DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, U.S. ARMY CORPS OF ENGINEERS
573 BONNEY LOOP, BUILDING 525
FORT SHAFTER, HAWAII 96858-5440

CEPOD-PDC (1105) 13 Jun 23

MEMORANDUM FOR Commander, Honolulu Engineer District (CEPOH-PPC/Nickolas Emilio), Building 230, Fort Shafter, HI 96858-5440

SUBJECT: Review Plan Approval for Honolulu Harbor Modification Feasibility Study, Integrated Feasibility Report and NEPA Document

1. References:

a. Engineering Regulation 1165-2-217, Civil Works Review Policy, 1 May 21.

b. Review Plan for Honolulu Harbor Modification Feasibility Study, Honolulu, Hawaii, Integrated Feasibility Report and NEPA Document (Encl).

c. CESAM-PD-D memorandum (Review Plan (RP) Endorsement, Honolulu Harbor Modification, Integrated Feasibility Report (IFR) and National Environmental Policy Act Document (NEPA)), 17 Mar 23 (Encl 2).

d. HQ POD, CEPOD-PDC memorandum (Delegation of Approval Authority for Review Plans for Civil Works Products), 6 Aug 22.

2. The Pacific Ocean Division (POD) is the lead office to execute this Review Plan. In accordance with Reference 1.d., the authority to approve POD Review Plans covering decision documents for Civil Works studies/projects has been delegated to the POD Director of Programs.

3. The Review Plan has been endorsed by the Deep Draft Navigation Planning Center of Expertise, as required by Reference 1.a. It includes Independent External Peer Review because it is anticipated that the project cost will exceed the $200 million mandatory trigger, but it does not include Safety Assurance Review.

4. I hereby approve this Review Plan, which is subject to change as circumstances require, consistent with work product development under the Project Delivery Business Process. Subsequent revisions to this Review Plan or its execution due to significant changes in the study/scope or level of review will require written approval from the POD Director of Programs.

5. POC is Mr. Russell Iwamura, Team Leader for Planning and Policy, Pacific Ocean Division, at 808-835-4625 or at Russell.K.Iwamura@usace.army.mil.

Encls

DAMON P. LILLY, SES
Director of Programs

REVIEW PLAN

Honolulu Harbor Modification Feasibility Study
Honolulu, Hawaii

Integrated Feasibility Report and NEPA Document

Honolulu District

MSC Approval Date: 13 June 2023
Last Revision Date: None

Disclaimer. This information is distributed solely for the purpose of pre-dissemination review under applicable information quality guidelines. It does not represent and may not be construed to represent any agency determination or policy.

US Army Corps of Engineers ®

REVIEW PLAN
May 2023

1. OVERVIEW
This review plan (RP) defines the scope and level of peer review for the following study:

- **Study Name:** Honolulu Harbor Modification Feasibility Study, Hawaii
- **P2 Number:** 445194
- **Federal Project:** Honolulu Harbor, Honolulu County, Hawaii
- **Decision Document - Type:** Integrated Feasibility Report and National Environmental Policy Act (NEPA) Document
- **Project Type:** Single-purpose navigation (Deep Draft Harbor)
- **Congressional Approval Required (Yes/No):** Yes
- **District:** Honolulu District (CEPOH)
- **Major Subordinate Command (MSC):** Pacific Ocean Division (CEPOD)
- **Review Management Organization (RMO):** Deep Draft Navigation Planning Center of Expertise (DDNPCX)
- **Review Plan (RP) Contacts:**
  - **District:** CEPOH Project Manager, 808-835-4259
  - **MSC:** CEPOD Planning and Policy Chief, 808-835-4625
  - **RMO:** DDNPCX, 251-694-3884

2. KEY REVIEW PLAN DATES

Action	Date - Actual[1]
RMO Endorsement of RP	17 March 2023
MSC Approval of RP	13 June 2023
Independent External Peer Review (IEPR) Exclusion Approval	N/A
Has RP changed since PCX endorsement?	No[2]
Last RP revision	None
RP posted on District Website	20 June 2023
Congressional notification[3]	Pending

[1]Date action occurred or 'pending' if not yet approved

[2]Minor changes to document formatting, rosters, and schedules were made between RMO endorsement and MSC approval. These changes do not affect the level of review specified in the endorsed Review Plan.

[3]Date RIT notified Congress of IEPR decisions

3. MILESTONE SCHEDULE

Action	Date - Scheduled	Date – Actual	Status – Complete?
Feasibility Cost Sharing Agreement Signed	9/23/22	9/23/22	Yes
Alternatives Milestone Meeting	2/13/23	2/13/23	Yes
Tentatively Selected Plan	11/15/24		No
Release Draft Report to Public	1/15/25		No
Agency Decision Milestone (ADM)	10/16/25		No
Final Report Transmittal	7/20/26		No
Chief's Report	11/20/26		No

4. BACKGROUND

- **RP References:**

– Engineer Regulation (ER) 1165-2-217, Civil Works (CW) Review Policy, 1 May 2021

– Engineer Circular (EC) 1105-2-412, Assuring Quality of Planning Models, 31 March 2011

– ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 November 2007

– Director's Policy Memorandum (DPM) CW Programs 2018-05, Improving Efficiency and Effectiveness in U.S. Army Corps of Engineers (USACE) CW Project Delivery (Planning Phase and Planning Activities), 3 May 2018

– 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

– Planning Bulletin (PB) 2018-01, Feasibility Study Milestones, 26 September 2018

– Planning Bulletin (PB) 2018-01(S), Feasibility Study Milestones Supplemental Guidance, 20 June 2019.

– DPM 2019-01, Policy and Legal Compliance Review, 9 January 2019

– Honolulu Harbor Modification Feasibility Study, Project Management Plan, March 2023

– CEPOD Quality Management Plan, November 2022

- **Authority**: This study is authorized under Section 216 of the Flood Control Act of 1970, which authorizes the Secretary to review the operations of projects constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes,when found advisable due to significantly changed physical or economic conditions.

- **Sponsor**: The State of Hawaii Department of Transportation (HDOT) is the cost-sharing non-federal sponsor of the feasibility study.

- **Specific, Measureable, Attainable, Risk-Informed, and Timely (SMART) Planning Status:** The study has completed the Alternatives Milestome Meeting (AMM) and is progressing toward the Tentatively Selected Plan (TSP) milestone. The project delivery team completed the AMM on 13 February 2023 and is working on the evaluation and comparison of the refined array of alternatives to infom the selection of the TSP.
The vertically aligned study duration and cost is 4 years and 2 months and $7.24 million, respectively. The study will need policy exception approval from the Assistant Secretary of the Army for Civil Works for a study duration exceeding 3 years and a total federal cost exceeding $3 million.

- **Project Area**: The project area is within the limits of the City of Honolulu on the island of Oahu in the State of Hawaii. Honolulu is the capital of Hawaii and is located on the southern shore of Oahu. Honolulu Harbor (Harbor) is in the western section of urban Honolulu, bounded by the neighborhood of Kaka'ako to the east, Downtown Honolulu to the north, and the Daniel K. Inouye International Airport to the west (Figure 1).

Figure 1: Honolulu Harbor Project Location

- **Problem Statement**: Under future conditions, it is anticipated that the Harbor will face continued growth in commodities and as a result, increased vessel traffic and harbor congestion. Honolulu Harbor sits at the center of a hub-and-spoke cargo transit system that includes the State of Hawaii and U.S. territories in the Pacific due to both its location between markets in Asia, North America, South America, and Oceania, and legal requirements for the import of goods into the U.S. and its territories. Under the Jones Act of 1920, all goods shipped between U.S. ports must be transported by U.S. vessels. Most of the goods and services that are shipped to and from the Neighbor Islands (Hawaiian Islands other than Oahu) and the U.S. Territories of American Samoa, the Commonwealth of Northern Mariana Islands (CNMI), and Guam go through the Harbor before reaching their final destination. Further, the Harbor's single point of entry and exit for vessels creates time delays, inefficiencies, and a single point of failure if there is an incident within the channel. While port infrastructure is expanding to accommodate changes in maritime supply and demand, these improvements will not address the inefficient operations and limited maneuverability in the Harbor. Inefficiencies are exacerbated by ongoing and projected increases in vessel dimensions.

- **Study/Project Goals and Objectives:** Project objectives are to:

  - Reduce transportation costs for the existing and future Harbor vessel fleet over the 50-year period of analysis.

  - Improve the Harbor's operational resilience over the 50-year period of analysis.

  - When possible, utilize construction and future maintenance dredged sediments beneficially.

- **Future Without Project Conditions:** The volume of containerized cargo that enters Honolulu Harbor is expected to increase by between 69% and 101% between 2020 and 2050, increasing vessel traffic and congestion within the Harbor. Additionally, it is expected that vessels with deeper drafts and wider beam dimensions will call on the Harbor in the future, limiting maneuverability in the Harbor. Without implementation of a project to address these problems, existing inefficiencies in Harbor vessel operations will be exacerbated and the Harbor's operations will continue to be threatened by an obstruction of the single entrance channel. As a critical point in the "hub-and-spoke" supply chain that services the State of Hawaii and U.S. territories in the Pacific, delays in Harbor operations or harbor closures would have have widely-felt effects.

- **Description of Action:** The study will evaluate the feasibility of modifications to the existing Federal project to improve efficiency and increase resiliency for Harbor operations**.** The scope of the alternatives considered include widening the Fort Armstrong Entrance Channel and the Kapalama Channel, deepening Honolulu Harbor channels and basins from the Fort Armstrong Entrance Channel to the Kapalama Basin, and the implementation of nonstructural measures. In the Harbor, project depths of up

to -45 feet mean lower low water (MLLW) will be evaluated. In the Fort Armstrong Entrance Channel, project depths of up to -50 feet MLLW will be evaluated. Improved channel widths of up to 750 feet will also be analyzed. The modification of the Sand Island Bridge, also known as the Slattery Bridge, and opening of the Kalihi channel are also being considered. The Integrated Feasibility Report and National Environmental Policy Act document will address dredged material management requirements for project construction and long-term operations and maintenance (O&M).

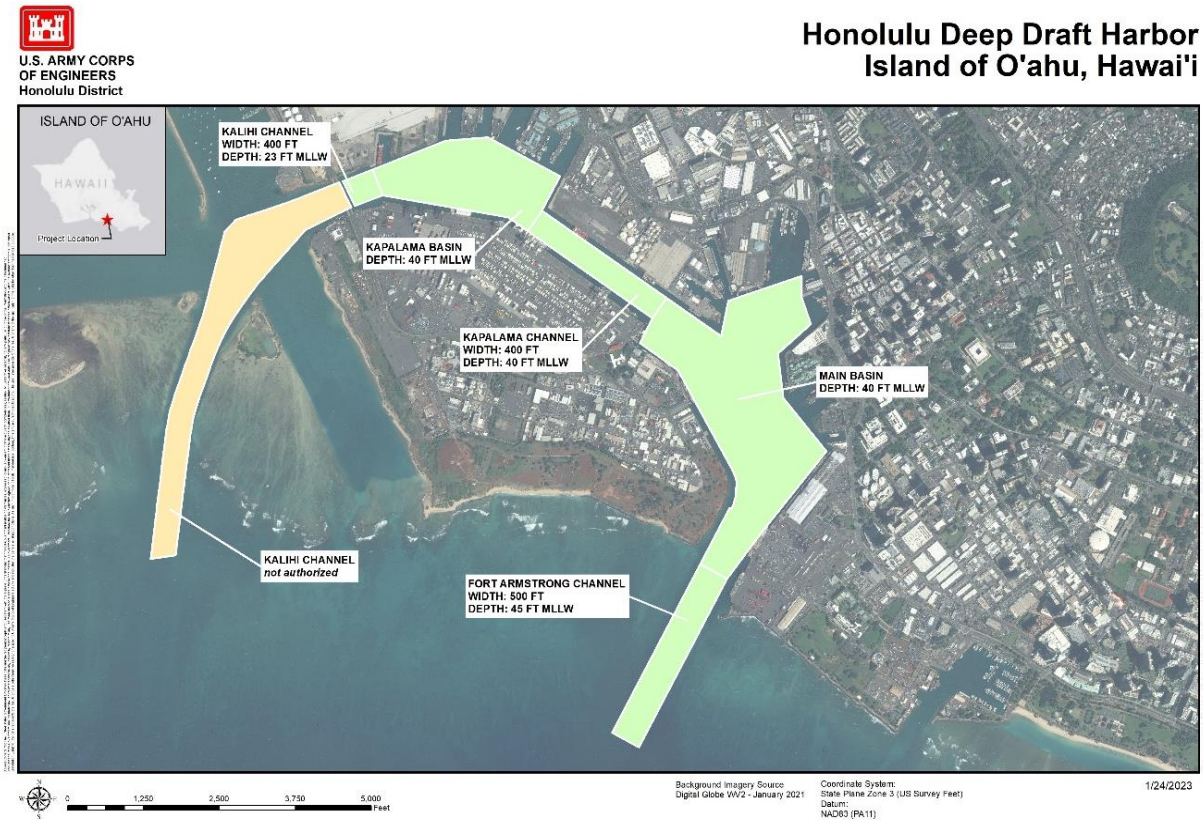

Figure 2: Honolulu Harbor Project Map

- **Federal Interest:** There is Federal interest in this study due to an opportunity to contribute to National Economic Development by reducing the transportation costs of deep draft navigation (DDN) vessels transiting Harbor channels. Efforts are underway to develop rough order magnitude benefits and costs. Preliminary information, however, indicates there is Federal interest in project improvements. Additionally, there may be substantial social benefits associated with project improvements that could improve the ability of socially vulnerable populations to access food, medicine, and other critical goods during emergency events.

- **Risk Identification:** Study related risks that could impact review scope and review team member expertise requirements are summarized below, with more detailed information provided in Paragraph 5.B.

- Project scope
- Alternatives screening
- Dredged material disposition
- Channel widening, deepening, second channel opening
- Public response to study and proposed improvements
- Real estate acquisition

5. FACTORS AFFECTING THE SCOPE AND LEVEL OF REVIEW

A. <u>Is it likely that part(s) of the study will be challenging (ER 1165-2-217, paragraph 3.6.1)?</u> No. This study does not pose unique technical challenges and there is ample experience within USACE to complete the study. The final integrated feasibility report and supporting documentation will contain standard engineering, economic, and environmental analyses and information that is unlikely to be novel or precedent-setting.

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).

- Project Scope – An incomplete scope of work that does not address all project requirements could lead to a study report that does not meet technical, policy or legal requirements. This risk will be managed by working with the PDT to ensure the project is scoped correctly. The assumed project risk at this point in the study is moderate.

- Alternatives Screening - Widening and second entrance alternatives are likely high-cost alternatives. These features require more time to model to fully analyze before screening. The PDT will retain both alternatives and continue analysis until a screening decision can be made prior to TSP. The study will retain widening and second entrance measures until sufficient economic modeling has taken place to have sufficient confidence in a screening decision. Economics will work to complete analysis soon after AMM before other disciplines spend excess time and cost on these features. The assumed risk rating is medium.

- Dredged Material Disposition – Characterization of Harbor and landside sediments will be completed after the TSP. The sediment characterization report will inform identification of feasible placement alternatives and inform evaluation and screening of alternatives prior to ADM. In-situ sediment sampling will be undertaken during feasibility to characterize sediments, to determine suitability for various disposal options, and to assess HTRW in the study area. The assumed risk rating is medium.

- Channel widening, deepening, second channel opening - The amount of mitigation and its associated cost for permanent, unavoidable loss of coral reef and live rock requiring coordination with U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), U.S. Environmental Protection Agency (USEPA), and Hawaii Department of Land and Natural Resources (DLNR) is currently unknown due to lack of surveys in most of the project footprint. Each alternative addresses improvements that cover various features of the Federal project, but when combined or looked at in total, the alternatives cover the entire harbor footprint. Since the preferred alternative is unknown at this time, a larger survey footprint is required at a greater cost; however, surveying the larger area will provide the most flexibility for informing and selecting alternatives. Locations for implementing mitigation are also not yet identified and may be limited. If mitigation is not in-kind (i.e., same habitat/species), the amount of mitigation considered equivalent increases. The risk is being managed by engaging resource agencies at the planning charette and at the agency workshop, inviting them to be a cooperating agency, meeting to discuss existing surveys and soliciting best professional judgement as to survey scope, hosting a Fish and Wildlife Coordination Act survey scoping meeting with USFWS, NMFS, and DLNR, ensuring resource agencies remain engaged and aware of schedule, etc. Additionally, the PDT will coordinate closely with federal and state agencies to reduce uncertainties from study onset to inform plan formulation e.g., initial meeting to discuss requirements, agree upon mitigation calculation/formulas, devise scope for surveys, and identify mitigation sites. The assumed risk rating is medium to high.

- Public response to study and proposed improvements – There is concern that the public, especially adjacent landowners and neighboring communities, that may be directly affected by the project are not adequately notified or provided adequate opportunity to provide study input. Public response to federal and state government projects is always an uncertainty that as of recent has been heightened within the context of revived anti-government sentiments throughout the State of Hawaii. The risk will be managed by engaging the public both early and often to ensure adjacent landowners, nearby Environmental Justice communities, and interested stakeholders are informed of the project and are given opportunities to provide input. Such will help manage expectations, address concerns swiftly, and ensure community buy-in to reduce schedule delays. The assumed risk rating is low to medium.

- Real Estate Acquisition - The recommended plan will likely require real estate acquisition. There is a risk that acquisition of the required real estate may be time consuming and costly if land is acquired in the Honolulu Harbor. The assumed rating for this risk item is high. To buy down this risk, appropriate contingencies will be applied to real estate costs and creative engineering solutions will be developed to reduce the project's real estate footprint. Additionally, there is a risk that the project will encounter HTRW as part of the Kaplama Channel widening, which could halt real estate acquisitions until remediation is complete or require the use of a commercial disposal site, which would increase construction costs. This risk item is currently rated as a medium risk to the project schedule and budget.

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)? 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 the project failure. Should the project not perform as expected, the impact would be a lower than expected economic benefits, which does not impact human life and/or safety. Non-performance of the project would not affect life safety but may negatively affect transportation costs for commodities moving through area facilities. There is no residual risk to account for in this project due to the fact that the proposed project does not address or directly affect human health and safety. This life safety assessment was reviewed by the CEPOH Chief of Engineering on 21 December 2022 and has his concurrence.

D. Does/will the study/project have significant interagency interest (ER 1165-2-217, paragraph 3.7.2.2)? The study will likely have significant federal and state, resource, and regulatory interagency interest among environmental agencies due to the presence of Endanged Specis Act (ESA)-listed species and essential fish habitat in the project area and federal and state trust resources (e.g., coral reef and coral and live rock). However, close coordination with natural resource agencies such as the USEPA, NFMS, USFWS, State DLNR and State Historic Preservation Officer (SHPO) is planned throughout the feasibility study to ensure the resource and regulatory agencies are informed and contribute to decision making. Additionally, these agencies have been invited as either cooperating or participating agencies in the development of the NEPA document. A range of alternative measures involving channel widening and deepening is being considered by the PDT, some of which may result in significant impacts, and some of which would likely result in less than significant impacts. The PDT will ensure resource impacts as well as commensurate mitigation are discussed with the resource agencies throughout and to inform the study. Prior to the TSP, the PDT will have narrowed the array of alternatives, and the environmental team will identify whether significant impacts are anticipated and whether an Environmental Impact Statement (EIS) is warranted. If no significant impacts are identified prior to TSP, the PDT will proceed with an Environmental Assessment. Preparation of the NEPA document will include collaboration and cooperation with federal and state regulatory and resource agencies. In addition, the U.S. Coast Guard is interested in improving the resiliency of the harbor. This is one of the objectives of the study and measures that meet that objective will be investigated.

E. Is the estimated total cost of the project greater than $200 million (ER 1165-2-217, paragraph 6.4.1)? Rough order magnitude costs have yet to be finalized; however, it is anticipated that all alternatives will exceed $200 million in total project cost.

F. Has the Governor of an affected state requested a peer review by independent experts (ER 1165-2-217, paragraph 6.4.2)? There has not been a request for independent peer review by the Governor of Hawaii.

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 such determination has been made. The study/project is not likely to involve significant public dispute as to its size, nature, or effects of the project or its economic or environmental costs or benefits as improvements are proposed to an existing port/Federal project. This assessment is based on the types of comments and questions received at interagency meetings and scoping meetings to date, described in more detail below.

- An interagency charrette was held 13-15 September 2022. A diverse group of stakeholders participated on all three days to gain an understanding of study objectives, share information relative to the study, and work through an iteration of the planning process. Attendees represented USACE, DDNPCX, the HDOT- Harbors Division (HDOT- Harbors), the Hawaii Pilots Association, NMFS, USFWS, U.S. Coast Guard (USCG), USEPA, and the State Department of Health. HDOT- Harbors and the Hawaii Pilots Association noted the current need for deeper channels to accommodate vessels attempting to call in Honolulu Harbor, for congestion relief measures, and for channel modifications that would improve safety and operational resiliency. Agency concerns focused on potential impacts on ESA-listed species that may result from the implementation of a plan that includes deepening and/or widening.

- A Cooperating Agency Workshop was held on 5 December 2022 and attended by representatives of the City and County of Honolulu (CCH) Department of Environmental Services (ENV), Hawaii Coastal Zone Management Program (CZMP), Hawaii Department of Health (HDOH) Clean Water Branch (CWB), HDOH Solid and Hazardous Waste Branch (SHWB), Hawaii DLNR, HDOT-Harbors, Honolulu Board of Water Supply (BWS), NMFS' Habitat Conservation and Protected Resources Divisions, USCG, USEPA, and USFWS. Concerns raised included: impacts to seagrass, live rock, fish and coral/coral reef; potential resuspension or exposure of contaminants in dig areas for dredging and landside of Piers 31-33 (i.e., widening areas of Kapalama Channel); and impacts to existing and planned infrastructure (i.e., BWS is in the process of installing two new water supply pipes on the Kalihi Bridge; Sand Island Wastewater Treatment Plant and current force mains crossing the Fort Armstrong Entrance Channel; a plan to produce BioGas and pipe off Sand Island; airport fuel lines from the Sand Island Fuel Farm cross Kalihi Channel and Keehi Lagoon; USCG currently has a construction project along the Sand Island side of Kapalama Channel; DLNR Division of Aquatic Resources has a fisheries research station adjacent to where channel widening is proposed). Attendees agreed to continue to be engaged throughout the duration of the study.

- Indication of public controversy with the project was not raised at either meeting. Based on nature of the project, i.e., modification of an existing commercial port that aligns with the use designated for the harbor, public controversy is not anticipated. However, the current state of public reception and perception of

government projects in Hawaii may provide insight to how the Harbor modifications may be received or perceived. Ensuring transparency, accessibility to project information and public engagement throughout the study is imperative.

H. Has another agency requested IEPR due to significant environmental impacts (ER 1165-2-217, paragraph 6.5.1.1)? No; to date, a request has not been made. However, due to limited information available at this time, it is assumed that IEPR will be required. This assumption will be revisited once additional information has been obtained and analyses performed. If, at that time, it is determined that the project would not significantly benefit from IEPR and none of the mandatory triggers for conducting IEPR apply, this RP will be updated to document that conclusion and submitted to the DDNPCX for endorsement and CEPOD for approval.

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)? The information in the decision document or anticipated project design is unlikely to contain influential scientific information or be a highly influential scientific assessment as the project is anticipated to involve traditional methods of dredging and placement of dredged material. Standard engineering, economic, and environmental information and analyses will be used. Assessing harbor resiliency will, however, require development of a strategy (methodology) for assessing comprehensive benefits related to port recovery following channel closure under various scenarios. The proposed methodology will be thoroughly vetted with the vertical team prior to use.

J. Will the study/project require an environmental impact statement (EIS) (ER 1165-2-217, paragraph 6.6.1)? At this time, it has not been determined whether an EIS will be required. Prior to the TSP milestone, the PDT will assess the significance of the potential environmental impacts of the alternatives in the final array to determine if an EIS is necessary. Unavoidable significant effects would require an EIS under NEPA. Should an EIS be required, this Review Plan will be updated to reflect the change in project scope.

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)? No. Background research indicates both archaeological and historic resources are in or near the project area; however, current information indicates that the project is not expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources. Structures and buildings in the area of potential effects (APE) are not 50 years old or are not eligible for listing in the National Register of Historic Properties. This assumption is based on literature and records search and will be confirmed with consulting parties. An underwater cultural resources survey is not required to appropriately identify historic properties in the APE. This assumption is

based on previous disturbance from dredging activities and will be confirmed with consulting parties. Sand Island is mostly dredged fill and would not require additional archaeological survey.

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)?The PDT is peripherally knowledgeable of fish and wildlife species in the project area; however, the extent of each alternative and potential for adverse impacts to resources is as of yet unknown. Biological surveys of the project area will be performed to determine what living resources are in the project area and if the project has the potential to have substantial adverse impact on such resources. Most improvement measures being considered are within the existing federal navigation channel and within the context of an operating harbor. Any recommendation made will be environmentally acceptable and ensure compliance with environmental laws and regulations.

M. 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 (ER 1165-2-217, paragraph 6.6.1.4)? No. Based on knowledge of endangered and threatened species in the project area, more than a negligible adverse impact on endangered or threatened species or their designated critical habitat is not anticipated. Upon selection of the TSP, the PDT will be able to adequately evaluate the potential for adverse effects to ESA species and designated critical habitat and determine if more than a negligible adverse impact is anticipated. USACE will ensure close coordination with the Services to ensure full compliance of the project with the Endangered Species Act.

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)? Yes, the final integrated feasibility report and supporting documentation will 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 beneficial use of dredged material, if determined suitable and feasible. There is ample experience for performing these activities within the USACE and industry to be considered routine. As previously mentioned, assessment of comprehensive benefits related to port resiliency will require determination of evaluation methodology; however, such will be thoroughly vetted prior to use. All other study efforts will not utilize novel methods, models, or conclusions and 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 this study/project (Table 1).

A. Types of Review

- 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. All decision documents (including data, analyses, environmental compliance documents, etc.) undergo DQC review. Additionally, DQC of milestone submittals is required (PB 2018-01).

- Agency Technical Review (ATR). ATR is performed to assess whether study/project analyses are technically correct and comply with USACE guidance and whether documentation explains the analyses and results in a clear manner. Further, the ATR team will ensure that proper and effective DQC has been performed (as assessment of which will be documented in the ATR report) and will ensure that the product is consistent with established criteria, guidance, procedures, and policy. ATR of the draft and final decision documents and supporting analyses is required (ER 1165-2-217, paragraph 5.3). Targeted reviews may be scheduled as needed.

- Quality Assurance Review. CEPOD has responsibility for Quality Assurance (QA). QA includes verifying that the overall project quality control activities are effective in producing a work product that meets the desired end quality. QA activities include reviewing work performed by the District (including implementation of the DQC and ATR processes) and the ATR Team.

- Independent External Peer Review. IEPR may be required for decision documents under certain circumstances. 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 PDT performs a risk-informed assessment whether IEPR is appropriate and documents that assessment/ recommendation in the RP (ER 1165-2-217, paragraph 6.5.2). Should IEPR be required, the RMO should be contacted at least three months in advance of the anticipated start of the concurrent review period to allow sufficient time to obtain contract services. If required, 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 will be coordinated with the Cost Engineering and ATR 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 RMO is responsible for coordinating with the MCX for participation on the ATR team. Cost reviews will occur as part of the draft/final report ATRs but the schedule for specific reviews may also vary. Accordingly, the PDT should coordinate closely review related needs with both the MCX and RMO.

- 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, transparency, and described in sufficient detail to address any limitations of the model or its use.

- Policy and Legal Compliance Reviews (P&LCRs). All decision documents will be reviewed throughout the study process for compliance with law and policy. ER 1105-2-100 (Appendix H) and DPM CW/DCW memos provide guidance on policy and legal compliance reviews. These reviews culminate in determination of whether report recommendations, supporting analyses, and coordination comply with law and policy and whether the decision document warrants approval or further recommendation to higher authority by the POD Commander.

- Public Review. CEPOH will post the RMO endorsed and POD approved RP on the District's public website. Internet posting of the RP provides 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 should 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 report. Should IEPR be required, public comments will be provided to the IEPR panel for consideration.

B. Anticipated Project Reviews and Estimated Costs

Table 1 provides the estimated schedule and cost for reviews anticipated for this study.

Table 1: Honolulu Harbor Modification Feasibility Study – Anticipated Reviews

Product to Undergo Review	Review	Start Date	End Date	Cost	Complete
Habitat Equivalency Analysis (HEA))	Approval for use	5/16/23	6/16/23	$10,000	No
Hawaii DBEDT State Input-Output Excel Model (with @Risk add-in)	Approval for use	8/7/23	11/7/23	$30,000	No
Pre-AMM Submittals	DQC	1/5/23	1/9/23	$5,000	Yes
Pre-TSP Milestone Submittals	DQC	10/21/24	10/29/24	$5,000	No
Draft Feasibility Report and NEPA Document	DQC	11/26/24	1/3/25	$56,000	No
	POH Legal Review	1/6/25	1/17/25	N/A	No
	ATR[1]	1/23/25	3/18/25	$70,480	No
	IEPR	1/23/25	6/9/25	$161,000	No
	P&LCR	1/23/25	3/5/25	N/A	No
Pre-ADM Submittals	DQC	9/24/25	9/30/25	$5,000	No
	DQC	2/11/26	4/1/26	$56,000	No

Final Feasibility Report and NEPA Document	POH Legal Review	6/16/26	7/6/26	N/A	No
	ATR	4/2/26	6/15/26	$65,080	No
	P&LCR	7/22/26	8/18/26	N/A	No
Targeted Reviews[2]	N/A				N/A
In-kind Products	See table note[3]	As scheduled	As scheduled	$24,000	No
ATR Lead Participation in Milestone Meetings		As scheduled	As scheduled	$1,500	No

[1]The basis for estimated ATR and IEPR costs (if applicable) is provided in Attachment 2 of this RP, which must be removed prior to posting on the District's public website.
[2] Targeted reviews are currently not anticipated to be required. Should this assumption change, the RP will be updated and coordinated with the DDNPCX for endorsement and CEPOD for approval.
[3] Anticipated in-kind products/services to be provided by HDOT include: public involvement, sediment sampling, topographic survey, wave data collection, geophysical survey, coral living rock and biological survey, cultural resources survey, and geotechnical investigation. Efforts performed and information obtained and used in study analyses will be subject to and included in all applicable reviews, as noted in this table.

C. District Quality Control (DQC)

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

- **Review Team Expertise.** Table 2 identifies the required expertise for the DQC team.

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 (such as planning, economics, environmental resources, etc.).
Plan Formulation	The plan formulation reviewer should be an experienced water resources planner with experience in leading a multi-disciplinary PDT through a DDN study, analyzing dredged material placement requirements, and have knowledge of DDN guidance/policies.
Economics[1]	The economics reviewer should be a DDN economist with experience in performing economic evaluations for channel deepening/widening projects. Experience with evaluating containerized trade is required. Knowledge of economic evaluation of cruise ship benefits would also be valuable. Models to be used: HarborSym, RECONS , and the HDBEDT Input-Output Model and @Risk Excel Model (Table 5).
NEPA / Environmental Resources	The environmental reviewer should have expertise in evaluating the impacts associated with DDN improvements implemented through dredging and/or blasting and dredged material placement requirements (including beneficial use assessments). Experience in evaluating impacts to hardbottom reef and seagrass ecosystems is also required. The reviewer should also be experienced with

DQC Team Disciplines	Expertise Required
	environmental coordination and NEPA requirements for DDN projects. Model anticipated to be used: HEA (Table 5).
Cultural Resources	The cultural resources reviewer should have knowledge of evaluating the impacts associated with DDN channel improvement and dredging projects as well as knowledge of local archaeology. The reviewer should also be familiar with the environmental coordination and NEPA/National Historic Preservation Act (NHPA) requirements.
HTRW	The reviewer will have extensive experience in evaluating HTRW issues and compliance with federal and state laws and USACE policies related to HTRW. The reviewer should also have experience with remediation of dredged material and soil/sediment contaminants and management of dredged material including placement and issues related to placement facilities.
Hydrology, Hydraulics and Coastal (HH&C) Engineering/ Climate Preparedness and Resilience (CPR)	The HH&C engineering reviewer should have significant experience in the field of hydraulic and coastal engineering, have a thorough understanding of open channel dynamics, and have experience in DDN project design and construction requirements if blasting is required (in addition or instead of dredging). The reviewer should also have experience with the HH&C models to be used in the study: CMS-FLOW, CMS-WAVE, FUNWAVE, WIS, and Engineer Research and Development Center (ERDC) Ship/Tow Simulator (Table 6). Finally, the reviewer should have experience reviewing climate preparedness and resilience (CPR) for DDN projects.
Geotechnical Engineer/Geologist	The geotechnical engineering reviewer will have experience performing geotechnical evaluations for DDN channel improvement projects, including behavior of soils, site characterization, slope stability, channel design (some of which must include blasting as means of constructing proposed improvements), risk analysis, and dredged material placement requirements (beneficial use, upland placement, ocean placement). Although it is likely both GeoStudio and Rockscience models will be used, only reviewer experience using the geotechnical slope stability model, GeoStudio - Slope/W (or equivalent) is required (Table 6).
Cost Engineer	The cost engineering reviewer should have experience evaluating cost requirements for a DDN channel improvement project and experience with the following models: MCACES, Crystal Ball CSRA, TPCS, and CEDEP (Table 6).
Operations	The operations reviewer will have experience with managing DDN projects that require maintenance dredging and placement (beneficial use, upland confined placement, and Ocean Dredged Material Disposal Site (ODMDS).
Real Estate	The real estate reviewer should have expertise in the real estate requirements of DDN projects.
Office of Counsel	Experienced attorney with expertise reviewing Civil Works Decision documents to ensure they are policy, ESA, and NEPA compliant.

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

- **Documentation of DQC**. Quality Control should 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 at the draft and final report stages. Documentation of DQC should follow the District

Quality Manual and the POD Quality Management Plan. 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 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).

D. Agency Technical Review

- ATR is mandatory for draft and final 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. The RMO will identify an ATR lead and ATR team members. Neither the home District nor POD will nominate review team members. The ATR team lead will be from outside POD. The ATR team lead is expected to participate in the study's milestone meetings (PB 2018-01), an invitation to which must be extended by PDT Leads. The ATR team will not require a site visit.

- **Review Team Expertise.** Table 3 identifies the anticipated disciplines and ATR team expertise required for study efforts.

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 CW 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 an experienced water resources planner with experience in leading a multi-disciplinary PDT through a DDN study, analyzing dredged material placement requirements, and have knowledge of DDN guidance/policies.
Economics - Report	The economics reviewer should be a DDN economist with experience in performing economic evaluations for channel deepening/ widening projects. Experience evaluating containerized trade is required. Knowledge of economic evaluation of cruise ship benefits would also be valuable.
Economics - Models	The economics reviewer should be a senior economist with experience in evaluating DDN improvement projects using HarborSym and RECONS. The reviewer will participate in the draft report review analyzing model inputs and ouputs. Models anticipated to be used: HarborSym, RECONS, and Hawaii DBEDT State Input-Output Model (Table 5).

ATR Team Disciplines	Expertise Required
NEPA / Environmental Resources	The environmental reviewer should have expertise in evaluating the impacts associated with DDN improvements implemented through dredging and/or blasting and dredged material placement requirements (including beneficial use assessments). Experience in evaluating impacts to hardbottom reef and seagrass ecosystems is also required. The reviewer should also be experienced with environmental coordination and NEPA requirements for DDN projects. If the identified reviewer lacks expertise in mitigation planning documents, the ECO-PCX will be contacted for assistance in identifying a reviewer to fulfill this need. Model anticipated to be used: HEA (Table 5).
Cultural Resources	The cultural resources reviewer should have knowledge of evaluating the impacts associated with DDN channel improvement and dredging projects as well as knowledge of local archaeology. The reviewer should also be familiar with the environmental coordination and NEPA/ NHPA requirements.
HTRW	The reviewer will have extensive experience in evaluating HTRW issues and compliance with federal and state laws and USACE policies related to HTRW. The reviewer should also have experience with remediation of dredged material and soil/sediment contaminants and management of dredged material including placement and issues related to placement facilities.
HH&C Engineer	The HH&C engineering reviewer should have significant experience in the field of hydraulic and coastal engineering, have a thorough understanding of open channel dynamics, and have experience in DDN project design and construction requirements if blasting is required (in addition or instead of dredging). The reviewer should also have experience with the HH&C models to be used in the study: CMS-FLOW, CMS-WAVE, FUNWAVE, WIS, and ERDC Ship/Tow Simulator (Table 6).
Geotechnical Engineer/ Geologist	The geotechnical engineering reviewer will have experience performing geotechnical evaluations for DDN channel improvement projects, including behavior of soils, site characterization, slope stability, channel design (some of which must include blasting as means of constructing proposed improvements), risk analysis, and dredged material placement requirements (beneficial use, upland placement, ocean placement). Although it is likely both GeoStudio and Rockscience models will be used, only reviewer experience using the geotechnical slope stability model, GeoStudio - Slope/W (or equivalent) is required (Table 6).
Cost Engineer	The cost engineering reviewer will be identified by the Cost MCX and will have experience evaluating cost requirements for a DDN project (channel deepening, widening, placement site construction, beneficial use, etc.). Models to be used include: MCACES, Crystal Ball CSRA, TPCS, and CEDEP (Table 6).
Operations	The operations reviewer will have experience with managing DDN projects that require maintenance dredging and placement (beneficial use, upland (contaminated sediments if applicable), and ODMDS).
Real Estate	The real estate reviewer should have expertise in the real estate requirements of DDN improvement projects. The real estate reviewer must be on the CEMP-CR list of approved reviewers for DDN improvement projects.
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.

- **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, for both draft and final decision documents (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, and the Certification of ATR includes signatures from the District's Chiefs of Engineering and Planning Divisions.

E. Independent External Peer Review

- Decision on 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.

At this time, due to limited, existing information, it is assumed that IEPR will be required. This is primarly due to the anticipation that project costs will exceed $200 million, which is a mandatory trigger for the need to conduct IEPR. Should this assumption change due to information obtained and analyses performed prior to the TSP milestone, the RP will be updated, as appropriate, to document findings supporting the determination that IEPR is not warranted, and the RP will be submitted to the DDNPCX for re-endorsement and to CEPOD for re-approval.

- Products to Undergo IEPR. The entire draft integrated feasibility report and NEPA document and supporting appendices 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 4 lists the required panel expertise.

Table 4: Required IEPR Panel Expertise

IEPR Panel Member Disciplines	Expertise Required
Plan Formulation (Planner)	The Review Panel member must have 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

IEPR Panel Member Disciplines	Expertise Required
	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 have a degree in economics and at least 15 years of demonstrated experience performing economic evaluations of containerized 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, other social effects analysis, regional economic impact analysis, applying risk analysis, and developing trade/fleet forecasts is required. Experience directly working for or with the USACE in applying Principles and Guidelines to Civil Works project evaluations is highly recommended. Experience assessing the social effects of water resources projects is required. Active participation in related professional societies is encouraged.
NEPA/Environmental	The Review Panel member must have 15 years of demonstrated experience directly related to performing water resources environmental evaluations and NEPA compliance for DDN channel improvement projects, dredged material placement projects (beneficial use, upland placement, ocean placement), and cultural resources assessments. The panel member should 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 should be an expert in compliance requirements of environmental laws, policies, and regulations, including the FWCA and ESA.
HH&C Engineer	The Review Panel member should be a Registered Professional Engineer with a M.S. degree in coastal or hydraulic engineering. The Review Panel member should have 15 years of demonstrated experience in DDN channel design, some of which must include blasting to construct channel improvements, and have expertise in the field of coastal 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 should be familiar with standard USACE hydraulic/coastal computer models and have 5-10 years' experience working with numerical modeling applications for navigation projects.
Geotechnical Engineer/Geologist	The Review Panel member should be a Registered Professional Engineer with a graduate degree in Civil Engineering or a related field. The Review Panel Member should have 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 (some of which must include blasting as means of constructing proposed improvements), risk analysis, and dredged material placement requirements (beneficial use, upland placement, ocean placement).

- 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 will 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.

F. Safety Assurance Review

- Decision on Safety Assurance Review (SAR). SAR 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; it does not contain precedent-setting methods or models; and it does not present conclusions that are likely to change prevailing practices. Proposed improvements are to an existing federal navigation project. Construction and maintenance techniques have been standardized and no new techniques are expected to be utilized for design and construction activities.

  - The project design does not require redundancy or robustness as the design of navigation improvements at Honolulu Harbor will be based upon previously developed and utilized construction techniques which do not require redundancy and/or robustness.

  - The project does not have unique construction sequencing or a reduced or overlapping design construction schedule.

  - The SAR determination will be revisited and confirmed prior to initiating the design phase and documented in the PED phase Review Plan.

G. 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/Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
HarborSym 1.5.8.3 or 1.6.3 (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 will be used to estimate transportation cost savings (benefits) attributable to fleet and loading changes under future with project conditions.	Certified
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
Hawaii DBEDT State Input-Output Model and @Risk Excel Model	This Input-Output (I-O) model depicts inter-industry relations of Hawaii's economy. It shows how the output of one industry is an input to each other industry. A given input is enumerated in the column of an industry and its outputs are enumerated in its corresponding row. This format shows how dependent each industry is on all others in the economy both as customer of their outputs and as supplier of their inputs. The main use of input-output model is for measuring the economic impacts. The @Risk model add-in is an Excel model estimating the probability of a Port shutdown and the potential impacts to critical supply chains. @Risk will incorporate a monte carlo simulation into the excel model to better communicate uncertainty and probability of occurrence. The model will be used in the OSE analysis.	Single Use Approval Required
HEA (Environmental Resources)	The HEA is used by the National Oceanic and Atmospheric Administration (NOAA) to determine compensatory mitigation requirements for damages to coastal and marine resources. The method assumes that compensation for lost ecological services (functions) can be provided by restoration (mitigation) projects that provide	Single Use Approval Required

Model Name/Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
	comparable services. The method determines the relative value of the loss and gain of the ecological services relative to the timing of project related impacts and mitigation efforts. The HEA model will be used to evaluate offshore marine biological resources.	

EC 1105-2-412 does not address 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 the responsibility of the user 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

Model Name and Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Model Certification / Acceptance Status
CMS-FLOW (v5.3) (Coastal Engineering)	CMS-Flow is a coupled hydrodynamic and sediment transport model capable of simulating depth-averaged circulation, salinity and sediment transport due to tides, wind and waves. The hydrodynamic model solves the conservative form of the shallow water equations and includes terms for the Coriolis force, wind stress, wave stress, bottom stress, vegetation flow drag, bottom and friction, and turbulent diffusion. CMS-FLOW will be applied in this study to develop currents for input into ship simulations and to evaluate harbor currents/circulation.	HH&C CoP Preferred
CMS-WAVE (v3.2)	CMS-Wave is a spectral wave transformation model and solves the steady-state wave-action balance equation on a non-uniform Cartesian grid. It considers wind wave generation and growth, diffraction, reflection, dissipation due to bottom friction, whitecapping and breaking, wave-wave and wave-current interactions, wave runup, wave setup, and wave transmission through structures.This model will be used to transform deep water wave conditions from WIS to the nearshore vicinity of the harbor and as input to the FUNWAVE model	HH&C CoP Preferred
FUNWAVE	FUNWAVE is a comprehensive numerical model for simulating the propagation and transformation of waves in coastal regions and harbors based on a time-domain solution of Boussinesq-type equations. The model can simulate most of the	HH&C CoP Preferred

Model Name and Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Model Certification / Acceptance Status
	phenomena of interest in harbor basins including shoaling/refraction over variable topography, reflection/diffraction near structures, energy dissipation due to wave breaking and bottom friction, cross-spectral energy transfer due to nonlinear wave-wave interactions, breaking-induced longshore and rip currents, wave-current interaction and wave interaction with porous structures. This model will be used to evaluate harbor surge and oscillations, reflection and results of proposed structural measures within the harbor.	
WIS	The Wave Information Study (WIS) is a wave hindcast that generates consistent, hourly, long-term (20+ years) wave climatologies along all US coastlines. A wave hindcast predicts past wave conditions using a computer model and observed wind fields. This data will be used to develop wave climate for the project area and determine offshore conditions appropriate for input to the wave transformation models.	HH&C CoP Preferred
ERDC Ship/Tow Simulator (HH&C)	The Ship/Tow Simulator features two bridges set up for real-time ship maneuvering, and were specifically developed for evaluating navigation channel designs, modifications, and safety issues. Located at ERDC, Coastal and Hydraulics Laboratory, the model portrays currents, wind and wave conditions, shallow water effects, bank forces, ship handling, ship to ship interaction, fender forces, anchor forces, and tug assistance. It will be used to analyze alternatives and aid in the design for channel widening. A ship simulation plan will be submitted to the MSC for approval as required by ER 1100-2-1403.	Preferred
GeoStudio (2021) (Geotechnical)	GeoStudio is an integrated software suite for modelling slope stability, ground deformation, and heat and mass transfer in soils and rock. Slope/W can be used to analyze the slope stability and Sigma/W may be used to analyze long term deformation.	Preferred (Slope/W), Allowed (Sigma/W)
Rocscience (Geotechnical)	Rocscience is a software suite for modelling slope stability, ground deformation, geological data, and pile analysis. Slide2 can be used to analyze slope stability and Settle3 can be used to analyze settlement and consolidation (long term deformation).	Preferred
Abbreviated Risk Analysis, 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. The analyses will include a narrative identifying the risks or uncertainties. During the alternatives evaluation, the PDT will assist the cost engineer	Civil Works Cost Engineering and Agency Technical Review MCX mandatory

Model Name and Version (Discipline)	Brief Model Description and How It Will Be Used in the Study	Model Certification / Acceptance Status
	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.	
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 a narrative documenting reasons for decisions and selections made by the cost engineer. Software distribution is restricted as it is considered proprietary to the Government.	Civil Works Cost Engineering and Agency Technical Review MCX mandatory
Microcomputer Aided Cost Engineering System (MCACES), MII (Cost Engineering)	Microcomputer Aided Cost Engineering System (MCACES) is the cost estimating software program tools used by cost engineering to develop and prepare Class 3 Civil Works cost estimates.	Civil Works Cost Engineering and Agency Technical Review MCX mandatory
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 features and respective estimates 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.	Civil Works Cost Engineering and Agency Technical Review MCX mandatory

H. Policy and Legal Compliance Reviews

In accordance with DPM CW 2018-05, policy and legal compliance reviews (P&LCRs) for draft and final planning decision documents are delegated to the MSC 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 (DPM 2019-01). 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 will collaborate to identify and endorse a P&LCR

Manager from among the P&LCR team identified for the study. The manager may be a MSC, PCX, or HQUSACE employee. The team 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.