



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN, NY 11252-6700

CENAD-PD-PP

2 July 2019

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, New England District, 696 Virginia Road Concord, MA 01742-2751

SUBJECT: Review Plan Approval for the Rhode Island Coastline General Investigation Study

1. Reference CENAE-ZC memorandum dated 31 May 2019, subject as above.
2. The Coastal Storm Risk Management Planning Center of Expertise of the North Atlantic Division is the lead office to execute the referenced Review Plan. The Review Plan does not include Independent External Peer Review, as it is not required for this study.
3. The enclosed Review Plan is approved for execution and is subject to change as study circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution require new written approval from the NAD Commander.
4. The point of contact is Mr. Larry Cocchieri, NAD Planning Program Manager, 347-370-4571, Lawrence.J.Cocchieri@usace.army.mil.

Encl


JEFFREY L. MILHORN
Major General, USA
Commanding



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

CENAE-ZC

31 May 2019

MEMORANDUM FOR Commander, North Atlantic Division (CENAD-PD-CID-P/Mr. Christopher Ricciardi), U.S. Army Corps of Engineers, Fort Hamilton Military Community, 301 General Lee Avenue, Brooklyn, NY 11252-8400

SUBJECT: Request for NAD approval of Rhode Island Coastline General Investigation Review Plan

1. Request review and approval of the attached Review Plan for the Rhode Island Coastal Storm Risk Management Feasibility Study. This study is authorized by the resolution adopted by the Senate Public Works Committee dated 12 September 1969, and resolution adopted by the Senate Committee on Environment and Public Works dated August 2, 1995. The study authorizes the investigation of options for reducing flood risk along the coastline of Rhode Island, from Narragansett Bay to the Massachusetts border.
2. The Review Plan received approval from the PCX on May 28, 2019.
3. Detailed information on this investigation can be obtained by contacting the Project Manager, Michael Riccio at (978) 318-8685 or Michael.S.Riccio@usace.army.mil.

2 Encls

1. RI CSRM Review Plan
2. PCX Approval Memo


WILLIAM M. CONDE
COL EN
Commanding



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN NY 11252-6700

CEPCX-CSRМ

24 May 2019

MEMORANDUM FOR: Commander, U.S. Army Corps of Engineers, New England District (CENAE-PDP/Michael Riccio) 696 Virginia Road Concord, MA 01742-2751

SUBJECT: Rhode Island Coastline Coastal Storm Risk Management Feasibility Study

1. The National Planning Center of Expertise for Coastal Storm Risk Management (PCX-CSRМ) has reviewed the Review Plan (RP) for the subject study and concurs that the RP complies with current peer review policy requirements contained in EC 1165-2-217, entitled "Review Policy For Civil Works".
2. The review was performed by Mr. Donald Cresitello.
3. PCX-CSRМ has no objection to RP approval by the Commander, North Atlantic Division. Upon approval of the RP, please provide the link to where the RP is posted on the NAE website to Mr. Cresitello and me.
4. Thank you for the opportunity to assist in the preparation of the RP. PCX-CSRМ is prepared to lead the Agency Technical Review for the subject study and will continue to coordinate with the PDT. For further information, please contact me at 347-370-4571.

A handwritten signature in black ink, appearing to read "Larry Cocchieri", is positioned above the typed name.

LARRY COCCHIERI
Deputy, National Planning Center of
Expertise for Coastal Storm Risk
Management

REVIEW PLAN

Updated: 30 May 2019

Project Name: Rhode Island Coastline Coastal Storm Risk Management Feasibility Study

P2 Number: 404574

Decision Document Type: Feasibility Report

Project Type: Coastal Storm Risk Management

District: New England District

District Contact: Michael Riccio: Study Manager: (978) 318-8685

Major Subordinate Command (MSC): North Atlantic Division

MSC Contact: Chris Ricciardi: Civil Works Integration Division - District Support Team: (347) 370-4534

Review Management Organization (RMO): USACE National Planning Center for Coastal Storm Risk Management (PCX-CSRМ)

RMO Contact: Larry Cocchieri: Deputy Director of the PCX-CSRМ: (347) 370-4571

Key Review Plan Dates

Date of RMO Endorsement of Review Plan: May 24, 2019

Date of MSC Approval of Review Plan: Pending

Date of IEPR Exclusion Approval: N/A

Has the Review Plan changed since PCX Endorsement? NA

Date of Last Review Plan Revision: May 2019

Date of Review Plan Web Posting: TBD

Date of Congressional Notifications: TBD

Milestone Schedule

	<u>Scheduled</u>	<u>Actual</u>	<u>Complete</u>
<u>FCSA Execution:</u>	MAR 2019	MAR 2019	Yes
<u>Alternatives Milestone:</u>	JUL 2019	TBD	No
<u>Tentatively Selected Plan:</u>	JUL 2020	TBD	No
<u>Release Draft Report to Public:</u>	SEP 2020	TBD	No
<u>Agency Decision Milestone:</u>	DEC 2020	TBD	No
<u>Final Report Transmittal:</u>	SEP 2021	TBD	No
<u>Senior Leaders Briefing:</u>	NOV 2021	TBD	No
<u>Chief's Report:</u>	MAR 2022	TBD	No

Project Fact Sheet
May 2019

Project Name: Rhode Island Coastline CSRM Feasibility Study

Location: Narragansett Bay Area, Rhode Island

Authority: The study is authorized by a resolution adopted by the Senate Public Works Committee dated 12 September 1969, and a resolution adopted by the Senate Committee on Environment and Public Works dated August 2, 1995 and by PL 84-71.

Sponsor: Rhode Island Coastal Resources Management Council (CRMC)

Type of Study: Feasibility Study

SMART Planning Status: On Schedule, working towards AMM

Study Area: The study will focus on undetermined coastal storm risk management problems and opportunities in coastal Rhode Island from Point Judith to the Massachusetts state line, including Block Island. This was a focus area identified in the North Atlantic Coast Comprehensive Study and was the primary driver for initiating the new start.

Problem Statement: Coastal storm risk management is a growing concern along the entire Rhode Island coastline. Much of the coastline within the study area is densely populated and developed which when factoring in sea level rise and a general increase in storm frequency and intensity, presents a challenge for many coastal communities in terms of how they are going to manage the land sea interface with respect to property damage, coastal resiliency and life safety. The scoping phase will identify specific problems and opportunities within the study area in order to develop an appropriate scope of work.

Federal Interest: The study will provide CSRM alternatives to manage risk and reduce the susceptibility of residential, commercial, and public structures and infrastructure to coastal storm-induced storm damages.

Risk Identification:

Coastal Storm Risk:

The Rhode Island coastline is vulnerable to coastal flooding, wave attack and erosion within the study area and is a potential threat to human life. Damages created by hurricanes, tropical storm events, and nor'easters pose a significant risk to the communities within the study area. In the future, coastal storms are predicted to increase in frequency and intensity due to climate change. This is expected to result in higher and more frequent storm damages and higher average annual damages, thus increase overall coastal storm risk.

Study Risks:

- Scope: The Feasibility Study covers a very broad range of problems over a large area with numerous yet-to-be defined focus areas. Narrowing the overarching study area into tangible focus areas, for which measures and alternatives can be developed and

evaluated, is very feasible but potentially time-consuming. The risk associated with study scope is the chance that problems and opportunities that ought to be addressed in the study get overlooked in an effort to meet the prescribed study timelines; namely the AMM. Because this challenge is readily understood across the Planning community, the team has tried to get out in front of the scoping risk as best it can by asking the CRMC to initiate as much of the local communication and coordination as they can on their own, in anticipation of our direct involvement. The CRMC has coordinated a series of face-to-face meetings with all of the impacted communities to be held immediately following receipt of the non-federal funding match. This is expected to streamline the scoping effort, thereby mitigating this study risk.

- Funding:

Funding is an inherent study risk associated with cost-shared feasibility studies. Without proper funding, a feasibility study is limited in what it can effectively investigate. While the consequence of poor funding is high, the likelihood is very low for this study, with a sponsor who has indicated its willingness and ability to readily fund the effort in full.

The one area where funding does present a high level of risk is with respect to the 3x3x3 schedule; particularly as it relates to the timeline of the AMM. It is fiscally impossible for the non-Federal sponsor to provide their study contribution in less than 30 days following execution of the FCSA. This lag time inherently delays the PDT's ability to begin working on the study, thus increasing the risk that the study will not be appropriately scoped within 90 days. Although this is a risk for the first study milestone, funding is not expected to have a significant impact on schedule beyond the AMM.

- Climate Change:

Climate change is a moving target in terms of absolute coastal storm risk, but with respect to study risk, how policy requirements fluctuate in concert with those uncertainties is expected to be a moderate risk throughout the study. Frequent and early communication with the vertical team including the Climate Preparedness and Resilience (CPR) Community of Practice Policy Reviewer (see table below) will be the general strategy for managing this risk.

In addition to the risk that Climate change presents in terms of Corps policy, there is also the risk that the non-federal sponsor has differing stances on climate change. This could result in different views on projected future conditions, thereby altering their desired outcome of the study. This is expected to be a moderate risk at the beginning of the study that should diminish over time as the scope of work and study trajectory are refined with their input.

- Local participation:

Local municipalities often have a wealth of valuable information that will improve the effectiveness and efficiency of the study overall, but establishing effective working relationships with them can be a time consuming process early on in the study. In the absence of executable funds, the CRMC has been pro-actively engaged with the communities briefing them on our mission and study process as well as coordinating initial discussions in anticipation of our direct involvement. This seems to be an effective risk management strategy.

In addition to the schedule-specific challenges associated with local community involvement there is also risk that local communities have CSRM goals and objectives that do not align well with the Corps' mission. We are not currently aware of any study-specific instances yet where this would be problematic, but we recognize it as a general risk associated with comprehensive CSRM feasibility studies in general. Heavy emphasis on communicating the study purpose and actively managing expectations throughout the study process will be the primary strategy for managing this risk.

- Resource Availability

Many of the District's in-house resources have an overwhelming workload beyond this study. Consequently, resource availability will present a moderate risk throughout the study process. So far this risk has been effectively managed at the District level by prioritizing workload, but if it could become a constraint in the future. In the event that resource availability becomes a limiting factor then contracting tasks out to other districts or private firms could be used as a risk management strategy to ensure that the PDT has the personnel needed to keep the study on schedule.

- Schedule

Initial funding constraints limit/delay the Corps' direct involvement following execution of the FCSA, which has and will impact the AMM, where uncertainty with the overall scope of the study is at its highest. That being said, scheduling is not expected to be a major overall study risk at this time. Constant communication with the vertical team as scheduling challenges arise will be the primary strategy for managing this risk throughout the study process.

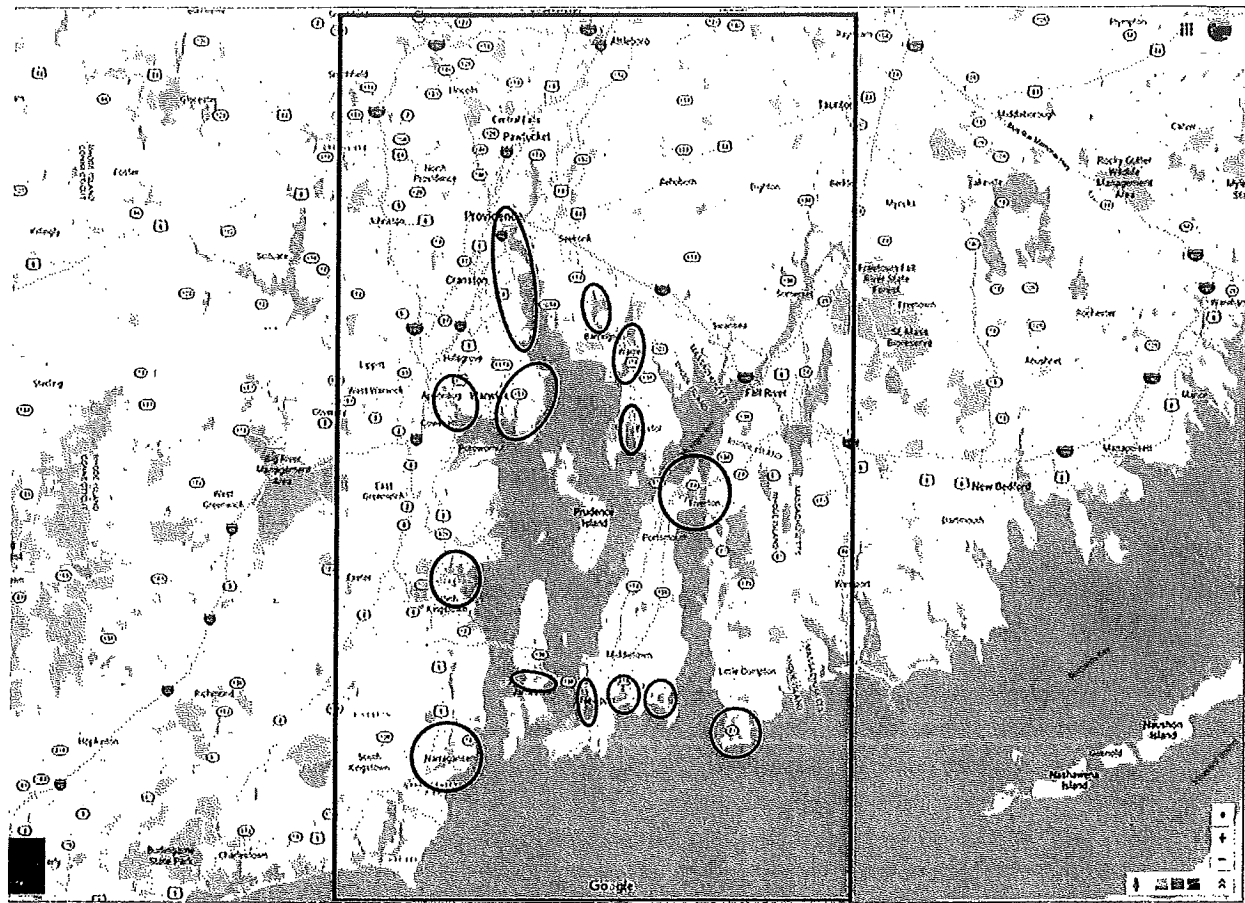


Figure 1. Overview of the overall study area and the presumed high risk problem areas within it.

1. FACTORS AFFECTING THE LEVELS OF REVIEW

Scope of Review.

- Will the study likely be challenging? Yes. Comprehensive GIs have proven to be difficult to manage within the 3x3x3 construct due to the broad scope of problems and opportunities within a large study area. It is doable but it will be challenging. Appropriately narrowing the scope of work into tangible focus areas with well-defined problems and opportunities in a timely fashion will be an important consideration. In addition to the logistical challenges associated with initiating the study, the densely populated nature of the region will make it challenging to identify a project(s) that can be recommended for implementation. Constructability, environmental acceptance and real estate acquisition are some of the typical challenges associated with CSRM studies and we expect them to be a primary factor on this study as well.

- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks.

There are risks associated with finding comprehensive solutions that will be acceptable to the public. Often times the typical suite of coastal storm risk management measures include structural options such as floodwalls, levees, and pump stations that encroach or otherwise negatively impacts private properties. It is too early in the study to assess this risk with any specificity but based on typical challenges associated with CSRM studies nationwide, we expect this to be a significant consideration throughout the study. Additional project risks would likely include environmental impacts to salt marsh and/or essential fish habitat.

- Is the project likely to be justified by life safety or is the study or project likely to involve significant life safety issues?

At this time potential CSRM projects within the study are not specifically expected to be justified by life safety. That being said life safety is always a potential study driver when considering coastal storm risk.

- Has the Governor of an affected state requested a peer review by independent experts?

At this point in time, the Governor of Rhode Island has not requested a peer review by independent experts.

- Will it likely involve significant public dispute as to the project's size, nature, or effects?

Public dispute is a risk for any CSRM study of this magnitude due to the densely developed nature of the land/sea interface and limited open space available to implement structural solutions. At this time no specific problems, opportunities or measures have been identified that might trigger such a response from the public, but it is something that the study team will consciously try to manage throughout the study process.

- Is the project/study likely to involve significant public dispute as to the economic or environmental cost or benefit of the project?

As of April 2019 it is presumed that the densely developed nature of the study area will favorably influence the economic benefits of any recommended solution and also limit the existing environmental resources likely to be disturbed.

- Is the information in the decision document or anticipated project design likely to be based on novel methods, involve innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices?

The PDT anticipates using approved planning, hydrology and hydraulics, cost engineering, climate change and environmental models. Additionally, all project designs, measures, and features are anticipated to be common and routine techniques with the exception of yet-to-be considered natural and nature based features that may be developed.

- Does the project design require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design/construction schedule?

As of April 2019, this is yet to be determined.

- Is the estimated total cost of the project greater than \$200 million?

As of April 2019, this is yet to be determined.

- Will an Environmental Impact Statement be prepared as part of the study?

An Environmental Impact Statement is not expected to be required as part of the study.

- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources?

The PDT does not anticipate any adverse impacts on scarce or unique tribal, cultural, or historic resources.

- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures?

Substantial adverse impacts on fish and wildlife species are not expected. The PDT has yet to determine if mitigation will be required as part of the project.

- Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat?

The PDT does not anticipate adverse impacts to any T&E species or critical habitat.

2. REVIEW EXECUTION PLAN

This section describes each level of review to be conducted. Based upon the factors discussed in Section 1, this study will undergo the following types of reviews:

District Quality Control. All decision documents (including data, analyses, environmental compliance documents, etc.) undergo DQC. This internal review process covers basic science and engineering work products. It fulfils the project quality requirements of the Project Management Plan.

Agency Technical Review. ATR is performed by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. These teams will be comprised of certified USACE personnel. The ATR team lead will be from outside the home MSC. If significant life safety issues are involved in a study or project a safety assurance review should be conducted during ATR.

Independent External Peer Review. Type I IEPR may be required for decision documents under certain circumstances. This is the most independent level of review, and is applied in cases that meet criteria where the risk and magnitude of the project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision is made as to whether Type I IEPR is appropriate.

Cost Engineering Review. All decision documents shall be coordinated with the Cost Engineering Mandatory of Expertise (MCX). The MCX will assist in determining the expertise needed on the ATR and IEPR teams. The MCX will provide the Cost Engineering certification. The RMO is responsible for coordinating with the MCX for the reviews. These reviews typically occur as part of ATR.

Model Review and Approval/Certification. EC 1105-2-412 mandates the use of certified or approved models for all planning work to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions.

Policy and Legal Review. All decision documents will be reviewed for compliance with law and policy. ER 1105-2-100, Appendix H provides guidance on policy and legal compliance reviews and DPM 2019-01 establishes procedures for implementing Reference 1.a to ensure consistency across Corps and all Major Subordinate Commands (MSCs) in the conduct of policy and legal compliance review (P&LCR). These reviews culminate in determinations that report recommendations and the supporting analyses and coordination comply with law and policy. Provided that the study maintains 3x3x3 compliance, the MSC has approval authority and the review would not warrant approval or further recommendation to a higher authority. These reviews are not further detailed in this section of the Review Plan.

Table 1 provides the schedules and costs for reviews. The specific expertise required for the teams are identified in later subsections covering each review. These subsections also identify requirements, special reporting provisions, and sources of more information.

Table 1: Levels of Review

Table listed below outlines project products, type of review, schedule and cost. This table will be updated at each IPR and SMART Planning Milestone meeting and presented to the Vertical Team. Table will be updated following feasibility completion for future phases of the project to include design, construction, and operation and maintenance.

Product(s) to undergo Review	Review Level	Start Date	End Date	Cost	Complete
Report Synopsis	District Quality Control	05/13/2019	07/10/2019	\$2,000	No
Draft Feasibility Report and EIS	District Quality Control	8/30/2020	TBD	\$5,000	No
Draft Feasibility Report and EIS	Agency Technical Review	9/30/2020	TBD	\$30,000	No
Draft Feasibility Report and EIS	Type I IEPR	N/A	N/A	N/A	No
Draft Feasibility Report and EIS	Policy and Legal Review	9/30/2020	TBD	TBD	No
Final Feasibility Report and EIS	District Quality Control	7/30/2021	TBD	TBD	No
Final Feasibility Report and EIS	Agency Technical Review	8/30/2021	TBD	TBD	No
Final Feasibility Report and EIS	Policy and Legal Review (NAD)	9/30/2021	TBD	TBD	No

NOTE: This table may also be used to identify future review work in follow-on phases of a project. This may include products prepared during the pre-construction engineering and design phase or products prepared as part of planning for the Operations and Maintenance phase of a project.

a. DISTRICT QUALITY CONTROL

The home district shall manage DQC and will appoint a DQC Lead to manage the local review (see EC 1165-2-217, section 8.a.1). The DQC Lead should prepare a DQC Plan and provide it to the RMO and MSC prior to starting DQC reviews. Table 2 identifies the required expertise for the DQC team.

Table 2: Required DQC Expertise

DQC Team Disciplines	Expertise Required
DQC Lead	A senior professional with extensive experience preparing Civil Works decision documents and conducting DQC. The lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.).
Planning	A senior water resources planner with experience in large Coastal Storm Risk Management projects.
Economics	The Economics reviewer should have at least 10 years of USACE economics experience or a combination of education and experience. The Economics reviewer should have a background in developing economic simulation models and analysis for large, complex regional investigations. Should have extensive experience in analyzing coastal storm flood risk management projects in accordance with ER 1105-2-100, the Planning Guidance Notebook. Experience with non-structural analysis preferred. Experience with HEC-FDA is preferred.
Environmental Resources	Senior Environmental Specialist with experience in CSRM projects. This includes experience in coastal zone management, essential fish habitat and endangered species compliance.
Cultural Resources	Senior Cultural Resource Specialist with experience with the tribes and culturally significant areas within New England
Hydrology/Hydraulic/ Coastal Engineering	Senior H&H Engineer with experience with 2-dimensional models and experience with climate change analysis. Experience with, application of levees and flood walls, non-structural solutions and flood proofing, and computer modeling such as S-Beach is preferred.
Structural Engineering	Senior Structural Engineer with experience in CSRM projects. Experience with floodwall and closure structure design is preferred.
Cost Engineering	The Cost Engineering panel member should have 10 years demonstrated experience or combined equivalent of education and experience assessing CSRM projects.
Real Estate	Senior Real Estate Specialist with experience within the New England real estate market. Experienced with easements and fee title acquisitions.

Documentation of DQC. Quality Control should be performed continuously throughout the study. A specific certification of DQC completion is required at the draft and final report stages.

Documentation of DQC should follow the District Quality Manual and the MSC Quality Management Plan. An example DQC Certification statement is provided in EC 1165-2-217, on page 19 (see Figure F).

Documentation of completed DQC should be provided to the MSC, RMO and ATR Team leader prior to initiating an ATR. The ATR team will examine DQC records and comment in the ATR report on the adequacy of the DQC effort. Missing or inadequate DQC documentation can result in delays to the start of other reviews (see EC 1165-2-217, section 9).

Recommended Best Planning Practice: Use DrChecks software to document DQC. Attach a DrChecks report to the DQC Certification to help illustrate the thoroughness of the DQC.

b. AGENCY TECHNICAL REVIEW

The ATR will assess whether the analyses are technically correct and comply with guidance, and that documents explain the analyses and results in a clear manner. An RMO manages ATR. The review is conducted by an ATR Team whose members are certified to perform reviews. Lists of certified reviewers are maintained by the various technical Communities of Practice (see EC 1165-2-217, section 9(h)(1)). Table 3 identifies the disciplines and required expertise for this ATR Team.

Table 3: Required ATR Team Expertise

ATR Team Disciplines	Expertise Required
ATR Lead	A senior professional with extensive experience preparing Civil Works decision documents and conducting ATR. The lead should have the skills to manage a virtual team through an ATR. The lead may serve as a reviewer for a specific discipline (such as planning).
Planning	A senior water resources planner with experience in large Coastal Storm Risk Management projects.
Economics	The Economics reviewer should have at least 10 years of USACE economics experience or a combination of education and experience. The Economics reviewer should have a background in developing economic simulation models and analysis for large, complex regional investigations. Should have extensive experience in analyzing coastal storm flood risk management projects in accordance with ER 1105-2-100, the Planning Guidance Notebook. Experience with non-structural analysis preferred. Experience with HEC-FDA is preferred.
Environmental Resources	Senior Environmental Specialist with experience in CSRM projects. This includes experience in coastal zone management, essential fish habitat and endangered species compliance.
Cultural Resources	Senior Cultural Resource Specialist with experience with the tribes and culturally significant areas within New England
Hydrology/Hydraulic/Coastal Engineering	Senior H&H Engineer with experience with 2-dimensional models and experience with climate change analysis. Experience with, application of levees and flood walls, non-structural solutions and flood proofing, and computer modeling such as HEC-RAS is preferred.
Structural Engineering	Senior Structural Engineer with experience in CSRM projects. Experience with floodwall and closure structure design is preferred.
Cost Engineering	The Cost Engineering ATR member should have 10 years demonstrated experience or combined equivalent of education and experience assessing CSRM projects.
Real Estate	Senior Real Estate Specialist with experience within the New England real estate market. Experienced with easements and fee title acquisitions.
Climate Preparedness and Resilience CoP Reviewer	A member of the Climate Preparedness and Resiliency Community of Practice (CoP) will participate in the ATR review.

Risk and Uncertainty	For decision documents involving hydrologic, hydraulic, and/or coastal related risk management measures, include a subject matter expert in multi-discipline flood risk analysis to ensure consistent and appropriate identification, analysis, and written communication of risk and uncertainty in accordance with ER 1105-2-101.
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Documentation of ATR. DrChecks will be used to document all ATR comments, responses and resolutions. Comments should be limited to those needed to ensure product adequacy. If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team for resolution using the EC 1165-2-217 issue resolution process. Concerns can be closed in DrChecks by noting the concern has been elevated for resolution. The ATR Lead will prepare a Statement of Technical Review (see EC 1165-2-217, Section 9), for the draft and final reports, certifying that review issues have been resolved or elevated. ATR may be certified when all concerns are resolved or referred to the vertical team and the ATR documentation is complete.

Recommended Best Planning Practice: All members of the ATR team should use the four part comment structure (see EC 1165-2-217, Section 9(k)(1)).

c. INDEPENDENT EXTERNAL PEER REVIEW

(i) Type I IEPR.

Type I IEPR is managed outside of the USACE and conducted on studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study.

Decision on Type I IEPR. At this time Type I IEPR is not expected to be needed for this feasibility study.

Products to Undergo Type I IEPR. N/A

Required Type I IEPR Panel Expertise. In the event that an IEPR is required, panels will consist of independent, recognized experts from outside of the USACE in disciplines representing a balance of areas of expertise suitable for the review being conducted. Table 4 lists the required panel expertise.

Table 4: Required Type I IEPR Panel Expertise

IEPR Panel Member Disciplines	Expertise Required
Economics	The economics reviewer should be experienced in economic evaluation of coastal storm risk management projects. Experience with modeling flood damages using tools such as HEC-FDA is required.
Environmental	Senior environmental specialist with experience in CSRM projects with 10+ years of experience. This includes experience in NEPA and coastal zone management.

Engineering	Senior engineer with experience in CSRM projects.
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Documentation of Type I IEPR. N/A

Recommended Best Planning Practice: Begin coordination with the RMO very early in the study to allow adequate time for scoping and contracting for the Type I IEPR.

Recommended Best Planning Practice: Follow the Type I IEPR SOP, Appendix C, for step-by-step guidance on how to seek an IEPR exclusion. A copy of the SOP is available on the Planning Community Toolbox at <https://planning.erdc.dren.mil/toolbox/library/Misc/Type%20I%20IEPR%20SOP%20Final-2016.pdf>

(ii) Type II IEPR.

The second kind of IEPR is Type II IEPR. These Safety Assurance Reviews are managed outside of the USACE and are conducted on design and construction for hurricane, storm and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. A Type II IEPR Panel will be convened to review the design and construction activities before construction begins, and until construction activities are completed, and periodically thereafter on a regular schedule.

Decision on Type II IEPR. At this time Type II IEPR is not expected to be needed for this feasibility study.

d. MODEL CERTIFICATION OR APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models are any models and analytical tools used to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of a planning product. The selection and application of the model and the input and output data is the responsibility of the users and is subject to DQC, ATR, and IEPR.

Table 5: Planning Models. The following models may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
G2CSRM	The program integrates hydrologic engineering and economic analysis to formulate and evaluate plans using risk-based analysis methods. It will be used to evaluate/compare plans to aid in selecting a recommended plan.	Certified
BEACH-FX 1.4.2	The program integrates beach performance and economic modeling to formulate and evaluate beach nourishment based alternatives	Certified

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue. The professional practice of documenting the application of the software and modeling results will be followed. The USACE Scientific and Engineering Technology Initiative has identified many engineering models as preferred or acceptable for use in studies. These models should be used when appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR.

Table 6: Engineering Models. These models may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Approval Status
HEC-RAS 5.0 (River Analysis System)	The software performs 1-D steady and unsteady flow river hydraulics calculations and has capability for 2-D (and combined 1-D/2-D) unsteady flow calculations. It will be used for steady flow analysis to evaluate the future without-project and future with-project conditions.	HH&C CoP Preferred Model
ADCIRC	ADCIRC is a hydrodynamic modeling technology that conducts short- and long-term simulations of tide and storm surge elevations and velocities in deep-ocean, continental shelves, coastal seas, and small-scale estuarine systems.	
Micro-Computer Aided Cost	MCACES is a cost estimation model. This model will be used to estimate costs for the feasibility study.	Certified

Engineering System (MCACES) MII Version 3.0		
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e. POLICY AND LEGAL REVIEW

Policy and legal compliance reviews for draft and final planning decision documents that are 3x3x3 compliant are delegated to the MSC (see Director's Policy Memorandum 2018-05, paragraph 9).

(i) Policy Review.

The policy review team is identified through the collaboration of the MSC Chief of Planning and Policy and the HQUSACE Chief of the Office of Water Project Review. The team is identified in Attachment 1 of this Review Plan. The makeup of the Policy Review team will be drawn from Headquarters (HQUSACE), the MSC, the Planning Centers of Expertise, and other review resources as needed.

- The Policy Review Team will be invited to participate in key meetings during the development of decision documents as well as SMART Planning Milestone meetings. These engagements may include In-Progress Reviews, Issue Resolution Conferences or other vertical team meetings plus the milestone events.
- The input from the Policy Review team should be documented in a Memorandum for the Record (MFR) produced for each engagement with the team. The MFR should be distributed to all meeting participants.
- In addition, teams may choose to capture some of the policy review input in a risk register if appropriate. These items should be highlighted at future meetings until the issues are resolved. Any key decisions on how to address risk or other considerations should be documented in an MFR.

(ii) Legal Review.

Representatives from the Office of Counsel will be assigned to participate in reviews. Members may participate from the District, MSC and HQUSACE. The MSC Chief of Planning and Policy will coordinate membership and participation with the office chiefs.

- In some cases legal review input may be captured in the MFR for the particular meeting or milestone. In other cases, a separate legal memorandum may be used to document the input from the Office of Counsel.
- Each participating Office of Counsel will determine how to document legal review input.

ATTACHMENT 1: TEAM ROSTERS

PROJECT DELIVERY TEAM			
Name	Office	Position	Phone Number
Rosemarie Bradley	NAE-PDE	Environmental Compliance/Biologist	(978) 318-8127
Danielle Pruell	NAE-PDE	Economist	(978) 318-8729
Kathleen Atwood	NAE-PDE	Cultural Resources	(978) 318-8537
Lisa Winter	CENAE-EDW	Coastal Engineer	(978) 318-8954
Eric Rosenberg	NAE-EDD	Civil Engineer	(978) 318-8216
TBD	NAE-EDD	Structural Engineer	(978) 318-8xxx
TBD	NAE-EDW	Geotechnical Engineer	(978) 318-8xxx
Jeff Gaeta	NAE-EDD	Cost Engineer	(978) 318-8438
Pamela Bradstreet	NAE-RE	Real Estate	(978) 318-8025
Michael Riccio	NAE-PDP	Plan Formulation	(978) 318-8685

DISTRICT QUALITY CONTROL TEAM			
Name	Office	Position	Phone Number
Mark Habel	CENAE-PDP	Plan Formulation	(978) 318-8871
Denise Kammerer-Cody	CENAE-PDE	Economics	(978) 318-8105
Andrew Jordan	CENAE-EDD	Cost Engineering	(978) 318-8476
Siamac Vaghar	CENAE-EDW	Geotechnical Engineering	(978) 318-8133
Lee Thibodeau	CENAE-EDD	Civil Engineering	(978) 318-8168
Jason Paolino	CENAE-EDD	Structural Engineering	(978) 318-8664

AGENCY TECHNICAL REVIEW TEAM			
Name	Office	Position	Phone Number
TBD		ATR Lead	
Patrick Obrien	CESWG-ECH	Climate Preparedness and Resiliency	
TBD		Real Estate	
TBD		H&H	
TBD		Environmental	
TBD		Cost Engineering	
TBD		Economics	
TBD		Civil Engineering	

VERTICAL TEAM			
Name	Office	Position	Phone Number
Larry Cocchieri	CENAD-PD-X	RMO	(347) 370-4571
Chris Richardi	NAD-DST	Civil Works Integration	(347) 370-4530
Charles Gould	HQ-RIT	Senior Planner	(202) 761-1572
Joseph Vietri	CENAD-PD-P	Chief Planning and Policy	(347) 370-4570
Alan Huntley	CENAD-RB-T	Chief Cost Engineering	(347) 370-4664
Karen Baker	CENAD	Programs Chief	(347) 370-4571

"ONE" POLICY REVIEW TEAM			
Name	Office	Position	Phone Number
Jenine Gallo	CECW-PC/LRD	HQ ENV	(202) 761-4700
Donald Cresitello	CENAD-PD-P	NAD Plan Formulation/Review Manager	(347) 370-4591
Naomi Fraenkel Altschul	CENAD-PD-PP	NAD Economic	(917) 359-2819
Patsy Falcigno	CECC-NAD	Office of Counsel	(347) 370-4524
Karen Kennedy	CENAD-PD-RE	Real Estate	(347) 370-4777
Ralph Lamoglia	CENAD-RB-T	Engineering	(347) 370-4599
George Nieves	CENAD-PSD-O	Operations Program Manager	(347) 370-4556
Will Veatch	CEMVN-ED-H	Climate Preparedness and Resiliency	(504) 862-2858