REVIEW PLAN

17 March 2024

1. OVERVIEW

This Review Plan (RP) identifies the review steps and defines the scale and scope of anticipated reviews for Wilmington District's evaluation of technical, policy and legal concerns noted in the Office of the Assistant Secretary of the Army's Civil Works (OASA(CW)) May 2020 Review Assessment of the North Carolina State Ports Authority's (NCSPA) February 2020 Water Resources Development Act (WRDA) Section 203 Feasibility Study which resulted in conditional authorization in Section 403 of WRDA 2020 of deepening and widening specific areas of the main channel and the anchorage basin to -47' mean lower low water (MLLW) from the current -42' MLLW.

- **Project Name:** Wilmington Harbor 403 Letter Report (LR) and Environmental Impact Statement (EIS)
- **P2 Number:** 496344
- **Decision Document - Type:** Letter Report with attached EIS
- **Project Type:** Single Purpose, Deep Draft Navigation
- **Congressional Approval Required (Yes/No):** Conditional Congressional Approval Received
- **District:** Wilmington District (CESAW)
- **Major Subordinate Command (MSC):** South Atlantic Division (CESAD)
- **Review Management Organization (RMO):** Deep Draft Navigation Planning Center of Expertise (DDNPCX)
- **Review Plan (RP) Contacts:**
  - **District:** CESAW Project Manager, 910-882-4936
  - **MSC:** CESAD Senior Policy Advisor, 404-845-6542
  - **RMO:** DDNPCX Review Manager, 251-694-3842

2. KEY REVIEW PLAN DATES

Table 1. Key Review Plan Dates

Action	Date - Actual[1]
RMO Endorsement of RP	Pending
MSC Approval of RP	Pending
Independent External Peer Review (IEPR) Exclusion Approval	N/A
Has RP changed since PCX endorsement?	N/A
Last RP revision[2]	N/A
RP posted on District Website	Pending
Congressional notification[3]	Pending

[1]Date action occurred or 'pending' if not yet approved.
[2]Enter 'none' if no updates have been made since approval.
[3]Date RIT notified Congress of IEPR decisions.

3. MILESTONE SCHEDULE

Table 2. Milestone Dates

Action	Date - Scheduled	Date – Actual	Status – Complete?
Cost Share Agreement Executed (CW130)	10/31/2022	10/25/2022	Yes
Notice of Intent (CW205)	10/25/2024		No
Public Review (CW250)	10/24/2025		No
Final LR & Attached EIS (CW160)	04/30/2026		No
MSC Approval (CW170)	07/01/2026		No
Record of Decision (ROD) (CW230)	10/23/2026		No

4. BACKGROUND

- **RP References:**
  - Engineer Regulation (ER) 1165-2-217, Civil Works Review Policy, 1 May 2021
  - ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 November 2007
  - Director of Civil Works (DCW) Memorandum, Revised Delegation of Authority in Section 2034(a)(5)(A) of the Water Resources Development Act of 2007 (WRDA 2007), as amended (33 U.S.C. 2343), 7 June 2018
  - Office of the Assistant Secretary of the Army's Review Assessment of Wilmington Harbor, North Carolina Navigation Improvement Project Integrated Section 203 Study & Environmental Report, February 2020
  - CESAD Policy Memorandum No. 1105-21-01, Quality Management Plan, 21 January 2021
  - CESAD Wilmington Harbor Section 403 of WRDA 2020; direction for alignment of efforts, 21 January 2021
  - Project Management Plan Scope, Schedule, and Budget for the Section 403 of WRDA 2020 Letter Report and Environmental Impact Statement, 26 September 2022

- **Authority**:
  - The NCSPA conducted a Section 203 study to determine the feasibility of improvements to the Federal navigation project at Wilmington Harbor to allow efficient movement of larger cargo vessel that are already in use or are projected to use the port over the design life. The improvements may include deepening and widening of the main channel, extending the entrance channel offshore, and expansion of the Anchorage Turning Basin.
  - NCSPA's February 2020 report was reviewed by the OASA(CW) resulting in their May 2020 Review Assessment. The 47' deepening project was conditionally authorized in Section 403 of WRDA of 2020. Authorization of projects based on feasibility studies prepared by non-Federal interests:

    The project for navigation, Wilmington Harbor, North Carolina, as described in the review assessment of the Secretary, titled "Review Assessment of Wilmington

Harbor, North Carolina Navigation Improvement Project Integrated Section 203 Study & Environmental Report (February 2020)" and dated May 2020, at a total cost of $834,093,000.

- **Sponsor**: The North Carolina State Ports Authority

- **Project Location**: Port of Wilmington, in southeastern North Carolina, is approximately 28 miles up the Cape Fear River from the Atlantic Ocean. The Cape Fear River borders Brunswick County to the west and New Hanover County to the east. Interstate Highway 40 connects Wilmington with the state capital, Raleigh, and to Interstate 95. State Highway 74 and Interstate Highway 74 connect the port to Charlotte, the state's most populous city. The CSX rail system connects the Port of Wilmington directly to intermodal transfer facilities in Charlotte. The Port of Wilmington is also connected to the CSX Carolina Connector rail hub. The project is located in the 7th Congressional District of North Carolina.

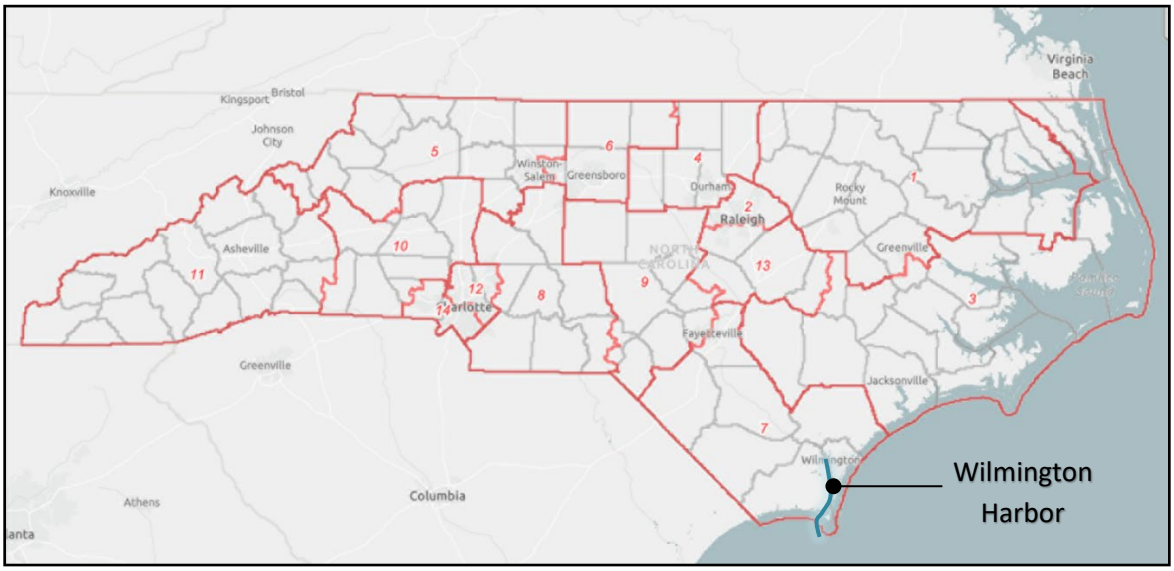

Figure 1. Wilmington Harbor, N.C. - Project Location

- **Purpose of the Work Product**:
  The purpose of this Section 403 effort is to conduct the analysis needed to produce a LR and EIS addressing the unresolved ASA(CW) comments as required by the conditional authorization of a 47' deepening of Wilmington Harbor in Section 403 of WRDA 2020. The comments to be addressed were conveyed in the May 2020 ASA(CW) Review Assessment of the NCSPA Section 203 feasibility study of improvements to the Federal navigation project at Wilmington Harbor.

- **Without Project Condition:**
  Under without-project conditions (No Action Alternative), the NCSPA will invest $20 million in turning basin expansion to ensure that the large vessels can call at the Port under without-project conditions. Additionally, ongoing implementation of the Port's Master Plan includes a total of more than $240 million in container yard, reefer yard, truck gate, and

intermodal yard improvements to be completed with or without Federal participation in channel improvements.

- **Federal Interest:** The Federal interest in project improvements is the opportunity to contribute to national economic development (NED) by addressing transportation inefficiencies for the forecasted vessel fleet, consistent with protecting the Nation's environment.

- **Problems to be Addressed:**
  - The most pressing problems are related to the growing size and increasing depth requirements of vessels, particularly container vessels. These problems will increase in the future if they are not addressed.
  - Large vessels (requiring more than 42-foot depth) are experiencing inefficiencies. To maintain navigation safety, inefficient operations such as light-loading large vessels or waiting for favorable tide conditions, or using smaller, and less efficient vessels to transport the cargo have been implemented.
  - Under-sized maneuvering areas exist.
  - Restrictive channel widths limit vessels to one-way traffic in several reaches and some maneuvering areas cannot fully accommodate the larger vessels.

- **Description of Project:** This LR and EIS effort will collect and analyze the information needed to address the outstanding issues identified during the review of the NCSPA report. The LR and accompanying EIS will utilize new and existing information to further evaluate potential navigation improvements at Wilmington Harbor to examine efficiencies that could be gained by the vessels and commodities expected to utilize the harbor. The LR and EIS will consider a range of alternatives, including the "no action alterative" and present a recommendation, with supporting facts and analysis, to decision makers. The array of alternatives includes the following depths: -42' MLLW (no action), -44' MLLW, -45' MLLW, -46' MLLW, -47' MLLW (conditionally authorized), and -48' MLLW. Dredged material will be placed in the ocean dredged material disposal site (ODMDS). If the dredged material has beneficial use potential it may be placed on islands and beaches. A preliminary review of costs for the action alternatives are within the Section 902 of WRDA 1986 limit based on the Section 403 WRDA 2020 authorized cost.

5. FACTORS AFFECTING THE SCOPE AND LEVEL OF REVIEW

Risk Identification: The factors affecting the risk-informed decisions on the appropriate scope and level of review for the Section 403 are noted below.

A. Is it likely that part(s) of the study will be challenging (ER 1165-2-217, paragraph 3.6.1)?

This effort will be challenging in part due to the unique scope limitations and plan formulation requirements based on the existing conditional authorization and review

assessment associated with the Section 203 Report. The Letter Report will focus on the unresolved comments from the ASA(CW) review.

B. Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks (ER 1165-2-217, paragraph 3.6.1/3.6.2.2).

- Uncertainties related to the geotechnical characteristics outside the existing maintenance dredging prism and potential impacts on construction methodology and costs present a moderate risk. These uncertainties and associated risks will be mitigated over time through vibracore data collection efforts and conservative assumptions.

- Volatility in fuel prices, construction costs, schedule and general inflation present decision risks associated with plan screening and selection present a moderate risk. This risk can be mitigated to some extent by periodic updates to the project's construction cost estimates.

- Existing uncertainty of adverse environmental impacts, mitigation strategies, and associated costs present a moderate risk to the project. Upon further analysis by the PDT, they will analyze the impacts and develop the scope and costs of the required environmental actions. These uncertainties and associated risks will be mitigated over time through the 403 efforts through data collection, coordination with experts, and analysis.

C. Is there a significant threat to human life associated with aspects of the study or failure of the project or proposed project (ER 1165-2-217, paragraph 3.6.2.2.2)?

No, the project does not contain any features that would present significant threat to human life safety upon failure.

Channel improvements will be justified through a savings in transportation costs and will not be justified by life safety. There are no significant threats to human life associated with either construction of the proposed improvements, operation and maintenance of the proposed project, or with project failure. 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/or safety. Non-performance of the project would not affect the well-being of the public and/or environment but may negatively affect transportation costs for commodities coming in through area facilities. There is no residual life loss risk to account for in this project due the fact that the project purposed does not address or directly affect human health and safety. This life safety assessment has been reviewed by the Wilmington District's acting Chief of Engineering Branch and has her concurrence.

D. Does/will the study/project have significant interagency interest (ER 1165-2-217, paragraph 3.7.2.2)?

Yes, State and Federal resource agencies have expressed significant interest in potential water quality and habitat related impacts associated with any deepening project that may be implemented. An EIS will be prepared.

E. Is the estimated total cost of the project greater than $200 million (ER 1165-2-217, paragraph 6.4.1)?

Yes, cost estimates for the initial set of 5- alternative channel depths have been completed. Initial cost estimates for these alternatives are above the IEPR $200 million threshold. Initial Project First Costs (FY23 Price Levels) for the array of alternatives range from $654M - $1.5B.

F. Has the Governor of an affected state requested a peer review by independent experts (ER 1165-2-217, paragraph 6.4.2)?

No; the Governor of North Carolina has not requested IEPR.

G. Has the Chief of Engineers determined that the project study 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 (ER 1165-2-217, paragraph 6.4.3))?

No, this effort is somewhat unique due to its foundation in a Section 203 Report and conditional authority. However, the Section 403 effort will apply standard USACE methodology. Significant controversy is not expected as no unusual environmental or economic costs or benefits are anticipated.

H. Has another agency requested IEPR due to significant environmental impacts (ER 1165-2-217, paragraph 6.5.1.1)?

No, another agency has not requested an IEPR due to significant environmental impacts. However, the OASA(CW) Section 203 Review Comment C-10 Independent External Peer Review comment requires IEPR prior to implementation of a project.

> *"CONCERN: IEPR is required for Section 203 project just like USACE led projects. Given the magnitude of the project implementation costs and the non-traditional economic analysis and the assumptions used, IEPR is recommended.*
>
> *REVIEW ASSESSMENT: IEPR will be undertaken as part of project implementation."* Further OASA(CW) guidance received in September 2023 stated the IEPR will be conducted on the new Economics Appendix & EIS, and any additional new data.

I. Is the information in the decision document or anticipated project design likely to contain influential scientific information or be a highly influential scientific assessment – i.e., 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 (ER 1165-2-217, paragraphs 6.5.2 and 7.4.1.1)?

This effort will generate a LR and not a decision document. Additionally, the project is expected to be relatively straight forward in its approach and implementation. It is not expected to utilize any novel methods or precedent-setting methods or models, involve innovative materials or present conclusions that are likely to change prevailing practices.

J. Will the study/project require an environmental impact statement (ER 1165-2-217, paragraph 6.6.1)?

Yes, an EIS will accompany the LR.

K. Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources (ER 1165-2-217, paragraph 6.6.1.2)?

Potential adverse impacts to cultural resources are anticipated, including relocation of submerged historic ships. The PDT will continue to coordinate with the State Historic Preservation Office and other interested stakeholders.

L. Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures (ER 1165-2-217, paragraph 6.6.1.3)?

Substantial adverse impacts to fish, wildlife, and their habitat are possible. The primary impacts are expected to result from saltwater intrusion and other water quality impacts related to potential deepening actions. Direct impacts may occur related to loss of habitat from deepening and widening. Short-term impacts related to construction and long-term impacts will be evaluated in the EIS, and a mitigation plan will be developed to address adverse impacts that cannot be avoided.

M. Is the project expected to have, before implementation of mitigation measures, no more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat (ER 1165-2-217, paragraph 6.6.1.4)?

Greater than negligible adverse impacts to ESA-listed species and their critical habitat are anticipated. The primary impacts are expected to result from direct loss of habitat, saltwater intrusion, and other water quality impacts related to potential deepening actions. Impacts will be evaluated in the EIS, and a mitigation plan will be developed to address adverse impacts that cannot be avoided.

N. Does the project study pertain to an activity for which there is ample experience within the USACE and industry to treat the activity as being routine (ER 1165-2-217, paragraph 6.6.2.2)?

The scope of this effort is not precedent setting but includes some complex elements that prevent it from being considered routine due to the initial Section 203 Report's use of nonstandard methodology and the OASA(CW)'s unresolved comments.

The final WH 403 Letter Report and EIS along with the supporting documentation will primarily contain standard engineering, economic, and environmental analyses and information. The proposed project is for dredging and will include the Federal Standard, or least cost, environmentally acceptable, technically feasible dredged material placement plan including beneficially using dredged material for wetland creation, for which there is ample experience within the USACE and industry to be considered routine. Novel methods will not be utilized, and methods, models, or conclusions will not be precedent setting or likely to change policy decisions.

6. REVIEW EXECUTION PLAN

This RP section provides a general description of each type of review and identifies the reviews anticipated for the LR & EIS. The LR will be comprised of a main report and technical appendices to respond to the OASA(CW)'s unresolved comments. Technical appendices will include Engineering, Cost Engineering, and the Real Estate Plan. The EIS will be included as an attachment.

A. Types of Review

1) **District Quality Control (DQC).** DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements of the project management plan. The LR and EIS (including data, analyses, environmental compliance documents, etc.) will undergo DQC review.

2) **Agency Technical Review (ATR).** ATR will include a review of the "CoP Approved" software listed in Table 8 Engineering Models. The ATR will conduct a comprehensive review of the LR and EIS conclusions to ensure that the results and decisions are clearly supported by the information presented and in compliance with current USACE policy and procedures. The ATR team will also assess whether analyses are technically correct and whether the LR and attached EIS explains the analyses and results in a clear manner. Per coordination with SAD, one round of ATR will be performed. Targeted reviews may be scheduled as needed.

3) **Independent External Peer Review.** IEPR is the most independent level of review and is applied in cases that meet criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. The RMO will be contacted at least six months in advance of the anticipated start of the concurrent review period to allow sufficient time to obtain contract services. The 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.

4) **Cost Engineering Review**. The LR will be coordinated with the Cost Engineering Mandatory Center of Expertise (MCX). The MCX will provide the cost engineering expertise needed on the

ATR team and will provide certification of cost estimates. The cost engineering review will be a part of ATR. The RMO is responsible for coordinating with the MCX for cost reviews. The PDT will coordinate review related needs with both the MCX and RMO.

5) **Model Review and Approval/Certification.** EC 1105-2-412 provides the process and requirements for ensuring the quality of planning models. The EC mandates use of certified or approved planning models for all planning activities to ensure that planning products are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions regarding the availability of data, transparent, and described in sufficient detail to address any limitations of the model or its use.

6) **Policy and Legal Compliance Reviews (P&LCRs).** The LR will be reviewed throughout the study process for compliance with law and policy. ER 1105-2-61, Feasibility and Post-Authorization Study Procedures and Report Processing Requirements, 1 July 2023 superseded all of the following: ER 1105—2-100 Appendix H, Director's Policy Memorandum 2019-01, Policy and Legal Compliance Review (P&LCR); Planning Bulletin (PB) 2012-2, Planning SMART Guide; PB 2014-01, Application and compliance of SMART Planning and the 3x3x3 Rule; PB 2015-02, Single Phase Planning Studies; PB 2018-01, Feasibility Study Milestones; PB 2018- 01(S), Feasibility Study Milestone Supplemental Guidance; and PB 2018-02, Exception Procedures for Planning Studies Exceeding Cost and Schedule Limits. DPM CW/DCW memorandums provide guidance on policy and legal compliance reviews. These reviews culminate in a determination regarding whether report recommendations, supporting analyses, and coordination comply with law and policy and whether the LR warrants approval or further recommendation to higher authority by the home MSC Commander.

7) **Public Review.** Wilmington District will post the RMO-endorsed and MSC-approved RP on the District's public website. Internet posting of the RP provides an opportunity for the public to comment on that document. It is not considered a formal comment period and there is no set timeframe for public comment. The PDT will consider any comments received and determine if RP revisions are necessary. During the public comment period, the public will also be provided with the opportunity to review and comment on the LR and EIS. Public comments will be provided to the IEPR panel for consideration.

B. Anticipated Project Reviews and Estimated Costs.

Table 3 provides the estimated schedule and cost for reviews anticipated for this study. A site visit will not be required for members of the anticipated review teams. If substantial time lapses between these reviews and the receipt of the Biological Opinion and if there are substantial changes to the LR and accompanying EIS, additional DQC and ATR reviews could be needed. If so, this review plan would be updated with appropriate reviews scaled, as needed, and will be coordinated with the DDNPCX for re-endorsement and the MSC for reapproval.

Table 3. Wilmington Harbor 403 LR and EIS - Anticipated Reviews

Products to Undergo Review	Review Level	Start Date	End Date	Cost	Complete?
HSI: Atlantic sturgeon	Single Use Approval, ECO-PCX	02/12/2024	04/11/2024	$4,000	No
HSI: Flounder	Single Use Approval, ECO-PCX	02/12/2024	04/11/2024	$4,000	No
UMAM	Single Use Approval, ECO-PCX	02/26/2024	04/25/2024	$4,000	No
Delft 3D	CoP Allowed Approval, ATR	03/22/2024	03/29/2024	$2,690	No
MODFLOW6	CoP Allowed Approval, ATR	03/22/2024	03/29/2024	$2,690	No
Draft LR and EIS	SAW DQC	07/16/2025	07/29/2025	$25,000	No
	SAW OC	07/29/2025	08/21/2025	N/A	No
	Public and Agency Review	10/24/2025	12/14/2025	N/A	No
	ATR	10/24/2025	12/01/2025	$74,000	No
	ATR back-check	12/01/2025	12/15/2025	$25,000	No
	IEPR	10/24/2025	01/15/2026	$200,000	No
Preliminary Final	SAW DQC	03/19/2026	04/01/2026	$20,000	No
	SAW OC	04/09/2026	04/24/2026	N/A	No
	P&LCR	04/27/2026	05/27/2026	N/A	No

C. District Quality Control

The Wilmington District shall manage DQC and will appoint a DQC Lead to oversee that review (ER 1165-2-217, paragraph 4.4.2).

1) Review Team Expertise. Table 4 identifies the required expertise for the DQC team.

Table 4. Required DQC Expertise

DQC Team Members / Disciplines	Expertise Required
DQC Lead	The DQC Lead shall 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 (such as planning, economics, environmental resources, etc.).
Plan Formulation	The Plan Formulation reviewer shall be a senior water resources planner with experience in formulation, evaluation, and selection of alternatives for deep draft navigation (DDN) projects. The reviewer

DQC Team Members / Disciplines	Expertise Required
	must also have knowledge of DDN guidance and policies.
Economics[1]	The economics reviewer shall be a DDN economist with experience in performing economic evaluations for channel deepening/widening projects.
Environmental Resources	The environmental reviewer shall have expertise in evaluating the impacts associated with DDN improvements/ dredging projects, dredged material placement requirements, and associated mitigation. The reviewer shall also be experienced with environmental coordination and NEPA requirements for DDN projects and the environmental models identified in Table 7. The reviewer must also have knowledge related to evaluating Greenhouse Gases and Air Quality assessments.
Cultural Resources	The cultural resources reviewer shall have knowledge of evaluating the impacts associated with DDN channel improvement and dredging projects as well as knowledge of underwater archaeological resources. The reviewer must also be familiar with the environmental coordination and NEPA/National Historic Preservation Act (NHPA) requirements.
Cost Engineering	The cost engineering reviewer shall be a current Tri-Service Certified Cost Engineer and have experience evaluating cost requirements for DDN projects (channel deepening, widening, placement site construction, beneficial use, etc.). Models to be used are identified in Table 8.
Coastal Engineering	The coastal engineer shall be a senior level reviewer with expertise in evaluation of dredging impacts on channel shoaling rates, tidal range impacts, and sea level rise. The reviewer must also have knowledge of evaluating shoreline impacts resulting from ship wake and associated mitigation and experience with the coastal engineering models to be used (Table 8). The reviewer may also serve as a reviewer for the hydrology and hydraulic (H&H) engineering and climate change, if qualifications are sufficient.
H&H Engineering	The H&H reviewer shall be a senior level engineer with an understanding of open channel dynamics and experience with DDN projects and the H&H models to be used in the study (Table 8).

DQC Team Members / Disciplines	Expertise Required
Climate Change	The climate change reviewer shall have expertise in both inland and coastal climate assessments.
Civil Engineering	The civil engineer shall be a senior level reviewer with expertise in civil work project development and layout, and development of quantities. The reviewer requires experience with DDN channel improvement projects and the civil engineering models to be used in the study (Table 8).
Geologist / Geotechnical Engineer	The geologist or geotechnical engineer shall be a senior level reviewer with expertise in performing geotechnical evaluations for DDN channel improvement projects, including behavior of soils, site characterization, slope stability, channel design, and dredged material placement requirements. The reviewer must also have an understanding rock quality and hardness and how it relates to dredging methods and blasting and experience with the geotechnical models to be used in the study (Table 8).
Real Estate	The real estate reviewer must have experience evaluating lands requirements for a DDN project.
Project Management	The reviewer shall be a Project Management Supervisor who is familiar with Civil Works. The reviewer must be experience with DDN projects and the NEPA process.

[1]The economics DQC team member will be identified by the DDNPCX (OPORD 2012-15).

2) **Documentation of DQC**. Quality Control will be performed continuously throughout the study. DrChecks software will be used to document DQC review comments, responses, and issue resolution. Certification of DQC completion is required. Documentation of DQC will follow the CESAD Policy Memorandum No. 1105-21-01, Quality Management Plan, 21 January 2021. An example DQC Certification statement is provided in ER 1165-2-217 (Appendix D).

   Documentation of the completed DQC review (i.e., all comments, responses, issue resolution, and DQC certification) will be provided to the MSC/RMO and ATR Team leader prior to initiating an ATR. 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 the start of subsequent reviews being delayed (ER 1165-2-217, paragraph 5.2.2).

   All computations, drawings or sketches shall undergo a rigorous independent check as part of the standard Quality Control (QC) process. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior

staff, or other qualified personnel. However, they will not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. DQC is assuring the math and assumptions are correct by having a checker review all computations. The documentation of the computation review will be done by initializing each sheet of the computations. Checking is accompanied by a red check mark or similar annotation next to the item that has been checked. An alternative method of documentation will be the use of a DQC Review Checklist that indicates items checked, which are initialized by reviewer. For drawings, the checker shall either follow similar procedures as the computations and place a red check mark or similar annotation on each dimension/elevation, note or reference showing concurrence with the correctness of the information shown or use a DQC Review Checklist.

D. Agency Technical Review

ATR is mandatory for all decision documents and supporting analyses (ER 1165-2-217, paragraph 5.3). The RMO will manage the ATR. ATR will be performed by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR will be performed by a team whose members are certified or approved by their respective Communities of Practice (CoPs) to perform reviews in the Corps of Engineers Reviewer Certification and Access Program (CERCAP). The MSC/RMO will identify an ATR lead and ATR team members. The home District will not nominate review team members. The ATR team lead will be from outside the home MSC. The ATR will review the "CoP allowed" software listed in Table 8.

1) **Review Team Expertise.** Table 5 identifies the anticipated disciplines and ATR team expertise required for the project.

Table 5. Required ATR Team Expertise

ATR Team Members / Disciplines	Expertise Required
ATR Lead	The ATR lead must be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead must also have the necessary skills and experience to lead a virtual team through the ATR process.
Plan Formulation	The Plan Formulation reviewer must be a senior water resources planner with experience in formulation, evaluation, and selection of alternatives for DDN projects, including dredged material placement evaluations. The reviewer requires knowledge of DDN guidance and polices and Environmental Justice.
Economics	Two economics reviewers will be required for ATR, one for the report and the other to review economic modeling (Table 7). The economics reviewer (report) will be a senior DDN economist with experience in performing economic evaluations for channel deepening/widening projects involving containerized trade.

ATR Team Members / Disciplines	Expertise Required
Environmental Resources	The environmental reviewer must have expertise in evaluating the impacts associated with DDN improvements/ dredging projects, dredged material placement requirements, and mitigation. The reviewer requires experience with environmental coordination and NEPA requirements for DDN projects. The reviewer shall also have knowledge/expertise in evaluating Greenhouse Gases and Air Quality assessments and in using the environmental models identified in Table 7. Since mitigation is anticipated, consultation with the ECO-PCX will be performed to include an expert on the team to assess mitigation planning documents.
Cultural Resources	The cultural resources reviewer requires knowledge of evaluating the impacts associated with DDN channel improvement and dredging projects as well as knowledge of local archaeology. The reviewer must also be familiar with the environmental coordination and NEPA/ NHPA requirements
Cost Engineering	The cost engineering reviewer will be identified by the Cost MCX and will have experience evaluating cost requirements for DDN projects (channel deepening, widening, dredged material placement, beneficial use, mitigation, etc.). The reviewer must have experience with the cost engineering models to be used (Table 8).
Hydrology, Hydraulics, and Coastal (HH&C) Engineering	The HH&C engineer must be a senior level reviewer with expertise in evaluation of dredging impacts on channel shoaling rates, tidal range impacts, and sea level rise. The reviewer must also have knowledge of evaluating shoreline impacts resulting from ship wake and associated mitigation. The HH&C reviewer requires experience with assessment of DDN open channel dynamics and channel design (e.g., estimating quantity of materials to be dredged). The reviewer must have experience with the HH&C engineering models to be used (Table 8).
Geologist / Geotechnical Engineer	The geologist or geotechnical engineer must be a senior level reviewer with expertise in performing geotechnical evaluations for DDN channel improvement projects, including behavior of soils, site characterization, slope stability, channel design, and dredged material placement requirements. The reviewer shall also have an understanding rock quality and hardness and how it relates to dredging methods and blasting. The reviewer must have experience with the geotechnical models to be used (Table 8).
Operations	The operations reviewer requires experience in the operation and maintenance of DDN projects to include channel maintenance dredging, placement in dredged material placement facilities (DMPF), ODMDS, and beneficial use locations such as islands and beaches.
Real Estate	The real estate reviewer must have experience evaluating lands requirements for a DDN project.

ATR Team Members / Disciplines	Expertise Required
Climate Preparedness and Resilience/ HH&C Climate	A member of the Climate Preparedness and Resiliency CoP or a HH&C Climate reviewer will participate on the ATR team. Another reviewer can fulfill this requirement if that reviewer has the required expertise. Both inland and coastal climate review expertise required.

2) **Documentation of ATR.** DrChecks will be used to document 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 (ER 1165-2-217, paragraph 5.8.3). If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team for resolution using the issue resolution process identified in ER 1165-2-217. 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 Report (ER 1165-2-217, paragraph 5.11). Any unresolved issues will be documented in the ATR report prior to certification. The Statement of Technical Review (ATR completion) includes signatures from the ATR Lead, Project Manager, and RMO. The Certification of ATR includes signatures from the District's Chiefs of Engineering and Planning Divisions.

E. Independent External Peer Review

1) **IEPR.** IEPR is managed outside of USACE and is typically conducted on studies. 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.

There are three mandatory conditions for determining whether IEPR is undertaken, which are the following: (1) when the estimated total cost of the project, including mitigation costs, is greater than $200 million; (2) when the Governor of an affected State requests a peer review by independent experts; and (3) when the Chief of Engineers determines the project study 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.

The 403 LR and EIS meets one of the triggers for IEPR (project cost). The OASA(CW) Section 203 Review Comment C-10 Independent External Peer Review comment requires IEPR prior to implementation of a project. OASA(CW) guidance received in September 2023 stated the IEPR will be conducted on the new Economics Appendix & EIS, and any additional new data.

- **Products to Undergo IEPR.** The entire draft LR and EIS will undergo IEPR.

- **Required 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 6 lists the required panel expertise.

Table 6: Required IEPR Panel Expertise

IEPR Panel Member Disciplines	Expertise Required
Plan Formulation (Planner)	The Review Panel member must be from academia, a public agency, a non-governmental entity, an Architect-Engineer (A-E) or consulting firm with a minimum of 10 years' demonstrated experience as a water resources planner for DDN channel improvement projects and have a Master of Science (M.S.) degree in a related field. The Review Panel member must have demonstrated experience applying USACE plan formulation processes, procedures, and standards to DDN channel improvement projects and dredged material management evaluations and recommendations (beneficial use, upland placement, ocean placement).
Economics	The review panel member must be from academia, a public agency, a non-governmental entity, an A-E, or consulting firm with at least a bachelor's degree in economics. They must have at least 15 years of demonstrated experience performing economic evaluations of waterborne containerized commercial trade moving on DDN projects and applying USACE procedures and standards to evaluate alternative plans for channel improvement projects. Experience using tools employed for economic analysis, applying risk analysis, and developing trade/fleet forecasts is required. Experience directly working for or with USACE in applying Principles and Guidelines to Civil Works projects and subsequent Principles and Requirements for Federal Investments in Water Resources is highly recommended. Active participation in related professional societies is encouraged.
Environmental	The environmental specialist must be a scientist from academia, a public agency, a non-governmental entity, an A-E, or consulting firm with 15 years of demonstrated experience directly related to performing water resources environmental evaluations and NEPA compliance for DDN channel improvement

IEPR Panel Member Disciplines	Expertise Required
	and dredged material placement projects (beneficial use, upland placement, ocean placement). The panel member must have a M.S. degree or higher in a related field. Additionally, the Review Panel member must also have extensive experience in evaluating environmental compliance documents and cultural resources assessments in support of navigation projects, including those that required blasting to construct channel improvements. The panel member -must be an expert in compliance requirements of environmental laws, policies, and regulations, including the Fish and Wildlife Coordination Act, the Magnuson Stevens Fish Conservation and Management Act, and the Endangered Species Act.
HH&C Engineer	The Review Panel member must be a Registered Professional Engineer from academia, a public agency, or an A-E or consulting firm with a M.S. degree in coastal or hydraulic engineering. The Review Panel member requires 15 years of demonstrated experience in DDN channel design improvements and have expertise in the field of coastal and riverine hydraulics and dredged material placement (beneficial use, upland placement, ocean placement). The Review Panel member must be familiar with the application of USACE risk and uncertainty analyses and coastal engineering requirements for feasibility studies (including channel design and effects of currents, sea level rise, sedimentation, and water quality on navigation channels). The Review Panel member shall be familiar with standard USACE hydraulic/coastal computer models and have 5-10 years' experience working with numerical modeling applications for navigation projects. The Review Panel member must also have expertise in climate change assessments for both inland and coastal navigation projects.
Geotechnical Engineer/Geologist	The Review Panel member must be a registered professional engineer with a minimum of 10 years' demonstrated experience in design/evaluation of DDN channel improvement projects including assessment of the behavior of soils, site characterization, slope stability, channel design, blasting as means of constructing proposed improvements, risk analysis, and dredged material placement requirements (beneficial use, upland placement, ocean placement).

IEPR Panel Member Disciplines	Expertise Required
	The Review Panel member shall have a M.S. or higher in engineering or a related field and actively participate in professional engineering societies/organizations.

- **Documentation of 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 RIT will post the Final IEPR Report on the USACE public website. 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 ER 1165-2-217 for a detailed explanation of the IEPR process, including public notification requirements.

2) **Decision on Safety Assurance Review.** 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 SARs, a panel is convened to review the design and construction activities before construction begins and periodically thereafter until construction activities are completed.

   The District Chief of Engineering has assessed this navigation project and determined that it DOES NOT meet the criteria for conducting SAR:

   - 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, does not contain precedent-setting methods or models, and does not present conclusions that are likely to change prevailing practices.
   - The project design does not require redundancy, resiliency, or robustness.

F. 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 DDNPCX will work with SAW and SAD to address model requirements, and the Review Plan will be updated as appropriate. The following models are being proposed for use in the development of LR and EIS, including the mitigation plan.

Table 7. Planning Models

Model Name/Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
HarborSym 1.5.8.3 (Economics)	HarborSym is a discrete event Monte-Carlo simulation model designed to facilitate economic analyses of proposed navigation improvement projects in coastal harbors. Incorporating risk and uncertainty, the model was used to update transportation cost savings (benefits) attributable to fleet and loading changes under future with project conditions.	Certified June 2012
Regional Economic System (RECONS) (Economics)	RECONS is a regional economic impact modeling tool that estimates jobs, income, and sales associated with Corps CW spending and additional economic activities. The model will be used to estimate the regional economic impacts of project implementation.	Certified
Uniform Mitigation Assessment Method (UMAM) (Environmental)	UMAM will be used to assess impacts to habitats and to determine the amount of mitigation needed to compensate for unavoidable impacts.	Approved for use in Florida and SC. Will require approval for single use for this project.
Habitat Suitability Index (Environmental)	A variety of HSI models will be used for this project including:	
	Shortnose Sturgeon (adapted for Atlantic Sturgeon)	Single Use Approval Required
	Flounder	Single Use Approval Required
	Striped Bass	Regionally Approved
	American Shad	Regionally Approved
	Juvenile Spot	Regionally Approved
	Eastern Oyster	Regionally Approved

EC 1105-2-412 does not address engineering models used in planning. The use of certified or approved engineering models or software is required for all activities to ensure the models and software are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. The responsible use of well-known and proven USACE-developed and

commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. 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 and ATR. Where such validations have not been completed, appropriate independent checks of critical calculations will be performed and documented as part of DQC, ATR, and IEPR (if required). The following engineering models, software, and tools are anticipated to be used.

Table 8. Engineering Models

Model/Software Name and Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Model Certification / Acceptance Status
Microcomputer Aided Cost Engineering System (MCACES), MII (Cost Engineering)	MCACES is the cost estimating software program tools used by cost engineering to develop and prepare Class 3 Civil Works cost estimates. The MCACES version 4.4.4.0 program is used to document and establish project costs. The MCACES program is USACE approved estimating software, that is mandated by ER-11102-1302.	Mandatory
Cost Schedule Risk Analysis (Cost Engineering)	Cost risk analyses identify the amount of contingency that must be added to a project cost estimate and define the high-risk drivers for both the project cost and construction schedule. The analyses will include a narrative identifying the risks or uncertainties. 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.	Approved
Total Project Cost Summary (TPCS) (Cost Engineering)	The TPCS is the required cost estimate document that will be submitted for either division or HQUSACE approval. The Total Project Cost for each Civil Works project includes all Federal and authorized non-Federal costs represented by the Civil Works Work Breakdown Structure (WBS) features and respective estimates	Mandatory

Model/Software Name and Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Model Certification / Acceptance Status
	and schedules, including the lands and damages, relocations, project construction costs, construction schedules, construction contingencies, planning and engineering costs, design contingencies, construction management costs, and management contingencies.	
Corps of Engineers Dredge Estimating Program (CEDEP) (Cost Engineering)	CEDEP is the required software program that will be used for dredging estimates using floating plants. CEDEP contains narrative documenting reasons for decisions and selections made by the cost engineer. Software distribution is restricted as it is considered proprietary to the Government.	Mandatory
OpenGround Cloud Software (Geotechnical)	OpenGround Cloud is the software program that will be used to manage the collected subsurface information and used to analyze and visualize it.	GG&M CoP Required (ELA type)
GeoStudio, Slope/W Software (Geotechnical)	GeoStudio, Slope/Wis a slope stability analysis program that will be used to analyze slope stability.	GG&M CoP Approved (ELA type)
GMS v10.7 Software (Groundwater Modeling)	A graphical pre- and post-processor for numerous groundwater models including FEMWATER, MODFLOW, MODPATH, MT3DMS, RT3D and SEAWAT	CoP Preferred
MODFLOW version 6 Software (Groundwater Modeling)	A modular finite-difference program for simulating three-dimensional movement of groundwater. MODFLOW was developed by the U.S. Geological Survey and is an international standard for simulating and predicting groundwater conditions.	CoP Allowed
AutoCAD Civil 3D Software (Civil)	AutoCAD is the software program that will be used to layout the various dredging alternatives and	CAD-BIM CoP Recommended (ELA type)

Model/Software Name and Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Model Certification / Acceptance Status
	compute the dredged material quantities.	
ArcGIS Pro Software (GIS)	Geospatial software program that will be used to store and visualize information.	GIS CoP Recommended (ELA type)
Delft3D Software Suite (HH&C)	Delft3D is the software program that will be used as the primary model to analysis and evaluate the hydrodynamics, waves, and water quality for the project.	HH&C CoP allowed
GenCade (HH&C)	GenCade is the software program that will be used to evaluate shoreline impacts. Created by U.S. Army Engineer Research and Development Center Coastal and Hydraulics Laboratory, Hydrology, Hydraulics and Coastal Community of Practice (ERDC CHL)	HH&C CoP preferred
STWAVE (HH&C)	STWAVE is the software program that will be used to numerically model waves and help understanding the complex changing coastal environment. Created by ERDC CHL	HH&C CoP preferred

G. Policy and Legal Compliance Reviews

In accordance with EP 1105-2-61, policy and legal compliance reviews (P&LCRs) for draft and final planning decision documents are delegated to the Major Subordinate Command (MSC, South Atlantic Division) responsible for the execution of the study.

With input from MSC and Headquarters USACE (HQUSACE) functional leaders and through collaboration with the Chief of Office of Water Project Review (OWPR), the MSC Chief of Planning and Policy is responsible for establishing a competent interdisciplinary P&LCR team. The composition of the policy review team will be drawn from HQUSACE, the MSC, the Planning Center of Expertise (PCX), and other review resources as needed. The identification of Counsel members will follow the procedures set forth by the HQUSACE Chief Counsel, as coordinated by HQUSACE and MSC Counsel functional leaders. The MSC Chief of Planning and Policy and the Chief of OWPR has identified and endorsed a P&LCR Manager from among the P&LCR team identified for the study. The team that has been selected, to date, is identified in Attachment 1 of this RP.

The P&LCR team will:

- Provide advice and support to the PDT and decision makers at the District, MSC, HQUSACE, and Assistant Secretary of the Army (CW) levels.
- Engage at both the MSC and HQUSACE levels, ensuring that the vertical teaming aspect of SMART planning is maintained.
- Help guide PDTs through project development and the completion of policy and legally compliant documents, identifying policy and legal issues as early as possible such that issues can be addressed while minimizing impacts to study and project costs and schedules.
- Provide impartial and unbiased recommendations, advice, and support to decision makers.

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