ Indicates a net positive influence or effect				
0 Indicates no positive or negative effect				
- Indicates a net negative influence or effect				
The alternative plans have been evaluated based upon four accounts to facilitate plan selection.				
Based upon these evaluations the revetment alternative is the selected NED plan.				
The Environmental Quality account displays non-monetary effects on significant cultural and natural resources.				
The Other Social Effects account registers plan effects relevant to planning process but not captured in other three accounts.				
The Regional Economic Development account registers changes in regional economic activity.				
The National Economic Development account displays changes in economic value of national output of goods and services.				

Table 2: Preliminary Alternatives Construction Cost Estimate, Oct. 2004 Price Levels
 First & Annual Costs & Annual Benefits Summary – Selection of Alternatives

	Alternative #2 Stone Revetment	Alternative #3 Offshore Breakwater and Beach Fill	Alternative #4 T-Groins and Beach Fill
Total First Cost	\$14,840,000	\$14,480,000	\$12,090,000
Interest during Construction @5.375%	\$950,000	\$750,000	\$630,000
Total Investment Cost	\$15,790,000	\$15,230,000	\$12,720,000
Annualized Total Investment Cost Based on 50-year Design Life Annual Interest of 5.375%	\$920,000	\$880,000	\$740,000
Annualized Maintenance Cost	\$50,000	\$60,000	\$50,000
Annualized Periodic Nourishment Cost Based on 50-year design life Annual interest of 5.375% 100,000 cy nourishment every 3 years	Zero Cost	\$500,000	\$500,000
TOTAL ANNUAL COST	\$970,000	\$1,440,000	\$1,290,000
Total Annual Benefits*	\$1,580,000	\$1,580,000	\$1,580,000
TOTAL NET BENEFITS	\$610,000	\$140,000	\$290,000

* Alternatives #2 through #4 are developed at the same 73-year storm design. The benefits claimed are the same because each of the alternatives will protect the same land to the same degree, and each alternative avoids the same average annual project damages.

Other factors affecting the decision included construction of breakwaters would be particularly difficult to construct due to difficult site access and in-water construction. T-groins would be difficult to construct due to difficult site access, however, land-based equipment could be utilized. Protective beach fill would require renourishment at a rate that is difficult to predict until it is constructed and monitored. Beachfill would require placement of approximately 200,000 cubic yards sand and was not considered feasible for many reasons including, high longshore transport rates requiring constant renourishment, environmental impacts from frequent renourishment, potential adverse impacts to surfing interests, and lower reliability of providing the required protection. Moving the Lighthouse complex would have an adverse impact on the archaeological resources and compromise the integrity of the lighthouse and associated structures. In addition, the New York State Office of Parks, Recreation and Historic Preservation has objected to any alternative which would involve relocation of the lighthouse.

Final Array of Alternatives/Comparison of Alternatives: The final array of plans included the No-Action Plan and a range of sizes of protective stone revetment. The No Action Plan (no Federal action through the Corps of Engineers) would consist of a continuation of the without-project condition, which includes the eventual displacement of the existing revetment and subsequent erosion of the exposed bluff. If allowed to occur, progressive instability of the bluff would result in the irrecoverable loss of the lighthouse and its associated structures, along with archaeological resources. A riprap stone revetment was proposed for long-term erosion control. The plan consists of 840-feet of revetment protection. The protection covers the most vulnerable bluff area that would directly endanger the lighthouse complex due to bluff failure without the project. Because the no action plan does not meet the basic planning objectives of protecting the lighthouse complex, the selected plan is the stone revetment. The selected alternative was then sized, or economically optimized, to identify the NED Plan.

Three design variations in the selected revetment alternative were considered to economically optimize the construction cost relative to the economic benefits (provide the greatest net economic benefits): a 150-year storm design; a 73-year storm design; and a 15-year storm design (see Table 3). Table 4 summarizes the National Economic Development (NED) Plan Selection of Alternative 2B. The 73-year design is the NED plan because it has the greatest net benefits (Line 6). All recreation benefits (Line 2) are included in the total benefits, total net benefits and final BCR (lines 8, 9 and 10) because the criterion for Federal participation with limited recreation benefits has been met. Based on maximum net excess benefits, the selected plan consists of the construction of a stone revetment with a 73-year storm design.

Table 3: Stone Revetment – Construction Cost Estimates for 3 Alternatives, Oct. 2004 PL

	Alternative #2A 150-year protection	Alternative #2B 73-year protection	Alternative #2C 15-year protection
Total First Cost	\$ 16,000,000	\$13,720,000	\$5,800,000
Total Annual Cost	\$1,050,000	\$890,000	\$520,000

Table 4: NED Plan Selection (Oct 2004 PL, 5.375% discount rate)

Description	15 yr Storm Design	73 yr Storm Design	150 yr Storm Design
1. Annual Storm Damage Benefits	\$210,000	\$540,000	\$560,000
2. Annual Recreation Benefits	\$550,000	\$1,040,000	\$1,060,000
3. Annual Recreation Benefits used for Project Justification	\$210,000	\$540,000	\$560,000
4. Total Benefits used for Project Justification	\$430,000	\$1,080,000	\$1,130,000
5. Annual Costs	\$530,000	\$890,000	\$1,050,000
6. Net Benefits	-\$100,000	\$190,000	\$80,000
7. BCR	0.8	1.2	1.1
8. Total Benefits		\$1,580,000	
9. Total Net Benefits		\$690,000	
10 Final BCR		1.8	

Recommended Plan: The recommended plan is a long term comprehensive revetment project with a 73-year storm design, which consists of the following improvements:

- Stone revetment, 840-feet in length, with a crest width of 40-feet at elevation +25 feet NGVD, and 1V:2H side slopes.
- 12.6-ton quarystone armor units extending from the crest down to embedded toe.
- Three layers of 4-5 ton armor units are used atop the splash apron. It is assumed that some of the stones in the existing structure can be re-used in the proposed revetment.

- The bottom of the armor stone layer in the toe would be located at a depth of 12-feet below the existing bottom.
- A heavily embedded toe is incorporated to protect against breaking waves, provide long-term stone stability, and prevent scour at the toe of the structure. Stone sub-layers are specified in accordance with standard Corps design procedures.

Systems/Watershed Context: The recommended plan, construction of a stone revetment, is consistent with the Fire Island to Montauk Point reformulation project sediment budget modeling and will not impact the results of that study. The goals of both that study and this project are consistent and include protection of historic and cultural resources. The recommended plan is the National Economic Development Plan and satisfies the Environmental Quality requirements. In addition, this feature is consistent with existing recreation purposes, such as fishing, surfing and sightseeing as well as the regional economic development requirements.

Environmental Operating Principles: The Montauk Point project is consistent with the Environmental Operating Principles (EOP). The construction of the revetment will have temporary impacts to the environment, but in the long-term, the construction will stabilize the area and provide benefits to the environment. For example, the new revetment will provide attachment surfaces for sessile invertebrate epifauna, which in turn will become a food source for motile vertebrate and invertebrate predators.

The New York District has held three formal public meetings and an additional four interagency and user group meetings in order to actively listen to the concerns of the public and interested parties. Frequent discussions took place with NYSDEC, the non-Federal sponsor.

The purpose of this hurricane and storm damage reduction project is to make sure the Montauk Point area is stable at a minimum throughout the life of the project. The plan for the revetment balances the need for protection of the Lighthouse and associated cultural and historical artifacts, while ensuring that the impact of the new revetment is minimized. Minimizing the impacts of the project include constructing the project on the existing project site, reuse of stone on site, construction during periods of low fish, wildlife and other biotic activity and the use of Best Management Practices during construction.

Independent Technical Review: The technical review was accomplished for this study by an independent team of district personnel, which was not associated with the project/product team. Numerous editorial and miscellaneous comments were addressed regarding the consistency of economic data throughout the text, the real estate and other project costs, contingencies, benefits, and price level.

The feasibility report was also reviewed by Philadelphia District staff as part of the **HSDPCx** and they support the technical analyses and the report recommendations. Lastly, discussions were held with NAD and HQ during preparation of the Feasibility Report to identify and resolve policy compliance review concerns.

EXPECTED PROJECT PERFORMANCE

Project First Costs:

TABLE 5
MONTAUK POINT HURRICANE AND STORM DAMAGE REDUCTION PROJECT
October 2004 Price Level

Construction Item	Cost
Seawall and Revetment	\$12,020,000
Lands & Damages	\$30,000*
Engineering and Design	\$630,000
Construction Management	\$1,040,000
Total Project Construction Costs	\$13,720,000

**Acct 01 – although the value of easements to be obtained are \$0, Administrative and incidental costs associated with easements to be obtained are estimated to be \$30k.*

Equivalent Annual Benefits and Costs:

TABLE 6
October 2004 Price Level, 50-Year Period of Analysis, 5.375% and 7% Discount Rate

<u>Investment Costs:</u>	
Total Project Construction Costs	\$13,720,000
Interest During Construction	\$710,000
Total Investment Cost	\$14,440,000
<u>Average Annual Costs:</u>	
Interest and Amortization of Initial Investment (additional annual amounts, if applicable)	\$840,000
OMRR&R	\$50,000
Total Average Annual Costs	\$890,000
Average Annual Benefits	\$1,580,000
Net Annual Benefits	\$690,000
Benefit-Cost Ratio	1.8
Benefit-Cost Ratio (computed at 7%)	1.3

Cost Sharing: The cost apportionment between Federal and non-Federal total first cost of the selected plan is shown in Table 7. If the protected area uses are deemed as recreational, Federal participation in projects are 50 percent of the estimated total project first costs, including LERRDs assigned to this purpose. This distribution of costs applies to project implementation, which includes PED phase and construction phase. The overall cost-sharing for this project is 50% Federal and 50% Non-Federal (see Table 7).

Table 7
Cost Apportionment

	<u>Cost-Shared Items</u>		<u>Total Cost</u>
	<u>Federal Share 50%</u>	<u>Non-Federal Share 50%</u>	
Cash Contribution	\$6,860,000	\$6,830,000	\$13,690,000
Real Estate Lands & Damages*	\$0	\$30,000	\$30,000
Total First Cost	\$6,860,000	\$6,860,000	\$13,720,000

	<u>Non Cost-Shared Items</u>		<u>Total Cost</u>
	<u>Federal Share 0%</u>	<u>Non-Federal Share 100%</u>	
Annual Revetment Maintenance	\$0	\$50,000	\$50,000

* Value of easements to be obtained are \$0. Administrative and incidental costs associated with easements to be obtained are estimated to be \$30k.

Project Implementation: The project sponsor, the New York State Department of Environmental Conservation (NYSDEC), the Montauk Historical Society, and the New York State Office of Parks, Recreation, and Historic Preservation are in full support of the selected plan of improvement. There is strong local, public and Congressional support for the project. The project sponsor is prepared to execute a Design Agreement.

The project sponsor shall be required to comply with all applicable Federal laws and policies and other requirements. A fully coordinated Project Cooperation Agreement (PCA) package (to include sponsor's financing plan) will be prepared subsequent to the approval of the feasibility phase. The non-Federal sponsor has indicated support of the recommendations presented in this Feasibility Report and the desire to execute a PCA for the recommend plan.

Operation, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R): An Operations and Maintenance Manual will be developed prior to construction, which will detail the local operations of the proposed project. The sponsor will be responsible for Operation and Inspection of the project to insure the proper functioning of all features including the structures incorporated into the shore protection project (such as, but not limited to, groins, revetments, seawalls, bulkheads, breakwaters, closure structures, and sand bypassing systems) prior to the storm season, immediately following each major storm, and otherwise at intervals not exceeding 90 days.

All ongoing maintenance will be the responsibility of the sponsor. The possibility of one coastal storm closely following another requires that coastal structures, particularly those, which provide storm protection, be maintained to the extent practicable in a state of readiness. Measures to eliminate unauthorized encroachments and to effect repairs found necessary by inspection shall be undertaken immediately. All repairs shall be accomplished by methods acceptable to the District Commander or an authorized representative.

Key Social and Environmental Factors: An Environmental Impact Statement (EIS) has been completed for this project. The proposed work will have no significant impact on the quality of the environment in the project area. Most impacts associated with this project will be temporary, and none of the impacts are regarded as significant. Implementation of the revetment is expected to result in significant benefits to the existing topography by stabilizing the bluff and shoreline.

The construction of the project would result in certain unavoidable adverse impacts on the environmental resources located within the project area. Temporary and localized adverse environmental effects that may occur during construction include: an increase in traffic, an increase in noise levels due to construction equipment, an increase of turbidity and sedimentation into water resources during construction, loss of less mobile wildlife including shellfish and other benthic organisms, and disruption of aesthetic, visual, and recreational resources.

However, implementation of the project is expected to generate numerous long-term beneficial impacts that would offset temporary adverse environmental impacts. These long-term beneficial impacts include the protection of the most vulnerable portion of the bluff area from failure, offering protection to the Turtle Hill plateau, the Lighthouse and associated structures, and other historically important resources. This protection would provide long-term protection to the socioeconomics of the area through the preservation the aesthetic, visual, historic, and recreational appeal that the project area currently offers. In addition, implementation of the project is expected to offer some protection from southeast wave attack to valuable interdunal pond communities that exist along the northern shore of Montauk Point.

Stakeholder Perspectives and Differences: Construction of the project would result in short-term, direct impacts to recreational uses, such as use of pedestrian trails and the revetment for recreational fishing, by temporarily limiting and/or blocking access to the beachfront and the existing revetment. These short-term, direct impacts would primarily affect recreational fishing because surfcasting from the existing revetment is a popular activity at Montauk Point. As a result of this potential impact, the District has coordinated with the Montauk Surfcasters Association and the New York Sport Fishing Federation to develop a plan that would minimize impacts on access to the revetment by fishermen during construction and enhance access after construction. The District has developed a construction schedule that will allow fishermen limited access to the revetment area during the initial stages of construction. Both organizations understand the importance of ensuring that there is a strong, stable, and long-lasting revetment wall at Montauk Point and offered their full support of the project. Access impacts during construction would be reduced by allowing limited access to the current revetment for fishing during the construction period to the maximum extent practicable, without causing a safety hazard. By initiating construction on the south end of the revetment while having a delayed construction start date on the north end of the revetment, a few additional months of access to the revetment by fishermen would be possible. However, eventually the entire revetment and staging areas immediately adjacent to the northern and southern ends of the revetment would need to be closed to the public for about 21 months. During this time, fishermen would still be able to fish from the adjacent beach areas.

The Surfrider Foundation, Long Island Chapter, raised concerns regarding the impact of the proposed project on recreational surfing. In response to the Surfrider Foundation's concerns, the District performed an analysis to determine the potential effect of implementation of the proposed project on offshore waves. The results determined that the wave reflection coefficient for the existing revetment ranged from 0.30 to 0.33, whereas the reflection coefficient for the proposed revetment would range from 0.25 to 0.28, an approximate 15 percent reduction from that of the existing revetment. This reduction is due to the milder front slope, the greater porosity of the cap stone layer, and the replaced 1946 stone at the toe of the proposed revetment. The analysis shows that from a coastal engineering perspective, the negative effects of the reflected waves would be slightly less with the proposed revetment alternative. The District believes that implementation of the proposed project would have little to no perceptible impact on the quality or surfability of the waves in the offshore waters of Montauk Point.

Several commenters, including The Nature Conservancy, have questioned whether the project would have an impact on the FIMP Reformulation Study because of downdrift changes to coastal and littoral processes. We have prepared responses that explain that long-term impacts due to the proposed project are small, essentially continuing the effects of the existing revetment. An equally small increase in erosion downdrift, which rapidly diminishes in a westerly direction on both the north and south shores would have an insignificant effect on the environment and no effect on the formulation of plans for the FIMP project.