



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

CENAD-PD-P

21 March 2019

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, Norfolk District,
Fort Norfolk 803 Front Street, Norfolk, VA 23510-1011

SUBJECT: Request for Approval of the Collier County Coastal Storm Risk
Management Feasibility Study and Environmental Impact Statement Review Plan

1. Reference Memorandum, CENAO-EX, dated 6 February 2019, subject as above.
2. The Coastal Storm Risk Management Planning Center of Expertise of the North Atlantic Division (NAD) is the lead office to execute the referenced Review Plan. The Review Plan includes Independent External Peer Review.
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 at 347-370-4571 or Lawrence.J.Cocchieri@usace.army.mil.

Encl

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Digitally signed by
MILHORN.JEFFREY.LARRY.1149493928
DN: cn=US, o=U.S. Government, ou=DoD,
ou=HPKI, ou=USA,
cn=MILHORN.JEFFREY.LARRY.1149493928
Date: 2019.03.21 20:04:25 -0400

JEFFREY L. MILHORN
Major General, USA
Commanding



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

CENAO-EX

06 February 2019

MEMORANDUM FOR Planning Division (ATTN: CENAD-PP/Mr. Cocchieri), U.S. Army Engineer Division, North Atlantic, 302 General Lee Avenue, Brooklyn, New York 1252-6700

SUBJECT: Collier County Coastal Storm Risk Management Feasibility Study and Environmental Impact Statement – Submission of Review Plan

1. Enclosed for review and approval is the Review Plan for the subject study.
2. Please contact Ian Swisher, Planning Team Lead, or Walt Trinkala, Project Manager, if you have any questions or require additional information.

Encl

A handwritten signature in black ink, appearing to read "P. Kinsman", is positioned above the printed name.

PATRICK V. KINSMAN, PE
Colonel, EN
Commanding

REVIEW PLAN

February 2019

Project Name: Collier County Coastal Storm Risk Management Feasibility Study and Environmental Impact Statement, Collier County, FL

P2 Number: 476674

Decision Document Type: Integrated Feasibility Report

Project Type: Single-Purpose Coastal Storm Risk Management

District: Norfolk District (executing district) and Jacksonville District (supported district)

District Contact: Project Manager (Norfolk) (757) 201-7715;

Planning Technical Team Lead (757) 201-7320;

Project Manager (Jacksonville) (904) 232-3292

Major Subordinate Command (MSC): North Atlantic Division

MSC Contact: Senior Coastal Planner (347)370-4591

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

RMO Contact: PCX-CSRМ Review Manager (347) 370-4571

Key Review Plan Dates

Date of RMO Endorsement of Review Plan: Pending

Date of MSC Approval of Review Plan: Pending

Date of Independent External Peer Review (IEPR) Exclusion Approval: N/A

Has the Review Plan changed since PCX Endorsement? N/A

Date of Last Review Plan Revision: N/A

Date of Review Plan Web Posting: Pending

Date of Congressional Notifications: Pending

Milestone Schedule

	<u>Scheduled</u>	<u>Actual</u>	<u>Complete</u>
FCSA Signed:	10/09/18	10/09/18	Yes
Alternatives Milestone (AMM):	01/11/19	01/11/19	Yes
Tentatively Selected Plan (TSP):	10/17/19		No
Release Draft Report to Public:	12/16/19		No
Agency Decision Milestone (ADM):	06/17/20		No
Final Report Transmittal:	04/20/21		No
State and Agency Review:	07/21/21		No
Chief's Report:	09/24/21		No

Project Fact Sheet

February 2019

Project Name: Collier County Coastal Storm Risk Management Feasibility Study, Collier County, Florida.

Location: The project is located in Collier County, Florida in the Cities of Naples and Marco Island.

Authority: The study authority is Section 4033 of Water Resources Development Act of 2007 (P.L. 110-114). Whereby the Secretary shall conduct a study to determine the feasibility of carrying out a project for hurricane and storm damage reduction and flood damage reduction in the vicinity of Vanderbilt, Park Shore, and Naples beaches, Collier County, Florida.

Sponsor: Collier County

Type of Study: Feasibility

SMART Planning Status: The project is currently 3x3 compliant. Project schedule was baselined on 14 NOV 2018. The schedule has been reviewed and approved by the vertical team.

Project Area: The Collier County, Florida Supplemental study is a single-purpose Coastal Storm Risk Mangement (CSRM) project located in southwest Florida (Figure 1). Collier County is located on the lower west coast of Florida, approximately 120 miles south of the entrance to Tampa Bay and about 100 miles north of Key West. Naples is the largest city located along the shoreline in the county. Collier County is comprised of nearly 200 square miles of landmass and roughly 300 square miles of water. It is the largest county in Florida by land area and fourth largest by total area (land and water). The estimated population for 2017 was nearly 373,000, which includes a dense population of people who require more time and assistance for evacuation. A large portion of the southeast section of the county lies within the Big Cypress National Preserve, and the southern coastal section of the county is home to parts of the Everglades National Park.

Problem Statement: There is a high risk of coastal storms causing significant damage to shorefront development in Collier County. The area is densely developed with a mix of residential, commercial, and recreational uses. During hurricane Irma the area experienced damage to existing development, but if the storm track had been perpendicular to the coastline then the damage would have been significantly worse. The CSRM project could take the form of widening of the existing beaches, raising existing dunes, constructing seawalls, buyouts, flood proofing, or any possible combination of CSRM risk reduction measures that meets study objectives.

Federal Interest: The Federal project includes two potential project areas: North County shorefront development from Wiggins Pass to Naples center and Marco Island shorefront development. Each area has different topography, coastal storm concerns, and environmental considerations, which will require them to be analyzed separately. There is dense development in the project area and it's anticipated the Federal interest in a coastal storm risk management project will be justified. The non-Federal Sponsor is interested in developing and improving the beach areas to provide protection of adjacent structures and critical infrastructure. The estimated total project

cost for a CSRM project is expected to be in the range from \$50 to \$100 million, and it is anticipated to be supported by the damages prevented to shorefront development.

Risk Identification: There are uncertainties, as in any study, such as whether improvements are economically justified, environmentally acceptable, and technically feasible. There may be environmental constraints, considering the rich ecosystems and environmental resources in the study area. These potential risks are similar to those found in other USACE CSRM studies or projects, and are not expected to inhibit successful implementation of this project.

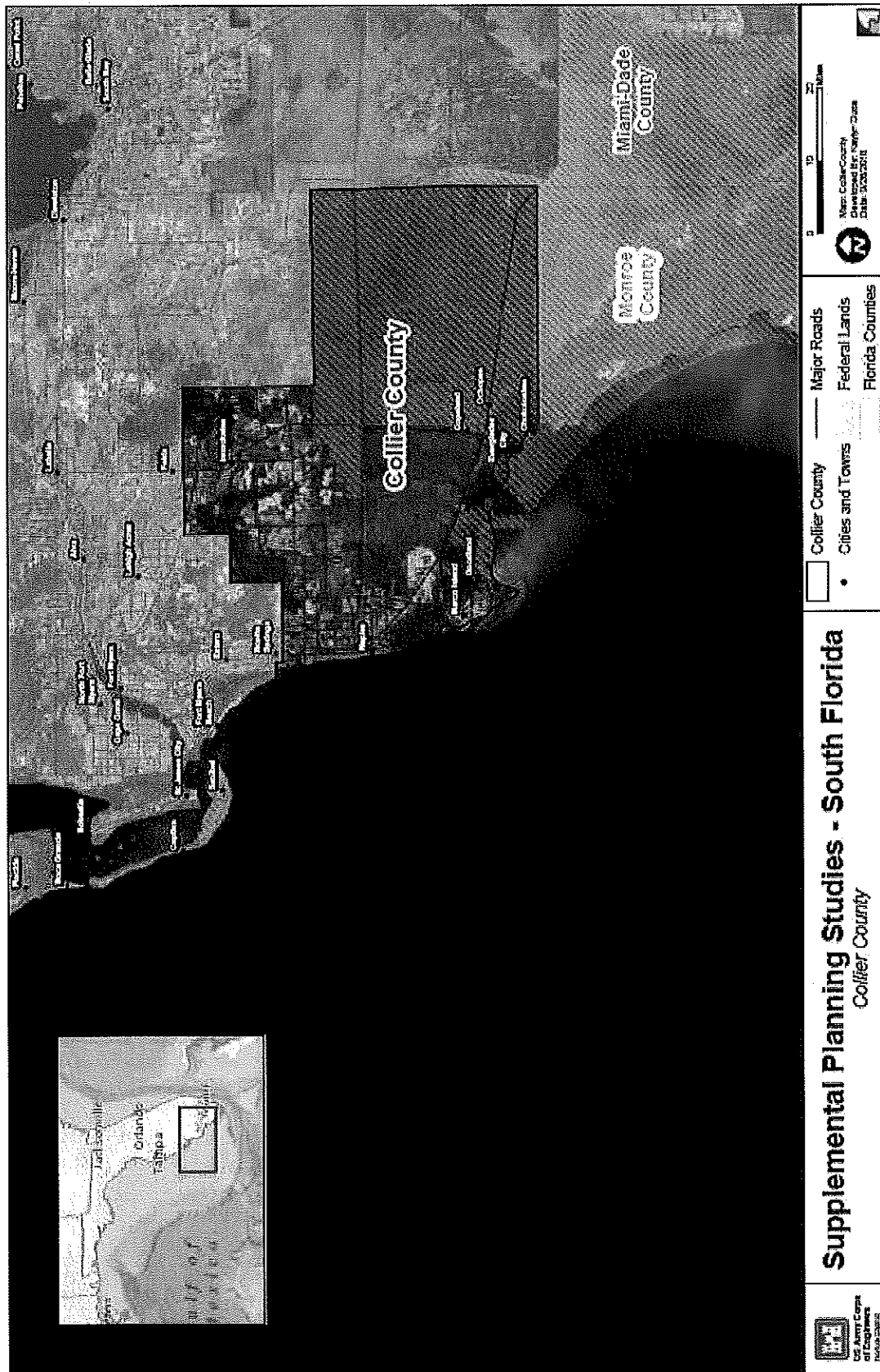


Figure 1: Project Area

1. FACTORS AFFECTING THE LEVELS OF REVIEW

- Is it likely that the study will be challenging?
This study will likely be challenging due to the large size of the study area, likely resulting in a large array of different project alternatives which are expected to vary across different areas of the county. However, the NFS previously constructed a beach project over 20 years ago and has current permits in place for nourishment efforts. Thus, the NFS has an abundance of existing information and prior reports available for use in this study. The non-Federal sponsor, Collier County, Florida, has requested and fully supports the study. Collier County has worked closely with State and local entities in the past to successfully construct projects in the area. It is likely there will be support for the project and any social and/or institutional concerns can be resolved through the study process.
- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks.
Project risk includes the impact of relative sea level change (RSLC) on the selected alternative. This risk will be addressed through sensitivity analysis of three rates of RLSC per guidance in ER 110-2-8162. Additional project risks related to project cost and schedule will be identified as the study progresses.
- Is the project likely to be justified by life safety or is the study or project likely to involve significant life safety issues?
The project will not be justified by life safety considerations and project failure does not involve a significant increased threat to human life. The Collier County feasibility study is a CSRM project that will be economically justified based on the reduction in value of economic losses projected to occur if no Federal project is constructed, or National Economic Development (NED) benefits, as outlined in ER 1105-2-100. Should the project not perform as expected, the impact would be a lower than expected benefit to NED, which does not impact human life and safety. Non-performance of the project would not affect the well-being of the general public and environment, but may negatively affect infrastructure adjacent to the project. There is no residual risk to account for in this project due to the fact that the project purpose does not address or directly affect human health and safety. Climate and sea level change could be a risk to this project but will be accounted for in accordance with USACE policy and guidance.
- Has the Governor of an affected state requested a peer review by independent experts?
There has not been a request for independent peer review by the Governor of Florida.
- Is it likely that the study/project will have significant public dispute as to the project's size, nature, or effects?
The study/project is not likely to involve significant public dispute as to its size, nature, or effects of the project. The improvements being considered are not expected to significantly negatively affect the environment and would only be implemented if economically justified, environmentally acceptable, and technically feasible.
- Is the project/study likely to involve significant public dispute as to the economic or environmental cost or benefit of the project?

The study/project is not likely to involve significant public dispute as to the economic cost or benefit of the project. The non-Federal sponsor's eagerness reflects the community's concerns regarding coastal storm resiliency and the importance of implementing a project to protect existing infrastructure.

- Is the project/study likely to have significant interagency interest?

The project is anticipated to have environmental interagency interest. During development of the NEPA document and in accordance with the requirements of all applicable Federal environmental laws, the Norfolk District will coordinate with the relevant state and Federal resource agencies to address such interests. A scoping meeting was held on 6 December 2018, and it did generate significant public interest which is typical for coastal areas where a strong environmental presence usually exists.

- 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 information in the integrated feasibility report and the anticipated project design are not likely to be based on novel methods, involve the use of 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. This is a study of an existing local project that will have strong elements of natural and nature based features with design elements determined in accordance with legacy USACE engineering and economic methodologies.

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

Because the incorporation of any CSR alternative would provide improved resilience, it is likely that the project design will require at least some elements of 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?

Yes. The estimated total cost of the project is expected to be in exceedance of \$200 million.

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

Due to the significant unique environmental resources in the study area, an EIS will likely be completed as part of this study.

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

No. The location of the project includes primarily existing beach construction areas and the back bay areas; no new Native American cultural resources are anticipated. To ensure compliance with the National Historic Preservation Act, Section 106 consultation is planned during the feasibility study and a finding of no significant impact is expected.

- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures?
No, only minor affects are expected. The study will address and assure compliance with the Endangered Species Act, the Magnuson-Stevens Fishery and Conservation Management Act including an Essential Fish Habitat Assessment, as well as other environmental compliance requirements.
- 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?
No, only minor adverse impacts are expected. Recommended implementation actions might include Time-of-Year restrictions on construction activities or other measures.

2. REVIEW EXECUTION PLAN

This Review Plan section provides a general description of each type of review and identifies the reviews anticipated for this study/project.

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

Agency Technical Review (ATR). 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/approved 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 (IEPR). 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. If required, Type I IEPR will be managed by an Outside Eligible Organization (OEO), external to USACE. Neither the public nor scientific or professional societies would be asked to nominate potential external peer reviewers.

Cost Engineering Review. All decision documents shall be coordinated with the Cost Engineering Mandatory Center of Expertise (MCX). The MCX will assist in determining the expertise needed on the ATR team. The MCX will provide 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 USACE policy and law. 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/coordination comply with law and policy and warrant approval or further recommendation to higher authority by the home MSC Commander.

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: Collier County Coastal Storm Risk Management – Levels of Review

Product(s) to undergo Review	Review Level	Start Date	End Date	Cost	Complete
Draft Feasibility Report and EA	District Quality Control	10/3/19	10/18/19	\$50,200	No
Draft Feasibility Report and EA	Agency Technical Review	12/16/19	2/7/20	\$59,620 ¹	No
Draft Feasibility Report and EA	Type I IEPR	12/16/19	2/7/20	\$100,000	No
Draft Feasibility Report and EA	Policy and Legal Review	12/16/19	2/7/20	N/A	No
Final Feasibility Report and EA	District Quality Control	3/23/20	4/3/20	\$50,200	No
Final Feasibility Report and EA	Agency Technical Review	4/6/20	4/19/20	\$59,620 ²	No
Final Feasibility Report and EA	Policy and Legal Review	4/21/20	5/22/20	N/A	No

¹ Estimated cost for Draft and Final Report ATRs does not include the cost of ATR Team Lead participation in milestone meetings or other engagement/coordination beyond that directly related with those ATRs. The estimated cost for ATR of the Draft Report is based upon the following assumptions:

- ATR Team Lead – 30 hours, \$130/hour
- ATR Team – 10 Technical Disciplines, 40 hours/discipline, average \$125/hour
- RMO – 40 hours, \$143/hour

² The estimated cost for ATR of the Final Report is based upon the following assumptions:

- ATR Team Lead – 30 hours, \$130/hour
- ATR Team – 10 Technical Disciplines, 40 hours/discipline, average \$125/hour
- RMO – 40 hours, \$143/hour

A. District Quality Control

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

Table 2: Required DQC Expertise

DQC Team Disciplines	Expertise Required
DQC Lead	The DQC lead should be 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 (i.e., planning, economics, environmental resources, etc.).
Plan Formulation	The plan formulation reviewer should be a senior water resources planner with experience in CSRM studies and familiarity with feasibility study requirements and the SMART Planning process.
Economics	The economics reviewer should be a senior economist with experience in CSRM studies and familiarity with feasibility study requirements and BEACH-FX. The economics DQC team member will be identified by the CSRM-PCX.
Environmental Resources	The environmental reviewer should have expertise in evaluating the impacts associated with CSRM and dredging projects as well as extensive knowledge of estuarine and coastal ecology. The reviewer should also be familiar with the environmental coordination and NEPA requirements for CSRM projects.
Cultural Resources	Cultural resources reviewer should have expertise in evaluating the impacts associated with CSRM and dredging projects as well as extensive knowledge of underwater archaeology. The reviewer should also be familiar with the environmental coordination and NEPA/National Historic Preservation Act (NHPA) requirements for CSRM projects.
Hydraulic/Hydrologic Engineering	The Hydraulic/Hydrologic Engineering reviewer should be familiar in the field of hydraulics and hydrology and have a thorough understanding and knowledge of the development of flow and stage frequency curves, application of floodwalls and interior drainage analysis, as well as computer modeling techniques that will be used such as HEC-HMS & HEC-RAS.
Coastal Engineering	The Coastal Engineering review should be have experience with coastal storm risk management investigations and projects. The reviewer should have a thorough understanding of wave dynamics and coastal processes. The coastal engineer should also be familiar in the field of coastal modeling specifically models such as S-BEACH, GENCADE and other coastal computer modeling tools and techniques.
Geotechnical Engineering	The Geotechnical Engineering reviewer should be familiar with the geotechnical requirements of the structural measures and beach nourishment borrow sources.
Structural Engineering	The Structural Engineering reviewer should be familiar with the structural requirements of the structural measures.

Cost Engineering	The cost engineering reviewer should have experience evaluating cost requirements and experience with the Abbreviated Risk Analysis, Cost and Schedule Risk Analysis (Crystal Ball) and CEDEP models.
Operations	The project design reviewer should have experience in the dredging operations, design, construction, and maintenance, including development of plans, surveying, mapping, and volumetric computations.
Real Estate	The real estate reviewer should have expertise in the real estate requirements of CSRM projects and preparation of Real Estate Plans.

Documentation of DQC. Quality Control should be performed continuously throughout the study. In compliance with Planning Bulletin 2018-01, Feasibility Study Milestones, DQC of milestone submittals is required. DQC will also be performed on the draft and final reports, both of which require a specific certification of DQC completion. 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 (Figure F). DrChecks software will be used to document DQC review comments, responses, and issue resolution.

Documentation of completed DQC will be provided to the MSC, RMO, and ATR Team leader prior to initiating an ATR. DQC review will be performed for milestone submittals. The ATR team will assess the quality of the DQC performed and provide a summary of that assessment in the ATR report. Missing or inadequate DQC documentation can result in delays to the start of other reviews (see EC 1165-2-217, Section 9).

B. Agency Technical Review

ATR will assess whether the analyses are technically correct and comply with USACE guidance and whether the documents explain the analyses and results in a clear manner. Further, the ATR will ensure proper and effective DQC has been performed and will ensure that the product is consistent with established criteria, guidance, procedures, and policy. The RMO will identify the ATR team members and manage the ATRs. Review team members will not be nominated by the home District/MSD.

Table 3: Required ATR Team Expertise

ATR Team Disciplines	Expertise Required
ATR Lead	The ATR lead will be 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 (e.g., plan formulation, economics, etc.).
Plan Formulation	The plan formulation reviewer should be a senior water resources planner with experience in CSRM studies and familiarity with feasibility study requirements and the SMART Planning process.
Economics	The economics reviewer(s) should be a senior economist with experience in CSRM studies and familiarity with feasibility study requirements and BEACH-FX. Typically, two economics reviewers are required, one to review the Economics Appendix and the other to review inputs/outputs of BEACH-FX modeling.
Environmental Resources	The environmental reviewer should have expertise in estimating the impacts associated with CSRM and dredging projects as well as extensive knowledge of estuarine and coastal ecology. The reviewer should also be familiar with environmental coordination and NEPA requirements for CSRM projects.
Cultural Resources	The cultural resources reviewer should have expertise in evaluating the impacts associated with CSRM and dredging projects as well as extensive knowledge of underwater archaeology. The reviewer should also be familiar with environmental coordination and NEPA/NHPA requirements for CSRM projects.
Hydraulic/Hydrologic Engineering	The Hydraulic/Hydrologic Engineering reviewer should be familiar in the field of hydraulics and hydrology and have a thorough understanding and knowledge of the development of flow and stage frequency curves, application of floodwalls and interior drainage analysis, as well as computer modeling techniques that will be used such as HEC-HMS & HMS-RAS.
Coastal Engineering	The Coastal Engineering review should be have experience with coastal storm risk management investigations and projects. The reviewer should have a thorough understanding of wave dynamics and coastal processes. The coastal engineer should also be familiar in the field of coastal modeling specifically models such as S-BEACH, GENCADE and other coastal computer modeling tools and techniques.

Geotechnical Engineering	The Geotechnical Engineering reviewer should be familiar with the geotechnical requirements of the structural measures and beach nourishment borrow sources.
Structural Engineering	The Structural Engineering reviewer should be familiar with the structural requirements of the structural measures.
Real Estate	The real estate reviewer should have expertise in the real estate requirements of DDN projects and preparation of Real Estate Plans.
Climate Preparedness and Resilience/Climate Reviewer	A member of the Climate Preparedness and Resiliency (CPR) CoP certified reviewer will participate on the ATR team.

Documentation of ATR. DrChecks will be used to document all ATR comments, responses, and issue resolution. Comments should be limited to those needed to ensure product adequacy. All members of the ATR team should use the four part comment structure (EC 1165-2-217, Section 9(k)(1)). 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. The comment(s) can then 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.

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. In addition to an EA being prepared, it is noted that none of the mandatory triggers for Type I IEPR are anticipated: There is no significant threat to human life; the estimated total cost of the project is expected to be less than \$200 million; the governor of Florida has not requested peer review by independent experts; and neither the DCW nor the Chief of Engineers has determined that the project study is controversial due to significant public dispute over either the size, nature, or effects of the project or the economic or environmental costs or benefits of the project.

When a decision document does not trigger a mandatory Type I IEPR, a risk informed recommendation is utilized. This process explicitly considers the consequences of non-performance on project economics, the environment, and social well-being (public safety and social justice), as well as indicated whether the product is likely to contain influential scientific information or be a highly influential scientific assessment; or involve any other issues that provide a rationale for determining the appropriate level of review.

Furthermore, the recommendation must make a case that the study is so limited in scope or impact that it would not significantly benefit from IEPR. Section 5 of this RP highlights the limited scope and anticipated limited impacts associated with the study and project implementation.

Products to Undergo Type I IEPR. The project team will be seeking a Type I IEPR exclusion. However in the interim, the team will plan for the entire draft report to undergo Type I IEPR in accordance with the following plan.

Required Type I IEPR Panel Expertise. IEPR 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 performed. Table 5 lists the required panel expertise.

Table 4: Required Type I IEPR Panel Expertise

IEPR Panel Member Disciplines	Expertise Required
Plan Formulation	The planner must have demonstrated experience serving as a water resources planner for CSRM projects and applying USACE plan formulation processes, procedures, and standards to CSRM projects and dredged material placement plans.
Economics	The economist must have at least a bachelor's degree in economics. The reviewer must have demonstrated experience in performing economic evaluations for CSRM projects; in applying USACE procedures and standards for CSRM economic analyses; and in formulating and evaluating alternative plans for CSRM projects. Knowledge/experience with tools employed for economic analysis, risk analysis, and trade/fleet forecasts is required.
Environmental Resources	The reviewer must have demonstrated experience directly related to water resources environmental evaluation and NEPA compliance for CSRM projects. Additionally, the panel member should be an expert in compliance requirements of environmental laws, policies, and regulations, including the fish and wildlife coordination act and the endangered species act.
Hydraulics, Hydrology & Coastal (HH&C) Engineer	The reviewer should be an expert in the field of coastal hydrology and hydraulics and have a thorough understanding of coastal storm wave dynamics and have experience in CSRM studies/projects. The reviewer should also be familiar with computer modeling techniques that were used for calculating benefits on CSRM studies. A registered professional engineer is recommended with applicable modelling and design experience.
Geotechnical Engineer	The geotechnical engineer must have demonstrated engineering experience or combined equivalent of education and experience in geo-civil design and geotechnical evaluation of CSRM projects. The panel member must be a registered

	professional engineer from academia, a public agency, or an A-E or consulting firm, with a MS degree or higher in geotechnical engineering. Candidate must have demonstrated experience related to USACE geotechnical practices for design and construction of CSRM projects. The panel member should have experience in geotechnical risk analysis. Active participation in related professional engineering and scientific societies is encouraged.
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Documentation of Type I IEPR. The OEO will submit a Final IEPR Report no later than 60 days after the end of the draft report public comment period. Upon RMO acceptance, the Regional Integration Team will post the Final IEPR Report on the USACE public website and the OEO will post the final panel comments in DrChecks. USACE shall consider all recommendations in the Final IEPR Report and prepare evaluator responses for all findings adopted or not adopted. Evaluator responses will become the basis of the Agency Response. The final decision document will include an appendix which contains the Final IEPR Report and Agency Response. Please consult EC 1165-2-217 for a detailed explanation of the Type I IEPR process, including public notification requirements.

(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. Type II IEPR, Safety Assurance Review, is managed outside of the USACE and is performed on design and construction activities for any project where potential hazards pose a significant threat to human life. For Type II IEPRs, a panel is convened to review the design and construction activities before construction begins and periodically thereafter until construction activities are completed.

The PDT has assessed this single purpose CSRM project and determined that it does not meet the criteria for conducting Type II IEPR:

- The Federal action is not justified by life safety and failure of the project will not pose a significant threat to human life.
- The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods; it does not present complex challenges for interpretations; it does not contain precedent-setting methods or models; and it does not present conclusions that are likely to change prevailing practices. Construction and maintenance techniques have been standardized and no new techniques are expected to be utilized for design and construction activities.

- The CSRSM project design does not require redundancy, resiliency, or robustness as the design of the project will be based upon previously developed and utilized construction techniques for CSRSM projects which do not require redundancy, resiliency, and/or robustness.
- The project does not have unique construction sequencing or a reduced or overlapping design construction schedule.

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 study area problems and take advantage of 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 assessment of input and output data is the responsibility of the users and is subject to DQC, ATR, and IEPR (if required). The following models may be used to develop the decision document.

Table 5: Planning Models

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
BEACH-FX, version 1.1.6	BEACH-FX is a new analytical framework for evaluating the physical performance and economic benefits and costs of shore stabilization projects, particularly, beach nourishment along sandy shores. BEACH-FX has been implemented as an event-based Monte Carlo life cycle simulation tool that is run on desktop computers.	Certified
HEC-FDA, version 1.4	HEC-FDA will be used to calculate flood damages associated with residential and non-residential structures, their contents, and vehicles. HEC-FDA performs an integrated hydraulic engineering and economic analysis during the formulation and evaluation of flood risk management alternative plans (EM 1110-2-1619, ER 1105-2-101).	Certified
G2CRM	G2CRM will be used to evaluate coastal storm risk management alternatives in the back bays recommended in the study with a focus on problematic lifecycle issues like the impact of climate change and avoidance of repetitive damages. The model will allow for use of readily available data from existing sources and corporate databases and integration with GIS. A wide variety of outputs will be used for estimating damages and costs, characterizing and communicating risk, and reporting detailed model behavior in both the FWOP and with-project conditions studied.	

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 (if required). The following models may be used to develop the decision document.

Table 6: Engineering Models

Engineering models assist in the evaluation of the existing and future conditions to gauge the effects of the tentatively selected plan on the surrounding environment, but are not used to determine the outputs for the benefits of the plan itself. Engineering models involved the application of science and can be used in both the design of the project alternative measures as well as the assessment of effects.

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Approval Status
S-BEACH	SBEACH is a numerical simulation model for predicting beach, berm, and dune erosion due to storm waves and water levels. It has potential for many applications in the coastal environment, and has been used to determine the fate of proposed beach fill alternatives under storm conditions and to compare the performance of different beach fill cross-sectional designs.	HH&C CoP Approved
Surface-Water Modeling System (SMS), Version 12.3	The Surface Water Modeling System (SMS) is a comprehensive environment for one- and two-dimensional models dealing with surface water applications. Hydrodynamic models include CMS-Flow and ADCIRC. The hydrodynamic models cover a range of applications including river flow analysis, rural and urban flooding, estuary and inlet modeling, and modeling of large coastal domains. Additional functionalities include advection/diffusion (RMA4) and sediment transport (FESWMS). Wave models in SMS include CMS-Wave, STWAVE, BOUSS2D, and CGWAVE and include both spectral and wave transformational models. The Particle Tracking Model (PTM) tracks particles added to the water column to help evaluate sediment transport and environmental impacts. It also includes a shoreline change model GENCADE. It is anticipated that GENCADE, CMS-Flow, CMS-Wave, STWAVE, and ADCIRC may all be used during this study.	HH&C CoP Approved
HEC-HMS	This system simulates the complete hydrologic processes of dendritic watersheds. It includes many traditional hydrologic analysis procedures such as event infiltration, unit	HH&C CoP Approved

(Hydrologic Modeling System)	hydrographs, and hydrologic routing. It includes procedures for continuous simulation including evapo-transpiration, snowmelt, and soil moisture accounting. Advanced capabilities are provided for gridded runoff simulation using the linear quasi-distributed runoff transform (ModClark). Supplemental analysis tools are provided for parameter estimation, depth-area analysis, flow forecasting, erosion and sediment transport, and nutrient water quality.	
HEC-RAS (River Analysis System)	This program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without and with-project conditions along the PC.	HH&C CoP Approved
Abbreviated Risk Analysis, Cost Schedule Risk Analysis	Cost risk analyses identify the amount of contingency that must be added to a project cost estimate and define the high risk drivers. The analyses will include a narrative identifying the risks or uncertainties. During the alternatives evaluation, the PDT will assist the cost engineer in defining confidence/risk levels associated with the project features within the abbreviated risk analysis. For the Class 3 estimate, an evaluation of risks will be performed using Crystal Ball Cost Schedule Risk Analysis for construction costs over \$40 million or the Abbreviated Risk Analysis for projects under \$40 million.	Civil Works Cost Engineering and Agency Technical Review MCX mandatory
CEDEP	Corps-proprietary, Excel add-on for Cost Engineering; used to estimate costs of alternatives and the recommended plan	Civil Works Cost Engineering and Agency Technical Review MCX mandatory
ArcGIS	Used to visually represent alternatives and the TSP	Enterprise

E. Policy and Legal Compliance 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).

1) 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
Walt Trinkala	CENAO-PMC	Project Manager	757-201-7715
Ian Swisher	CENAO-WRP-R	Planning Technical Team Lead	757-201-7320
Dan Hughes	CENAO-WRP-R	Planning Resources Chief	757-201-7539
Susan Conner	CENAO-WRP	Planning Chief	757-201-7320
Richard Harr	CENAO-WRP-E	Environmental	757-201-7746
John Haynes	CENAO-WRP-E	Cultural Resources	757-201-7008
Jennifer Spencer	CENAO-WRP-R	Economics	757-201-7102
Laura Frank	CENAO-WRP-R	Economics	757-201-7794
Robert Sweitzer	CENAO-WRO-NS	Surveying	757-201-7666
Kaylyn Duda	CENAO-WRO-G	GIS	757-201-7191
Jeff Swallow	CENAO-WRO-G	Mapping and Volumes	757-201-7213
Trent Elder	CENAO-ECE-G	Geotechnical Engineer	757-201-7080
Sherry Jean	CENAO-ECE-E	Cost Engineering	757-201-7823
Alicia Farrow	CENAO-ECE-H	Engineering Technical Team Lead	757-201-7869
Kyle McElroy	CENAO-ECE-H	Coastal Engineer	757-201-7519
Leah Weaver	CENAO-ECE-H	Hydraulic/Hydrologic Engineer	757-201-
Chuck Sanders	CENAO-ECE-S	Structural Engineer	757-201-7705
Matt Donaldson	CENAO-OC	Office of Counsel	757-201-7867
Kevin Kane	CENAO-RE	Real Estate	757-201-7562
Eartha Garrett	CECT-NAO	Contracting Support	757-201-7131
Lindsey Ambush	CENAO-RM	Financial Management Support	757-201-7224
Christy Alexander	CENAO-RMA	Cost Share Control and Accounting	757-201-7325
Nora Batten	CENAO-PMC	Financial Management Support	757-201-7735
Shelley Trulock	SAJ-PMC	Project Management Support	904-232-3292
Gary McAlpin	Collier County, FL	Non-Federal Sponsor	239-252-5342

DISTRICT QUALITY CONTROL TEAM			
Name	Office	Position	Phone Number
Daniel Hughes	CENAO-WRP-R	DQC Lead	757-201-7539
TBD		Plan Formulation	
TBD		Economics	
TBD		Environmental Resources	
TBD		Cultural Resources	
TBD		Hydraulic Engineering	
TBD		Geotechnical Engineering	
TBD		Cost Engineering	
TBD		Operations	
TBD		Real Estate	

AGENCY TECHNICAL REVIEW TEAM			
Name	Office	Position	Phone Number
TBD		ATR Lead	
TBD		Plan Formulation	
TBD		Economics	
TBD		Economics - HarborSym	
TBD		Environmental Resources	
TBD		Cultural Resources	
TBD		Hydraulic Engineering	
TBD		Geotechnical Engineering	
TBD		Cost Engineering	
TBD		Operations	
TBD		Real Estate	
TBD		CPR CoP Certified Reviewer	

VERTICAL TEAM			
Name	Office	Position	Phone Number
Jason Allmon	CENAD-PD-C	DST/Program Manager	347-370-4567
Joe Vietri	CENAD-PD-P	MSC Chief of Planning and Policy	347-370-4570
Cathy Shuman	CECW-NAD-RIT	Deputy Chief NAD RIT	202-761-1379
Larry Cocchieri	CENAD-PD-X	PCX-CSR Deputy Director	347-370-4571

POLICY REVIEW TEAM			
Name	Office	Position	Phone Number
Donald Cresitello	CENAD-PD-P	Review Manager/Plan Formulation	347-370-4591
Jeff Strahan	CECW-PC	Economics	202-761-8643
Valerie Cappola	CENAD-PD-P	Environmental	347-370-4557
Ralph Lamoglia	CENAD-RB-T	Engineering and Construction	347-370-4599
George Nieves	CENAD-PSD-O	Operations	347-370-4556
Michael Grove	CENAD-PD-RE	Real Estate	347-370-4777
Suzanne Kimble	CECC-NAD	Counsel	347-370-4527
Jessica Podoski	CEPOH-EC-T	Climate Change and SLR	808-835-4146