Pawcatuck River, Rhode Island
Coastal Storm Risk Management
Feasibility Study

Appendix G: Pertinent Correspondence from Review of the Draft Report

Critical Comment Summary

Pawcatuck River, Rhode Island
Coastal Storm Risk Management
Feasibility Study

Public/Agency Review

A total of 6 letters were received from various groups including one letter from the Rhode Island Coastal Resources Management Council, the NFS, and one from a U.S. Senator Reed's office. There were also numerous emails posted to the District website. Almost all the comments received were negative in nature; calling into question the Corps' projections for future sea level, expenditure of Federal tax dollars on private property, retreat as the only viable option, questions about sponsorship, etc. Many of the Corps' responses to those comments can be found in the response letter to the Senator, dated January 13, 2017. The NFS and a couple of other commenters raised two fairly technical issues that required detailed discussion and response.

1. The NFS notes the difference between the Base Flood Elevation (BFE) water levels used in the feasibility study and recent work developed by them in collaboration with the University of Rhode Island called the Coastal Environmental Risk Index (CERI). CERI will result in BFEs several (2+) feet higher for the properties selected for the TSP in Charlestown. The NFS had been in the initial stages of applying for a Letter of Map Revision with FEMA but that effort has since been discontinued.

Response: Water level and wave input data for our study originated from the FEMA Flood Insurance Rate Maps and Study for Washington County, RI (effective October 16, 2013). This was the best available dataset for wave heights and water levels in the study area, including water levels for multiple return periods in the coastal ponds of southern Rhode Island, and wave height and total water level data (water level + wave height) for the 1-percent AEP event through the Base Flood Elevations (BFEs). Water levels and wave heights from the North Atlantic Coastal Comprehensive Study, or NACCS, a report developed as a result of Super Storm Sandy were available for use in Block Island Sound but were not considered reliable overland or within the coastal ponds where the NACCS model mesh resolution was too coarse to capture detailed topography.

CERI used the available NACCS save point data immediately offshore as their starting water level, but allowed wave setup to increase going inland across the ponds in Charlestown. This increase in water surface elevation both increases the inundation area and allows larger waves to propagate across the ponds, generating greater BFEs in the backshore.

A change in BFEs and floodplain mapping would have a significant impact on the analysis. Not only will it increase the amount of without project damages experienced but it would increase the number of properties eligible to be elevated. The Corps has since been told that FEMA will not entertain a re-study or adopt the CERI analysis for their regulatory mapping for Charlestown nor is there any timetable when the development of similar CERI data for the other three communities might occur.

After further discussion, it was decided that using the existing FEMA BFE data was the best course of action. The Corps will not endorse using the CERI data even to come up with a Locally Preferred Plan because of the confusion that would result from the use of the two different sets of BFE information.

2. The NFS as well as others disagree with the Corps use of the low sea level rise (SLR) rates over the 50 year period of analysis. RI CRMC has officially adopted NOAA's high curve rate from the Newport, RI gage. With this selection, mean sea level is projected to increase 3.7 feet by 2070. This increase is more than 3.3 feet higher than our selection of the Corps low (historic) rate of 0.37 feet.

Response: The study investigated three sea level change scenarios and their impact on the TSP. These rates were the low (historic), intermediate, and high rates as determined by the National Research Council (NRC) curves 1 and 3, respectively, in accordance with Engineering Cirular 1165-2-212. Engineering Regulation 1100-2-8162 (Incorporating Sea Level Change in Civil Works Programs) must be used when determining the choice of SLR scenario. It contains the latest guidance and procedures for evaluating SLR scenarios. The ER states that:

Planning studies and engineering designs over the project life cycle will consider alternatives that are formulated and evaluated for the entire range of possible future rates of SLC, represented by 3 scenarios of low (historic), intermediate, and high SLC. Alternatives should be evaluated using all 3 rates of future SLC for both "with" and "without" project conditions. Once the 3 SLC rates have been estimated, the next step is the sensitivity analysis to determine:

- ***how sensitive alternative plans and designs are to these rates of future local mean SLC***
- ***how this sensitivity affects calculated risk, and***
- ***what design or O&M measures should be implemented to adapt to SLC to minimize adverse consequences while maximizing beneficial effects.***

For the historic rate, the New London, CT NOAA station was used. The station is 22 miles west of the approximate center of the study area. The Newport, RI NOAA station, which is to the east of the project area, was also checked. There were very minor differences between the New London and Newport stations. Based on that comparison and the stations' comparable lengths of record, it was decided that using the New London station alone was adequate. The selected historic rate of SLR is 0.37 feet between 2020 and 2070. The intermediate and high rates suggest an increase of 0.84 feet and 2.33 feet, respectively.

The NFS argues that if the Newport gage is used for the period of 1999 to 2016 there appears to be an uptick in the rate that justifies their position for the NOAA high rate. Choosing the time period from 1999 to 2016 is arbitrary and somewhat selective to the Corps, relative to the entire period of record. The Corps has observed similar increases in the rate for similar lengths of time in the overall record (e.g. higher rate between 1960 and 1975). However, the high rates are always offset with lower rates and you end up with the linear trend (i.e. historic) which is holding fairly steady with no statistically significant deviations to date. The latest uptick could be the start of acceleration or it could just be another decadal cycle uptick, which could be followed by a decrease in the rate. It is too soon to tell. Given that there has been no statistically significant acceleration in SLR to date, the historic rate of SLR of 0.37 feet was selected and incorporated into the target structure elevation.

Just like a higher BFE, the selection of a higher rate of SLR would have a significant impact on the analysis. It will increase the target elevation for structure elevation, the amount of damages, and the number of properties eligible to be elevated.

There are quite a few coastal studies being done by the Corps in the north Atlantic region using the intermediate curve, but each one has its own reasons for doing so as identified

through the sensitivity analysis (such as a project having critical infrastructure that is impacted).

After further coordination with the Corps' Climate Preparedness and Resilience Community of Practice, the study team will choose the scenario that makes the most sense in light of the economic (2020-2070) and planning (2120) horizons for the project. The Corps will then re-run the analysis using the chosen scenario (most likely intermediate SLR) +1', +2', etc. to determine where benefits are maximized. This will result in a higher target elevation and a larger group of structures to elevate.

3. The report discussion states that "forty six other mainly commercial structures throughout the study area, though found to be highly susceptible to coastal flooding damage, do not lend themselves to elevation (concrete, brick, or metal structures). Instead, other flood proofing measures may be able to be applied in these situations by others." The report should include a more detailed discussion on the reasons what should be done with these '46'.

Response: Some commercial structures were included in the recommended plan; ones that were determined could be elevated. Forty-six other commercial and residential structures were not included like large multi-story hotels, sheet metal construction, brick on concrete slab construction, recreational structures (e.g. water slides), mobile homes, etc. that do not lend themselves to non-structural elevation. The District was not comfortable evaluating floodproofing measures for these structures. The Corps' National Floodproofing Committee was called upon to assist with this evaluation. Additional discussion and/or analysis will be included in the final report to determine whether or not any of these structures will be included in the final recommended plan.

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

January 13, 2017

Honorable Jack Reed
United States Senate
728 Senate Hart Office Building
Washington, D.C. 20510

Dear Senator Reed:

Thank you for your letter of December 19, 2016 regarding comments from various constituents on the Pawcatuck River, Rhode Island Coastal Storm Risk Management Feasibility Study. These comments are similar to comments we received as part of the public review period, which closed in November 2016.

As you know, this feasibility study has been ongoing for the past two years. The study is funded by the Disaster Relief Appropriations Act of 2013, which gave the Corps of Engineers the authority and funding to examine coastal storm risk management measures along the south facing coast of Rhode Island. The study is limited to the coastal floodplain of Westerly, Charlestown, South Kingstown, and Narragansett. The study examined a number of structural (e.g. beaches, walls, tide gates) and non-structural (e.g. elevation or acquisition of structures) alternatives. We are required to include non-structural alternatives in all flood risk management investigations. Our analysis determined that the elevation of 341 structures was the most economically viable (most net benefits) alternative. That alternative was presented as the recommended plan for the study area in our draft report. We are currently working through all the comments on the report, both from the public and the various levels of Corps review. It is our plan to have the final report completed by the summer of this year.

With regard to some of the major comments highlighted in the letters you sent us, I offer the following information.

1. If and when the recommended plan is authorized and funded, the non-Federal sponsor will be required to pay 35% of the design and construction cost to elevate the structures. The Government will pay 65% of the project cost as required by current cost sharing regulations. The sponsor for the study is the Coastal Resources Management Council (CRMC) and they are currently exploring options to meet the non-Federal cost share requirements for the project.

   The historic (low) rate of sea level rise is factored into our analysis of the recommended plan. We also conducted sensitivity analyses of intermediate and high sea level rise rates as required by our regulations. We continue to work with

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Jeffrey Diehl
Executive Director and CEO

November 21, 2016

Mr. Christopher Hatfield
District Engineer
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Dear Mr. Hatfield,

Rhode Island Infrastructure Bank ("RIIB") is pleased to submit comment to the U.S. Army Corps of Engineers ("USACE") on the Pawcatuck River Coastal Storm Risk Management ("CSRM") feasibility study in the Rhode Island towns of Westerly, Charlestown, South Kingstown, and Narragansett. RIIB commends the work of the USACE and Rhode Island Coastal Resources Management Council ("CRMC") on their focus to this pressing need in the State of Rhode Island and the commitment to putting financial resources forward to protect property owners from the impacts of flood events, storm surge, and sea level rise.

Rhode Island, through the work of CRMC and other agencies, leads the nation in developing tools for the public and private sectors to use in identifying the impacts of extreme weather events. These tools, such as STORMTOOLS and the Coastal Environmental Risk Index (CERI), provide information about storm surge and sea level rise that decision makers can use to make smart investments in infrastructure. RIIB, as one of the key hubs of infrastructure investment in the State of Rhode Island, is looking forward to building on the success of the work of CRMC and to create a sustainable and comprehensive investment program for resiliency in the State that is replicable and provides a model for the nation.

RIIB's mission is to support and finance investments in Rhode Island's local infrastructure and has significant experience in managing investment programs in a multitude of infrastructure sectors. We have consistently led the nation in leveraging federal and state funds with private sector capital on behalf of the State of Rhode Island for investments in sustainable infrastructure that enhance the environment, create local jobs, and promote economic development. According to a recent report by the investment bank Piper Jaffray, RIIB again ranked #1 in the nation for leveraged funds in our Clean Water State Revolving Fund (CWSRF) program, creating $6.00 dollars of infrastructure investment for every dollar invested by the United State Environmental Protection Agency ("US EPA") to the State of Rhode Island's CWSRF. We believe that the lessons learned from our successful implementation of infrastructure investment programs in Rhode Island can be the basis for the creation of a successful investment program for resiliency improvements in the CSRM location and beyond.

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RIIB has evaluated the CSRM proposal in detail and is recommending that the USACE consider providing flexibility in how the federal cost share is contributed to this proposal. Investing the federal share of funds as seed capital into a resilient property investment program, rather than granting these funds to individual tasks, we believe will lead to a sustainable program that increases the uptake for elevation and related property investments, cuts the time to implementation for property owners, and contributes to increased resiliency in the State of Rhode Island.

Property elevation, as identified in the CSRM proposal, is one of a number of investments that a property owner can make to become more resilient to extreme weather impacts. Other investments that are not directly evaluated in this study should be considered in a comprehensive investment program. For example, property owners that elevate their homes should also have the option to make wind hardening improvements to protect against the higher wind speeds they may encounter at higher elevations. Additionally, property owners should consider making related investments to protect their utility connections, heating and cooling units and septic systems from flooding, storm surge, and sea level rise.

Taking a page from the "dig-once" policy for infrastructure investment, RIIB believes that Rhode Island has the opportunity to leverage federal funding from this proposal to create a comprehensive and sustainable property investment program for property related resiliency improvements. Providing property owners with a menu of improvement options that they can undertake, in addition to elevation under one program umbrella, is likely to increase the uptake of the program, cut the time to implementation, and contribute to an increase in resiliency to all Rhode Islanders.

When evaluating our proposed approach to the implementation of the CSRM proposal, RIIB reviewed the elevation program undertaken by USACE in Milford, CT; a subsequent State of Connecticut sponsored property elevation program, and others. Funding for the USACE program in Milford, whereby 65% was contributed by the federal government through a grant, and 35% contributed by and through various channels to achieve the non-federal share, resulted in limited uptake from property owners identified in the proposal. Out of the 120 properties identified in the proposal for elevation, only 36 of those took advantage of elevation through the USACE program. RIIB believes that by providing flexibility in how the federal share is contributed to this project, as seed capital in a program to be leveraged with state and private sector capital, will lead to a successful and comprehensive property investment program. Providing the funds as seed capital, will allow Rhode Island to invest, leverage, and recycle these funds such that they can be used in the future to support additional investments in properties identified in this study and across the State of Rhode Island who are at risk from sea level rise and storm surge impacts.

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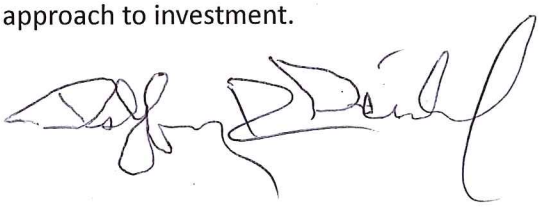
RIIB commends the work of the USACE and their commitment to investment in Rhode Island's infrastructure. RIIB looks forward to partnering with USACE, CRMC and all stakeholders to build a successful investment program leading to a resilient Rhode Island. We appreciate the opportunity to provide comment on the CSRM proposal and would welcome the chance to speak further about this approach to investment.



our Headquarters staff to determine how best to address this issue given the state of Rhode Island's differing views on future sea levels. The state's adopted future rate is a foot higher than even the Corps high rate over the same period of analysis. Notwithstanding that fact, the CRMC has expressed their support for the recommended plan in concept.

2. Many commenters expressed concern that Federal tax dollars will be spent on private property. Reduction of coastal storm damage to public infrastructure and private property is a Corps mission. Reduction of damage can be accomplished through different means including the elevation of individual structures. The Corps can participate in these types of nonstructural projects when they are the most cost effective solution. Whether the Federal government provides assistance to individual property owners through this project, post-disaster assistance, or subsidized flood insurance, Federal tax dollars are being used to assist individuals. Proactively elevating the properties will result in less Federal funding being paid out over time and lowers flood insurance premium rates for those carrying flood insurance.

3. We have no ability to determine which properties are primary or secondary residences and did not discriminate on that basis.

4. The Corps does not have the ability to set up a loan program. Acquisitions (aka. buy-outs) were examined during the study but were not as economically feasible compared to elevating structures. The average cost to elevate the structures identified in the recommended plan is about $172,000. The average acquisition cost per structure is significantly more as it is based on purchasing a similar flood-free property (structures and land), plus the cost of demolition and site restoration.

5. State and local laws often require septic system upgrades when "substantial" improvements are made to structures. Whether or not septic upgrades will be required for this project and, if so, whether the cost of such an upgrade can be a shared cost is not clear at this time. This issue is something we will have to address with Corps Headquarters staff as we move forward. In any event, we have no authority to include structures that are outside the study area defined earlier.

I trust this letter helps answer some of the questions and concerns raised. Please feel free to contact me at 978-318-8220 or the Project Manager, Mr. Christopher Hatfield at 978-318-8520, if you have any additional questions or need additional assistance.

Sincerely,

Christopher J. Barron
Colonel, Corps of Engineers
District Engineer

JACK REED
RHODE ISLAND

COMMITTEES

APPROPRIATIONS
ARMED SERVICES, RANKING MEMBER
BANKING, HOUSING, AND URBAN AFFAIRS
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December 19, 2016

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Col. Christopher Barron
District Engineer Commander
U.S. Army Corps of Engineers New England District
696 Virginia Road
Concord, MA 01742

Dear Col. Barron:

I write on behalf of a number of my constituents from communities across Rhode Island.

As the enclosed letter indicate, these individuals have concerns about the proposal to raise a number of structures along the Washington County coast. I have enclosed their letters for your review.

Thank you in advance for your attention.

Sincerely,

Jack Reed
United States Senator

Enclosure

Dear Senator Reed,

My wife and I have been following the Army Corps' proposal to raise a number of properties along the South Coast. It is our understanding that the Corps will be using 'public' money–and a lot of it –and the home owners will have 'no skin in the game.' We are shocked by the proposal and quite opposed to it.

We have lived in RI since 1968 and watch over the years increasing development of housing along the shoreline –often right on the beach or in the dunes. The impact of all this private development has not been good for the environment (the beach front, the salt ponds, etc), the aesthetics of the area, and the public access to the beaches. Private owners have over-built, and they have tried to control access to the beach and even the use of the beach about the high tide line. I understand that that is what the laws allow, but if they now are facing increasingly higher tides, that is their problem and responsibility ---not the publics.

It is also our understanding the tide figures the Corps is using are simply the 'regular' tide increases –well short of the figures that Save The Bay and other climate scientists are suggesting for a much more substantial increase in tides by 2050. Sound scientific data is key here to assess any proposal. (Homeowners along the south shore have seen significant storm erosion and higher tides for the last two decades; this is not a surprise.)

The home owners built these homes, enjoyed exclusive use of the area, watched the value of their properties increase; it is not the public's responsibility to insure the continued use of their property by supplying money to raise their houses –and to insure the high value of their properties. These are second homes for most of these folks –and they are doing very well. There are risks with buying a property and they must be borne by the owner –not by those of us who chose to buy our house away from the tides and storms. (For that they can buy insurance, but the public should not pay for the insurance; it was their choice and now it is their responsibility.)

Obviously, for all the same reasons, we are also opposed to the alternate proposal of the Corps to buy out the homeowners.

We strongly urge you to weigh in on this matter and oppose the Corps' proposal.

Sincerely,

Peter and Susan McCalmont
Barrington, RI

Dear Senator;

As previously reported in the news media, the US Army Corps of Engineers is proposing a 58 million dollar plus project(38 million of which is our federal tax money) to lift 341 privately owned structures to reduce their potential damage from storm surges and sea level rise. These structures are located along 28 miles of coast in Westerly, Charlestown, South Kingstown and Narragansett. I think this is a total misuse of our federal tax dollars and opens the door to having tax payers fund protecting vulnerable private structures along the entire seaboard - can you imagine the cost? Safeguarding private property is the owner's responsibility - not the responsibility of the American tax payer. I think our tax dollars would be better used to a) provide low or no interest loans to owners of vulnerable properties or b)to purchase and demolish vulnerable structures to expand the sea barrier. Money used to help owners finance the US Corps of Engineers' recommended upgrades would create a self-replenishing fund to assist every owner of vulnerable property instead of just the 341 identified in the proposal.

Thank you,
John
Newport, RI

Dear Senator Reed:

In the Pawcatuck River, Rhode Island Coastal Storm Risk Management Feasibility Study, the US Army Corps of Engineers is proposing to spent nearly 60 million dollars (Sandy money) to raise 341 private structures in an attempt to reduce future flooding caused by storm surges.

I am opposed to using tax payer dollars for private purposes. If these private structures are unusually vulnerable to flooding, then perhaps the owners should raise their structures using a no interest or low interest loans from the Sandy fund. If this is not feasible then perhaps the USG should buy and demolish these properties to create a flood barrier.

If the Corps of Engineers continues with this proposal, where will it end? Will the tax payers pay to raise all structures along every coast and river subjected to flooding? or is this proposal for only a selected few?

I think Congress should hold hearings to determine if this proposal is an appropriate use of taxpayer monies.

Thank you,
John Drotos
Newport, RI

Dear Senator Reed,

I recently read about the Army Corps' proposal to raise 341 houses along the southern Rhode Island coast. $58.6 million of public funds will be used to raise the house from 8 to 15 feet off the ground. I am unequivocally against this proposal.

Sincerely.
Joseph Williams
Scituate, RI

Dear Senator Reed,

I am writing today so that my comments will be part of the official record for the proposed project of lifting 341 privately owned homes in South County Rhode Island.

As a former member of the Portsmouth Town Council (elected 1990 thru 2002) as both the Vice –President and President, I was dismayed to read about this Army Corps project in the Providence Journal and how far it has come along (nearly to shovels in the ground).

When I left public office I felt it was time to let those who have been duly elected to do their jobs and to keep my comments to myself. After all, I already had my shot. To date, I haven't publicly commented on any local issue even though I have certainly had my share of both agreements and disagreements on some pretty hot-button issues.

But after reading the aforementioned article I am both angry and dismayed and wonder aloud if many of us "missed the boat" on securing some federal funding to help Portsmouth residents!

In short, some highlights of the story are that the Corps has spent $800,000 already studying the area in South County. They propose to lift 341 PRIVATE RESIDENCES at a cost of some $58.6 million dollars which has already been approved for spending by Congress.

What is the benefit to the Public who is funding this expenditure with taxes? NONE! The only benefit I see is to improve these private homes and properties, where many of the owners do not even live in these homes year-round. Tax dollars are being spent to improve their private summer playgrounds!

On the other hand, the residents of Island Park, Portsmouth Park and Common Fence Point are being forced to replace cesspools and septic systems. The vast majority of these systems were approved and/or legal when originally installed when these homes were built. Many of these residents cannot afford the $30,000 plus cost of these new systems. In many cases, the cost of the new system is greater than the original cost of the home. Many are forced to sell their properties at reduced sales prices.

I am not denying the benefit of these new system installations. Rather, the benefit is exactly my point and bolsters my argument!!

These new systems will ensure cleaner groundwater and drinking water and cleaner water at the shore for boaters, bathers and shell fishermen. There is a long-lasting benefit to the public and this is exactly the type of project that should be funded by government agencies.

If you compare the home lifting project that "might" save some money should we get a 100 year storm to the long-lasting benefit of a septic renewal project the difference is like night and day.

I implore the elected and appointed officials to read the Providence Journal story, take a long, hard look at what we are doing here and do a reality check and get some relief for these Portsmouth residents. It's not too late to correct the past and what might happen in the future! I for one believe it is your responsibility.

Thanking you in advance for your anticipated cooperation,

Stephen P. Pappas
Portsmouth RI

State of Rhode Island and Providence Plantations
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November 21, 2016

Christopher J. Barron, Colonel
District Engineer
Department of the Army
New England District, Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751
Attn: Planning Division (Mr. Christopher Hatfield)

Re: Pawcatuck River, Rhode Island Coastal Storm Risk Management Feasibility Study – Draft Integrated Feasibility Report & Environmental Assessment, October 2016

Dear Colonel Barron:

The Rhode Island Coastal Resources Management Council (CRMC) is providing the following comments in response to the public notice issued by the Corps of Engineers on 19 October 2016 for the above referenced study. The CRMC supports the concept in the Corps' Tentatively Selected Plan that specifies the following number of residential dwellings will be eligible for elevation within the study area: Westerly (45); Charlestown (44); South Kingstown (172); and Narragansett (80). We look forward to participating with the Corps of Engineers on the proposed plan to elevate residential structures within the study area and the elevation of these structures certainly appears warranted. We would like to discuss the issue of the Corps selected sea level rise 50-year projection and what we believe to be an underestimation of eligible residential structures within the study area communities. Each specific issue is addressed in more detail below.

Sea Level Rise

Using the Corps Sea Level Change Calculator for the NOAA water level station at New London, CT, the study specifies that sea level rise (SLR) over the 50 year project life would be 0.37 feet for the low rate and 2.33 feet for the high rate. The Corps has selected the low rate for purposes of adding extra elevation above the RI State Building Code (SBC) requirement of base flood elevation (BFE) plus 1 foot. Thus, eligible structures would be elevated to BFE plus 1.37 feet to meet SBC and accommodate the Corps projected sea level rise over the next 50 years. Appendix B of the study shows an intermediate SLR of 0.84 feet over 50 years that will increase the number of eligible structures by 30 and a high rate of 2.33 feet over the same period, which will increase the number of eligible structures by 140. The study does not provide any rationale for the selection of the low sea level rise rate, other than the sensitivity analysis in Appendix B. The Corps selected low rate of 0.37 feet increase in SLR by 2070 equates to an annual rate of 0.089 inches or 2.26 mm/yr. The present mean annual rate of SLR for Newport is 4.8 mm/year (since 1999) as determined from the Permanent Service for Mean Sea Level at Newport

SAVE THE BAY®
NARRAGANSETT BAY

November 21, 2016

Mr. Christopher Hatfield
Planning Division
District Engineer
696 Virginia Road
Concord, MA 01742

Re: Pawcatuck River Coastal Storm Risk Management Project: Westerly, Charlestown, South Kingstown and Narragansett, Rhode Island

Dear Mr. Hatfield:

Save The Bay has reviewed the Draft Integrated Feasibility Report and Environmental Assessment (DIFREA) and submits that it does not adequately assess the environmental consequences of the project, adequately account for sea level rise, analyze reasonable alternatives or demonstrate that the Tentatively Selected Plan (TSP) maximizes the net economic benefit while protecting the environment. Therefore, Save The Bay submits that the TSP should not move forward without a complete environmental assessment as required by the National Environmental Policy Act (NEPA).

As you know, "[t]he NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment." 40 CFR 1500.1(c). The Environmental Impact Statement (EIS) must "provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 CFR 1502.1.

The EIS must contain a "detailed statement" about the proposed project, including a statement concerning the environmental impacts of the proposed project and all reasonable alternatives to the project. 42 U.S.C. § 4332(C)(i)(iii). An agency must "consider all significant environmental impacts before choosing a course of action (internal citations omitted).' After all, '[pa]rt of the harm NEPA attempts to prevent in requiring an EIS is that, without one, there may be little if any information about prospective environmental harms and potential mitigating measures.' *Winter v. NRDC,* 555 U.S. 7, 129 S.Ct. 365, 376, 172 L.Ed.2d 249 (2008). It follows inexorably that

Rhode Island Flood Mitigation Association

PO Box 14235 East Providence, Rhode Island 02914

November 21, 2016

Christopher Hatfield, District Engineer
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

RE: Pawcatuck River Coastal Storm Risk Management (CSRM) feasibility study in Westerly, Charlestown, South Kingstown, and Narragansett, Rhode Island

Dear Mr. Hatfield,

Thank you for the opportunity to comment on the CSRM feasibility study in four communities of Rhode Island's South coast. As a network of associates who bring their experiences to a statewide forum for sharing and learning, RIFMA is strongly supportive of hazard mitigation actions taken to reduce risks to properties, human health and safety, and the communities that we live in.

We applaud the effort of the USACE in this study and generally support recommendations to elevate at risk properties. However, we feel that the Tentatively Selected Plan falls short on its analysis, and we would encourage the USACE to look at the following element, together with local and state officials, before finalizing the plan.

- Sea level rise scenarios used are too conservative. Using ".37 feet to account for historic sea level rise over the next 50 years" is not best practice, is not consistent with RI State policy Section 146 of the Coastal Resources Management Plan (taken from the USACE Sea Level Rise Calculator and using NOAA high curve), and is not consistent with the Executive Order 11988/13690 Federal Flood Risk Management Standard for federal agencies to apply greater freeboard. Additionally, this option seemingly is not cost effective for the homeowner; whereas, their flood insurance rates decrease substantially for each additional foot of freeboard.
- The costs and benefits do not appear to include other associated costs that would be borne by the owner and/or municipality. For instance, elevating homes may trigger the need for new on-site wastewater disposal systems (septic systems). How does that cost get considered in the Benefit/Cost ratio for the project? If these costs were considered, would the proposed plan still be justified? If these costs were considered, could retreat or outright purchase of land then be more realistic in some areas?
- The proposed project seems to be piece meal, with a scattering of residential homes along the shore. A holistic neighborhood by neighborhood approach may be more effective. Are repetitive loss properties/neighborhoods given priority? How effective will this mitigation effort be if the access road is under water during extreme tides on a regular basis and/or as a result of high intensity storms?

clf
conservation law foundation

For a thriving New England

CLF Massachusetts
62 Summer Street
Boston, MA 02110
P: 617.350.0990
F: 617.350.4030

November 18, 2016

Mr. Christopher J. Barron, District Engineer
United States Army Corps of Engineers
696 Virginia Road
Concord, MA 01742
ATTN: Planning Division, Mr. Christopher Hatfield

Subject: Pawcatuck River Coastal Storm Risk Management Project

Dear Mr. Barron:

Thank you for the opportunity to comment on the proposed Pawcatuck River Coastal Storm Risk Management Project for the towns of Westerly, Charlestown, South Kingston, and Narragansett, Rhode Island.

Conservation Law Foundation (CLF) is a regional environmental advocacy organization committed to preserving New England's natural resources, building healthy communities, and sustaining a vibrant economy. In the face of climate change, achieving these goals is more challenging and important than ever. As our region confronts increases in sea level rise, precipitation, extreme heat, and the intensity of storm events, we need to be proactive in developing resilient infrastructure.

While we are pleased that the United States Army Corps of Engineers (USACE) is taking steps to address the vulnerabilities of Rhode Island's coastal communities, we are concerned that the proposed project lacks the foresight and prudence necessary to protect Rhode Island from future climate impacts. Specifically, CLF does not believe that the sea level rise analysis in the USACE feasibility report, or the subsequently chosen elevation level, is adequate or justifiable. We strongly urge you to consider a more realistic sea level rise scenario, relying on scientific consensus rather than historical estimates. Pouring millions of federal dollars into a project that does not take future climate risks into consideration is not only an irresponsible use of taxpayer money but also fails to achieve the ultimate goal of making these communities more resilient to flooding and extreme weather events.

Public Notice

U.S. Army Corps
Of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Date: 19 October 2016

Comment Period Closes: 21 November 2016

Evaluation Branch, Planning Division

PAWCATUCK RIVER
COASTAL STORM RISK MANAGEMENT PROJECT
WESTERLY, CHARLESTOWN, SOUTH KINGSTOWN, and NARRAGANSETT, RHODE ISLAND

Interested parties are hereby notified that the U.S. Army Corps of Engineers (USACE), New England District, is currently working on the Pawcatuck River Coastal Storm Risk Management (CSRM) feasibility study in Westerly, Charlestown, South Kingstown, and Narragansett, Rhode Island (see Figure 1). The non-Federal project partner for the study is the Rhode Island Coastal Resources Management Council (RI CRMC). The non-Federal sponsor for project implementation has not been identified at this point in the study, but a non-Federal sponsor for the project will be required for project implementation. This study is authorized in a resolution approved by the Committee on Public Works of the United States Senate, dated September 12, 1969. Authorization and funding is also provided under investigations heading, Title X, Chapter 4, Division A of the Disaster Relief Appropriations Act of 2013, Public Law 113-2 (127 Stat. 23) enacted January 29, 2013. The Secretary of the Army is authorized to complete ongoing flood and storm damage reduction studies in areas that were impacted by Hurricane Sandy. This public notice provides information about the Pawcatuck River CSRM project and documents compliance with all applicable laws and regulations.

Purpose and Need for Work: The study area includes about 28 miles of moderately developed coast in the towns of Westerly, Charlestown, South Kingstown, and Narragansett, in Washington County, Rhode Island. The floodplain completely encompasses the coastal barrier beaches and salt ponds in the area (see Figure 2). There is a demonstrated need for coastal resiliency measures to be implemented in south coastal Rhode Island. Residential and commercial properties in the Pawcatuck River coastal floodplain are all vulnerable to inundation from coastal storms. The study area includes about 4,800 structures most of which are residential. The total value of the existing residential and commercial inventory is estimated to be worth over $600 million.

The Tentatively Selected Plan (TSP) for the Pawcatuck River CSRM project consists of elevating the first floors of 341 structures in the four study area communities. The first floors will be elevated to a height corresponding to the Federal Emergency Management Agency (FEMA) designated Base Flood Elevation (BFE), ranging from +11 feet North Atlantic Vertical Datum of 1988 (NAVD88) to +17 feet NAVD88, plus 1 additional foot in accordance with state building code and another 0.37

NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

For Immediate Release:
Oct. 19, 2016
Release No. RI 2016-098

Contact:
Tim Dugan, 978-318-8264
cenae-pa@usace.army.mil

Public comments due by Nov. 21

Corps of Engineers proposes coastal storm risk management plan for Westerly, Charlestown, South Kingstown, Narragansett

CONCORD, Mass. – The U.S. Army Corps of Engineers, New England District is conducting the Pawcatuck River Coastal Storm Risk Management (CSRM) feasibility study and is proposing a plan to reduce potential storm and flooding impacts to Westerly, Charlestown, South Kingstown and Narragansett, Rhode Island.

The study area includes about 28 miles of moderately developed coast in the towns of Westerly, Charlestown, South Kingstown and Narragansett in Washington County. The floodplain completely encompasses the coastal barrier beaches and salt ponds in the area. There is a demonstrated need for coastal resiliency measures to be implemented in south coastal Rhode Island. Residential and commercial properties in the Pawcatuck River coastal floodplain are all vulnerable to inundation from coastal storms. The study area includes about 4,000 structures most of which are residential. The total value of the existing residential and commercial inventory is estimated to be worth more than $600 million.

This study is being conducted under existing authorities and under the Disaster Relief Appropriations Act of 2013 for Hurricane Sandy impacts, according to Project Manager Christopher Hatfield, of the Corps of Engineers, New England District, Planning Division in Concord, Mass.

The Tentatively Selected Plan for the Pawcatuck River CSRM project consists of elevating the first floors of 341 structures in the four study area communities. The first floors will be elevated to a height corresponding to the Federal Emergency Management Agency (FEMA) designated Base Flood Elevation (BFE), ranging from +11 feet North Atlantic Vertical Datum of 1988 (NAVD88) to +17 feet NAVD88, plus 1 additional foot in accordance with state building code and another 0.37 feet to account for historic sea level rise over the next 50 years. Properties eligible for elevation are: 45 structures in Westerly; 44 structures in Charlestown; 172 structures in South Kingstown; and 80 structures in Narragansett.

Forty-six other mainly commercial structures in the study area, though found to be highly susceptible to coastal flooding damage, do not lend themselves to elevation (concrete, brick or metal structures). Instead, they may be able to apply other flood-proofing measures in these situations.

Elevation of individual structures will rely on conventional residential construction methods. Structures will be elevated using lifting jacks and supported on temporary cribbing. The existing foundation for the participating home will be demolished and temporary utility connections put into place to allow occupants to remain in the structure throughout construction. Those structures in the AE-zone of the floodplain will be provided with a new concrete wall foundation. Those in the VE-zone will be placed on new concrete piers. Once ready, structures will be lowered onto new foundations and the permanent utility connections made.

– more –

Corps proposes Pawcatuck River Coastal Storm Risk Management Project/2-2-2-2-2

The Pawcatuck River CSRM feasibility study considered a range of structural and nonstructural measures to reduce the risk of storm damage. Through an iterative planning process, potential coastal storm risk management measures were identified, evaluated and compared. Initial screening of alternatives determined that detailed study of structural (sheet pile floodwalls and tide gates), soft structural (beach fill/nourishment), and nonstructural (elevation and buyout of properties) alternatives should be conducted in Westerly due to the density of development there. Conversely, only non-structural alternatives made sense for full evaluation in the towns of Charlestown, South Kingstown and Narragansett.

The non-Federal project partner for the study is the Rhode Island Coastal Resources Management Council. The non-Federal sponsor for project implementation has not been identified at this point in the study, but a non-Federal sponsor will be required before a project could be implemented.

Approximately 221 of the structures proposed for elevation date from 1900 to 1966; most date to the 1950s. There are no 19th century buildings in the inventory. Most are small, single-story houses on small lots scattered throughout the study area; however, there are some that comprise cohesive neighborhoods. None of the buildings merit individual distinction for eligibility for the National Register of Historic Places. One neighborhood potentially could be eligible for the National Register under Criterion A for its association with the early to mid-20th Century development of coastal communities in Rhode Island: 17 houses on Champlin Avenue in Narragansett. Elevating buildings in this neighborhood could have an effect on historic properties. This determination is being coordinated with the Rhode Island State Historic Preservation Office and the Narragansett Tribal Historic Preservation Office.

An Integrated Report (combined Detailed Project Report and Environmental Assessment) was prepared for the Pawcatuck River CSRM project. A preliminary determination was made that an Environmental Impact Statement is not required under the provisions of the National Environmental Policy Act of 1969.

The proposed plan is being coordinated with: U.S. Fish and Wildlife Service; U.S. Environmental Protection Agency; U.S. National Marine Fisheries Service; Rhode Island Department of Environmental Management, Office of Water Resources, Bureau of Natural Resources, Division of Fish and Wildlife - Marine Fisheries; Rhode Island Coastal Resources Management Council; The Nature Conservancy, Rhode Island Chapter; Save the Bay; Wood-Pawcatuck Watershed Association; Rhode Island Historical Preservation and Heritage Commission; Narragansett Indian Tribe – Tribal Historic Preservation Office; and the towns of Westerly, Charlestown, South Kingstown and Narragansett.

A copy of the report is available via the website http://www.nae.usace.army.mil/Missions/Projects-Topics/ or from Project Manager Christopher Hatfield at 978-318-8520. Any person who has an interest that may be affected by the proposed project may request a public hearing. The request must be submitted in writing within 30 days and must clearly set forth the interest and the manner in which the interest may be affected.

Public comments on this proposed plan should be forwarded no later than Nov. 21, 2016 to the U.S. Army Corps of Engineers, New England District, ATTN: Planning Division (Mr. Christopher Hatfield), 696 Virginia Road, Concord, MA 01742-2751 or by email to cenae-ep@usace.army.mil.

# # #

U.S. ARMY CORPS OF ENGINEERS – NEW ENGLAND DISTRICT
696 VIRGINIA ROAD, CONCORD, MA 01742-2751
http://www.nae.usace.army.mil

feet to account for historic sea level rise over the next 50 years. Properties eligible for elevation, by town, are as follows:

- Westerly: Elevate 45 Structures
- Charlestown: Elevate 44 Structures
- South Kingstown: Elevate 172 Structures
- Narragansett: Elevate 80 Structures

Forty six other mainly commercial structures throughout the study area, though found to be highly susceptible to coastal flooding damage, do not lend themselves to elevation (concrete, brick, or metal structures). Instead, others may be able to apply other flood proofing measures in these situations.

Elevation of individual structures will rely on conventional residential construction methods. First, existing structures will be elevated using lifting jacks and supported on temporary cribbing. Then the existing foundation for the participating home will be demolished and temporary utility connections put into place to allow occupants to remain in the structure throughout construction. Those structures located in the AE-zone of the floodplain will be provided with a new concrete wall foundation. Those in the VE-zone will be placed on new concrete piers. Once ready, the structures will then be lowered onto the new foundations and the permanent utility connections made.

Alternatives Analysis: The Pawcatuck River CSRM project plan formulation considered a range of structural and nonstructural measures to reduce the risk of storm damage in the study area. Through an iterative planning process, potential coastal storm risk management measures were identified, evaluated, and compared. Initial screening of alternatives determined that detailed study of structural (sheet pile floodwalls and tide gates), soft structural (beach fill/nourishment), and nonstructural (elevation and buyout of properties) alternatives should be conducted in Westerly due to the density of development there. Conversely, only non-structural alternatives made sense for full evaluation in the towns of Charlestown, South Kingstown, and Narragansett.

Coordination: Letters of coordination have been sent to the following agencies:

Federal
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
U.S. National Marine Fisheries Service

State
Rhode Island Department of Environment Management
Office of Water Resources
Bureau of Natural Resources
Division of Fish and Wildlife - Marine Fisheries
Rhode Island Coastal Resources Management Council
Rhode Island Historical Preservation and Heritage Commission

Tribal Governments
Narragansett Indian Tribe - Tribal Historic Preservation Office

Local
Town of Westerly
Town of Charlestown
Town of South Kingstown
Town of Narragansett

Non-Governmental Agencies
The Nature Conservancy Rhode Island Chapter
Save the Bay
Wood-Pawcatuck Watershed Association

Endangered Species: The northern long-eared bat (NLEB), a federally-listed threatened species, is a medium-sized bat found across much of the eastern and northcentral United States. It is assumed that the NLEB is present and may utilize mature trees within the existing development and surrounding forest habitat for roosting. Since the footprint of the buildings proposed for elevation will remain the same, and homeowners generally do not have trees close to foundations for structural integrity, the USACE does not anticipate that a large number of trees would need to be cut for construction purposes. However, in the event that some individual trees need to be removed to enable access for construction vehicles, no cutting of trees ≥ 3 inches diameter at breast height will occur from 15 April to 30 September, in any year, to avoid direct impacts to roosting NLEB.

The piping plover (*Charadrius melodus*), a federally threatened species, is a small species of shorebird which breeds along the northeastern Atlantic coast. Plovers nest above the high tide line on coastal beaches, sand flats at the ends of sandspits and barrier islands, gently sloping fore dunes, blowout areas behind primary dunes, sparsely vegetated dunes, and wash over areas cut into or between dunes. A Planning Aid Letter received from the U.S. Fish and Wildlife Service (USFWS), dated August 13, 2015, identified the coastline within the study area as having potential to support suitable nesting and foraging piping plover habitat. None of the individual houses proposed for elevation are located within designated piping plover habitat in Westerly, Charlestown, South Kingstown or Narragansett. However, a small number of houses are located within 900 feet of designated piping plover habitat. Although indirect impacts to piping plover may occur due to construction activities (e.g., construction noise, truck traffic, etc.), these potential impacts are not expected to be significant. This determination is currently being coordinated with the USFWS pursuant to the Endangered Species Act (ESA).

Environmental Impacts: An Integrated Report (combined Detailed Project Report and Environmental Assessment) was prepared for the Pawcatuck River CSRM project. A preliminary determination was made that an Environmental Impact Statement is not required under the provisions of the National Environmental Policy Act of 1969.

Cultural Resources: Approximately 221 of the structures proposed for elevation date from 1900 to 1966; most date to the 1950s. There are no nineteenth century buildings in the inventory. Most are small, single story houses on very small lots scattered throughout the study area, however there are some that comprise cohesive neighborhoods. None of the buildings merit individual distinction for eligibility for the National Register of Historic Places. One neighborhood could be potentially eligible for the National Register under Criterion A for its association with the early to mid-twentieth century development of coastal communities in Rhode Island: 17 houses on Champlin Avenue in Narragansett. Elevating buildings in this neighborhood could have an effect on historic properties. This determination is being coordinated with the RI State Historic Preservation Officer and the Narragansett

Tribal Historic Preservation Officer in accordance with Section 106 of the National Historic Preservation Act, as amended.

Federal Consistency with Coastal Zone Management: The project will be conducted in a manner consistent to the maximum extent practicable with all applicable Rhode Island Coastal Resources Management Program policies and the Rhode Island Salt Pond Region Special Area Management Plan (SAMP). The SAMP is part of the Rhode Island Coastal Resources Management Council's (CRMC) ongoing responsibility under both the Rhode Island General Laws 46-23 and the Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451-1464).

Other Federal Permit Requirements: No in-water work is proposed. As such, a Water Quality Certificate (Section 401 of the Clean Water Act of 1977), Section 404(b)(1) evaluation (Section 404 of the Clean Water Act), and an Essential Fish Habitat review pursuant to the Magnuson-Stevens Fishery Conservation and Management Act are not required.

Compliance: This Public Notice is being issued in compliance with several environmental laws and regulations (see Attachment A).

Availability of the Draft Integrated Report: A copy of the report can be obtained via the website below or upon request by contacting the Project Manager, Chris Hatfield at 978-318-8520.

http://www.nae.usace.army.mil/Missions/Projects-Topics/

Public Comments: Comments are invited from all concerned parties and should be directed to the District Engineer at 696 Virginia Road, Concord, MA 01742, ATTN: Planning Division (Mr. Christopher Hatfield), within 30 days of this notice. Any person who has an interest that may be affected by the proposed project may request a public hearing. The request must be submitted in writing to me within 30 days of the date of this notice and must clearly set forth the interest and the manner in which the interest may be affected. Please bring this notice to the attention of anyone you know to be interested in the project.

18 OCT 2016
Date

Christopher J. Barron
Colonel, Corps of Engineers
District Engineer

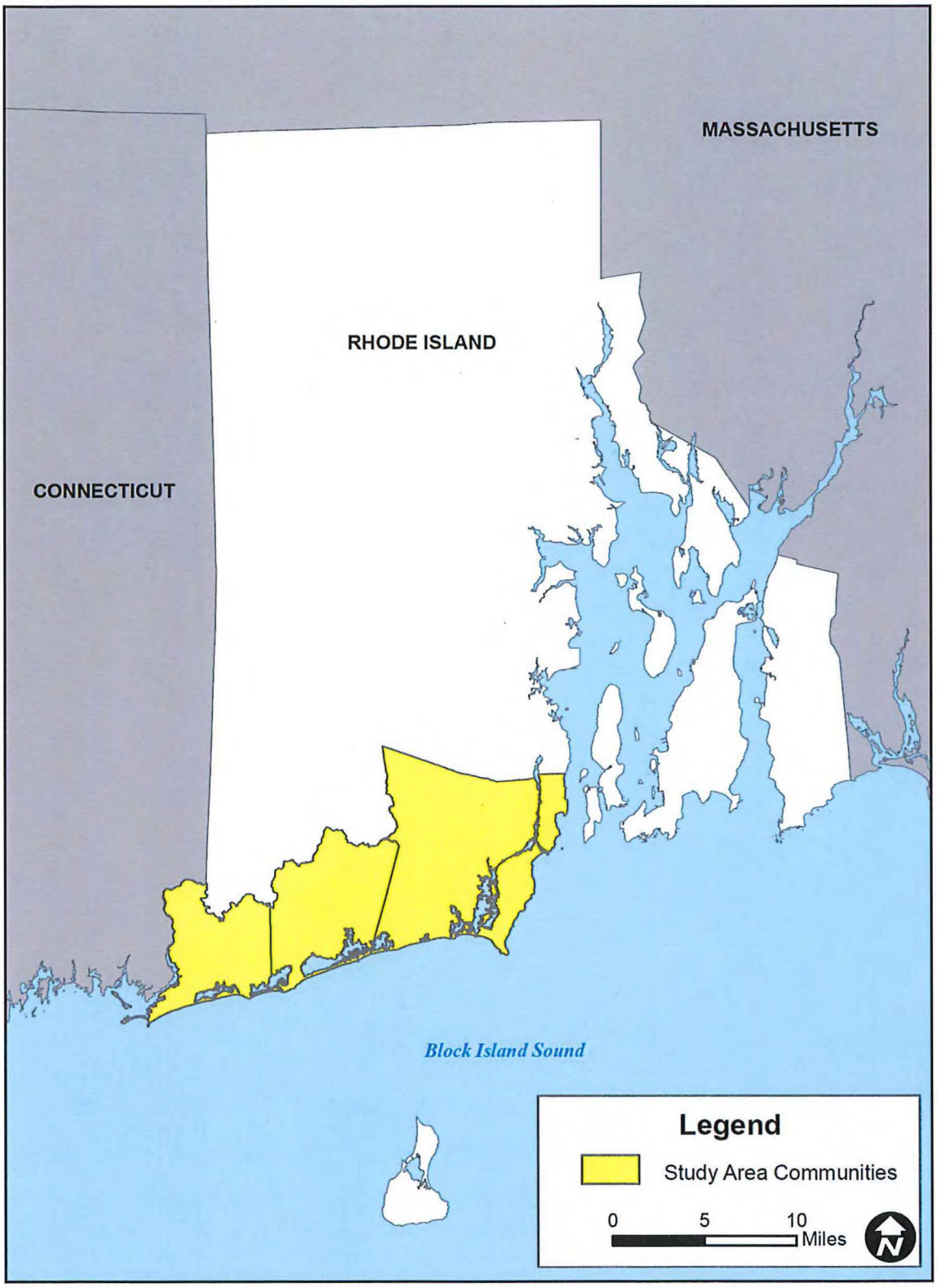

Figure 1 – Location Map

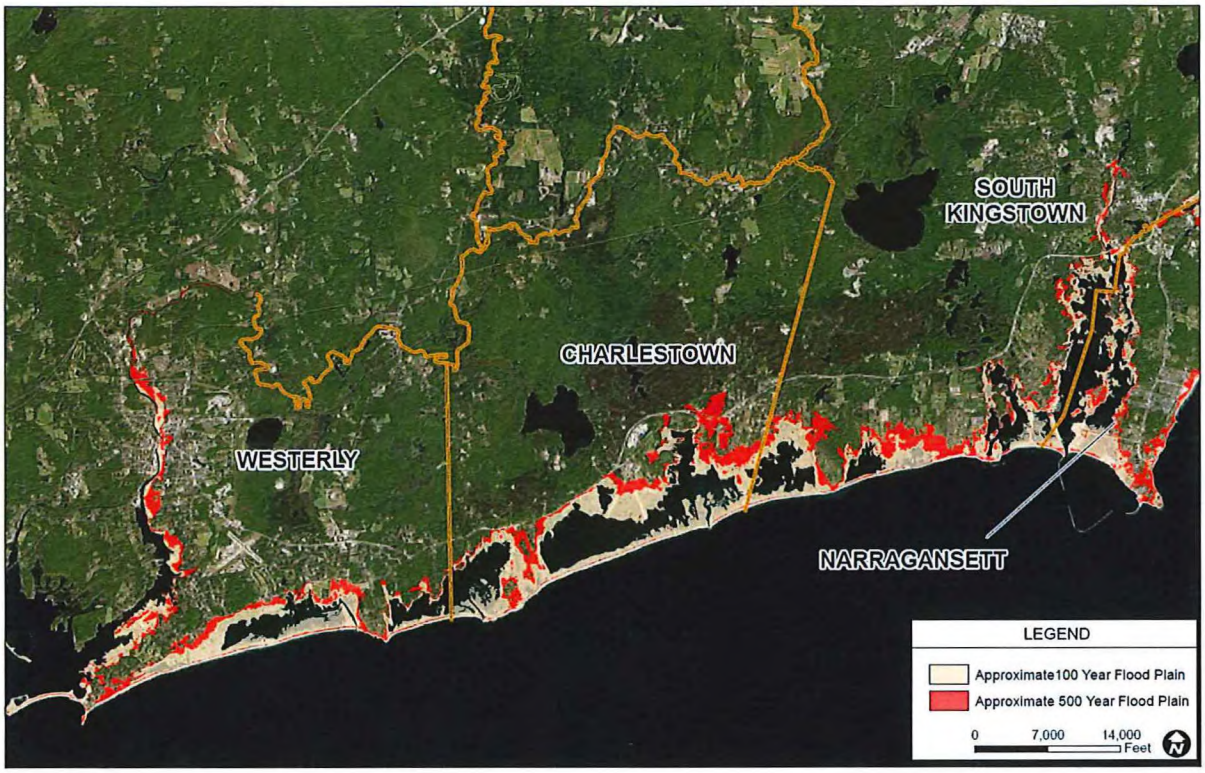

Figure 2 – Pawcatuck River – Coastal Flood Plain

Attachment A

PERTINENT LAWS, REGULATIONS AND DIRECTIVES

Clean Air Act, as amended (42 U.S.C. 1221 et. seq.)

Clean Water Act, as amended (33 U.S.C. 1251 et. seq.)

Coastal Zone Management Act of 1972, Sections 307 (c)(1) and (2)[16 U.S.C. 760c-760g]

Endangered Species Act of 1973, as amended (16 U.S.C. 668aa-668cc)

Executive Order 11988, Floodplain Management, 24 May 1977

Executive Order 11990, Protection of Wetlands, 24 May 1977

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994.

Executive Order 13007, Accommodations of Sacred Sites, May 24, 1996.

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, April 21, 1997.

Fish and Wildlife Coordination Act (16 U.S.C. 661-666c)

National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347)

National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

White House Memorandum, Government-to-Government Relations with Indian Tribes, April 29, 1994.

Project Context

In 2012, the east coast of the U.S. was devastated by Hurricane Sandy. The impacts of the storm on New England were not as great as those suffered by other parts of the Northeast like New York and New Jersey but some communities, including Rhode Island coastal communities, still realized significant damages. Much of the damage in Rhode Island was concentrated along the coastline and in the 100-year floodplain where residents endured storm surge, flood inundation, high winds, and electricity outages. In the aftermath, Hurricane Sandy served as a wake-up call to communities all along the Eastern seaboard and became a catalyst for innovative and proactive planning for future storms and climate change risks.

In January 2013, the Disaster Relief Appropriations Act of 2013 (DRAA) was passed by Congress and signed into law by the President as Public Law 113-2. The legislation provides supplemental appropriations to address damages caused by Hurricane Sandy and to, "reduce future flood risk in ways that will support the long-term sustainability of the coastal ecosystem and communities, and reduce the economic costs and risks associated with large-scale flood and storm events" (P.L. 113-2, 127 Stat. 24).[1] USACE has undertaken dozens of projects under the Disaster Relief Appropriation Act of 2013 (P.L. 113-2) to identify coastal vulnerabilities in areas impacted by Hurricane Sandy and reduce risks to physical infrastructure, community well-being, and coastal economies, including most recently the proposed the Pawcatuck River Coastal Storm Risk Management Project.

The Tentatively Selected Plan (TSP) for the Pawcatuck project was chosen following the completion of the Integrated Feasibility Report and Environmental Assessment (IFREA) for the towns of Westerly, Charlestown, South Kingstown and Narragansett. The TSP proposes that the first floors of 341 structures across the four communities be elevated to the FEMA Base Flood Elevation[2] (BFE) + 1.37 feet at a total estimated cost of $58.6 million. CLF has significant concerns with that proposal for the reasons set forth below.

Consideration of Sea Level Rise

As articulated above, funds made available through DRAA are intended to support *long-term* sustainability and reduce economic costs and risks associated with flood and storm events. CLF does not believe the proposed project is consistent with these goals.

As an initial matter, CLF agrees that elevation is a valuable nonstructural measure for protecting against flood risk. It appears that this option is well-suited for these communities and we are pleased that USACE undertook a thorough evaluation of alternatives to come to

[1] United States Army Corp of Engineers, Second Interim Report, Disaster Relief Appropriations Act, May 20 2013. Available at: http://www.usace.army.mil/Portals/2/docs/Emergency%20Ops/Second_Interim_Report_FINAL.pdf

[2] The Federal Emergency Management Agency (FEMA) Base Flood Elevation (BFE) is the computed elevation to which floodwater is anticipated to ruse during the "base flood", which are shown on Flood Insurance Rate Maps (FIRMS). The BFE is a regulatory requirement for the elevation or floodproofing of structures.

this conclusion. However, the proposed elevation of BFE + 1.37 feet is disconcerting and short-sighted.

FEMA BFE's are based solely on historical data and do not take into consideration scientific consensus on sea level rise and more intense storm activity. As a result, designated floodplain boundaries and BFEs that are based solely on historical data woefully underestimate community flood risk.[3] Many states use the BFE as a minimum threshold to address this issue. In Rhode Island, the *minimum* elevation required under the state building code is BFE+1 ft.

USACE is proposing 0.37 feet be added to the Rhode Island state minimum to account for the historic rate of sea level change, which is referred to in the IFREA as the "low" estimate. The study recognizes that when scientific projections are taken into consideration, the rate of sea level change rises considerably. The "intermediate" and "high" estimates, which use the projections from the International Panel on Climate Change (IPCC), are 0.84 and 2.33 respectively for a 50-year time horizon. USACE guidance on incorporating sea level change in civil works programs (Regulation No. 1100-2-8162) states:

> "Once the three rates have been estimated, the next step is to determine how sensitive alternative plans and designs are to these rates of future local mean SLC, how this sensitivity affects calculated risk, and what design or operations and maintenance measures should be implemented to adapt to SLC to minimize adverse consequences while maximizing beneficial effects. Alternative plans and designs are formulated and evaluated for three SLC possible futures. Alternatives are then compared to each other, and an alternative is selected for recommendation. The approach to formulation, comparison, and selection should be tailored to each situation. The performance should be evaluated in terms of human health and safety, economic costs and benefits, environmental impacts, and other social effects. There are multiple ways to proceed at the comparison and selection steps (Page 3)."

Aside from providing the intermediate and high estimates and including a "sensitivity analysis" in Table 20, which shows the impact of each estimate on the total number of eligible structures, there is no explanation for why the low estimate was chosen for this project. More importantly, the alternatives analysis of damages with and without the project was modeled using the low estimate only. No damages were calculated under the intermediate or high estimates. Additionally, Table 10 estimates the cost of elevating several types of residential structures in the A and V Zones under the low estimate but includes no estimates for the elevation of structures under the intermediate and high SLR scenarios. Our interpretation of USACE guidance is that proper alternative and sensitivity analyses should consider these factors as a fundamental foundation for reasoned decision making.

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[3] Joyce, C. (2016, September 15). Outdated FEMA Flood Maps Don't Account For Climate Change. Available at: http://www.npr.org/2016/09/15/492260099/outdated-fema-flood-maps-dont-account-for-climate-change

There are only two statements that address the justification of the low estimate. The first is on page 56 of the IFREA and states, “the rate of SLC in future years is not known but there are several projections of what may occur varying from low (historic) to high rate of change. Based on the historical climate data for the area and professional judgment, the economic damages were calculated assuming the low (historic) rate of SLC, which generally provides a conservative estimate of damages that will be used for alternatives comparison.” This is not an adequate explanation and it certainly is not a conservative estimate.

The second is on page 59 of the IFREA and states, “local building codes determine the maximum height to which a structure can be elevated”, when in fact the local building codes are not a maximum but merely a minimum. USACE has the ability to impose a higher elevation standard if they so wish. The mere fact that the proposed elevation is 1.37 feet to consider historic rate of sea level change, which is more than the state building code standard, is evidence that this is the case.

Scientific Consensus on Climate Change

It is true that the *exact* level and timing off SLR in future years is uncertain. However, scientific understanding of SLR and future flood risk has improved dramatically over time and today we have access to a variety of sophisticated estimates that provide a probabilistic range of future scenarios. While the correct range of probable estimates can be debated, it is irrefutable that the global sea level is changing at an accelerated rate.[4] To ignore scientific consensus on climate change and rely on the increasingly less predictive historic rates of sea level change for this project is inconsistent with the DRAA statutory language that states:

> “Provided further, that efforts using these funds shall incorporate current science and engineering standards in constructing previously authorized Corps projects designed to reduce flood and storm damage risks and modifying existing Corps projects that do not meet these standards (P.L. 113-2, 127 Stat. 24).”

Even the non-federal partner for this project, the Rhode Island Coastal Resources Management Council (CRMC), has acknowledged that the chosen sea level rise scenario is insufficient and will not have the reported 50-year design life expectancy.

In Westerly, one of the towns included in the project, the town has been assisting homeowners with elevation over the past few years under the FEMA Hazard Mitigation Grant Program. Some of these homes have been elevated considerably higher than what USACE is requiring under this project – one homeowner at an elevation of BFE + 3 feet.[5] It

[4] See the National Oceanic and Atmospheric Administration (NOAA) fact sheet on sea level here: http://oceanservice.noaa.gov/facts/sealevel.html

[5] Faulkner, Dale P. "Flood-prone Houses Getting a Boost from FEMA." The Westerly Sun, 18 Dec. 2013. Available at: http://www.thewesterlysun.com/news/westerly/3118445-129/flood-prone-houses-getting-a-boost-from-fema.html

appears that this project would not allow for individual homeowner flexibility to elevate higher than the BFE + 1.37 standard.

USACE's disregard for accepted climate science and the risks posed by SLR sets a dangerous precedent for this and future elevation and coastal risk management projects. It also sends the message that SLR is not a serious concern or something worthy of consideration in floodplain management, which undermines extensive and comprehensive climate change education efforts at the federal, state, and local levels.

We strongly urge USACE to perform additional analyses using the intermediate and high estimates to estimate the total cost of the project under a higher elevation standard and the potential damages at under these SLR scenarios.

Sincerely,

Deanna Moran
Director of Environmental Planning
Conservation Law Foundation

- These issues, this large scale project, and this tremendous opportunity bring to the forefront the need for increased collaboration in finalizing and implementing the plan. This effort requires close collaboration with residents and neighborhood associations, as well as municipal and state officials. These include 1) Municipal staff and boards who will potentially get a flurry of applications, above their normal heavy load; 2) State officials who provide technical assistance on floodplain management, hazard mitigation, and insurance issues; and 3) State regulators who issue permits for wastewater and coastal zone management assents, among others.

We hope that you will incorporate these concerns in your final plan. As a network of professionals, RIFMA members work throughout RI and adjacent states in a variety of roles reaching from the floodplain to the Statehouse. We would like to see this project succeed and use it as a positive example for Rhode Island residents and communities to showcase and benefit from in the decades ahead.

Please keep us informed on the progress as well as any future meetings in the area. Additionally, please consider sharing some of your expertise and hearing about Rhode Island hazard mitigation lessons learned at our annual conference on April 6, 2017. You can contact us directly by email RhodeIslandFMA@gmail.com or through the website, http://www.riflood.org/ where you can find the Call for Abstracts.

Regards,

Carissa T. Lord, CFM
Chair, Rhode Island Flood Mitigation Association

CC:
U.S. Senator Reed
U.S. Senator Whitehouse
U.S. Representative Langevin
U.S. Representative Cicilline
Grover Fugate, CRMC
Michelle Burnett, RIEMA

'when a decision to which NEPA obligations attach is made without the informed environmental consideration that NEPA requires, the harm that NEPA intends to prevent has been suffered.' *Massachusetts v. Watt,* 716 F.2d 946, 952 (1st Cir.1983)." *United States v. Coalition for Buzzards Bay,* 644 F.3d 26, 31 (1st Cir. 2011).

The "[environmental assessment] is intended to serve as the foundation upon which the agency will make its determination about whether it is necessary to prepare an EIS. Id. § 1501.4(c). While an EA is not as extensive as an EIS, it nonetheless must include 'discussion [ ] ... of the environmental impacts of the proposed action and alternatives." *Id.* § 1508.9(b)." Id. at 32. An EA must also use the best available information. The Council on Environmental Quality (CEQ) regulations demand information of ''high quality'' and professional integrity. 40 CFR 1500.1, 1502.24.

The DIFREA does not meet the requirements of 42 USC § 4332 (C) and (E): It recommends a decision without "the informed environmental consideration that NEPA requires" and must therefore be supplemented. A finding of no significant impact cannot be made without additional analysis, as the DIFREA fails to:

1. Describe environmental consequences of elevating hundreds of homes;
2. Use best available information on sea level rise and coastal erosion;
3. Develop and describe appropriate alternatives to the recommended courses of action; and
4. Address the 46 mainly commercial structures throughout the four communities.

1. The DIFREA does not address the environmental consequences of elevating 341 residential structures in the four communities + 1-foot above the FEMA-designated base flood elevation and must consider the environmental consequences of maintaining roads, wastewater treatment systems and water supply infrastructure in the impacted area that serve those homes.

Many roads, such as Atlantic Avenue in Misquamicut, are already plagued by flooding waters during spring high tides. Roadways will need to be elevated and/or maintained in order to provide even the most basic of emergency (fire, medical, and police) response services. According to the State of Rhode Island's Division of Planning, in these four communities, with just one foot of sea level rise, approximately 4435 linear feet of roadways will be impacted (See http://www.planning.ri.gov/documents/sea_level/2016/TP167.pdf). When sea level rise estimates increase to three feet, 102,960 linear feet of roadways will be impacted in just these four communities alone (equating to over 19.5 miles of affected roads). The impacts to the roads are significant, and costs to maintain roadways must be considered in conducting the cost-benefit analysis.

Additionally, as sea levels continue to rise, other residential infrastructure such as septic systems and drinking wells will be impacted by saltwater intrusion. Elevating these structures will also trigger RIDEM regulations and upgrades to the systems may be required, particularly in critical resource areas. Several hundred septic systems were heavily impacted by Superstorm Sandy. Storm damage left older systems damaged and uncovered, visible on beaches and around coastal ponds, and newer systems were inundated by saltwater and destroyed. The cost of upgrades and maintenance of the systems must be taken into account. Water mains, electrical lines, and other above-and below-ground infrastructure also need to be evaluated for potential relocation away from the coast. There is no benefit to be gained from elevating homes without considering access to the homes, emergency services and the utilities needed to make them habitable. Such costs must be included in order to conduct even the most rudimentary cost-benefit analysis. If a new analysis is conducted that includes all costs noted, it should also include the cost of moving structures away from the coastal feature when it is elevated on lots where this is possible.

2**. The best available information on sea level rise and coastal erosion must be used to fully assess impacts, cost and project longevity.**

The National Oceanic and Atmospheric Administration (NOAA) estimates of sea level rise must be used. The ACOE developed the TSP using the estimate that sea level will rise 4.44 inches in the next fifty years. NOAA estimates that sea level will rise 2 feet in 32 years (by 2050) and up to 7 feet by 2100. The information used not only unduly limits the buildings eligible for consideration but provides a faulty estimate of the benefits of the TSP within 50 years. Clearly, the DIFREA did not meet the "high quality" mandate. See, 40 CFR 1500.1 (a)-(f). The proposal significantly impacts the public health and safety of the community because the elevated homes will not remain above sea level for 50 years and the community will need to continue to provide roads, water, and additional services to the elevated homes. The issue of wastewater disposal systems cannot be ignored. It is unclear whether the systems will be able to function, even under the Army Corps estimate of sea level rise. 40 CFR 1508.27**.** ACOE found that "continuing beach erosion has made shorefront properties more vulnerable to storms of a given magnitude than they would have in the past." Appendix D, page 1. Additional loss of land will impact the time the structures may remain if elevated.

In Rhode Island, CRMC "recognizes that the lower the sea level rise estimate used, the greater the risk that policies and efforts to adapt sea level rise and climate change will prove to be inadequate" (CRMP Section 145.C.3). Utilizing the "low" or "historic" Sea Level Change (SLC) scenario (as in the TSP) does not take into account the accelerated rate of sea level rise that has been occurring. CRMC relies upon the most recent NOAA sea level rise data - "as of 2015 the range of sea level rise change is projected by NOAA

to be a maximum of approximately 1.0 feet by 2030, 2.0 feet in 2050 and 7.0 feet in 2100" (Sec 145.C.4). These numbers are far above the 4.44 inches that the Army Corps is estimating over the life of the TSP (50 years). Storm surge from Sandy was 5 1/2 feet in Misquamicut alone.

Additionally in 2016, CRMC replaced older 2003 and 2004 Shoreline Change Maps that were adopted by the CRMC in 2008 with 45 newly updated maps based on 2014 orthophoto aerial images that have been prepared as part of the CRMC Shoreline Change Special Area Management Plan, also referred to as the Beach SAMP. These shoreline change maps detail accretion and erosion rates for the state's shoreline including the area of Watch Hill to Point Judith. This new data needs to be incorporated into this feasibility study.

The regulations for implementing NEPA promulgated by the CEQ require information of ''high quality'' and professional integrity. 40 CFR 1500.1, 1502.24. The decade-old data used in the DIFREA on sea level rise and erosion does not meet the standards set by the CEQ.

3. The alternative of acquisition/relocation (retreat) was not adequately considered and must be further developed.

Sea levels are rising, so major future ecosystem and asset losses are expected. Planned retreat from the sea behind natural ecological defenses is an adaptation option that must be considered by the ACOE, not merely noted. Consideration must be given to setting land aside for colonization by coastal ecosystems.

The ACOE must not ignore other impacts of climate change when considering sea level rise. Sea level rise affects more than beaches and oceanfront land owners. Sea level rise can increase the height of storm waves, making more areas vulnerable to storm damage. Sea level rise can inundate and flood low-lying areas, causing losses to tidal wetlands, habitat, and agricultural areas. Sea level rise also can cause higher water tables and saltwater intrusion interfering with septic system functions, drinking water infrastructure and irrigation water.

As NOAA notes, even a small vertical rise can result in seawater covering large areas of flat beaches and low-lying land. If sea level rises quickly, the encroaching ocean can drown coastal marshes and disrupt seaside ecosystems. Higher seas also enable storm surges to travel farther inland, putting more lives in danger and increasing the risk to property when powerful storms come ashore.

In Appendix C, Coastal Engineering, the issue of retreat was summarily addressed. It was stated on page 41, that:

> "relocation has been considered by the Corps in most studies but historically it has almost always been determined to be less cost

> effective than reducing the flood/damage potential for a particular area to the aforementioned considerations. As sea level continues to rise and perhaps accelerate, relocation may become more cost effective and necessary as the number of areas requiring storm damage reduction measures rise and the available funding for such efforts remains uncertain."

Similarly, on page 59 of the DIFREA, it was stated that, "[c]ost (especially outright acquisition), structural integrity of the building and land availability will be the primary deciding factors on whether this is a viable alternative. Preliminary economic analysis of this measure showed marginal promise. Until more specific information is developed, this measure was retained for further evaluation."

Save The Bay submits that the retreat alternative should have been more fully developed and the estimated costs are flawed. Although the discussion of alternatives need not be exhaustive under the regulations, there must be sufficient information to permit a reasonable choice.

Without including the cost of elevating, moving and maintaining roads, water and sewer, the impacts of storm events, saltwater intrusion on utilities and access and the most recent data on sea level rise and erosion, the Corps is simply unable to estimate the cost and environmental impacts of the proposal. It may be more cost-effective to include retreat, or at least retreat in certain areas. Further, the Corps must consider that this is a voluntary program and all homes in the designated areas may not participate so there will be environmental impacts *to* the homes that are not elevated and *from* the homes that are not elevated.

Despite the fact that the DEIS stated that relocation has been historically determined to be less cost effective than reducing the flood/damage potential for a particular area, retreat was recommended and implemented in the 1980s to prevent flood damage to approximately 38 acres of residential land in Warwick, RI, referred to as Belmont Park. The Corps considered structural and nonstructural measures to reduce damage from flooding and ultimately moved or eliminated 61 homes, purchased outright 19 privately-owned lots and constructed 12 above-ground utility room additions to service residences in that area which experienced less flooding. As stated by the Corps, it:

> "bought the land and returned it to its natural state to limit the river's flood damage potential. Recognizing the value floodplains have in our society, the U.S. Council on Environmental Quality said in its 1973 Annual Report: 'The movement is away from the 19th century idea that land's only function is to permit its owner to make maximum profit. Whereas the traditional answer to the question, `Why regulate land use?' was `To maximize land values,' the new answer is becoming `To make the best use of our land resources.' (This is) a far

> cry from the simple value maximization concepts of early real estate interests .... **"The goal of long-range enhancement of land values is replacing a system aimed solely at increasing the short-run value and salability of land**. **The interest of the general public and of future generations is no longer ignored..."** (emphasis provided).

It appears that the "interest of the general public and of future generations" is being ignored in the DIFREA. Consideration must be given to setting land aside for colonization by coastal ecosystems and flood compensation. Retreat is a reasonable alternative because, as already determined by the ACOE decades ago, buying at risk properties will reduce impacts from sea level rise, allow marshes to migrate, increase and preserve public access, and reduce costs to the communities for maintaining utilities and access to those properties. The interest of future generations and the public must be considered. As set forth in the DIFREA, page 50, this is an opportunity to "[i]mprove the overall resiliency of the south coast of Rhode Island in the wake of coastal storms." Such an opportunity must consider acquisition and relocation. The DIFREA does not contain all needed information about the costs of elevation so that the cost-benefit analysis weighing retreat against elevation is flawed. Retreat must be considered, at least as part of the proposal for particular locations, and it is not permissible under NEPA to disregard choices merely because those choices do not fully resolve the problem.

4. **Insufficient consideration was given to the 46 mainly commercial structures throughout the four communities**.

The commercial structures were noted only in that they may receive wet or dry flood-proofing (flood treatment). The DIFREA on page 50 stated that it presented an opportunity to "[d]evelop a plan to reduce the threat of damages to existing residential and commercial property caused by coastal storms", yet there was very limited discussion about commercial properties. No costs were included for flood treatment of commercial properties and the impacts of leaving commercial structures in these areas vulnerable to flooding, storm surge, sea level rise and erosion were not considered. The costs of maintaining water, power, wastewater treatment systems, power and access to the commercial structures by elevating roads, and impacts on and from the utilities and structures, were not addressed. The flood mitigation plan for the communities is not complete without providing a plan for commercial structures and addressing infrastructure.

5. The tide gate and sheet pile floodwalls should not be brought forward as an alternative.

Although the cost of the tide gate and sheet pile floodwalls in Misquamicut seems prohibitive, Save The Bay submits that this alternative should `not be brought forward because it does not comply with the CRMP. Such a wall would require a special exception and the floodwalls would not meet the criterial for a special exception. In

addition, the walls, combined with the tide gate, may in fact cause more flooding if the dunes were overtopped during a major storm event causing further flooding to properties on the north and south side of Winnapaug Pond.

In summary, the DIFREA does not meet the minimum NEPA requirements as set forth above. The DIFREA was not based on high quality information, does not include all costs associated with enabling the elevated homes to be habitable, and does not provide a detailed discussion of retreat as a reasonable alternative. Therefore, the cost-benefit analysis must be supplemented and the alternative of retreat pursued, giving due consideration to the long term interest of the general public.

Please contact me through email at dprescott@savebay.org or by phone at (401)315-2709 if you have any questions or need additional information.

Sincerely,

David Prescott
South County Coastkeeper

Cc: The Honorable Senators Jack Reed and Sheldon Whitehouse, Congressmen James Langevin and David Cicilline, Anne Maxwell Livingston Chair, CRMC, Grover Fugate, Executive Director CRMC, Janet Coit, Director DEM

(http://www.psmsl.org/data/obtaining/stations/351.php). In addition, present scientific consensus conservatively estimates that the Atlantic coast region will see at least 1 meter of SLR by the end of this century. And, earlier this year the CRMC adopted the NOAA SLR curves as determined from the Corps Sea Level Change Calculator for Newport, RI. These NOAA curves have been integrated into Section 145 of the Coastal Resources Management Program. See: http://www.crmc.ri.gov/regulations/RICRMP.pdf. Using the NOAA high curve it is projected that the Rhode Island shoreline could see 1 foot of SLR by 2035 above 1990 levels and nearly 7 feet by 2100. Thus, for the purposes of this study, the Corps selected SLR of 0.37 feet between 2020 and 2070 is inadequate to provide long-term coastal resiliency for any eligible structures within the study area.

Underestimation of Eligible Structures within the Study Area

According to the analysis presented in the study there are approximately 4000 structures that are located within the 1% storm impacted area. The study area itself is not well defined but appears to cover the coast between Napatree Point and Point Judith (Figure 1). Little Narragansett Bay and the Pawcatuck River and the coast of Narragansett from Pt Judith to Narrow River appear to be outside the study domain.

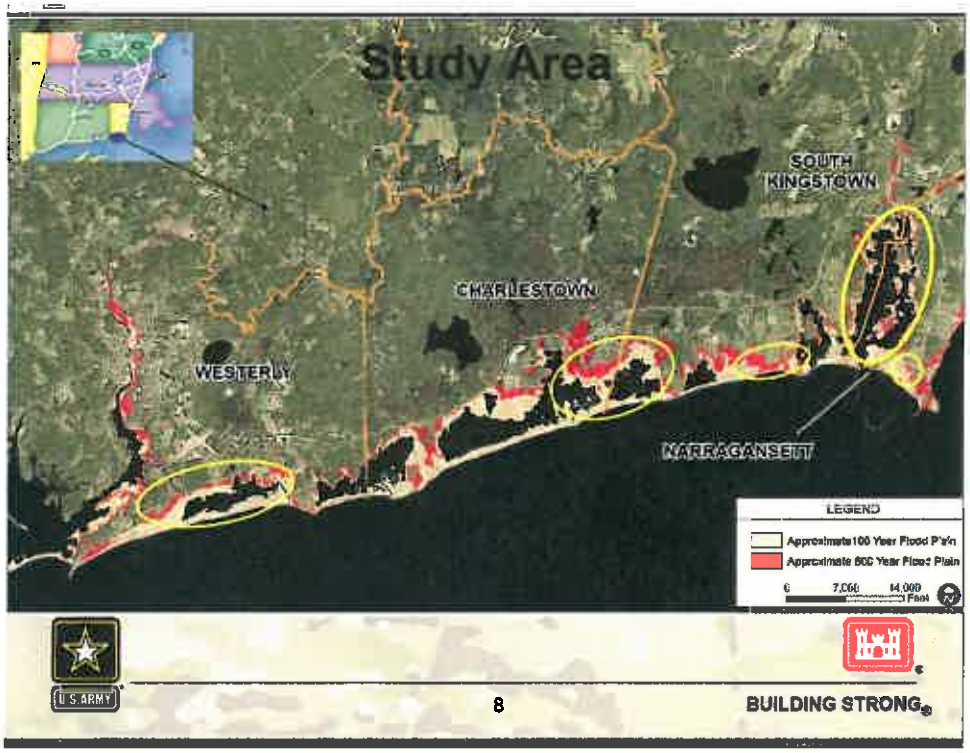

Figure 1 ACOE Pawcatuck study area.

To put this in context, an analysis has recently been performed to assess the number of structures at risk from coastal flooding as part of the CRMC's Beach SAMP program based on flooding maps generated in STORMTOOLS initiative (http://www.beachsamp.org/stormtools/). The analysis has been performed for varying return periods and sea level rise (SLR) scenarios. The data is available at http://www.beachsamp.org/e911. The number of structures in the flood plain for each town, for 100 yr, 100 yr & 2ft and 7 ft SLR are provided in Table 1, below. The total for the 100 yr return

period is about 4400, roughly consistent with the ACOE estimate. It is also consistent with the fact that structures in the study area both come from the E911 data base and the Beach SAMP based estimates include all of the towns of Westerly and Narragansett, not just those located along the southern RI shoreline. If SLR is considered the values increase by about 15% for 1 ft SLR, 26% for 2 ft SLR, and over 100 % for 7 ft SLR. Given CRMC's recently adopted policies, coastal resiliency planning efforts should include SLR projections. The 4,000 structure estimate is hence too low to account for any SLR projection that might be relevant for the ACOE study.

According to the ACOE study there are about 341 structures across the four towns eligible for elevation. The numbers for each town are provided in Table 1. This represents about 7.7% of the structures in the 1 % impacted area for all four towns. The variation among the towns is quite large with South Kingstown having the highest percentage (14.6%) and Westerly the lowest (3.6%). It is unclear why the differences among the towns are so large.

Table 1 STORMTOOLS Exposure Estimates- Number of buildings exposed

	Storm Condition			SLR- Sea Level Rise	Percent change relative to 100 yr					
Town	100 yr	100 yr & 1ft SLR	100 yr & 2 ft SLR	100 yr & 7ft SLR	1 ft SLR	2 ft SLR	7 ft SLR	Number selected for elevation	% Elevated of Total, 100 yrs	% Elevated of Total 100 yrs 2 ft SLR
Westerly	1263	1462	1516	2018	15.8%	20.0%	59.8%	45	3.6%	3.0%
Charlestown	806	937	982	1474	16.3%	21.8%	82.9%	44	5.5%	4.5%
South Kingstown	1176	1300	1536	2238	10.5%	30.6%	90.3%	172	14.6%	11.2%
Narragansett	1172	1348	1553	3600	15.0%	32.5%	207.2%	80	6.8%	5.2%
Total	4417	5047	5587	9330	14.3%	26.5%	111.2%	341	7.7%	6.1%

Source: http://www.beachsamp.org/e911/

In an attempt to better understand the basis of the analysis, CRMC requested that the ACOE provide a detailed description of how the analysis was performed, including identification of structures at risk, damage to structures at risk, criteria used to remove structures from eligibilty for elevation, and the cost benefit analysis. The CRMC has just received the requested list of the ACOE identified structures that were ultimately selected for elevation. However, we have not had time to evaluate this list. Our concern is understanding why certain sturctures were selected and why others were not.

To put this in additional context, Spaulding et al (2016a) have recently applied the Coastal Environmental Risk Index (CERI) to Charlestown, RI. CERI estimates the damage to individual structures, using state of art model predictions for flood inundation and flooding and the ACOE damage curves from the North Atlantic Comprehensive Coastal Study (2015). The CERI analysis shows that 527 structures experience damage of 50% or greater, using the most likely damage curves. Figure 2 shows the distribution of buildings impacted estimated by CERI. For comparison, Figure 3 shows the location of structures (44) selected for elevation in the ACOE Pawcatuck study. The ACOE study has selected only about 8 % of those identified by CERI as having substantial damage and recommended for elevation. Therefore we are trying to understand why there are difference in the two estimates.

Figure 2 CERI predicted location of structures impacted by 100 yr storm with no SLR, damage of 50% or greater and most likely damage curve.

Figure 3 Location of structures selected for elevation by the ACOE Pawcatuck study (Figure12. TSP Elevation Locations in Charlestown; p.81)

Methodological Problems

A review of the material available on the study has identified a number of important methodological problems with the way the ACOE has performed their analysis. In brief, these include:

- The ACOE has used the FEMA FIRM flooding maps as input to their analysis to determine the water levels (1% AEP) and estimate structural damage. CRMC is on record as expressing our concerns regarding these maps as they under represent the risks for the southern RI study area according to our analysis. This issue has recently been documented in Spaulding et al (2016b). CRMC has notified FEMA that the maps do not meet state-federal consistency provisions.
- The eroded dune profile that FEMA assumes in their analysis to generate the FIRMs is not supported by long term observations from the study area.
- For all study areas, except Westerly, the ACOE study used the HEC-FDA model to assess damages (http://www.hec.usace.army.mil/software/hec-fda/documentation/HEC-FDA_CertificationReport.pdf). This model was designed for estimating inland flooding. It includes damage due to inundation but not damages associated with waves. The later, as recently shown in the CERI application to Charlestown, dominate the damage for structures that are very close to the coast. It is therefore highly likely that the ACOE assessments underestimate the damage.
- We suggest it is prudent that the ACOE consider the impact of future erosion on the inundation and wave field for most of the study area.
- ACOE method is not consistent with CRMC's offically adopted SLR, and thus we request there be further discussion on this topic.

References

Spaulding, M. L., T. Isaji, C. Damon, and G. Fugate, 2015. Application of STORMTOOLS's simplified flood inundation model, with and without sea level rise, to RI coastal waters, ASCE Solutions to Coastal Disasters Conference, Boston, MA, September 2015.

Spaulding, M. L., A. Grilli, C. Damon, T. Crean, G. Fugate. B. A. Oakley, and P. Stempel, 2016a. STORMTOOLS - Coastal Environmental Risk Index (CERI), J. Mar. Sci. Eng. 2016, 4, 54; doi:10.3390/jmse4030054.

Spaulding. M. L., A. Grilli, C. Damon, T. Crean, G. Fugate. B. A. Oakley, T. Isaji, and L. Schambach, 2016b. Application of state of art modeling techniques to predict flooding and waves for an exposed coastal area, Coastal Engineering (in review).

It is my understanding that due to time constraints it unlikely that the ACOE will rerun the model for the study area to reexamine eligible structures for elevation. Therefore, the CRMC requests that at the very least that the Corps use the high SLR projection of 2.33 feet over the next 50 years. This would expand the pool of eligible structures by 140 for a total of 481 structures within the study area that potentially may be elevated to minimize their vulnerability to coastal hazards. In addition, if there is significant property participation in the Corps elevation program I recommend that prioritization of elevations be conducted as follows:

1. Repetitive loss properties (these will be substantially below BFE)
2. Primary residences; then
3. Secondary residencies

Thank you for the opportunity to work collaboratively with the Corps on this project and to be able to provide comments on the ACOE Pawcatuck River, Rhode Island Coastal Storm Risk Management Feasibility Study. As we go forward with this project I expect that we will have further discussion on the issues prior to the study being finalized and proposed implementation activity based on the comments received. We also anticipate that the Corps will be filing with this office a formal request for federal consistency in accordance with 15 CFR § 930 Subpart C – Consistency for Federal Agency Activities. Thanks once again for the Corps' work on this assessment up to this time, and the State looks forward to a productive partnership as we both move this important project forward to ensure public safety and make existing homes more resilient to coastal hazards.

Please contact me at 401-783-3370 or email gfugate@crmc.ri.gov with any questions regarding this response.

Sincerely,

Grover J. Fugate, Executive Director
Coastal Resources Management Council

/lat

cc Anne Livingston, CRMC Chair
Jeffrey Willis, CRMC Deputy Director
Lisa Vura-Weis, Deputy Chief of Staff, Governor's Office