MONTAUK POINT, NEW YORK

Hurricane Sandy Limited Reevaluation Report

FINAL – December 2016 (updated March 2017)

US Army Corps of Engineers
New York District

Hurricane Sandy Limited Reevaluation Report (HSLRR)

and Environmental Assessment (EA)

Montauk Point, New York

Final HSLRR – December 2016 (updated March 2017)

Prepared by

U.S. Army Corps of Engineers

New York District

& New England District

EXECUTIVE SUMMARY

This Hurricane Sandy Limited Reevaluation Report (HSLRR) updates the Final Feasibility Report and Environmental Impact Statement completed in 2005.

The Report of the Chief of Engineers was released in 2006 and the project was authorized for construction by the Water Resources Development Act (WRDA) of 2007 P.L.110–114:

> TITLE I - WATER RESOURCES PROJECTS, SEC. 1001. PROJECT AUTHORIZATIONS. Except as otherwise provided in this section, the following projects for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plans, and subject to the conditions, described in the respective reports designated in this section: …(36) MONTAUK POINT, NEW YORK.—The project for hurricane and storm damage reduction, Montauk Point, New York: Report of the Chief of Engineers dated March 31, 2006, at a total cost of $14,600,000, with an estimated Federal cost of $7,300,000 and an estimated non-Federal cost of $7,300,000.

The authorized project consists of 840 feet of revetment, designed to a 1.4% (73-year) storm event to reduce risk to the historic lighthouse complex from damage due to bluff failure. The project also provides reduction of risk to the various cultural resources associated with the lighthouse complex and stability to the natural environment which would support the continued use of the area as a recreational destination. The project provides reduction of risk to the most vulnerable portion of the bluff that would directly endanger the lighthouse complex should it fail.

In response to the 2012 Sandy event, Public Law (P.L.) 113-2, the Disaster Relief Appropriations Act of 2013 will provide funds to complete the authorized but unconstructed project at Montauk Point, New York.

The non-Federal sponsor for this project is the New York State Department of Environmental Conservation (NYSDEC).

The project area is located in Suffolk County, New York in the town of East Hampton. The site is at the easternmost end of the south fork of Long Island on the Atlantic Ocean. The study area includes the entire historic Montauk Point Lighthouse complex situated on a high bluff underlain with glacial till. The top of the bluff is at elevation 65 feet NAVD88[1].

[1] North American Vertical Datum of 1988

The Lighthouse is a National Historic Landmark. The lighthouse is the focal point of the historic complex and surrounding facilities and is a junction marker for ships headed for New York Harbor or Long Island Sound. The Lighthouse complex consists of the Lighthouse Tower and Keeper's House, the Fire Control Tower, and Garage, which was an earlier Keeper's House. The archaeological sites associated with the lighthouse and bluff are also part of the complex.

The Montauk Historical Society, a nonprofit 501(c)(3) organization operates and owns the property and is dedicated to the protection, preservation and educational development of this nationally significant historic site. Through programs, exhibits, publications and special events, the story of this site is conveyed to the public. Membership in the Montauk Historical Society and visitation to the lighthouse is fee based and open to all without any discrimination. Fees help maintain the properties and overall operation.

The lighthouse complex/bluff is located adjacent to the Montauk Point, State Park (New York) and is primarily used by fishermen, surfers, and sightseers. Turtle Cove, a popular surf casting and surfing beach is located to the south of the lighthouse complex.

In August 2013, USACE, New York District completed a post-Hurricane Sandy assessment of the existing Montauk Point revetment to review existing site conditions and determine if refinements to the 2005 feasibility level design might be advisable. USACE found that, regardless of continuous maintenance/repair activity, the existing stone structure is continuing to degrade and is inadequate to provide long term reduction of risk to the bluff. Some of the deficiencies noted included partial collapse of the revetment due to overtopping, movement down-slope of material, gradual loss of interlocking of armor stones, water seepage along the south shore, and splitting of poor quality armor stone. Degradation of the revetment will continue and possibly accelerate in the future without the authorized project. Observations confirmed the need for the construction of the proposed Montauk Point revetment to reduce risk to the historic lighthouse complex and associated cultural and recreational resources.

This study reviewed the 2005 Feasibility Report revetment project design as to the ability to meet performance requirements of the authorized project, relative sea level change (RSLC), constructability, cost, and project environmental review update, as well as specific requirements pursuant to P.L. 113-2. Generally, this review confirmed the adequacy of the 2005 feasibility level design, and recommended some design refinements. The revetment project proposed to be constructed is the same as the authorized project at a length of 840 feet and designed for a 1.4% (73-year) storm event.

The most significant design refinements made to the 2005 design included modifications to the cross-section to include a wider, lower structure crest and a toe berm feature instead of a buried toe to improve constructability. The toe berm may be available for future maintenance depending on the amount of adjustment it undergoes over time. This cross-section allows for

less removal of the existing structure during construction, and less new stone for construction. The toe berm results in a significant reduction in the amount of excavation that is required in comparison to what would have been necessary for a buried toe. Based upon updated coastal analysis, including the consideration of relative sea level rise considerations, the stone size has been increased from 12.5 tons to 15 tons, which improves the sustainability of the project with relatively minor impacts on cost.

PROJECT PERTINENT DATA

Project Features. The proposed 840 ft. long stone revetment project consists of 15-ton armor stone overlain on the existing 5-10 ton stone revetment. The revetment slopes up from the toe at a 2:1 slope until elevation +10 ft. NAVD88, at which point there will be a 12 ft. wide bench. From there, the revetment continues at a 2:1 slope until reaching elevation +21 ft. NAVD88. The top bench at +21 ft. NAVD88 will be approximately 30 ft. wide. The final element is a stone splash apron to +25 ft. NAVD88 and consists of 1-2 ton stone underlain by a geo-textile fabric. Planting will stabilize the slope above the splash apron. The project will take about 18 months to construct.

Project Costs. The project first cost is estimated at **$22,885,000 (FY 2017 price level)**.

The fully funded cost is estimated at $23,816,000, escalated to the midpoint of construction of November 2018, and will serve as the basis for the Project Partnership Agreement (PPA).

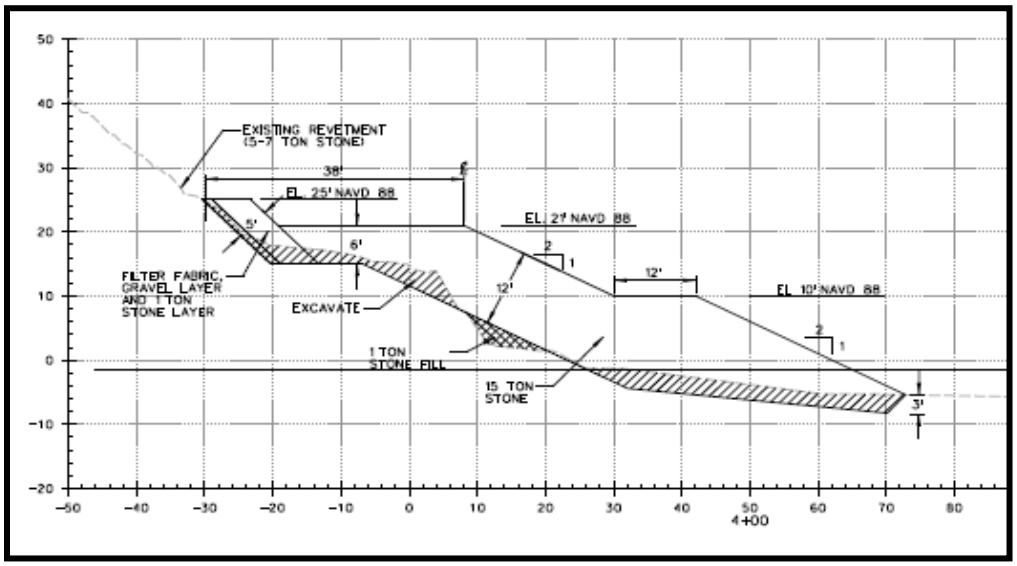
Project cost-sharing (fully funded) is 65% Federal ($15,480,000) and 35% non-Federal ($8,336,000)

Operation, Maintenance, Rehabilitation, Repair and Replacement **(OMRRR) is estimated at an annual cost of $58,900 and is a 100% non-Federal cost.**

Project Benefit-to-Cost Ratio. The economic reevaluation demonstrates that the project remains economically justified with a project **benefit-to-cost ratio (BCR) of 1.4 to 1 @ 2.875% (FY 2017 price level**), with recreational benefits not exceeding coastal storm risk management benefits, and a total BCR of 2.3 to 1 when accounting for full recreation benefits.

Real Estate. Requirements for the HSLRR include acquisition of Bank Protection permanent easements (1.96 acres) and Temporary work area easements (2.6 acres). **The non-Federal sponsor is responsible for providing the required real estate.**

Environmental Compliance. Environmental review and State and Federal regulatory compliance has been updated for the proposed project and the proposed project meets environmental requirements. (See Attached Final Environmental Assessment.) **No long-term significant impacts to the environment were identified. Only temporary, minimal impacts would occur during the construction phase of the project.**



HSLRR revetment typical cross section

Parameter	2017 HSLRR
Construction Approach	**Build Over Existing Revetment, Remove Poor Stone**
Armor Stone Size	**15 Ton Stone, 2 Layers (49,000 tons)**
Splash Apron	**1-2 Ton Stone**
Toe	**Partial Buried Toe (15 Ton Stone)**
Bottom of Toe	**Excavate to approx -6 ft. NAVD88 (4,200 cy)**
Toe "Bench"	**10 ft. NAVD88, 12ft. Wide**
Constructability	**Minor Toe Excavation. Bench Provides Access.**
Reuse Existing Materials	**Build Over Existing Revetment**
Revetment at -1.57 ft. NAVD88 (MLLW)	**HSLRR Revetment is 38 ft. Seaward of Current Revetment at MLLW**

Economics

Project First Cost*.....$22,885,000
Fully Funded Cost (fully funded to mid-point of construction)** $23,816,000
Average Annual Cost***.....$946,000
Total Annual NED Benefits $1,322,000
Net NED benefits.....$376,000
Benefit to Cost Ratio.....1.4
* Estimates based on FY17 price level
** Midpoint of construction FY19 1st Quarter
*** Annualized over 50 year period; FY17 Federal Discount rate of 2.875 %

Cost Apportionment

2017 HSLRR - Project First Cost FY17				
Item	**Comment**	**Federal ($000)**	**Non-Federal ($000)**	**Total ($000)**
PED	Funded initially by Sandy Appropriations	$1,287		$1,287
S&A		$1,791		$1,791
Construction Costs		$19,632		$19,632
Real Estate Costs		$34	$140	$174
Total		**$22,745**	**$140**	**$22,885**
		Project Cost Sharing (First Cost)		
		65% Federal ($000)	**35% Non-Federal ($000)**	**Total ($000)**
		$14,875	**$8,010**	**$22,885**

The fully funded cost is estimated at $23,816,000, escalated to the midpoint of construction of November 2018, and will serve as the basis for the Project Partnership Agreement (PPA).

Project cost-sharing for the PPA is 65% Federal ($15,480,000) and 35% non-Federal ($8,336,000).

Operation, Maintenance, Rehabilitation, Repair and Replacement (OMRRR) is estimated at an annual cost of $58,900 and a 100% non-Federal cost.

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

The Final Report of the Chief of Engineers on the Montauk Point, New York, Hurricane & Storm Damage Reduction Project was provided to Congress on March 31, 2006 and the project was authorized in WRDA 2007 P.L.110–114:

> TITLE I - WATER RESOURCES PROJECTS SEC.1001. PROJECT AUTHORIZATIONS. Except as otherwise provided in this section, the following projects for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plans, and subject to the conditions, described in the respective reports designated in this section: …(36) MONTAUK POINT, NEW YORK.—The project for hurricane and storm damage reduction, Montauk Point, New York: Report of the Chief of Engineers dated March 31, 2006, at a total cost of $14,600,000, with an estimated Federal cost of $7,300,000 and an estimated non-Federal cost of $7,300,000.

The authorized project entails the placement of an 840 ft. long stone revetment (replacing the existing revetment) to cover the most critically eroding area of Montauk Point in order to avoid the eventual total loss of the irreplaceable historic lighthouse complex.

As a consequence of Hurricane Sandy in October 2012, Congress passed P.L. 113-2, the "Disaster Relief Appropriations Act, 2013", which authorized supplemental appropriations to Federal agencies for expenses related to the consequences of Hurricane Sandy. Chapter 4 of the law identifies those actions directed by Congress specific to US Army Corps of Engineers (USACE), including preparation of two interim reports to Congress, a project performance evaluation report, and a comprehensive study to address the flood risks of vulnerable coastal populations in areas affected by Hurricane Sandy within the boundaries of the North Atlantic Division of the USACE.

The May 2013 Interim Report to Congress specifically identified the Montauk Point project in the list of "authorized but unconstructed" projects and the Montauk Point project is the subject of this HSLRR. The "Disaster Relief Appropriations Act, 2013" will provide funds to complete the authorized but unconstructed project.

The Montauk Point Lighthouse is located on an eroding bluff at the eastern tip of Long Island in the Town of East Hampton, Suffolk County, New York. See Figure 1. Due to erosion of the bluff, the lighthouse is less than 120 ft. from the edge of the bluff. Continued erosion has been

recognized as a problem for many decades and various efforts have been made to stabilize the shoreline, with limited success.

The Montauk Point Lighthouse was designated as a National Landmark in March 2012. The lighthouse was commissioned by President Washington and completed in 1796. It has served as an important navigation aid for the first land encountered by ships heading for New York Harbor and Long Island Sound, as well as other eastern seaboard ports. The lighthouse continues to operate as a navigation aid with a marine rotating beacon and fog signal.

Figure 1. <u>Project Location Map</u>

The lighthouse complex is owned and operated by the Montauk Historical Society, a nonprofit 501(c)(3) organization. The Montauk Historical Society is dedicated to the protection, preservation, and educational development of this nationally significant historic site. Membership in the Montauk Historical Society and visitation to the lighthouse is fee based and open to all without any discrimination. Fees help maintain the properties and overall operation.

Erosion of the coastal bluff at Montauk Point has been recognized as a problem for many decades. There is a long history of erosion control activities constructed by both governmental and non-governmental agencies from 1946[2] to the most recent efforts in the 1990s. See Figure 2. The erosion control measures, including the existing revetment, are inadequate for long-term reduction of risk against waves and water levels.

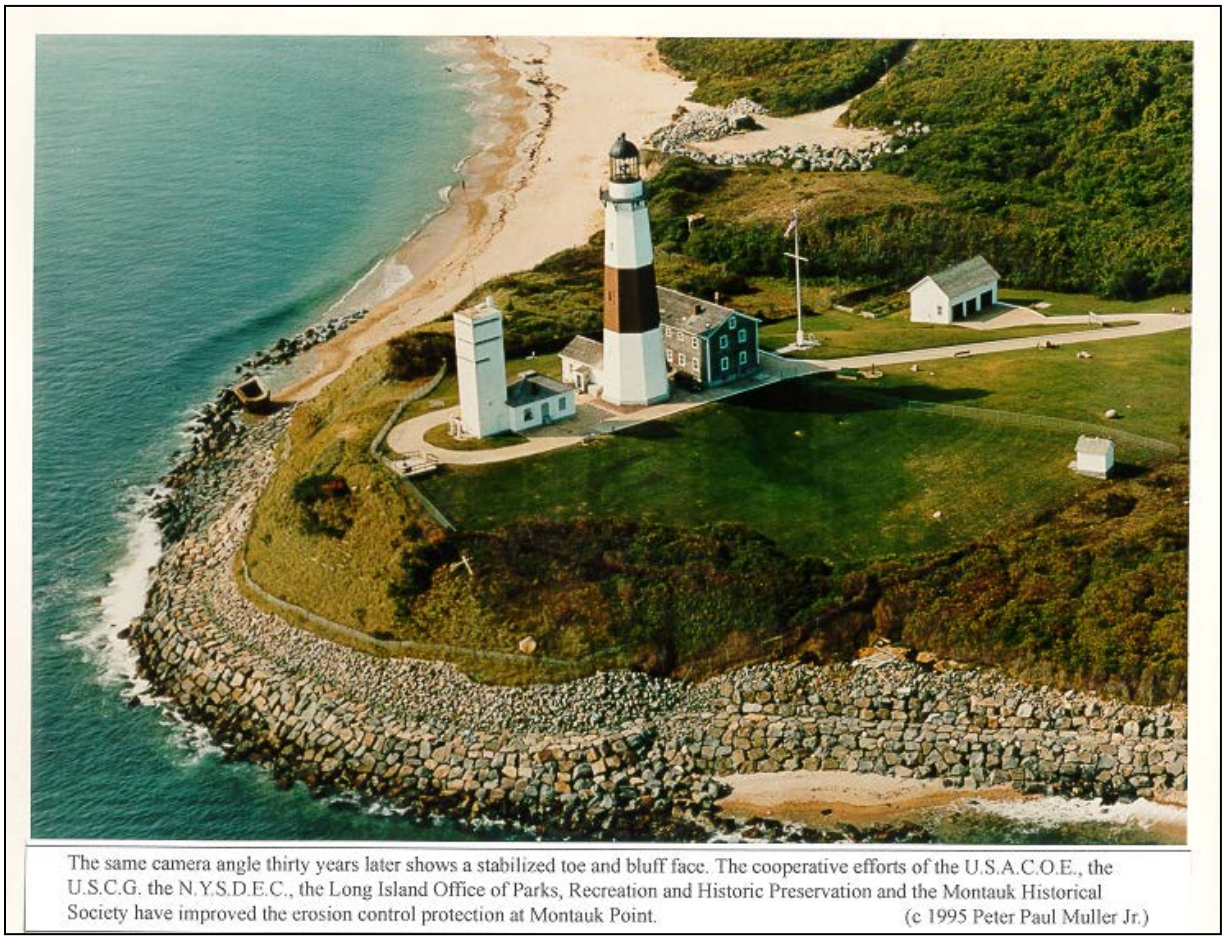


Figure 2. <u>Montauk Lighthouse, associated grounds, and revetment circa 1995</u>

[2] A 700 ft. revetment was installed in 1946 by the Army Corps of Engineers. This revetment eventually failed and was replaced by a 300 ft. revetment constructed by the Coast Guard in 1991. This revetment was augmented by a 150 ft. long revetment completed by Montauk Historical Society on both ends of the Coast Guard revetment in 1992. Since 1992, the Montauk Historical Society has conducted periodic repairs to the revetment as the existing revetment continues to degrade due to storm damage.

1.2 PURPOSE AND SCOPE OF HSLRR

This HSLRR and attached Environmental Assessment (EA) have been prepared to provide information in support of the construction of the authorized but unconstructed Montauk Point, New York, Coastal Storm Risk Management (formerly known as Hurricane and Shore Protection) Project.

Specifically, the HSLRR and EA provide:

1. Engineering review and refinements, economic review, and environmental review of the project to demonstrate that the project remains economically justified, technically feasible, and environmentally acceptable.

2. The costs and cost-sharing to support a Project Partnership Agreement (PPA) for construction of the project.

3. Acknowledgement of the changes in the applicability of Section 902 of WRDA 1986, as amended.

4. Information to demonstrate project resiliency, sustainability, and consistency with the North Atlantic Coast Comprehensive Study.

2. AUTHORIZED PROJECT

2.1 Authorization History

The Final Report of the USACE Chief of Engineers (Chief's Report) on the Montauk Point, New York, and Hurricane & Storm Damage Reduction Project was provided to Congress on March 31, 2006 and the project was authorized in Water Resources Development Act of 2007. The New York District (NAN) is the lead Federal agency for the project, and the New York State Department of Environmental Conservation (NYSDEC) is the non-Federal sponsor agency.

The 2006 Chief's Report and the project authorization are based on the Final Montauk Point Storm Damage Reduction Feasibility Report and Environmental Impact Statement (FS/EIS), October 2005. This report was prepared under the authority of a resolution adopted by the Committee on Environment and Public Works of the U.S. Senate on May 15, 1991. A second resolution, also dated May 15, 1991, authorized the study of interim emergency risk reduction works until a comprehensive project was formulated, designed and constructed.

2.2 Project Area

The project area is located in Suffolk County, New York, between the Atlantic Ocean and Block Island Sound at the easternmost end of the south fork of Long Island. Montauk is in the Town of East Hampton. The study area includes the entire historic Montauk Point Lighthouse complex situated on a high bluff underlain with glacial till. The lighthouse is the focal point of the historic complex and surrounding facilities. The complex consists of the Lighthouse Tower and Keeper's House, the Fire Control Tower, the Garage, which was an earlier Keeper's House, and archaeological sites associated with the Lighthouse and Montauk Point. The lighthouse complex is located adjacent to the Montauk Point State Park. Turtle Cove, a popular surf casting and surfing beach, is located south of the lighthouse.

2.3 Lighthouse Ownership

The ownership of the lighthouse and associated property was transferred from the U.S. Coast Guard to the Montauk Historical Society, a nonprofit 501(c)(3) organization, on September 30, 1996. Surrounding property is owned by the State of New York and the Town of East Hampton. The Historical Society's continued ownership of the lighthouse complex is subject to the condition to maintain the Montauk Light Station in accordance with the provisions of the National Historic Preservation Act of 1966, amended (16 U.S.C. 470 et seq.) and other applicable laws. All rights, title, and interest would revert to the United States if the Montauk Light Station ceases to be maintained in accordance with the National Historic Preservation Act as a nonprofit center for public benefit for interpretation and preservation of the material culture

of the United States Coast Guard, maritime history of Montauk, and Native American and colonial history.

The Montauk Historical Society is dedicated to the protection, preservation, and educational development of this nationally significant historic site. Through programs, exhibits, publications and special events, the story of this site is conveyed to the public. Membership in the Montauk Historical Society and visitation to the lighthouse is fee based and open to all without any discrimination. Fees help maintain the properties and overall operation.

There is a USACE policy that a Coastal Storm Risk Management Project should not be developed to reduce risk to a single owner. As part of the feasibility study, a waiver to the USACE single landowner policy from the Assistant Secretary of the Army (Civil Works) was granted on 29 June 2005 for the project.

2.4 Alternatives Analysis, 2005 FS/EIS

The 2005 Montauk Point Storm Damage Reduction Feasibility Study and Environmental Impact Statement (FS/EIS) evaluated six alternatives to determine the most appropriate solution to provide coastal storm risk management for the bluff and lighthouse complex at the top of the bluff. Alternatives evaluated included the no-action alternative, a nonstructural alternative, the relocation of the lighthouse; and four structural alternatives; a stone revetment, offshore segmented breakwater with beach nourishment, t-groins with beach nourishment, and beach nourishment. An abbreviated discussion of each alternative evaluated in the 2005 Montauk Storm Damage Reduction FS/EIS is provided in the attached Final Environmental Assessment Sections 2.1 to 2.3. The stone revetment was the recommended project. For more information, the 2005 FS/EIS can be downloaded from the NAN public website at: http://www.nan.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/11241/Article/11324/fact-sheet-montauk-point.aspx

2.5 Authorized Project Description

The authorized project consists of an 840 ft. stone revetment designed to withstand a 1.4% (73-year) return period storm. The revetment covers the most vulnerable bluff area that would directly endanger the lighthouse complex due to bluff failure. The 2005 design was based on Engineering Manual 1110-2-1614 "Design of Coastal Revetments, Seawalls and Bulkheads". The design uses 12.6 ton quarry stone armor units extending from the crest down to the embedded toe. The designed revetment was 2:1 slope, with a crest of +24 ft, NAVD88. The revetment was anchored by an embedded toe at a depth of -20 ft. NAVD88 at a distance of about 65 ft. from the existing shoreline. The estimated first cost for the stone revetment was $13,722,000 (2004 price level), including contingency, planning, engineering and design, and construction supervision and administration.

3. REEVALUATION OF PROJECT COSTS

3.1 Design Refinements

In August 2013, USACE completed a post-Hurricane Sandy assessment of the existing Montauk Point revetment to review existing site conditions and determine if refinements to the 2005 feasibility level design might be advisable. USACE confirmed the analysis contained in the feasibility study that the existing stone structure is continuing to degrade and is inadequate to provide long term risk reduction of the bluff. Some of the deficiencies noted included partial collapse of the revetment due to overtopping, movement downslope of material, gradual loss of interlocking of armor stones, water seepage along the south shore, and splitting of poor quality armor stone. Degradation of the revetment will continue and possibly accelerate in the future without the authorized project. The site visit findings confirmed the future without project condition assumed in the Feasibility Report and reinforced the urgent need for the construction of the proposed Montauk Point revetment to reduce risk to the historic lighthouse complex and other natural, cultural and recreational resources.

The feasibility study revetment design was reviewed and evaluated for potential refinements. Eight variations on the revetment design were developed and considered for selection. The variations provided a level of design consistent with the authorized project, and were evaluated based upon ability to meet performance requirements and consideration of sea level change (SLC), constructability, quantity of stone required, environmental impacts, long term maintenance implications, and cost.

3.2 Coastal Engineering Review

As part of the HSLRR, a coastal engineering review was conducted for the Montauk Point project. Items included in the review were design storm return period, design water level, sea level change, shoreline erosion-water depth impact, design wave height, stone size, and overtopping rate. Generally, the 2005 feasibility level design was found to be adequate. However, modifications were recommended to better cope with potential impacts identified through the relative sea level change (RSLC) analysis and to improve constructability and sustainability. These factors resulted in a recommended larger stone size for the revetment, and construction of a toe berm feature instead of a buried toe. The toe berm eliminates a large amount of excavation that would have been necessary for a buried toe. (See the Coastal Engineering Appendix for additional information.)

3.3 Design Refinements

The selected design refinement option consists of 15 ton armor stone overlain on the existing 5-10 ton stone revetment. Loose material at the foot of the proposed revetment will be removed to

form a stable base and prevent future scour. The revetment slopes from the toe at a 2:1 slope until elevation +10 ft. NAVD88, at which point a 12 ft. wide bench is constructed. This bench is at 10 ft. NAVD88. From there, the revetment continues on a 2:1 slope until reaching elevation +21 ft. NAVD88. The top bench at +21 ft. NAVD88 is about 30 ft. wide. The final element is a splash apron from elevation +21-25 ft. NAVD88. This element consists of 1-2 ton stone underlain by a geo-textile fabric.

The selected option typical cross section is illustrated in Figure 3. The plan view is provided in Appendix 2, drawing C-101.

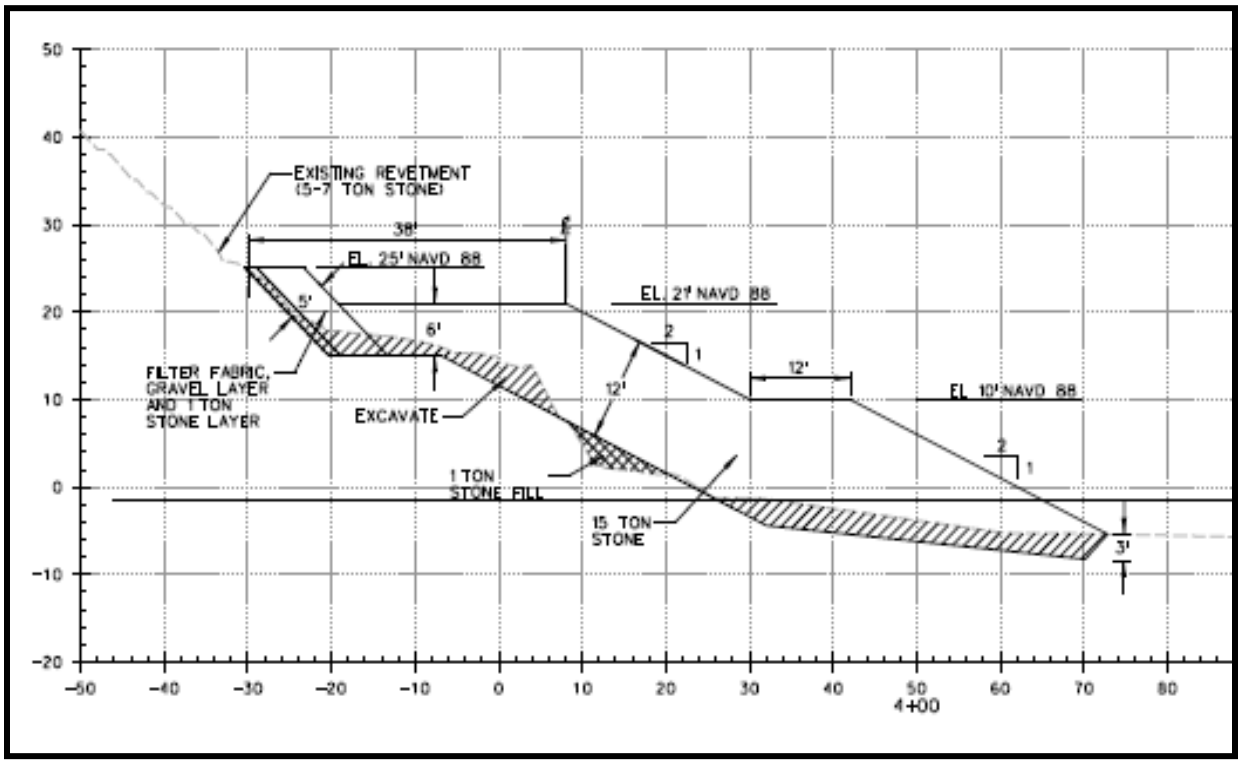


Figure 3. <u>HSLRR Revetment Typical Cross Section</u>

The selected option includes the following refinements from the feasibility study (FS) design:

1. Build on top of the existing revetment (5-10 ton stone) instead of removing it. The FS design included the removal of the existing revetment and constructing the new revetment in its place. The HSLRR design will utilize the existing revetment as a foundation for the new revetment. This approach will reduce the amount of stone required. Furthermore, this approach has the added benefit of providing a reduction of risk to the bluff during the entire construction process.

2. Construct a toe berm instead of a buried toe. The FS design included a buried toe installed to a depth of approximately -20 ft. NAVD88. The construction of the FS toe design would be very difficult because the construction will take place approximately 65 ft. away from the existing shoreline. In addition, de-watering would likely be required to place the toe, which complicates the construction. The HSLRR design consists of a toe berm constructed at +10 ft. NAVD88. Minimal excavation will be required to approximately -6 ft. NAVD88 to remove loose material and place the stone. The stone will only need to be placed approximately 40 ft. away from the existing shoreline. It is anticipated that the toe berm would be built first, to a width of 25 ft., to accommodate a crane. The upper part of the revetment would be constructed on top of the toe berm, leaving a 12 ft. wide berm to facilitate future maintenance. Excavation material is reduced from about 32,000 cubic yards to about 4,200 cubic yards. Based on soil borings (refusal at 2.5 ft.) and observations made during site assessment, the existing material provides an adequate base. The toe berm design also reduces the amount of armor stone required.

3. Use 15 ton stone instead of 12.6 ton stone for armor stone. While 12.6 ton stone is adequate for the design wave height of 13.4 ft. under current conditions, the water depths in front of the structure are anticipated to increase throughout the project life (thus increasing the design wave height) due to both erosion and sea level change. The selection of 15 ton stone results in increased strength without having to upgrade to special heavier duty equipment for stone handling and placement. In addition, the larger stone size increases productivity because a lower number of stones are required to be placed resulting in a shorter construction duration. Lastly, the larger stone will stay in place better, reducing future maintenance requirements.

4. Lower crest to +21 ft. NAVD88 instead of +24 ft. NAVD88. The reduced elevation of the crest reduces the amount of armor stone required, while still providing adequate reduction of risk against wave over-topping. This is achieved by an extra wide crest (about 33 ft.). To provide an additional layer of reduction of risk against overtopping, a five foot layer of 1-2 ton stone is placed from 21 ft. NAVD88 to 25 ft. NAVD88. See the Coastal Engineering Appendix for additional details on this analysis.

A comparison of the FS and HSLRR Cross Section and Plan View are displayed in Figure 4 and Figure 5).

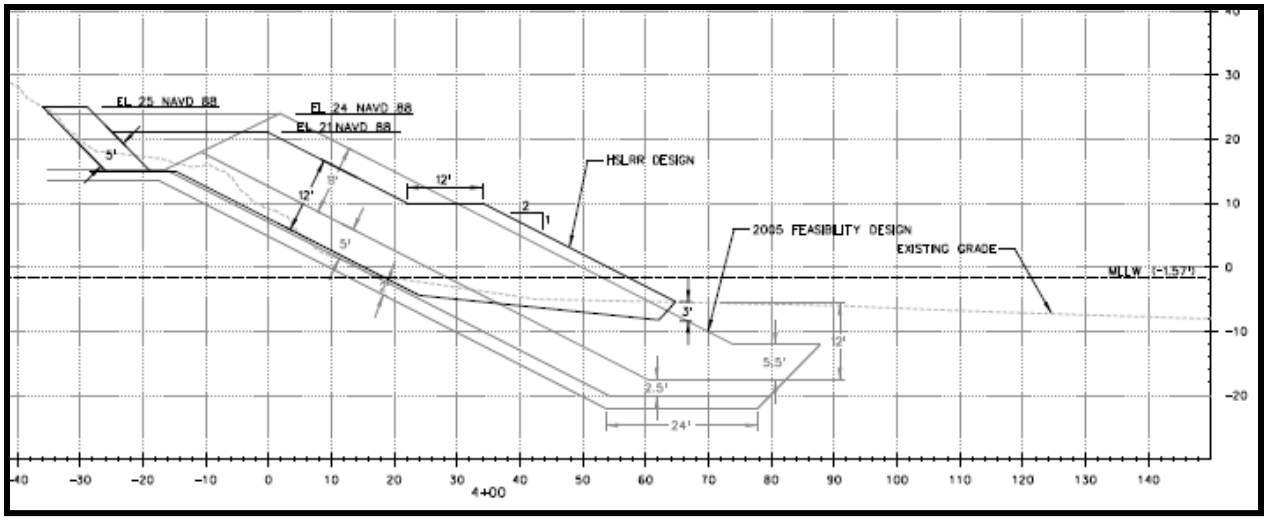


Figure 4. Comparison of FS and HSLRR - Cross Section (Typical)

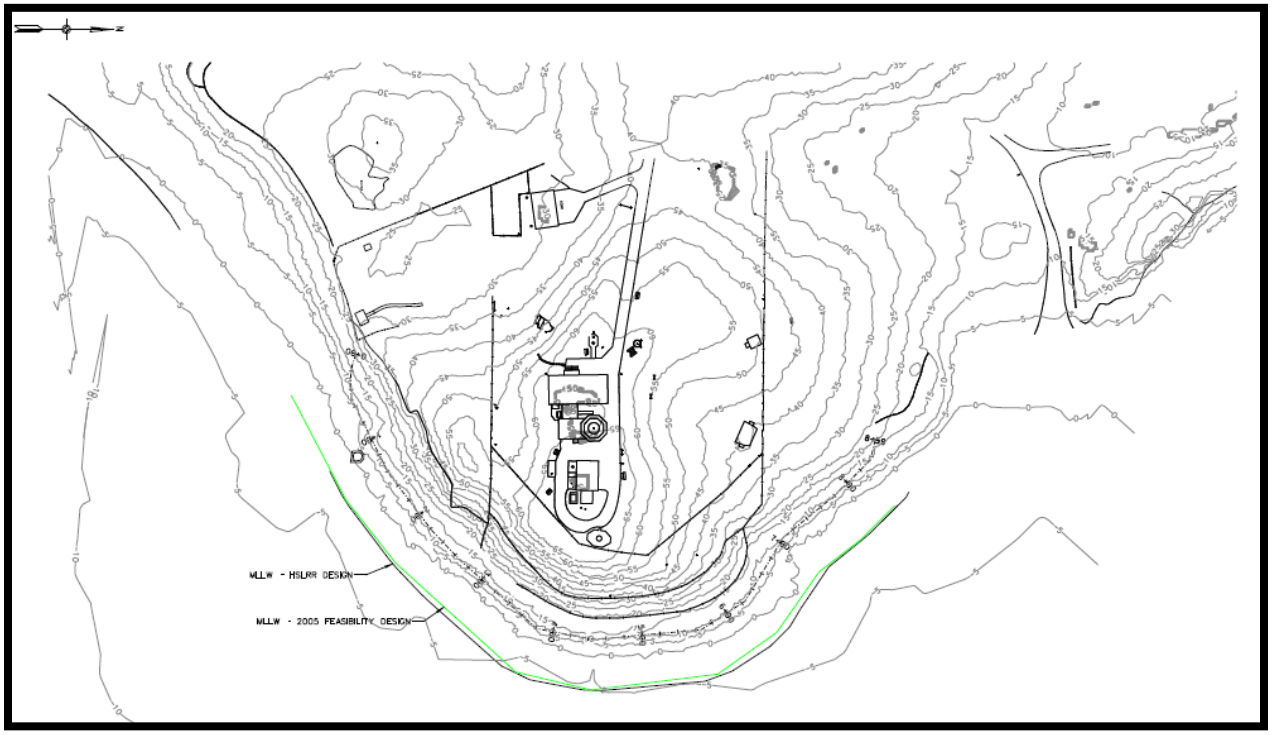


Figure 5. Comparison of FS and HSLRR – Plan View

As noted in Figure 5, the HSLRR design refinements result in a smaller footprint of impact than the feasibility study design. The HSLRR design does result in a slightly greater impact at the Mean Lower Low Water interface (seaward shift of about 4 ft.). A summary of the key parameters of the feasibility study design and HSLRR refinements are provided in Table 1.

Table 1. Key Parameters Comparison

Parameter	2005 Feasibility Report, Authorized Project	2017 HSLRR, Updated Design Refinements
Construction Approach	Remove Existing Revetment, Reuse Quality Stone	**Build Over Existing Revetment, Remove Poor Stone**
Armor Stone Size	12.6 Ton Stone, 2 Layers and 1.3 Ton under layer Stone (64,600 tons)	**15 Ton Stone, 2 Layers (49,000 tons)**
Splash Apron	4-5 Ton Stone, 3 layers	**1-2 Ton Stone**
Toe	Buried Toe (12.6 Ton Stone)	**Partial Buried Toe (15 Ton Stone)**
Bottom of Toe	Excavate to approx -20 ft. NAVD88 (32,000 cy)	**Excavate to approx -6 ft. NAVD88 (4,200 cy)**
Toe "Bench"	None	**10 ft. NAVD88, 12ft. Wide**
Constructability	Difficult Construction. Major Toe Excavation.	**Minor Toe Excavation. Bench Provides Access.**
Reuse Existing Materials	Some Reuse of Existing Stone	**Build Over Existing Revetment**
Revetment at -1.57 ft. NAVD88 (MLLW)	FS Revetment is 34 ft. Seaward of Current Revetment at MLLW	**HSLRR Revetment is 38 ft. Seaward of Current Revetment at MLLW**
Inter-Tidal Area Loss (MHHW to MLLW)	28,560 ft^2 (0.655 Acres)	**31,920 ft^2 (0.733Acres)**

The HSLRR process entailed an analysis that was analogous to a value engineering analysis of the feasibility study design. While both revetment designs meet the intended purpose of providing adequate reduction of risk against a 1.4% (73-year) design storm, the refinements proposed under the HSLRR improve the constructability and sustainability of the revetment. The construction of a buried toe 65 ft. seaward of the existing revetment would have been very difficult and expensive. The toe berm provides a suitable construction platform to simplify initial construction, and may be available for future maintenance depending on the amount of adjustment the toe berm it undergoes over time. Most normal waves will break at the toe of the revetment. Larger storm waves will break higher on the toe berm, or at the base of the armor

stone above the toe berm. At this point above the toe berm (10 ft. to 21 ft. NAVD88), the revetment will consist of two layers of 15 ton armor stone, plus the existing revetment of 5-10 ton armor stone beneath it as a foundation. This will provide more than adequate reduction of risk against the intended design storm. The HSLRR refinements have the added benefit of reducing the rock quantity and the construction duration, resulting in lower overall construction costs.

3.4 Potential Project Construction Description

It is anticipated that trucks will be used to bring the stone for the revetment to the site either directly from the source quarry via Route 27 or possibly delivered by barges to an off-load facility on the north fork of Long Island and then by truck to the site (the environmental assessment of air quality evaluation assumes the trucking option). Two areas will be available to stage the stone, at the north side of the revetment and at the south side of the revetment. The entire proposed revetment project will be built on top of the existing revetment to take advantage of the existing armor stone. Unsuitable stone in the existing revetment would be removed. The revetment will be 840 ft. long and tie in to the ends of the existing revetment. Details on the tie in will be developed in the design phase.

For the purpose of the HSLRR cost estimate, the following construction sequencing was assumed: Construction would start with the toe berm at elevation +10 ft. NAVD88. The berm will be constructed with 15 ton armor stone. The berm will be approximately 24 ft. wide to accommodate a construction crane. The crane will be able to reach both the upper and lower limits of the revetment. From the bench, two crews can work at the same time. Starting from the center of the revetment, the crews can work backwards filling and narrowing the bench. As the crews back up, they would bury the bench with two layers of 15 ton stone. A 12 ft. bench would remain. The toe berm elevation provides over 8 ft. of freeboard between the construction (toe berm) platform and the MHHW tide level. This provides a reasonable reduction of risk against waves during construction. For construction access, stone ramps would be built to transition between the new and old revetment. Furthermore, the ramps would act to support the ends of the new revetment and should remain in place following construction.

A top bench would be constructed at approximately elevation +21 ft. NAVD88 with a stone splash apron to +25 ft. NAVD88. Based on the Coastal Analysis, overtopping is not expected to occur above +21 ft. NAVD88. As much as possible, existing vegetation above +25 ft. NAVD88 will be preserved. New vegetation will be planted as necessary to control erosion above the stone splash apron.

The construction description provided in the previous text is used as the basis for estimating project costs. The selected contractor will have the option to alter the construction sequence provided in the previous text to meet their requirements and resources. Construction is anticipated to take about 18 months.

During project design, the New York District will coordinate with the Surfcaster Association and the Sport Fishing Federation, as well as various surfing groups such as Surfrider Foundation, to discuss the construction schedule. Construction work area safety requirements would be implemented in active construction areas. At a minimum, public access would be provided to the beach next to the revetment for surfing and fishing.

3.5 Project Costs

As noted previously, the Montauk Point 2005 Feasibility Report was reviewed and design refinements are incorporated in the project. Revetment layout and qualities were based on 2012 LiDAR data and the topographic survey conducted for the 2005 Feasibility Report. Quantities were calculated using Bentley InRoads. Table 2 provides a summary of the project costs. The estimated project cost includes the construction cost, pre-construction engineering and design (PED), construction management (S&A), and associated contingencies. PED cost includes preparation of plans and specifications, site survey, environmental surveys & coordination, and project management.

Biological Surveys. During the design phase of the project, NAN would coordinate with the NYSDEC to determine proper protocol for conducting pre-construction surveys for state-listed plants and birds. Further coordination with the NYSDEC would be initiated regarding recommendations to minimize and avoid disturbance if listed species are encountered. Also, coordination would be conducted with the NMFS and USFWS, if necessary, regarding changes to anticipated seal haul out areas within the project vicinity.

During the design phase NAN will coordinate with the Montauk Historical Society, New York State Office of Parks, Recreation and Historic Preservation, Montauk Surfcasters Association, New York Sport Fishing Federation, Surfrider Foundation, etc., to discuss the revetment construction plan and public accessibility during construction.

The HSLRR revetment construction cost estimate was calculated in the USACE Micro-Computer Aided Cost Estimating System second generation (MII) software. Local stone quarries were contacted for the project estimate. The project cost also includes any lands, easements, right of ways, relocations, or disposal (LERRD) required for project construction. Contingences for the cost estimate were developed using the abbreviated risk analysis (ARA) spreadsheet developed by the USACE Cost Center of Expertise and considers cost and schedule

risks. Contingencies are applied to each item. A detailed description of the development of project costs and the ARA are included in the Cost Appendix.

Table 2. Cost Estimate

Project First Cost	**FY 2017 price level $000**
Construction Cost	$19,632
Pre-construction, Engineering & Design	$1,287
Supervision & Administration	$1,791
Real Estate	$174
Total Project First Cost (rounded)	**$22,885**

3.6 Project Schedule

The project schedule is provided below. For project planning purposes, it is assumed that a Project Partnership Agreement (PPA) would be signed in Spring/Summer 2017 and that the project would be ready to advertise in December 2017.

Start Plans and Specifications (Design Phase)	April 2017
Finalize Plans and Specifications	November 2017
Real Estate Certification	November 2017
Ready to Advertise Contract	December 2017
Award Construction Contract	January 2018
Complete Construction	August 2019

3.7 Revetment Maintenance

Maintenance of the revetment post-construction will be the responsibility of the non-Federal sponsor. It is expected that minimal maintenance will be required for the revetment. However, the possibility of one coastal storm closely following another requires that the revetment be inspected and maintained to the extent practical in a state of readiness. Measures to implement repairs found necessary by inspections will be undertaken in a timely manner by the non-Federal sponsor. Gaps that develop in the toe berm crest (+10 ft. NAVD88) should be filled to ensure structure is safe for access by inspection and maintenance personnel. Although unlikely, loss of larger stone in the sloped face of revetment would require replacement. The annual cost of maintenance is reflected in the total project economic cost. For the purposes of economic

analysis, the annual maintenance cost was estimated as a percent of the direct cost of construction. For the HSLRR, the annual revetment maintenance cost is estimated at $58,900.

3.8 Real Estate

A revised real estate estimate was prepared for the HSLRR and is included in the Real Estate Appendix. The real estate requirements for the proposed project are similar to the requirements in the 2005 Feasibility Report with some minimal modifications to the acreages required. See Table 3. The non-Federal sponsor is responsible for the project's Lands, Easements, Right-of-Ways, Relocations, and Disposals (LERRD) expenses. The project's total real estate cost including administration cost is approximately $174,000.

Table 3. Real Estate Summary

Project Real Estate	2005 Feasibility, Acres	2017 HSLRR, Acres
Bank Protection Permanent Easement	1.81	1.96
Temporary Work Area Easements	3.70	2.60
Total	**5.51**	**4.56**

The non-Federal sponsor is responsible for providing the required real estate for the project. They will be required to obtain the necessary property interests from the Montauk Historical Society, who owns the revetment and from the Town of East Hampton and the Long Island State Park Commission who own the lands that are necessary for construction activities.

Figure 6. Real Estate Map

3.9 Annualized Project Costs

Project cost components were amortized over the 50-year period of analysis at the FY 2017 Federal discount rate of 2.875 % and the annual project cost is provided in Table 4. Annual project costs and interest rate extracted from the 2005 Feasibility Report are also included in Table 4 for comparison purposes.

Table 4. Annualized Project Costs

Category	2005 Feasibility	2017 HSLRR
Interest Rate	5.375%	2.875%
Price level	FY 2005	FY 2017
Total First Cost	**$13,722,900**	**$22,885,000**
Interest During Construction*	$712,700	$493,500
Total Investment Cost	$14,435,600	$23,738,500
Annual Investment Cost	$837,000	$887,000
Annual Revetment Maintenance Cost	$52,300	$58,900
Total Annual Cost (rounded)	**$889,300**	**$946,000**

* Interest During Construction - These costs are hidden, unpaid costs that must be accounted for when determining the economic costs of a project. The cost of this waiting period is known as the *opportunity cost* and it reflects the foregone opportunity of investing the funds for other purposes.

4. REEVALUATION OF PROJECT BENEFITS

4.1 National Economic Development (NED) Benefits Description

The HSLRR economic analysis reviewed the existing conditions and verified the reasonableness of the Feasibility Report benefits categories and methodology and updated these benefits to current conditions. The economic benefits calculations provided in the 2005 Feasibility Report and in this HSLRR include the following benefit categories:

Proxy for Depreciated Replacement Value of Montauk Lighthouse Complex

There is no mechanism to value the lighthouse because of the unique nature of the historic structure. Instead, a proxy is used to place a depreciated replacement value of the historic Montauk Point Lighthouse complex based on the calculations for the costs of cultural mitigation including moving the lighthouse off the bluff to the parking area located west of the bluff. The economic analysis assumes that cultural mitigation of the site and the lighthouse move will be initiated after the existing revetment is displaced. (See paragraph 9, in the Economics Appendix.)

Recreation Loss Value

Another without-project consequence of storm damage to the bluff would be loss of visitations to the lighthouse. Visitation losses associated with the lighthouse's closure were assessed in the 2005 study using the Travel Cost Estimate of Willingness to Pay. The same method was used for the HSLRR with updated visitation data. The Montauk Point Lighthouse complex resides within the Montauk Point State Park which offers a unique experience that is not found elsewhere in the New York metropolitan area. Part of the State park experience is its connection with the lighthouse complex. There will be a reduction to the overall aesthetics and recreational value of the State park visitations if the lighthouse complex did not exist. The economic value of the recreation benefit for the without and with project condition is estimated using the Unit Day Value method. These calculations are presented in the Economics Appendix, paragraph 15.

Local Costs Foregone

The lighthouse complex is situated on 3 acres of land. The top of the bluff will erode when the revetment fails. In the without project condition the land lost represents lost value or local cost foregone. A prorated dollar amount for value of land lost is used to calculate the local costs foregone in the without-project condition. These calculations are presented in the Economics Appendix, paragraph 19 and Table 16.

General Economic Analysis Parameters

Table 5 compares the basic economic parameters (applicable to civil works projects) for the 2005 feasibility study and the HSLRR.

Table 5. Economic Analysis Parameters

Parameter	2005 Feasibility	2017 HSLRR
Discount Rate	5.375 %	2.875 %
Period of Analysis	50 years	50 years
Price level	FY 2005	FY 2017

4.2 NED Benefits Update

Annual project benefits are summarized in Table 6. Damages without and with the project were calculated for the following storm damage categories: Storm damage to the lighthouse complex, and local costs foregone for the land loss value due to erosion, and for two recreation loss categories: lost lighthouse visitations, and loss of State Park visitation benefits. Benefits are estimated to be annual damages in the without-project conditions minus any residual damages in the with-project alternatives. The benefits claimed are avoided storm damage costs when compared to the without project condition, specifically avoided loss of the lighthouse complex and its associated costs for the preservation of artifacts, local costs foregone for the loss of land value, and avoided lost visitation benefits to the lighthouse and to the State Park. Benefits are discounted and amortized over a 50-year period of analysis.

4.3 Annualized Project Benefits

Table 6. Annual Benefits Summary

Category	2005 Feasibility	2017 HSLRR
Interest Rate	5.375%	2.875%
Price level	FY 2005	FY 2017
Coastal Storm Risk Management Benefits		
Lighthouse Complex	$484,835	$553,075
Local Cost Foregone (bluff land loss)	$56,520	$107,561
Subtotal	$541,400	$661,000
Recreation Benefits		
Lighthouse Visitation	$847,132	$1,146,185
Park Visitation	$190,177	$376,099
Subtotal	$1,037,300	$1,522,000

5. REEVALUATION OF PROJECT Benefit Cost Ratio

5.1 Economic Analysis Summary

Table 7 summarizes the changes in the economic analysis benefits and costs from the 2005 Feasibility Report to this study. The proposed project remains economically justified with a benefit-to-cost ratio (BCR) of 1.4 with net annual benefits of $376,000. Incorporation of all recreation benefits results in a project BCR of 2.3 with net annual benefits of $1,237,000.

Table 7. Cost-Benefit Summary,

Description	**2005 Feasibility**	**2017 HSLRR**
Interest Rate	5.375%	2.875%
Annual Storm Damage Benefit	$541,400	$661,000
Annual Recreation Benefit	$1,037,300	$1,522,000
Annual Recreation Benefits Used for Project Justification (limited to an equiv. amount of coastal storm risk management benefits)	$541,400	$661,000
Total Benefits Used for Project Justification	$1,082,800	$1,322,000
Annual Costs	$889,300	$946,000
Net Benefits	$193,500	$376,000
BCR	**1.2**	**1.4**
All Recreation Benefits Included	**2005 Feasibility**	**2017 HSLRR**
Total Average Annual Benefits	$1,578,700	$2,183,000
Total Average Annual Costs	$889,300	$946,000
Net Benefits	$689,400	$1,237,00
FINAL BCR (with recreation)	**1.8**	**2.3**

5.2 Section 902 of the WRDA 1986

Section 902 of the Water Resources Development Act of 1986 (WRDA 1986) provides that *each total cost* stated in WRDA 1986 or a later act establishes the maximum cost for the project, with additional allowances for further increases up to 20 percent above the cost stated in law, as well as further increases due to inflation or required by changes in Federal law. However, in accordance with P.L. 113-2, Chapter 4, to the extent construction funds provided in that law are used to construct this project, the provisions of section 902 of WRDA 1986 do not apply.

6. COST APPORTIONMENT

Chapter 4 of P.L. 113-2, in "Construction" section, states:

> *". . . the completion of ongoing construction projects receiving funds provided by this division shall be at full Federal expense with respect to such funds."*

And Paragraph 4 of CECW-ZA Guidance Memorandum "Disaster Relief Appropriations Act of 2013, Policy Guidance Memorandum – Construction Account" (9 December 2013) states:

> *". . . other NAD Projects that do not involve ongoing construction may be financed in accordance with section 103(k) of the Water Resources Development Act of 1986 (WRDA 1986)".*

Therefore, as construction is not currently on-going, the non-Federal Sponsor will be required to cost share 35% of the construction costs.

Future operation and maintenance is a 100% non-Federal cost and responsibility.

Table 8. Project Cost Apportionment

2017 HSLRR - Project First Cost FY17				
Item	**Comment**	**Federal ($000)**	**Non-Federal ($000)**	**Total ($000)**
PED	Funded initially by Sandy Appropriations	$1,287		$1,287
S&A		$1,791		$1,791
Construction Costs		$19,632		$19,632
Real Estate Costs		$34	$140	$174
Total		**$22,745**	**$140**	**$22,885**
		Project Cost Sharing (First Cost)		
		65% Federal ($000)	**35% Non-Federal ($000)**	**Total ($000)**
		$14,875	**$8,010**	**$22,885**

The fully funded cost is estimated at $23,816,000, escalated to the midpoint of construction of November 2018, and will serve as the basis for the Project Partnership Agreement (PPA).

Project cost-sharing for the PPA is 65% Federal ($15,480,000) and 35% non-Federal ($8,336,000). Operation, Maintenance, Rehabilitation, Repair and Replacement (OMRRR) is estimated at an annual cost of $58,900 and a 100% non-Federal cost.

7. ENVIRONMENTAL ASSESSMENT (EA)

An Environmental Assessment (EA) was prepared for the Montauk Point, NY project to update the Environmental Impact Statement (EIS) prepared in 2005 and was released for a 30-day public review in 2016. This Final EA considers the project including HSLRR design refinements, affected environment changes, and regulatory changes. The project and design refinements were re-coordinated with jurisdictional Federal, State and local agencies (see Final EA - Appendix A – Pertinent Correspondence). Section 4 of the EA includes a table summarizing "Compliance with Environmental Quality Protection Statutes and Other Environmental Review Requirements".

The project is evaluated in the attached Final EA and the conclusion is a Finding of No Significant Impact (FONSI). Environmental review of the project as documented in the Final EA demonstrates that the project remains environmentally acceptable.

8. TOPICS SPECIFICALLY ADDED BY FIRST INTERIM REPORT TO CONGRESS

8.1 Resilience

P.L. 113-2, the "Disaster Relief Appropriations Act, 2013", authorized supplemental appropriations to Federal agencies for expenses related to the consequences of Hurricane Sandy. Chapter 4 of P.L. 113-2 identifies those actions directed by Congress specific to USACE, including preparation of two "interim" reports for areas that were affected by Hurricane Sandy within the boundaries of the North Atlantic Division of USACE.

The Second Interim Report to Congress states (Appendix 3, page 3):

> "When determining how to move forward in implementing project specific measures in accordance with the funding and direction in the Act, the Corps will perform an expedited limited re-evaluation that addresses resiliency, economics, risks, environmental compliance, and long-term sustainability . . .. "

"Resilience" is a relatively new criterion to be evaluated in this and other post-Hurricane Sandy efforts. The term has positive connotations but multiple meanings that depend on the context and interpretation of the word. This is in contrast to categories such as "economics" and "environmental compliance", both of which are legacy categories by which USACE civil works projects are routinely evaluated.

> Definition 1: USACE-NOAA white paper "Infrastructure Systems Rebuilding Principles" (Appendix 8): "Resilience. Ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies".
>
> Definition 2: "Disaster Resilience: A National Imperative" by the National Academies Press (NAP) (2012): ". . . the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events".
>
> Definition 3: Resiliency is defined in the May 2016 USACE Resilience Initiative Roadmap as the ability of a system to prepare for, resist, recover and adapt to achieve functional performance under the stress of disturbances through time.

Given the definitions of resilience, the Montauk Point project is expected to contribute to the resiliency of the project area by reducing storm damage related repairs to the project area. Presently, the existing coastal structure at Montauk Point is not resilient. There is an ongoing threat of storm failure of the existing revetment, and the existing structure requires extensive maintenance to prevent further degradation and increased vulnerability. The proposed design, with larger armor stone, and improved design represents a resilient structure that is capable of resisting storm forces, and has been designed to continue to function under a wide range of

conditions, over time. The project includes features that allow for necessary future actions that may be needed for recovery or adaptation in the future.

8.2 Risk

Risk and uncertainty are intrinsic to project evaluation in water resources planning and design. Engineering Regulation 1105-2-101, "Risk Analysis for Flood Damage Reduction Studies" (January 3, 2006) provides guidance on the evaluation framework to be used in USACE flood damage reduction studies. As per the Regulation, risk is the probability an area will be flooded, resulting in undesirable consequences. Uncertainty is a measure of the imprecision of knowledge of parameters and functions used to describe the hydraulic, hydrologic, geotechnical, and economic aspects of a project plan. The greatest risk associated with the project is that no action is taken to implement Montauk Point Project. If no action is taken to construct the project, the Montauk Point coastal bluff/existing stone revetment will continue to experience coastal storm damage and erosion and the historic lighthouse complex situated on top of the bluff will be lost. Primarily, the project will reduce the risk of failure through construction of a stone revetment designed to withstand significant storm events. Construction of a well-designed stone revetment is a proven method of eliminating erosion with a long history of success.

8.2.1 Sea Level Change

In planning and design of a coastal storm risk reduction project, an area of uncertainty is in regard to the rate of future sea level change (rise). We can examine the past rate of rise to project a future rate, however, changing climatic and other unknowns can impact the future rate of rise. The USACE identifies this uncertainty in Engineering Regulation ER 1100-2-8162, "Incorporating Sea Level Change in Civil Works Programs", December 2013. The ER recommends that projects be evaluated under three levels of SLC - historic, intermediate and high rates. The Engineering Technical Letter ETL 1100-2-1, "Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaptation" June 2014, includes methods to be used in evaluation of sea level change. For this project three sea level change scenarios, historic (low), intermediate, and high rates were considered during the design evaluation. Figure 7 provides the calculated relative sea level elevation changes under each rate of rise. The historic rate was used along with consideration of other rates to make a risk informed decision on project design. The two key parameters impacted by increased water elevation for the project/alternatives are the stable stone size on the revetment due to larger wave heights impacting the revetment (depth limited waves), and increased run-up elevation/overtopping volume due to higher water levels and larger waves. Detailed explanation of these factors and selected stone size and overtopping protection is included in the Coastal Appendix (Appendix 1).

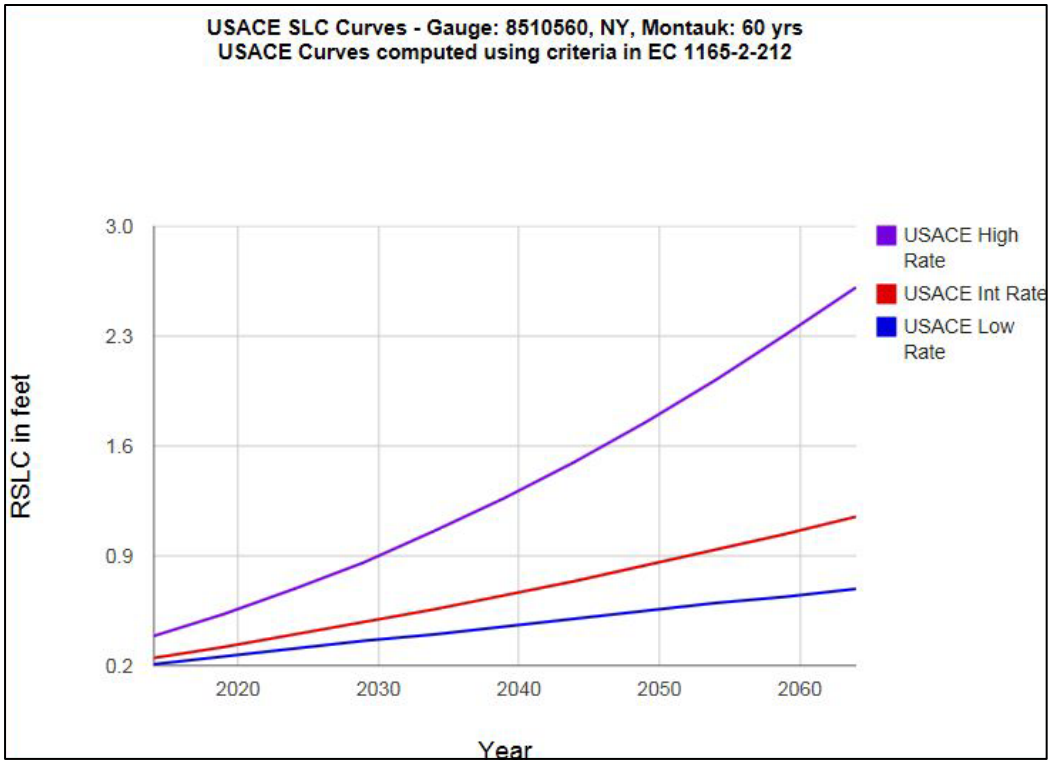


Figure 7. Sea Level Change Curves

8.3 Long-Term Sustainability

Long-term sustainability has been established as a criterion for evaluating projects funded through the USACE Hurricane Sandy Program. Several well accepted definitions of the term "sustainability" are presented in the following text.

> Definition 1. "Sustainability . . . refers to the capacity to endure and remain productive over time, which is very well aligned with the concept of adaptation, which is adjustment in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects." (USACE CLIMATE CHANGE ADAPTATION PLAN AND REPORT 2011).
>
> Definition 2. "Sustainability: The ability of a coastal landscape feature to maintain its general location, spatial configuration, and habitat functions over time." (LACPR Summary Report, 2010).
>
> Definition 3. ''Sustainability and sustainable mean to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations."

(Executive Order 13514, October 5, 2009, Federal Leadership in Environmental, Energy, and Economic Performance).

The recommended features for the Montauk Point stone revetment project are physically sustainable and the revetment is expected to endure and provide continued coastal storm risk management over time. The revetment will allow for the historic lighthouse complex to maintain its current location and allow for continued enjoyment and recreational opportunity for historic education at the site.

8.4 Consistency with North Atlantic Coast Comprehensive Study

The North Atlantic Coast Comprehensive Study (NACCS) originated from the Disaster Relief Appropriations Act of 2013, P.L. 113-2, signed on 29 January 2013. The North Atlantic Coast Comprehensive Study Project Management Plan was approved in March 2013 and completed in January 2015.

One of the requirements of the Sandy program is that a project be consistent with the NACCS. The purpose of the NACCS is to develop a decision-making framework in order to reduce risk and increase resiliency to coastal populations affected by Hurricane Sandy. The NACSS is not a decision document, but a framework from which more detailed evaluations can be pursued. The goals of the NACCS are to:

(1) Provide Risk Reduction – Reduce risk to which vulnerable coastal populations are subject.

(2) Promote Coastal Resilient Communities – Ensure a sustainable and robust coastal landscape system, considering future sea level rise scenarios and climate change, to reduce risk to vulnerable population, property, ecosystems and infrastructure.

Given this statement of the study's goals and discussion in this HSLRR regarding risk and uncertainty, resilience, sustainability, economic justification, and environmental acceptability, it is evident that the project is fully consistent with the goals of the NACCS.

9. CONCLUSIONS

This HSLRR has been prepared to address the requirements of P.L. 113-2.

The limited reevaluation demonstrates that the project remains economically justified with a BCR of 1.4 to 1 and a total BCR of 2.3 to 1 (with recreation).

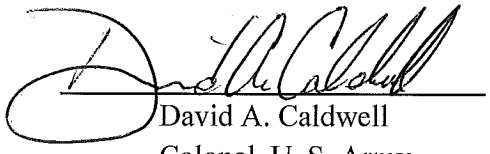
The project first cost is estimated at $22,885,000. The next phase of the project is to develop Plans and Specifications and execute a Project Partnership Agreement with the State of New York for project construction. The fully funded cost is estimated at $23,816,000, escalated to the midpoint of construction of November 2018. Project construction costs will be cost-shared with the non-Federal sponsor at 65% Federal, 35% non-Federal.

Environmental review and state and Federal Regulatory compliance has been updated for the proposed project and the proposed project meets environmental requirements (see attached Environmental Assessment). No long term significant impacts to the environment were identified. Only temporary, minimal impacts would occur during the construction phase of the project.

10. RECOMMENDATIONS

In making the following recommendations, the New York District has given consideration to all significant aspects in the overall public interest, including environmental quality, social effects, economic effects, engineering feasibility, and compatibility of the project with the policies, desires and capabilities of the State of New York. A project has been identified and previously authorized by Congress that is technically sound, economically cost effective over the life of the project, and socially and environmentally acceptable. In addition, the recommended plan has support from the non-Federal sponsor. Therefore, it is recommended that Federal participation in the construction of the Montauk Point, New York project be approved.

The recommendations contained herein reflect the information available at this time and current policies governing the formulation of individual projects. They do not reflect program and budgetary priorities inherent in the formulation of a national civil works construction program, nor the perspective of higher review levels within the U.S. Army Corps of Engineers. Consequently, the recommendations may be modified upon review by higher authority.



David A. Caldwell
Colonel, U. S. Army
District Commander