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

CENAD-PD-PP

22 JUL 2020

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 Fairfield and New Haven Counties, Connecticut Coastal Storm Risk Management Feasibility Study

1. Reference CENAE-ZC memorandum dated 7 July 2020, 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.

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 North Atlantic Division (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

THOMAS J. TICKNER
Brigadier General, USA
Commanding

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

CENAE-ZC 07 July 2020

MEMORANDUM FOR Commander, USACE North Atlantic Division, (CENAD-PD-X Larry Cocchieri), 301 General Lee Avenue, Fort Hamilton Community, Brooklyn, New York 11252

SUBJECT: Submission of the Review Plan for the Fairfield and New Haven Counties, Connecticut CSRM Feasibility Study (P2 No. 395890) for Approval.

1. References: EC 1165-2-217, Review Policy for Civil Works, 20 FEB 2018.

2. Background: The New England District developed the enclosed updated Review Plan for the subject study which amends the approved Review Plan dated 20 March 2019. This amended review plan provides updated language regarding the requirement to conduct a Type I IEPR for a Coastal Storm Risk Management feasibility study. The New England District has made a risk-informed determination that a Type I IEPR is neither required nor beneficial for this feasibility study.

3. Request: Based on criteria detailed in EC 1165-2-217 Section 11, the New England District requests that the North Atlantic Division approves the subject Review Plan and support the Type 1 IEPR exclusion. The full analysis required by EC 1165-2-217 may be found beginning on Page 12 (section c.i.) of the enclosed Review Plan.

4. Point of Contact: Questions should be directed to Byron Rupp, Study/Project Manager. He can be reached at 978-318-8172.

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Encl

WILLIAM M. CONDE
COL, EN
Commanding

REVIEW PLAN

Updated: 17 June 2020

Project Name: Fairfield and New Haven Counties, Connecticut. Coastal Storm Risk Management Feasiblity Study

P2 Number: 395890

Decision Document Type: Feasibility Report

Project Type: Coastal Storm Risk Management

District: New England District

District Contact: Study Manager: (978) 318-8172

Major Subordinate Command (MSC): North Atlantic Division

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

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

RMO Contact: Deputy Director of the CSRM PCX: (347) 370-4571

Key Review Plan Dates

Date of RMO Endorsement of Review Plan: 21 Feb 2019

Date of MSC Approval of Review Plan: 20 Mar 2019

Date of IEPR Exclusion Approval: N/A

Has the Review Plan changed since PCX Endorsement? Yes

Date of Last Review Plan Revision: June 2020

Date of Review Plan Web Posting: Mar 2019

Date of Congressional Notifications: Mar 2019

Milestone Schedule

	Scheduled	Actual	Complete
Alternatives Milestone:	Sep 2017	Sep 2017	Yes
Tentatively Selected Plan:	Jun 2019	Jun 2019	Yes
Release Draft Report to Public:	Dec 2019	Dec 2019	Yes
Agency Decision Milestone:	Mar 2020	Mar 2020	Yes
Final Report Transmittal:	Aug 2020	TBD	No
Senior Leaders Briefing:	Oct 2020	TBD	No
Chief's Report:	Dec 2020	TBD	No

Project Fact Sheet
June, 2020

Project Name: Fairfield and New Haven Counties, Connecticut CSRM Feasiblity Study

Location: Fairfield and New Haven Counties, Connecticut

Authority: The study is authorized under a Resolution by the Committee on Transportation and Infrastructure of the United States House of Representatives dated April 29, 2010 which states: "the Secretary of the Army review the report of the Chief of Engineers on Land and Water Resources of the New England-New York Region, published as Senate Document No. 14, 85th Congress, 1st Session, and other reports to determine whether any modifications of the recommendations contained therein are advisable at the present time in the interest of flood damage reduction, coastal storm damage reduction, coastal erosion, and other related purposes in the vicinity of the estuaries and shoreline of Fairfield and New Haven Counties, Connecticut."

Sponsor: Connecticut Department of Energy and Environmental Protection (DEEP)

Type of Study: Feasibility Study

SMART Planning Status: An exemption from the three year time rule was approved in Sep

Study Area: The study will focus on the estuaries and shoreline of Fairfield and New Haven Counties, Connecticut located along the north shore of Long Island Sound. The study area encompasses approximately half of the Connecticut shoreline and includes 15 coastal municipalities. Since the study began in 2016, the NAE PDT, working with the non federal sponsor and local stakeholders, has screened the focus area of the study from a two-county area to the Long Wharf District within the city of New Haven.

Problem Statement: The Fairfield and New Haven County, CT study area is highly vulnerable to damages resulting from coastal storm events such as Hurricanes and Nor' easters. Hurricane Sandy (2012) is the most recent major event to cause wide spread damage to the region. The USACE North Atlantic Coast Comprehensive Study (completed in 2015) identified areas of high exposure and risk along the Connecticut coast study within Fairfield and New Haven counties. The combined population of the study area (as of the 2010 census) is approximately 1.8 million. Low lying coastal communities contain thousands of high-value residential structures, commercial properties and government facilities. Critical infrastructure throughout the region including the I-95 corridor and multiple railroad transportation systems, government facilities, and medical facilities become more at risk of damage from coastal storm events as climate changes.

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. Another goal of the study is to increase the reliability of the Nation's transportation system (I-95 corridor & Railroad) by providing alternatives that will potentially lessen damages from coastal storm-induced flooding.

According to the NOAA Office for Coastal Management, 35 tropical cyclones (including hurricanes and tropical storms) have tracked within the Fairfield & New Haven County study area since the mid-1800s. The most intense hurricane of record within the study area is the Hurricane of 1938. According to NOAA, this hurricane was a Category 3 intensity at landfall along the Connecticut coast. There were also several high intensity hurricanes during the 1800s and early 1900s that made landfall along Long Island, although details about their intensity are limited. Of the 35 tropical cyclones, 5 hurricanes and tropical storms passed within a 50-nautical mile radius of the study area during the last 25 years. These storms are listed below (with maximum track intensities indicated):

- Beryl, Tropical Storm, 1994
- Bertha, Category 3 Hurricane, 1996
- Floyd, Category 4 Hurricane, 1999
- Hanna, Category 1 Hurricane, 2008
- Irene, Category 3 Hurricane, 2011

Although these hurricanes reached intensities as high as Category 4 at some point over their storm track, the storm intensities decreased significantly over the colder New England waters. Hurricane Sandy, although its landfall was over 200 nautical miles south of the study area, was one of the most significant flood events in Connecticut due to its very large windfield. Sandy's storm surge when combined with tides, caused water levels to reach Elevation 12.3 feet MLLW (Elevation 8.6 feet NAVD88) in the vicinity of the Long Wharf area in the city of New Haven.

Risk Identification: The Connecticut coast is vulnerable to coastal flooding, including storm surge and waves. There is a potential threat to human life as the focused study area within the town of Fairfield and the city of New Haven contains an approximate population of 200,000 residents, many of whom live in close proximity to coastal floddplains. 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 will result in higher and more frequent storm damages and higher average annual damages. Sea level rise over the next 50 years is predicted to be between 0.4 foot and 3.2 feet. The effect of sea level rise will be to increase both the frequency and floodwater elevation of coastal flood events. Under the high sea level rise projections utilized by the USACE, by the year 2116, tidal flooding of the Long Wharf area in New Haven will also occur (similar to that observed during Hurricane Sandy, but on a twice-daily basis).

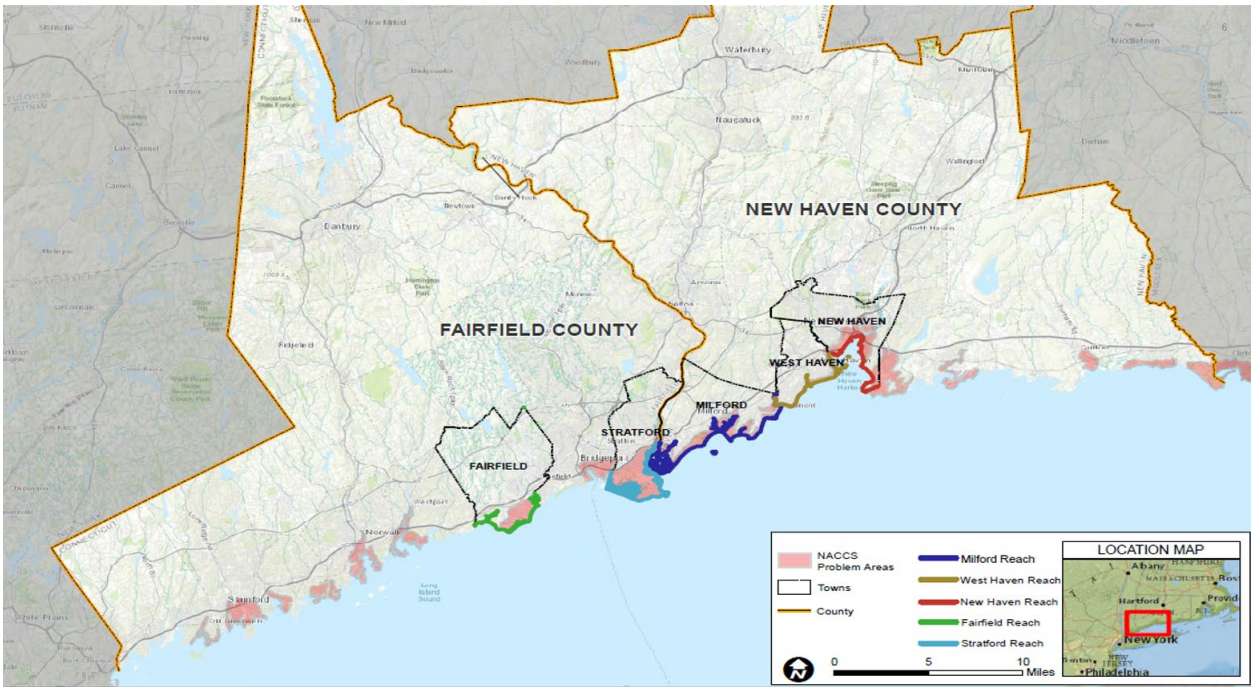

Figure 1. Overview of the five original study reaches for the Fairfield and New Haven Counties Feasibility study. As approved during the ADM meeting in March 2020, the focused study areas have been further screened a single focused study area within the Long Wharf District in the city of New Haven (outlined in red).

1. FACTORS AFFECTING THE LEVELS OF REVIEW

Scope of Review.

- Will the study likely be challenging? Yes due to the size of the study area and differing stakeholder viewpoints, particularily with CSRM alternatives that will impact private property within study reaches such as the town of Fairfield. Additionally, there have been issues on the non-Federal side with funding the study. The original scoped budget of $3 million has been reduced to less than half of that amount (FCSA amended in June 2018). This has resulted in scoping issues for the study, forcing the PDT and non-Federal sponsor to screen out study reaches that have the lowest economic damages.

- 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. Proposed alternatives in the town of Fairfield involve structural options that involve floodwalls and pump stations that will impact private properties. Potential negative impacts to an existing salt marsh complex in Fairfield is another project risk that is currently under evaluation.

  In the city of New Haven, one project risk involves a potential alternative which is integrated into the existing Interstate 95 highway embankment. Large, deployable closure structures are also needed to block multiple I-95 underpasses. Discussions with CT DOT, City Engineering and Federal Highways are ongoing to determine the feasibility of integrating existing highway infrastructure into a USACE CSRM project. UPDATE, JUNE 2020: Following the TSP milestone, it was determined that integrating the CSRM project into the existing embankment was not technically feasible given risks to structural stability of the embankment.

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

  A potential CSRM project within the Long Wharf District (New Haven) will not be justifiued by life safety. The Long Wharf District is primarily industrial in nature and surrounded by natural high ground. Adjacent high ground allows for the efficient evacuation of anyone in the coastal floodplain prior to severe coastal storm events.

- Has the Governor of an affected state requested a peer review by independent experts?
  The Governor of Connecticut has not requested a peer review by independent experts. The State of Connecticut strongly supports the recommend plan.

- Will the it likely involve significant public dispute as to the project's size, nature, or effects?
  As of the ADM meeting in March 2020, the tentatively selected plan for the New Haven study reach is strongly supported by state and city officials. A potential CSRM project in the Long Wharf area of New Haven is not expected to create public dispute.

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

  As of June 2020, the economic cost or benefit of the project is not expected to involve significant public dispute.

- 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 has used approved planning, hydrology and hydraulics, cost engineering, climate change and environmental models to develop the tentatively selected plan. Additionally, all project designs, measures, and features are anticipated to be common and routine techniques (primarily flood walls and pump stations).

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

  The recommended project design will not require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design/construction schedule.

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

  The estimated total cost of the project presented at the ADM (March, 2020) is approximately $165,000,000.

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

  An Environmental Impact Statement will not be required as part of the study. The PDT has determined that an EA/FONSI will satisfy NEPA requirements.

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

  The PDT has not identified 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 as not been identified by the PDT. Mitigation will not 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 has not identified any adverse impacts to 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. These reviews culminate in determinations that report recommendations and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. 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

Product(s) to undergo Review	Review Level	Start Date	End Date	Cost	Complete
Report Synopsis	District Quality Control	05/13/2019	05/24/2019	$2,000	Yes
Draft Feasibility Report and EA	District Quality Control	11/18/2019	12/10/2019	$4,000	Yes
Draft Feasibility Report and EA	Agency Technical Review	12/16/2019	02/08/2020	$35,000	Yes
Draft Feasibility Report and EA	Type I IEPR	N/A	N/A	N/A	N/A
Draft Feasibility Report and EA	Policy and Legal Review	12/16/2019	01/30/2020	n/a	No
Final Feasibility Report and EA	District Quality Control	06/22/2020	07/03/2020	$4,000	No
Final Feasibility Report and EA	Agency Technical Review	07/06/2020	07/31/2020	$25,000	No
Final Feasibility Report and EA	Policy and Legal Review (NAD)	08/17/2020	09/30/2019	n/a	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 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 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.
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.

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.
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.

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.

c. INDEPENDENT EXTERNAL PEER REVIEW

(i) Type I IEPR.

Decision on Type I IEPR. The New England District has made a risk informed decision to not conduct Type I IEPR and is pursuing a formal exclusion from the North Atlantic Division Commander. The decision to not conduct Type I IEPR is based on criteria detailed in EC 1165-2-217 Section 11. The Fairfield and New Haven Counties, CT CSRM decision document does not meet the following Type I IEPR mandatory triggers detailed in the EC including:

- **Significant threat to human life:** There are no significant life safety issues within the project area. The Long Wharf District project area within the city of New Haven, CT is a low lying coastal flood plain area consisting primarily of industrial structures, the I-95 highway embankment and rail infrastructure. The area is immediately adjacent to high ground above the coastal floodplain which facilitates rapid evacuation of the project area in the event of severe coastal storms. Additionally, rail and highway operations could be rapidly halted during severe coastal storms which would further reduce the chance for life safety issues.

- **Estimated total cost of the recommended project exceeds $200 million:** As of the Agency Decision milestone, the estimated total project cost is $165 million, including design costs and LERRDS. The recommended plan does not require periodic nourishment.

- **Request from the Governor of an affected State:** The Governor of Connecticut has not requested a peer review by independent experts. The State of Connecticut strongly supports the recommend plan.

- **Controversial Project as Determined by the Chief of Engineers**: The Chief of Engineers has NOT made the determination that this project is controversial due to significant public dispute over the size, nature, or effects of the project or the economic or environmental costs or benefits of the project.

- **Significant public dispute as to size, nature, or effects of the project**: Based on interactions with the non-Federal sponsor and public comments received on the draft IFR/EA, there are no public disputes related to the size, nature, or effects of the recommended plan.

- **Significant public dispute as to the economic or environmental cost or benefit of the project:** Based on interactions with the non-Federal sponsor and public comments received on the draft IFR/EA, there are no public disputes related to the economic or environmental costs or benefits associated with the recommended plan.

- **Is required by USACE for cases where information is based on novel methods, presents complex challenges for interpretation, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices.** This Type I IEPR mandatory trigger is non applicable for this study and recommended plan. Standard engineering principles, practices and designs were used to develop the recommended plan.

- **Any other circumstance that leads the Chief of Engineers to determine Type I IEPR is warranted.** This Type I IEPR mandatory trigger is non applicable for this study and recommended plan, there are no additional circumstance which would justify the cost and time required to complete an IEPR. The project study does not include an EIS and is not controversial. Additionally, the recommended plan has negligible adverse impacts on scarce or unique tribal, cultural, or historic resources and has no adverse impacts on fish and wildlife species and their habitat. Lastly, the recommended plan has no adverse impact on a species listed as endangered or threatened species under the Endangered Species Act of 1973 (or the critical habitat of such species designated under such Act.)

- **The consequences of non-performance on project economics, the environmental and social well-being (public safety and social justice)**: It is not anticipated that the recommended plan will have any impact to the above listed factors.

- **The product is likely to contain influential scientific information or highly influential scientific assessment:** The Fairfield and New Haven Counties, CT CSRM IFR/EA will not contain influential scientific information or highly influential scientific assessment.

(i) 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 point in the planning process, a determination regarding whether or not to conduct a Type II IEPR has not been made. Insufficient detail is known about the need for Type II IEPR at this point in the study, and a decision will be coordinated at a later date with the vertical team.

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
Ex: HEC-FDA 1.4.2	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

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
Micro-Computer Aided Cost Engineering System (MCACES) MII Version 3.0	MCACES is a cost estimation model. This model will be used to estimate costs for the feasibility study.	Certified

e. POLICY AND LEGAL REVIEW

Policy and legal compliance reviews for draft and final planning decision documents 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
Grace Moses	NAE-PDE	Environmental Compliance/Biologist	(978) 318-8717
Mike Berner	NAE-PDE	Economist	(978) 318-8959
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