



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
PACIFIC OCEAN DIVISION, U.S. ARMY CORPS OF ENGINEERS  
FORT SHAFTER, HAWAII 96858-5440

CEPOD-PDC

20 Nov 2012

MEMORANDUM FOR COMMANDER HONOLULU ENGINEER DISTRICT (CEPOH-PP-C/CINDY BARGER), BUILDING 230, FORT SHAFTER, HI 96858-5440

SUBJECT: Review Plan Approval for the Nawiliwili Deep Draft Harbor Navigation Improvements Project Feasibility Report, Island of Kauai, Hawaii

1. References:

a. Engineering Circular 1165-2-209, Civil Works Review Policy, 31 January 2010, and Change 1, 31 January 2012.

b. Review Plan for the Nawiliwili Deep Draft Harbor Navigation Improvements Project Feasibility Report, Island of Kauai, Hawaii, Honolulu District, U.S. Army Corps of Engineers.

2. IAW reference 1.a., the Review Plan (reference 1.b.) was coordinated with the Deep Draft Navigation Planning Center of Expertise (DDN-PCX) in the Mobile District of the South Atlantic Division which is the lead office to execute this Review Plan. For further information, contact the DDN-PCX at 251-694-3804. This Review Plan includes Type I Independent External Peer Review.

3. I approve this Review Plan. It is subject to change as circumstances require, consistent with project development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office.

4. The point of contact for this memorandum is Mr. Russell Iwamura, Senior Economist, Civil Works Integration Division, at 808-835-4625 or email [Russell.K.Iwamura@usace.army.mil](mailto:Russell.K.Iwamura@usace.army.mil).

Encl

GREGORY J. HUNTER  
Colonel, EN  
Acting Commander









## 1. PURPOSE AND REQUIREMENTS

**a. Purpose.** This Review Plan defines the scope and level of peer review for the Nawiliwili Deep Draft Harbor Navigation Improvements Project, Island of Kauai, Hawaii, Feasibility Study.

The original Review Plan for this project was approved in 2007. The Review Plan is being updated to be consistent with current U.S. Army Corps of Engineers (USACE) regulations and policies and reflect the current status of the project. This Review Plan was developed using the National Planning Center of Expertise (PCX) review plan template dated 15 June 2011.

### **b. References.**

- (1) Engineer Circular (EC) 1165-2-209, Civil Works Review Policy, 31 January 2012.
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011.
- (3) Engineer Regulation (ER) 1110-1-12, Quality Management, 30 September 2006.
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 November 2007.
- (5) Nawiliwili Deep Draft Harbor Navigations Improvement Project Management Plan (PMP), December 2004.
- (6) USACE Pacific Ocean Division (POD) Quality Management Plan, December 2010.
- (7) USACE Honolulu District (POH) Civil Works Review Policy (ISO CEPOH-C\_12203), 1 November 2010.

**c. Requirements.** This Review Plan, that is a component of the PMP, was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design; construction; and operation, maintenance, repair, replacement, and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review, certification (per EC 1165-2-209), and planning model certification/approval (per EC 1105-2-412) and the Value Management Plan requirements in the Project Management Business Process Reference 8023G and the ER 11-1-321, Change 1.

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a PCX or the Risk Management

Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Deep Draft Navigation Planning Center of Expertise (DDN-PCX).

The DDN-PCX will coordinate with the Cost Engineering Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

### 3. STUDY INFORMATION

**a. Authority.** The project was originally authorized under the Rivers and Harbors Act of March 1919 and September 1954. The current modification study is being conducted under Section 209 of the Rivers and Harbors Act of 1962 (PL 87-875). A feasibility cost share agreement was executed on 28 February 2005 between USACE and the non-Federal sponsor to initiate the study.

**b. Decision Document.** A feasibility report and associated Environmental Impact Statement (EIS) serves as the project decision documents. The Chief of Engineers is the approval authority for the feasibility report and EIS. If approved by the Chief of Engineers, Congressional authorization would be required to proceed to construction.

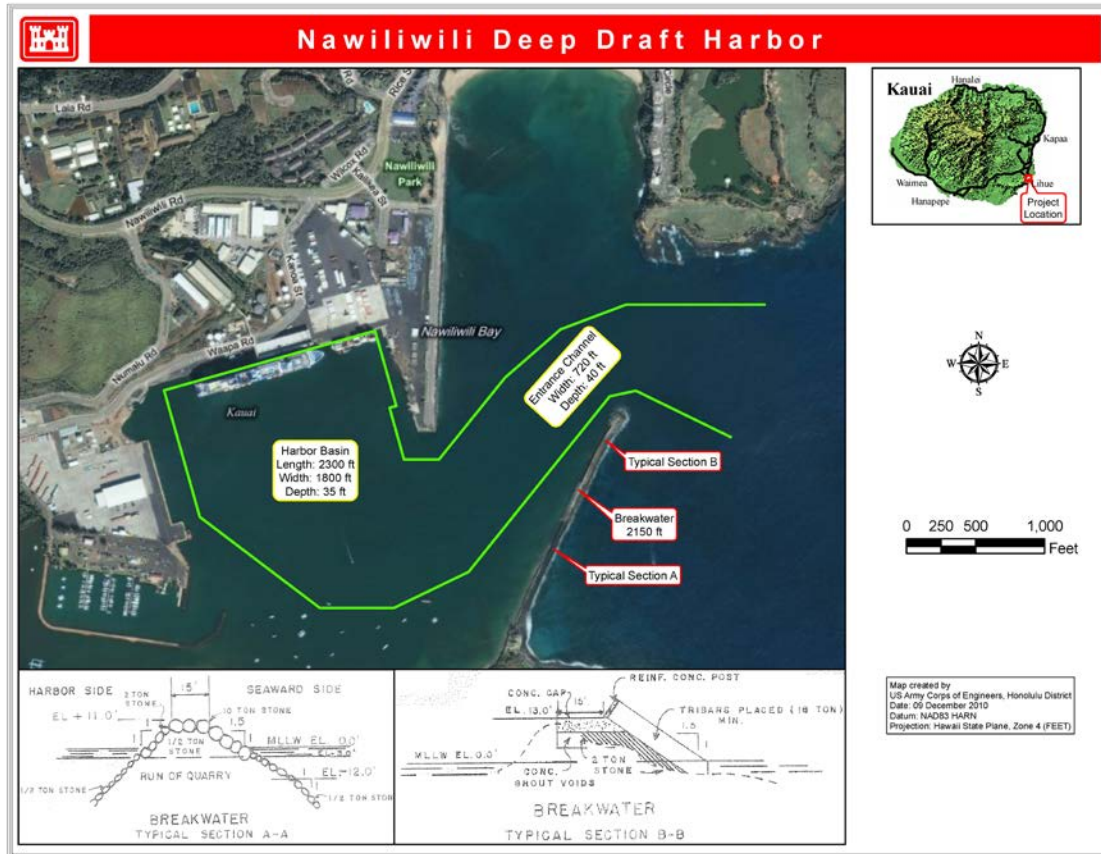
**c. Project Sponsor.** The non-Federal sponsor for the project is the State of Hawaii, Department of Transportation.

**d. Study Location.** Nawiliwili Harbor is the primary harbor on the Island of Kauai. It is located on the southeast coast of the island near the town of Lihue, Hawaii (See Figure 1).

**e. Study/Project Description.** The Nawiliwili Deep Draft Harbor consists of a 2,045 feet long breakwater, and a 2,400 feet long S-shaped entrance channel which is 40 feet deep with a minimum 600 feet width. The initial Federal improvement was completed in 1930 with additional work completed in 1956 and 1960. The breakwater was last inspected in March 2009 and found to be in fair condition. Nawiliwili Deep Draft Harbor was last maintenance dredged in March 1999. According to the latest waterborne commerce statistics, 2.3 million short tons of cargo were shipped through Nawiliwili Harbor in 2007.

Problem: The State has been aggressively pursuing the lucrative passenger cruise market in order to boost Kauai's economy. The harbor was designed for vessels 470-feet long. Navigation of the newer 965-foot passenger cruise ships through the S-shaped channel entrance during the high seas and swells pose a serious safety issue. Modifications to the existing harbor are required to improve the margin of safety to navigate large cruise vessels safely through the S-shaped entrance channel.

Figure 1: Nawiliwili Harbor Location Map



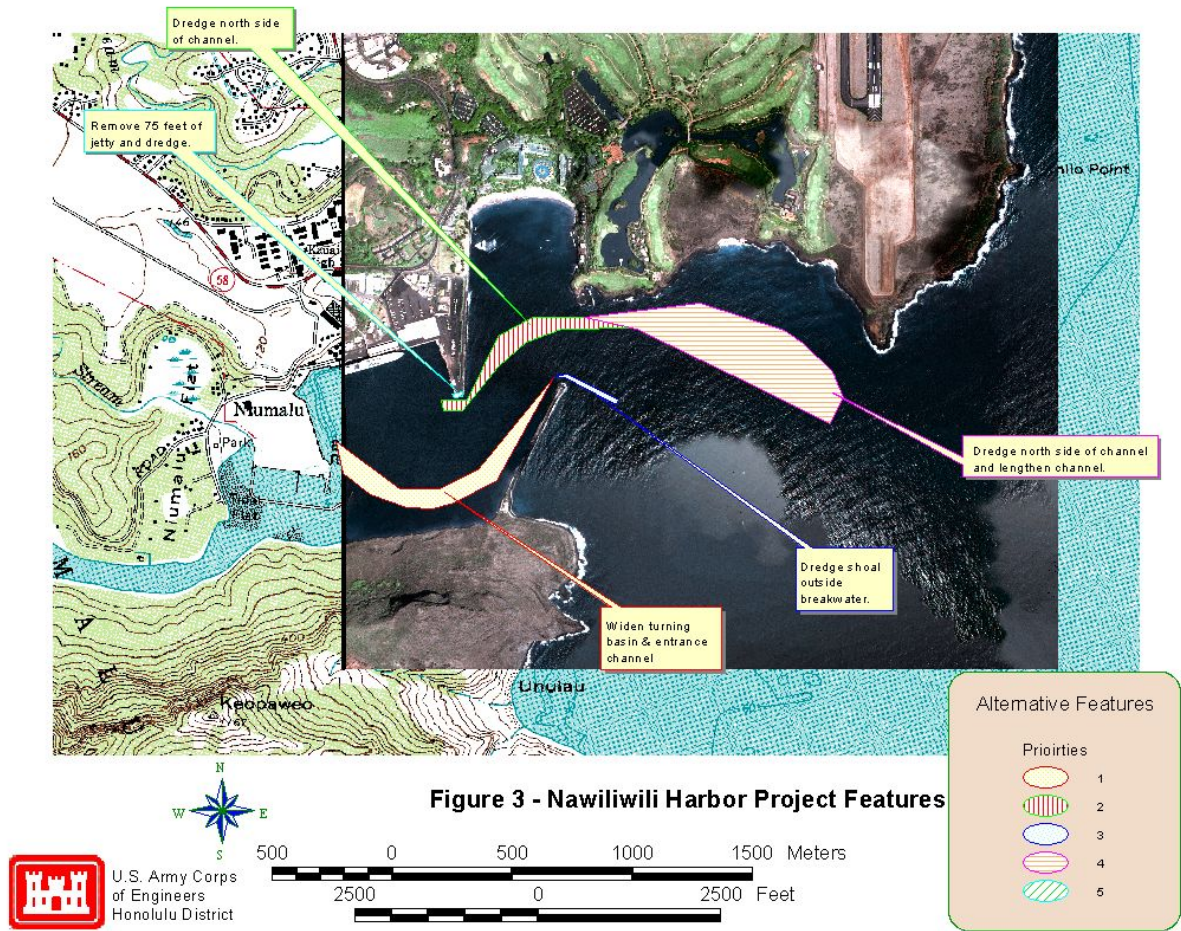
Alternatives: The alternatives being formulated for this project include variations of widening the entrance channel and turning basin in the critical maneuvering areas by means of dredging (See Figure 2).

- Dredge the South Side of the Channel. This alternative proposes to focus the dredging in the south side of the channel, dredging approximately 19.3 acre area.
- Dredge the North Side of the Channel. This alternative proposes to dredge the north side of the channel and the area fronting the jetty. This would be approximately 11.4 acres of dredging. The channel width would be increased from 600 feet to 880 feet.
- Dredge the North Side of Channel and Outside the Breakwater. This alternative proposes to dredge 1.35-acre area outside the breakwater, remove 49 acres on the north side of the channel, lengthen the channel and remove a 75-foot section of jetty. The jetty would be rebuilt to match the remaining sections.

Estimated Construction Cost: The estimated cost of construction is \$30 to \$35 million.



Figure 2: Nawiliwili Deep Draft Harbor Alternatives



**f. Factors Affecting the Scope and Level of Review.** The primary issue for this project is the need for an EIS. An EIS is anticipated to be required due to potential significant adverse impacts to benthic habitat, including coral reef ecosystems. Benthic habitat surveys are underway to assess the extent and type of benthic habitat and the possible project impacts to such habitat. If the results of the survey show that impacts to habitat would be less than significant, POH would conduct an Environmental Assessment instead of an EIS. If coral reef habitat is likely to be adversely impacted by the proposed project, the following additional criteria apply to this project:

- Because of the potential unavoidable impacts to coral reefs and the risk and uncertainty with effectively mitigating for impacts to benthic habitat, including coral reef ecosystems, Federal and state agencies have noted that the project is likely to have a significant adverse impact on environmental, cultural or other resources under the jurisdiction of the agency after implementation of proposed mitigation plans;

- The project is anticipated to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures;
- While there is ample experience within USACE and industry for the harbor construction to treat the activity as being routine, there is not ample experience within USACE or the industry to treat the implementation of potential mitigation measures as being routine;
- The project has significant interagency interest by U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration;
- The project is anticipated to have no more than a negligible adverse impact, before implementation of mitigation measures, on a species listed as endangered or threatened under the Endangered Species Act (ESA) of 1973 or the critical habitat of such species designated under ESA. However, there are 82 Pacific coral reef species proposed for listing under ESA. Depending on the final listing decision, the proposed project may have an adverse impact to potentially listed species;
- While the project is not expected to incorporate challenging technical solutions for the harbor construction, the potential mitigation options incorporate challenging technical solutions; and
- While the project design for the harbor construction is not likely to be based on novel methods, the information in the decision document for potential mitigation options is likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practice.

Other study factors affecting the level of review include:

- The estimated construction costs are less than \$45 million.
- There has been no request nor expected to have a request by the Governor of Hawaii for peer review by independent experts.
- No significant public dispute has been voiced over any aspect of the proposed project, including the size, nature, or effects of neither the project nor the economic or environmental cost or benefit of the project.
- The study is not likely to contain influential scientific information or be a highly influential scientific assessment.
- There has been no request by a head of a Federal or state agency for peer review by independent experts.

- The project is not controversial.
- The project is anticipated to have negligible adverse impacts on scarce or unique tribal, cultural or historic resources.
- The project study does not involve the rehabilitation or replacement of existing hydropower turbines, lock structures, or flood control gates within the same footprint and for the same purpose as an existing water resources project.

**g. In-Kind Contributions.** Products and analyses provided by the non-Federal sponsor as work-in-kind services are subject to DQC, ATR, and IEPR. The proposed non-Federal sponsor in-kind contributions are including in the study's PMP. All work-in-kind information incorporated into the feasibility report and EIS will undergo DQC, ATR, and IEPR as appropriate.

#### **4. DISTRICT QUALITY CONTROL (DQC)**

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the PMP. POH shall manage the DQC process. Documentation of DQC activities is required and should be in accordance with the Quality Manuals of the POH and POD.

**a. Documentation of DQC.** Consistent with the POH Quality Manual, DQC will be documented using the POH DQC review table. When all comments have been addressed and back checked, the DQC lead will sign a DQC certification in compliance with the POH Quality Manual. The DQC comments and responses will be provided for the ATR team at each review.

**b. Products to Undergo DQC.** The following products will be subject to DQC:

- Draft and final integrated feasibility report/EIS.
- All technical reports and appendices developed in support of the integrated feasibility report/EIS.
- The draft and final Record of Decision (ROD).

**c. Required DQC Expertise.** The following expertise is needed for DQC. An individual reviewer may meet the requirements for multiple disciplines.

**Table 1: DQC Required Expertise**

<b>DQC Team Members/Disciplines</b>	<b>Expertise Required</b>
DQC Lead	The DQC lead should be a senior professional with experience in preparing Civil Works decision documents and conducting DQC.
Planning	The Planning reviewer should be a senior water resources planner with experience in the development of feasibility studies and navigation projects.
Economics	The Economics reviewer should have experience with in civil works navigation projects.
Environmental Resources	The Environmental reviewer should have environmental regulatory expertise in National Environmental Policy Act (NEPA), Clean Water Act (CWA) Section 404(b) (1) analysis and Section 401 Water Quality Certification, Fish and Wildlife Coordination Act (FWCA), and ESA. The environmental expert should be familiar with environmental compliance requirements for dredging and disposal of harbors. The environmental expert should also be familiar with tropical marine ecology, particularly coral reef ecosystems, and the potential impacts to these ecosystems from navigation projects.
Marine Ecology Output Model	The Marine Ecology Output Model reviewer should have experience and familiarity with tropical coral reef and marine habitats and familiarity with the Habitat Equivalency Analysis (HEA).
Coastal Engineering	The Coastal Engineering reviewer will be an expert in the field of coastal engineering with experience with navigation projects.
Geotechnical Engineering	The Geotechnical Engineering reviewer should have experience in geotechnical evaluation of navigation structures including jetties and breakwaters.
Civil/Structural Engineering	The Civil/Structural Engineering reviewer should have experience in navigation structures, including jetties and breakwaters.
Cost Engineering	Reviewer must be experienced in design requirements for navigation projects.
Real Estate	Reviewer must be experienced in civil works real estate laws, policies and guidance and experience working with sponsor real estate issues.

**5. AGENCY TECHNICAL REVIEW (ATR)**

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the DDN-PCX as the designated RMO, and is conducted by a qualified team from outside POH that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the POD.

**a. Products to Undergo ATR.**

- Draft and final feasibility report/EIS.
- All technical reports and appendices developed in support of the feasibility study/EIS.
- The draft and final Record of Decision.

**b. Required ATR Team Expertise.** The following ATR expertise is required for this project. Where possible ATR team members will address multiple disciplines and emphasis. The DDN-PCX will select the ATR team and identify the ATR team leader in consultation with the Project Manager (PM), vertical team and other appropriate centers of expertise. Once identified, the ATR team members for this study and a brief description of their credentials will be added in Attachment 1.

**Table 2: ATR Required Expertise**

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting an ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in the development of feasibility studies and navigation projects.
Economics	The economics reviewer should have experience with in civil works navigation projects.
Environmental Resources	The environmental reviewer should have environmental

ATR Team Members/Disciplines	Expertise Required
	regulatory expertise in NEPA, CWA Section 404(b) (1) analysis and Section 401 Water Quality Certification, FWCA, and ESA. The environmental expert should be familiar with environmental compliance requirements for dredging and disposal of harbors. The environmental expert should also be familiar with tropical marine ecology, particularly coral reef ecosystems, and the potential impacts to these ecosystems from navigation projects.
Marine Ecology Output Model	The Marine Ecology Output Model reviewer should have experience and familiarity with tropical coral reef and marine habitats and familiarity with the HEA.
Coastal Engineering	The Coastal Engineering reviewer will be an expert in the field of coastal engineering with experience with navigation projects.
Geotechnical Engineering	The Geotechnical Engineering reviewer should have experience in geotechnical evaluation of navigation structures including jetties and breakwaters.
Civil/Structural Engineering	The Civil/Structural Engineering reviewer should have experience in navigation structures, including jetties and breakwaters.
Cost Engineering	Reviewer must be experienced in design requirements for navigation projects.
Real Estate	Reviewer must be experienced in Civil Works Real Estate laws, policies, and guidance and experience working with sponsor real estate issues.

**c. Documentation of ATR.** DrChecks<sup>sm</sup> review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

- The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and

- The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations where information is incomplete or unclear, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks<sup>sm</sup> will include the text of each ATR concern, the Project Delivery Team (PDT) response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes POH, DDN-PCX, POD, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks<sup>sm</sup> with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review (STR) certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A STR should be completed, based on work reviewed to date, for the draft report and final report. A sample STR is included in Attachment 2.

## **6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review and is applied where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-

informed decision, as described in EC 1165-2-209, is made to assess whether an IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines. The IEPR panel will represent a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- **Type I IEPR.** Type I IEPR reviews are managed outside the USACE by an Outside Eligible Organization (OEO) and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review (SAR)) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.

- **Type II IEPR.** Type II IEPR, or SAR, is managed by the RMC and is conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

**a. Decision on IEPR.** Based on the assumed need to do an EIS and the other factors described in Section 3.f., the POH has determined that a Type I IEPR is required.

**b. Products to Undergo Type I IEPR.** Draft Feasibility report/EIS.

**c. Required Type I IEPR Panel Expertise.** The following IEPR expertise is required for this project. Where possible IEPR panel members will address multiple disciplines and emphasis. The DDN-PCX will identify the final make-up of expertise required for the IEPR team in consultation with the PM, vertical team and other appropriate centers of expertise. Once identified, the IEPR team members for this study and a brief description of their credentials will be added in Attachment 1.

**Table 3: IEPR Required Expertise**

<b>IEPR Panel Members/Disciplines</b>	<b>Expertise Required</b>
Economics	The Economics panel member should have experience with in civil works navigation projects.



IEPR Panel Members/Disciplines	Expertise Required
Environmental	The Environmental panel member(s) should have environmental regulatory expertise in NEPA, CWA Section 404(b) (1) analysis and Section 401 Water Quality Certification, FWCA, and ESA. The environmental expert should be familiar with environmental compliance requirements for dredging and disposal of harbors. The environmental expert should also be familiar with tropical marine ecology, particularly coral reef ecosystems, and the potential impacts to these ecosystems from navigation projects. The environmental panel member should also have experience and familiarity with tropical coral reef and marine habitats and familiarity with the HEA.
Engineering	The Engineering panel member(s) should have experience in coastal, geotechnical, civil and structural engineering as it relates to navigation projects, including dredging and construction of jetties and breakwaters.

**d. Documentation of Type I IEPR.** The IEPR panel will be selected and managed by an OEO per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 5.c. above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

## **7. POLICY AND LEGAL COMPLIANCE REVIEW**

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the POD Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

## **8. COST ENGINEERING MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Cost Engineering MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the Cost Engineering Certification. The DDN-PCX is responsible for coordination with the Cost Engineering MCX.

## **9. MODEL CERTIFICATION AND APPROVAL**

**a. Planning Models.** 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, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

In accordance with EC 1105-2-412 Paragraph 5.c, models that are single-use or study-specific require approval that the model is a technically and theoretically sound and functional tool that can be applied during the planning process by knowledgeable and trained staff for purposes consistent with the model's purpose and limitations. For this project, the PM will coordinate with the DDN-PCX and Ecosystem Restoration (ECO)-PCX in determining the appropriate level of review for model approval. At this time, an additional ATR reviewer, the expert in marine ecological output models, has been added to specifically approve models for site specific use.

The following planning models are anticipated to be used in the development of the decision document:

**Table 4: Planning Models and Certification/Approval Status**

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Certification / Approval Status</b>
<p>Institute of Water Resources (IWR) Planning Suite</p>	<p>This model assists with formulating plans, cost-effectiveness, and incremental cost analysis (CE/ICA), which are required for ecosystem restoration projects. An “annualizer” module has been included to allow for easy calculations of equivalent annual average values, total net values, and annualizing non-monetary benefits and calculating costs.</p> <p>The IWR Planning Suite will be used to conduct the CE/ICA necessary to identify the appropriate compensatory mitigation for the project in conjunction with the Nawiliwili Harbor site specific mitigation model.</p> <p>The IWR Plan Annualizer in the IWR Planning Suite will be used to compute average annual values of cost and revenue streams, discount future values to present values, compute interest during construction and perform other basic arithmetic functions.</p>	<p>Certified</p>
<p>HarborSym Simulation Model for Coastal Harbors</p>	<p>HarborSym is a planning-level simulation model designed to assist in economic analyses of coastal harbors. With user provided input data, such as the port layout, vessel calls, and transit rules, the model calculates vessel interactions within the harbor. Unproductive wait times result when vessels are forced to delay sailing due to transit restrictions within the channel; HarborSym captures these delays. Using the model, analysts can calculate the cost of these delays and any changes in overall transportation costs resulting from proposed modifications to the channel’s physical dimensions or sailing restrictions. Developed as a data driven model, HarborSym allows users to analyze changes without modifying complex computer code. This approach also enables analysts to apply the model to many different ports by altering the network representation of the harbor.</p>	<p>Certified</p>

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Nawiliwili Harbor Site Specific Spreadsheet Mitigation Model	<p>An ecosystem output model is required to assess the mitigation requirements for this study. In the absence of any regionalized ecosystem output model that quantifies habitat benefits for coral reef habitats in Hawaii, a customized spreadsheet model will be developed specifically for use on the Nawiliwili Deep Draft Harbor Navigation Improvement project. This is considered to be an appropriate approach, as a spreadsheet model can be tailored to focus on metrics that are directly applicable to the project mitigation objective. In particular, habitat quality parameters contained within the model can serve as a key dataset for quantification of habitat impacts and benefits in the spreadsheet model. In addition, elements of the HEA approach will be used. NOAA and FWS regularly use this method for coral reef mitigation assessment in the Pacific.</p> <p>HEA has not been approved by the ECO-PCX but has been accepted on a site specific basis for navigation projects in the USACE Jacksonville District. In accordance with USACE regulations and policies, the HEA discount rate will not be used.</p>	Approval to be coordinated with the ECO-PCX

**b. Engineering Models.** EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology initiative, many engineering models have been identified as preferred or acceptable for use on USACE studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

The following engineering models are anticipated to be used in the development of the decision document:

**Table 5: Engineering Models and Approval Status**

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Approval Status</b>
ADCIRC (Advanced Circulation) Hydrodynamic Model v.49	ADCIRC is a long-wave hydrodynamic model that simulates the circulation and water levels associated with both tides and atmospheric conditions. A two-dimensional, depth-averaged version of ADCIRC will be applied in this study to develop currents for input into ship simulations.	HH&C CoP Preferred Model
STWAVE (Steady-state Spectral Wave) Transformation Model	STWAVE is a spectral wave transformation model which is capable of representing depth-induced wave refraction and shoaling, current-induced refraction and shoaling, depth- and steepness-induced wave breaking, diffraction, wind-wave growth, wave-wave interaction, and whitecapping. 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 BOUSS-2D model.	HH&C CoP Preferred Model
BOUSS-2D (Boussineq-2D)	The BOUSS-2D 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 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.	Allowed for Use
WIS (Wave Information Study)	The WIS is a wave hindcast model that generates consistent, hourly, and long-term (20+ years) wave climatologies along all U.S. 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 Model

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
Microcomputer Aided Cost Engineering System (MCACES) 2 <sup>nd</sup> Generation (MII)	The MCACES MII construction cost estimating software, developed by Building Systems Design, Inc., is a tool used by cost engineers to develop and prepare all USACE Civil Works cost estimates. Using the features in this system, cost estimates are prepared uniformly allowing cost engineering throughout USACE to function as one virtual cost engineering team.	Cost Engineering MCX Required Model

**10. REVIEW SCHEDULES AND COSTS**

**a. ATR Schedule and Cost.** The ATRs for this study will be accomplished in accordance with the cost and schedule in the PMP. As of the approval date of this Review Plan, the ATRs of the various documents are scheduled as follows:

- Draft Feasibility Report/EIS: October 2014.
- Final Feasibility Report/EIS: August 2015.
- Estimated Total ATR Costs: \$80,000.

This assumes \$40,000 for the ATR of the draft report and \$40,000 for the ATR of the final report.

**b. Type I IEPR Schedule and Cost.** The IEPR for this study will be accomplished in accordance with the cost and schedule in the PMP. As of the approval date of this Review Plan, the IEPR is scheduled as follows:

- Draft Feasibility Report/EIS: December 2014.
- Estimated Contract Cost: \$180,000. Pursuant to Section 2034 of the Water Resource Development Act of 2007, this amount is 100% federally funded.
- Estimated cost for POH and DDN-PCX Coordination of the IEPR: \$60,000. This estimate was developed using the Type I IEPR Standard Operating Procedure table provided by the PCXs. This amount is cost-shared between USACE and the non-Federal Sponsor.

**c. Model Certification/Approval Schedule and Cost.** The certified HarborSym model will be used for the economic evaluations. Nawiliwili Harbor Site Specific Ecosystem Output Model will be used on a one-time basis. Consistent with EC 1105-2-412, the model will require approval for use. The approval review of the single use site specific model will be coordinated with the DDN-PCX and ECO-PCX to determine if approval during ATR is acceptable. In the event that the ECO-PCX requires a separate or regional approval, schedule and costs will be adjusted accordingly.

## **11. PUBLIC PARTICIPATION**

A Public Involvement Plan will be developed for the feasibility study to guide the public participation process, including required NEPA public reviews. Small group meetings will be conducted to collect specific information relevant to study goals and objectives and provide information to key stakeholders and interest groups relevant to study goals and objectives. A public meeting will be held during the public review process to seek input on the draft report.

## **12. REVIEW PLAN APPROVAL AND UPDATES**

The POD Commander is responsible for approving this Review Plan. The POD Commander's approval reflects vertical team input (involving POH, POD, DDN PCX, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. POH is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last POD Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) will be re-approved by the POD Commander, following the process used for initially approving the plan. The latest version of the Review Plan, along with the POD Commander's approval memorandum, will be posted on the POH webpage. The latest Review Plan will also be provided to POD and the DDN-PCX.

## **13. REVIEW PLAN POINTS OF CONTACT**

Public questions and/or comments on this review plan can be directed to the following points of contact:

### Honolulu District

Ms. Athline Clark, Project Manager  
Civil and Public Works Branch  
Programs and Project Management Division  
U.S. Army Corps of Engineers, Honolulu District  
Building 230, Room 307  
Ft. Shafter, HI 96858  
Telephone: (808) 835-4032

### Pacific Ocean Division

Mr. Russell Iwamura  
U.S. Army Corps of Engineers, Pacific Ocean Division  
Building 525  
Ft. Shafter, HI 96858-5440  
Telephone: (808) 835-4625





**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR  
DECISION DOCUMENTS**

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The ATR has been completed for the *<type of product>* for *Nawiliwili Deep Draft Harbor Navigation Improvement Project, Island of Kauai, Hawaii*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing USACE policy. The ATR also assessed the DQC documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

*SIGNATURE*

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*Name*

ATR Team Leader

*Office Symbol/Company*

\_\_\_\_\_  
Date

*SIGNATURE*

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*Name*

Project Manager

*Office Symbol*

\_\_\_\_\_  
Date

*SIGNATURE*

---

*Name*

Architect Engineer Project Manager<sup>1</sup>

*Company, location*

\_\_\_\_\_  
Date

*SIGNATURE*

---

*Name*

Review Management Office Representative

*Office Symbol*

\_\_\_\_\_  
Date

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.*

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

*SIGNATURE*

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*Name*

Chief, Engineering Division

*Office Symbol*

\_\_\_\_\_  
Date

*SIGNATURE*

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*Name*

Chief, Planning Division

*Office Symbol*

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted.



**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

**Table 10: Standard Acronyms and Abbreviations**

<b><u>Term</u></b>	<b><u>Definition</u></b>	<b><u>Term</u></b>	<b><u>Definition</u></b>
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CWA	Clean Water Act	OMRR&R	Operation, Maintenance, Repair, Replacement, and Rehabilitation
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
EIS	Environmental Impact Statement	PMP	Project Management Plan
ER	Engineer Regulation	PL	Public Law
ESA	Endangered Species Act	POD	U.S. Army Corps of Engineers, Pacific Ocean Division
HQUSACE	Headquarters, U.S. Army Corps of Engineers	POH	U.S. Army Corps of Engineers, Honolulu District
IEPR	Independent External Peer Review	RMC	Risk Management Center
IWR	Institute of Water Resources	RMO	Review Management Organization
MCX	Mandatory Center of Expertise	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers