



**DEPARTMENT OF THE ARMY  
CHIEF OF ENGINEERS  
2600 ARMY PENTAGON  
WASHINGTON, DC 20310-2600**

**28 SEP 2023**

**DAEN**

**SUBJECT: Rhode Island Coastline, Rhode Island, Coastal Storm Risk Management**

**THE SECRETARY OF THE ARMY**

1. I submit for transmission to Congress my report on coastal storm risk management recommendations for the Rhode Island Coastline, Rhode Island. It is accompanied by the report of the New England District and the North Atlantic Division engineer(s). This study is an interim response to the authorization in a resolution adopted by the Senate Public Works Committee dated September 12, 1969. The authorization requested that the Board of Engineers of Rivers and Harbors review a prior report with a view to determining the feasibility of providing water resource improvements for flood control, navigation, and related purposes in areas of southeastern New England, including the Rhode Island coastline. [The Board of Engineers of Rivers and Harbors was terminated in Public Law (PL) 102-580, with its functions reassigned to the Chief of Engineers.] The study is also authorized by a resolution adopted by the Senate Committee on Environment and Public Works dated August 2, 1995, which directs the Secretary of the Army to review the same prior report, as modified by the 1969 committee resolution, to determine whether modification of the recommendations contained therein are advisable in the interest of improved flood control, frontal erosion, coastal storm damage reduction, watershed, stream and ecosystem habitat viability, and other purposes, in the area from Watch Hill, Rhode Island to Narragansett, Rhode Island. And finally, Public Law (PL) 84-71 authorized an examination and survey of the coastal and tidal areas of the eastern and southern United States, with particular reference to areas where severe damages have occurred from hurricane winds and tides. Preconstruction engineering and design activities will continue under the study authority cited above.

2. The reporting officers recommend authorizing a risk management system of features that will reduce the risk of damages from coastal storms to residential and commercial structures, public infrastructure, and critical facilities. The Recommended Plan is not the National Economic Development (NED) Plan. A NED policy exception was approved by the Assistant Secretary of the Army for Civil Works on February 3, 2023, that allows the recommended plan to include non-economically justified separable elements based on other social effects (OSE) and environmental quality (EQ). The Recommended Plan includes the following system of non-structural features:

- a. Elevation of 290 residential structures
- b. Floodproofing of 171 non-residential structures
- c. Floodproofing of 36 critical infrastructure facilities

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The total number of structures in the Recommended Plan is 497 structures. Of that total, 302 structures were economically justified by NED benefits. The NED policy exception approved adding 195 structures based on OSE and EQ.

3. The Rhode Island Coastal Resources Management Council is the non-federal cost sharing sponsor for all features of the project. As a shared responsibility, the Recommended Plan is inclusive of the non-federal sponsor's additional floodplain management responsibilities and emergency response actions in conjunction with state and Federal Emergency Management Agency (FEMA) related programs to mitigate the plan's residual risk, including potential life loss and damages to critical infrastructure. Based on October 2022 price levels, the estimated total project first cost is \$289,775,000. The total project first cost includes the value of lands, easements, rights-of-way, relocations, and dredged material placement area improvements (LERRD). Total LERRD costs are estimated to be \$7,374,000. Cost sharing is applied in accordance with the provisions of Section 103 of the Water Resources Development Act (WRDA) of 1986 (33 U.S.C. § 2213), as follows:

a. The federal share of the project first cost for initial construction is estimated at \$188,353,750 and the non-federal share, which includes the cost of LERRD, is estimated at \$101,421,250, which equates to 65 percent federal and 35 percent non-federal.

b. The additional annual cost of operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) for the Recommended Plan is expected to be de minimis. OMRR&R activities include periodic curb-side assessments by the non-Federal sponsor. The non-federal sponsor will be responsible for 100 percent of the cost of project OMRR&R.

4. Based on a 2.5 percent discount rate and a 50-year period of analysis, the equivalent average annual benefits are estimated at \$17,693,000 and equivalent average annual costs are estimated at \$11,041,000, with equivalent average annual net benefits of \$6,652,000 and a benefit-to-cost ratio (BCR) of 1.6 to 1. All project costs are allocated to the authorized purpose of coastal storm risk management.

5. The Recommended Plan will provide OSE and Environmental Quality EQ benefits including separable elements included in the plan with BCRs below 1.0. These elements fall into three groups – (1) The Wickford Historic District, (2) Socially Vulnerable /Environmental Justice Communities, and (3) Critical Infrastructure Facilities. By managing coastal storm risk to these elements, the Recommended Plan provides non-NED benefits. For example, The Wickford Historic District is a unique historic resource. Protecting this resource will ensure the economic vitality of the area by maintaining a vibrant tourist industry and providing the area with a unique and strong sense of community and cultural identity. A complete list of OSE and EQ benefits is provided in the Plan Formulation Appendix of the Rhode Island Coastline CSRMS study Integrated Feasibility Report and Environmental Assessment.

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6. The Recommended Plan aligns with the current Administration's prioritization of environmental justice as set out by Executive Order 13390, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (2021) and the existing EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994). The Recommended Plan was developed by considering both socially vulnerable communities and communities located in environmental justice areas, as identified by the Rhode Island Department of Environmental Management. The plan includes four socially vulnerable/environmental justice communities through NED and OSE benefits.

7. The study report fully describes coastal storm risk to structures and life safety associated with coastal storms. The Recommended Plan would reduce, but not eliminate future damages and residual risk would remain. The recommended plan reduces expected annual damages by approximately 27 percent for the 100-year floodplain and 73 percent for the structures included in the Recommended Plan relative to the without project conditions. The residual risk, along with the potential consequences, has been communicated to the non-federal sponsor and will become a requirement of any communication and evacuation plan. The Recommended Plan is not intended to, nor will it, reduce the risk to loss of life during major storm events. The only certain method to prevent loss of life is by residents and visitors following existing local evacuation plans and leaving the study area prior to significant storm events.

8. Implementation strategies for the risk management system would be a shared responsibility conducted in coordination with the non-federal sponsor and FEMA to cost effectively reduce risk from coastal storms. The Plan includes a risk informed strategy that utilizes best practices to reduce risk to the most vulnerable areas and critical infrastructure first with the most cost-effective measures.

9. The study evaluated potential impacts of sea level change in formulating and engineering the recommended plan. To address this uncertainty, project performance was assessed at the intermediate rate of sea level rise as it offered the best balance between equally likely scenarios (i.e., the historic rate of sea level rise continuing indefinitely and the high rate including accelerated rates of change caused by warming temperatures and accelerated ice melt) and by estimating the period the project would perform at or above a desired level. Based on this analysis, it was decided that the intermediate rate of sea level rise offered the best balance between climate scenarios that risk underperformance and over-performance. However, USACE will continue to monitor local conditions and determine if the intermediate scenario of sea level change is reasonably representative of observed conditions. If observed conditions significantly exceeding the intermediate projection are identified during design or construction, reevaluation of the Recommended Plan will be required.

10. All compliance with required applicable environmental laws and regulations has been completed. A National Historic Preservation Act (NHPA) Programmatic Agreement (PA) has been prepared and executed that outlines the process to identify and evaluate historic properties and avoid, minimize, and where possible, mitigate for any adverse impacts in accordance with Section 106 of the NHPA and implementing regulations 36

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CFR 800. The PA was entered into with the Rhode Island State Historic Preservation Officer, the Advisory Council on Historic Preservation, and the Rhode Island Coastal Resource Management Council. In accordance with the PA, the proposed project may have adverse impacts to historic properties, requiring mitigation. The estimated total cost of cultural resource mitigation is \$2,718,000.

11. In accordance with USACE policy on the review of decision documents, all technical, engineering, and scientific work underwent an open, dynamic, and rigorous review process. The comprehensive review process included District Quality Control Review, Agency Technical Review, and Headquarters Policy and Legal Compliance review to confirm the planning analyses, alternative design and safety, and the quality of decisions. Washington-level review indicates the plan recommended by the reporting officers complies with all essential elements of the U.S. Water Resources Council's Economic and Environmental Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies, as well as other administrative and legislative policies and guidelines. The views of interested parties, including federal, state, and local agencies, were considered and all comments from public reviews have been addressed and incorporated into the final report documents where appropriate.

12. USACE decision documents recognize cost risk and uncertainty surrounding implementation. All cost estimates carry a degree of uncertainty. The total first cost for the Recommended Plan is estimated to be between \$289,775,000 and \$324,827,000 at the 80 and 100 percent confidence levels, respectively. This range of costs is based on a USACE Class 4 level of technical information and design reflecting approximately a 15 percent level of project definition. The total project first cost includes a contingency amount of \$56,086,000, which is approximately 24 percent of the estimated base project cost of \$233,689,000. The cost contingency reflects an 80 percent confidence level in estimated total project first cost and are intended to cover potential cost and schedule increases associated with identified project risks and their probability of occurrence. An 80 percent confidence level carries some degree of uncertainty. For the Recommended Plan project first costs, the known uncertainty drivers include: 1) applicability of Pawcatuck, Rhode Island Nonstructural project cost data (currently in PED) which was used to inform the cost estimate for this study; 2) potential congested site access and availability of staging areas within the 19 municipalities associated with the project; 3) potential contract modifications, specifically for a Design Build contract. As the project moves into the next phases, USACE will focus risk management and mitigation on the significant risk drivers to the extent within USACE control. However, there still exists the potential for unanticipated and uncontrollable changes in environmental or economic conditions that could increase the total project first cost beyond the current estimate and/or necessitate changes in the project's design.

13. In full consideration of the risks as documented in the preceding paragraphs in this report, I concur in the findings, conclusions, and recommendation of the reporting officers. Accordingly, I recommend that coastal storm risk management improvements for the Rhode Island Coastline, be authorized in accordance with the reporting officers' Recommended Plan at an estimated cost of \$289,775,000 for initial construction, with such modifications as in the discretion of the Chief of Engineers may be advisable.

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Federal implementation of the project for coastal storm risk management includes, but is not limited to, the following items of local cooperation to be undertaken by the non-federal sponsor in accordance with applicable federal laws, regulations, and policies:

a. Provide 35 percent of construction costs, as further specified below:

1. Provide, during design, 35 percent of design costs in accordance with the terms of a design agreement entered into prior to commencement of design work for the project;

2. Provide all lands, easements, rights-of-way, and placement areas and perform all relocations determined by the Federal government to be required for the project;

3. Provide, during construction, any additional contribution necessary to make its total contribution equal to at least 35 percent of construction costs;

b. Prevent obstructions or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) that might reduce the level of coastal storm risk reduction the project affords, hinder operation and maintenance of the project, or interfere with the project's proper function;

c. Inform affected interests, at least yearly, of the extent of risk reduction afforded by the coastal storm risk management features; participate in and comply with applicable Federal floodplain management and flood insurance programs; prepare a floodplain management plan for the project to be implemented not later than one year after completion of construction of the project; and publicize floodplain information in the area concerned and provide this information to zoning and other regulatory agencies for their use in adopting regulations, or taking other actions, to prevent unwise future development and to ensure compatibility with the project;

d. Operate, maintain, repair, rehabilitate, and replace the project or functional portion thereof at no cost to the Federal government, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal laws and regulations and any specific directions prescribed by the Federal government;

e. Give the Federal government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor owns or controls for access to the project to inspect the project, and, if necessary, to undertake work necessary to the proper functioning of the project for its authorized purpose;

f. Hold and save the Federal government free from all damages arising from design, construction, operation, maintenance, repair, rehabilitation, and replacement of the project, except for damages due to the fault or negligence of the Federal government or its contractors;

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g. Perform, or ensure performance of, any investigations for hazardous, toxic, and radioactive wastes (HTRW) that are determined necessary to identify the existence and extent of any HTRW regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601-9675, and any other applicable law, that may exist in, on, or under real property interests that the Federal government determines to be necessary for construction, operation, and maintenance of the project;

h. Agree, as between the Federal government and the non-Federal sponsor, to be solely responsible for the performance and costs of cleanup and response of any HTRW regulated under applicable law that are located in, on, or under real property interests required for construction, operation, and maintenance of the project, including the costs of any studies and investigations necessary to determine an appropriate response to the contamination, without reimbursement or credit by the Federal government;

i. Agree, as between the Federal government and the non-Federal sponsor, that the non-Federal sponsor shall be considered the owner and operator of the project for the purpose of CERCLA liability or other applicable law, and to the maximum extent practicable shall carry out its responsibilities in a manner that will not cause HTRW liability to arise under applicable law; and

j. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended, (42 U.S.C. 4630 and 4655) and the Uniform Regulations contained in 49 C.F.R Part 24, in acquiring real property interests necessary for construction, operation, and maintenance of the project including those necessary for relocations, and placement area improvements; and inform all affected persons of applicable benefits, policies, and procedures in connection with said act.

14. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program or the perspective of higher review levels within the Executive Branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding. However, prior to transmittal to Congress, the non-federal sponsor, interested federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.



SCOTT A. SPELLMON  
Lieutenant General, USA  
Chief of Engineers