DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
SOUTH ATLANTIC DIVISION
60 FORSYTH STREET SW, ROOM 10M15
ATLANTA, GA 30303-8801

REPLY TO
ATTENTION OF

13 DEC 2012

CESAD-PDP

MEMORANDUM FOR Commander, Charleston District (CESAC-PM-P/B. Williams)

SUBJECT: Review Plan Approval for the Charleston Harbor Post 45 Feasibility Study and Environmental Impact Statement

1. References:

a. Memorandum, CESAC-PM-P, 16 November 2012, subject: Review Plan Post 45 Charleston Harbor Feasibility.

b. EC 1165-2-209, Civil Works Review Policy, 31 January 2010.

2. The enclosed Review Plan for the Charleston Harbor Post 45 Feasibility Study and Environmental Impact Statement has been prepared in accordance with Engineer Circular (EC) 1165-2-209. The Review Plan has been coordinated with the Deep Draft Navigation Planning Center of Expertise (DDNPCX) of the South Atlantic Division (SAD), which is the lead office to execute this plan. For further information, please contact the DDNPCX at (251)694-3884. The Review Plan includes independent external peer review.

3. I hereby approve this Review Plan, which is subject to change as circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office. The District shall post the approved Review Plan and a copy of this approval memorandum to the SAC District public internet website and provide a link to the DDNPCX for their use. Before posting to the website, the names of Corps employees should be removed.

4. The point of contact for this action is Mr. Patrick O'Donnell at (404) 562-5226.

Encl

DONALD E. JACKSON, JR.
COL, EN
Commanding

REVIEW PLAN

Charleston Harbor Post 45 Phase II, Charleston, South Carolina
Feasibility Report
And
Environmental Impact Statement

Charleston District

P2: 137921

MSC Approval Date: 13 December 2012
Last Revision Date: December 2012

US Army Corps
of Engineers ®

REVIEW PLAN

Charleston Harbor Post 45 Phase II, Charleston, South Carolina
Feasibility Report

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Charleston Harbor Post 45 Phase II, Charleston, South Carolina Feasibility Report.

b. References

(1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
(2) EC 1105-2-412, Planning Models Improvement Program: Model Certification, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 21 Jul 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(5) Review of Civil Works Projects, Planning SMART Guide, 31 May 2012
(6) Charleston Harbor Project Management Plan

c. Requirements. This review plan 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 and certification and planning models are subject to certification/approval (per EC 1105-2-412).

(1) District Quality Control/Quality Assurance (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 Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and will be in accordance with the Quality Manual of the District.

(2) 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 US Army Corps of Engineers (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 a designated Risk Management Organization (RMO) and is conducted by a qualified team from outside the home district 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. To ensure independence, the leader of the ATR team shall be from outside the home MSC.

(3) Independent External Peer Review (IEPR). Any work product that undergoes DQC and ATR may be required to undergo IEPR under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain 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. A risk-informed decision, as described in EC 1165-2-

209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR: Type I is generally for decision documents and Type II is generally for implementation products.

(a) Type I IEPR. Type I IEPR is required for all **decision documents** except where no mandatory triggers apply, criteria for an exclusion are met, and a risk-informed recommendation justifies exclusion. Type I IEPR reviews are managed outside USACE 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 any biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all the underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR, per EC 1165-2-209.

(b) Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), is managed outside USACE 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.

(4) 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 home MSC 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.

(5) Cost Engineering Review and Certification. All **decision documents** shall be coordinated with the Cost Engineering Directory of Expertise (DX), located in the Walla Walla District. The DX, or in some circumstances regional cost personnel that are pre-certified by the DX, will conduct the cost ATR. The DX will provide certification of the final total project cost.

(6) Model Certification/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, 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. 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. Use of engineering models is also subject to DQC, ATR, and IEPR.

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 Planning Center of Expertise (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 designated PCX for Deep Draft Navigation projects, from the South Atlantic Division (CESAD).

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. This is a single-purpose navigation project. Consequently, coordination with other planning centers of expertise is not anticipated. Scope of the SAR and coordination with the Corps Risk Management Center (RMC), if needed, will be described in a follow-on implementation phase review plan. RMC coordination is not anticipated during this decision document phase.

3. STUDY INFORMATION

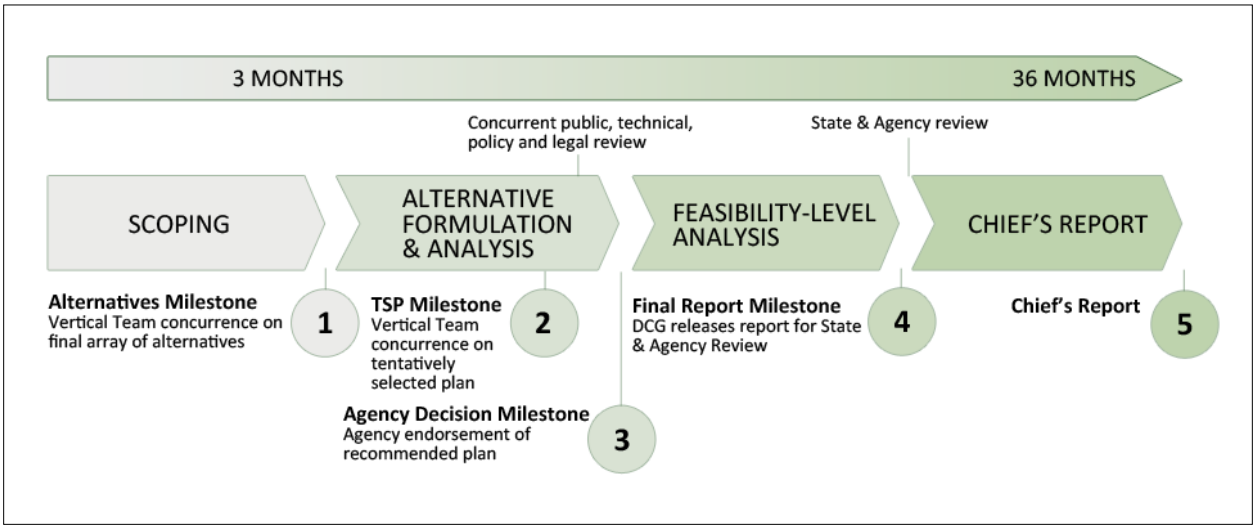
a. Decision Document. The purpose of the decision document, "Charleston Harbor Post 45 Phase II, Charleston, South Carolina, General Investigations (GI) Feasibility Report," is to present the results of a feasibility study undertaken to determine the optimal harbor depth for Post-Panamax ships that supports the National Economic Plan and South Carolina State Ports Authority goals with the least environmental impact. The decision document will ultimately be approved by the USACE Chief of Engineers and will require Congressional authorization and funding. The study will require an Environmental Impact Statement (EIS) to be completed, along with any other National Environmental Policy Act (NEPA) documentation required.

b. **Study/Project Description.** Charleston Harbor is situated at the confluence of the Ashley, Wando, and Cooper Rivers. It is 14 square miles in area and lies approximately at the midpoint along the South Carolina Coast. Adjacent municipalities include the Cities of Charleston, North Charleston, and Mount Pleasant, as well as Sullivan's, James, and Morris Islands. The harbor entrance is protected by two jetties constructed in 1878.

Since the 1890's the harbor has undergone periodic expansion, with the most recent modification of the federal channel – a deepening to 45 feet - the result of a 1996 feasibility report. The evolution of the global maritime fleet, however, is to larger ships that require greater drafts than the harbor can efficiently support. Many of the larger ships calling on the port of Charleston are limited by tide

stages and, as a result, are incurring additional costs of time and money. This feasibility study will look at a combination of widening and deepening measures that may be undertaken to increase efficiency of the port throughput in response to changes in the maritime fleet.

c. Factors Affecting the Scope and Level of Review. USACE is transforming its planning process and refining how decisions are made during the pre-authorization study phase. This revised planning process has been labeled SMART Planning. The principles of SMART Planning will require team members and decision makers to accept a lower level of detail and higher level of uncertainty during the pre-authorization study phase. This review plan lists key decisions that will need to be made by the Vertical Team at each Milestone or associated In-Progress Review (see figure below) in order for the study to progress to the next step. Uncertainty will vary throughout the study and will be addressed at each Milestone. The review plan is envisioned as a living document that will be revised following key decisions throughout the process.



Factors affecting risk-informed decisions on the appropriate scope and level of review include:

(1) The project will not be justified by life safety, and it is anticipated that there will be no significant threat to human life associated with this project.

(2) There is currently no request by a Governor of an affected State for peer review.

(3) As is typical for a project study of this nature and scope, it is anticipated that there may be a public dispute involving some stakeholders regarding the size, nature, or effects of the Project, or regarding the economic or environmental cost or benefits of the Project.

(4) It is not anticipated that the design will require redundancy, resiliency and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule. However, these elements will be evaluated throughout the design process to ensure that if these elements are required, the review plan will be updated to reflect those changes.

(5) It is not anticipated that the project will require novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices. However, should this change over the course of the study, the products containing these methods, materials, techniques or models will be subject to DQC, ATR and Type I IEPR.

d. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. At this time no in-kind services have been identified by the sponsor and none have been received. However, if and when in the future in-kind services are received, the Peer Review Plan will be updated to annotate this.

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 Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and will be in accordance with the Quality Manual of the District.

a. **Documentation of DQC**. In compliance with EC 1165-2-209, the Charleston District will conduct a full district quality control assessment. The DQC will include quality checks and reviews, and PDT reviews. All work products and reports, evaluations, and assessments shall undergo necessary and appropriate District Quality Control/Quality Assurance (DQC). Documentation of DQC will be in accordance with the Quality Manual of the District. The DQC of products and reports shall also cover any necessary National Environmental Policy Act (NEPA) documents and other environmental compliance products. The DQC will cover all contract products and any in-kind services provided by the local sponsor.

   The assessment will be documented on the District Quality Control Checklist. The checklist will be included in all documentation submitted to the ATR and IEPR teams.

b. Products to Undergo DQC. The Draft and Final Feasibility Reports and EIS, with technical appendices, will be submitted to DQC prior to the formal ATR. On-going DQC may be requested at other times during the SMART process and will generally be of limited scope and managed by the office generating the work product. Any in-kind services will be subject to DQC.

c. Required DQC Expertise. The desired expertise for the DQC will be determined by the district Engineering and Planning Chiefs and may be augmented from District staff outside of SAC. The Chiefs will ensure personnel have adequate experience completion of the DQC.

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 introduction of the Planning SMART paradigm does not change this requirement. 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 designated RMO and is conducted by a qualified team from outside the home district 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 home MSC.

a. Products to Undergo ATR. The SMART Planning process incorporates 5 formal milestones for vertical team involvement; however, the planning process also allows the team to explore non-traditional methods to streamline the process. As such, on-going ATR will occur concurrently with study development and formal ATR reviews will occur after Milestone #2 (Tentatively Selected Plan) and before Milestone #4 (Final Report). The following items will undergo formal ATR: 1) the Draft Feasibility Report and EIS (integrated) with technical appendices; 2) the Final Feasibility Report and EIS.

The ATR team will be engaged throughout the planning process instead of only at specific points. The ATR lead will be proactive and highly engaged with the project team and will participate in each Milestone Review and IPR. The ATR lead will coordinate with the PDT to ensure that key ATR members attend IPR and Milestone teleconferences at the necessary strategic times. This will allow for a continuous and real time commenting approach to deal with ATR issues as they arise. Project documentation requiring ATR will be uploaded to a District managed website.

b. Required ATR Team Expertise. The ATR will be comprised of individuals who have not been involved in the development of the decision document or interim work products and will be chosen based on expertise, experience, and/or skills. The members will roughly mirror the composition of the PDT. This Peer Review Plan will be updated to include the ATR members, their disciplines, and other relevant information once members are designated.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead will be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead will also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc). The ATR lead will be from outside the MSC.
Planning	The Planning reviewer will be a senior water resources planner with experience in reviewing Plan Formulation processes for multi-objective studies and be able to draw on “lessons learned” in advising the PDT of best practices.
Economics	Knowledge of procedures for deep draft navigation and containership analysis. Knowledge of tools employed for economic analysis, including HarborSym, risk analysis and multiport analysis.
Economics - HarborSym Model	Knowledge of and expertise with the application of the HarborSym model for Deep Draft Navigation studies.
Environmental Resources	Knowledge of all applicable environmental laws and regulations Expert in coastal, estuarine, and riverine habitats and associated natural resources and environmental impacts of harbor deepening, as well as a familiarity with dredged material disposal and Offshore Dredge Material Disposal Sites.
Cultural Resources	Must have experience with underwater archaeology and various surveying techniques impacts of harbor deepening on the cultural resources in an area with numerous historic structures.

ATR Team Members/Disciplines	Expertise Required
Hydraulic Engineering	Hydraulic Engineer – Knowledge of USACE guidance related to engineering requirements for the deep draft navigation studies. Knowledge of hydrodynamic riverine processes and navigational modifications to evaluate impact of deepening navigation channel on hydrodynamics, salinity and sedimentation of the river and harbor, coastal and bank erosion analysis, wake erosion and channel design . Minimum seven years experience with EFDC numerical model and ship simulation, and a Professional Engineer (P.E.).
Coastal Engineering	Coastal Engineer – Knowledge of coastal processes to evaluate impact of deepening navigation channel on adjacent shoreline. Seven years minimum experience with coastal numerical models such as ADCIRC, STWAVE and sediment transport models such as MPFATE, STFATE and LTFATE, and a Professional Engineer (P.E.).
Geotechnical Engineering - Geology	The reviewer will have an understanding of the behavior of aquifers, soils, as well as the analysis and disposal of dredged material. Minimum of seven years experience and a Professional Engineer (P.E.).
Cost Engineering	These reviewers will be associated the Cost Estimating Center(DX) in Walla Walla, Washington. They will be familiar with USACE requirements for cost engineering including the development of economic and financial costs, risk and uncertainty, and preparation of the MII Cost Estimate. Expert on estimating dredging operations and the development of ODMDS sites.
Operations	The member will have an understanding of dredging operations and placement of dredged material for new construction as well as maintenance, with a minimum of seven years of experience.
Construction	Expert in dredging operations and the methodologies that will be required to construct the project, with a minimum of seven years of experience.
Real Estate	Expert in utility/facility relocations due to potential relocation of utilities under the harbor, such as waterlines and communication line.

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process and also for the duration of the planning process as they arise for "continuous ATR." The draft and final report comments will be immediately entered into DrChecks. All other intermediate comments throughout the planning process will be first recorded in a memorandum, and then officially entered into DrChecks. Comments should be organized according to the nature of the comment, not the reviewer's field of expertise. 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:

(1) The review concern – Identify the product's information deficiency or incorrect application of policy, guidance, or procedures;

(2) The basis for the concern – Cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
(3) 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
(4) 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, especially where there appears to be incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, 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 with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR Lead 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 certifying that the issues raised by the ATR team have either been resolved (or elevated to the vertical team for resolution within appropriate timeframes). The ATR Lead will be provided with notification of the implementation of any follow-up measures necessary to achieve issue resolution. A Statement of Technical Review will be completed, based on work reviewed to date, for the draft report and final report. A sample Statement of Technical Review is included in Attachment 1.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

a. Decision on Type I IEPR. After a preliminary assessment, it has been determined that a Type I IEPR will need to be performed for the feasibility report decision document for the following reasons:

(1) Several mandatory triggers appear to be met, including:
- The estimated cost of the project is anticipated to exceed the $45M ceiling.
- An Environmental Impact Statement (EIS) will be performed.
- As is typical for a project study of this nature and scope, it is anticipated that there may be a public dispute involving some stakeholders regarding the size, nature, or effects of the Project, or regarding the economic or environmental cost or benefits of the Project.

(2) Even if no mandatory trigger is met, because the project is not routine and an EIS will be performed, there is no exclusion applicable to the study.

b. Decision on Type II IEPR. Based on the project as currently envisioned, the District Chief of Engineering, as the Engineer-In-Responsible-Charge, does not recommend a Type II IEPR Safety Assurance Review of this project at this time. A risk-informed decision concerning the timing and the appropriate level of reviews for the project implementation phase will be prepared and submitted for approval in an updated Review Plan prior to initiation of the design/implementation phase of this project.

c. Products to Undergo Type I IEPR. The Draft Feasibility Report and EIS, as well as technical appendices, will be reviewed.

d. Required Type I IEPR Panel Expertise. The following provides a description of the proposed panel members and expertise. The proposed four member panel includes the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document, as required by EC 1165-2-209, Appendix D. The Outside Eligible Organization (OEO) will determine the final participants on the panel. The following table lists the suggested types of disciplines that might be included on the panel. The following disciplines are recommended based on the high risk factors as described in the risk register.

IEPR Panel Members/Disciplines	Expertise Required
Plan Formulation	This individual will be a scientist from academia, public agency, non-governmental entity, or an Architect-Engineer or Consulting Firm with a minimum 10 years demonstrated experience in evaluating and comparing alternative plans for USACE.
Economics	The Economics Panel Member will have knowledge of procedures for deep draft navigation and containership analysis. Knowledge of tools employed for economic analysis, including HarborSym, risk analysis multiport analysis and trade forecasts.
Environmental	Knowledge of all applicable environmental laws and regulations Expert in coastal, estuarine, and riverine habitats and associated natural resources and the environmental impacts of harbor deepening as well as a familiarity with dredged material disposal and Offshore Dredge Material Disposal Sites.
Engineering - Hydraulic	Hydraulic Engineer – Knowledge of USACE guidance related to engineering requirements for the deep draft navigation studies. Knowledge of hydrodynamic riverine processes and navigational modifications to evaluate impact of deepening navigation channel on hydrodynamics, salinity and sedimentation of the river and

IEPR Panel Members/Disciplines	Expertise Required
	harbor, coastal and bank erosion analysis, wake erosion and channel design. Ten years minimum experience with EFDC numerical model and ship simulation, and a Professional Engineer (P.E.).
Engineering- Geotechnical	Geotechnical Engineer - An understanding of the behavior of aquifers and soils, as well as the analysis and disposal of dredged material, with a minimum of ten years experience, and a Professional Engineer (P.E.).

e. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (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 4.d 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 ER 1105-2-100, Appendix H. 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 home MSC 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 DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX 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 DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

9. MODEL CERTIFICATION AND 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, 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).

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 (SET) 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) .

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
IMPLAN	IMPLAN software system helps analysts address two common questions about economic study and analysis: How does the local economy function? What would the economic consequences of deepening be? By constructing Social Accounts that describe the structure and function of a specific economy, IMPLAN can create a localized model to investigate the consequences of projected economic transactions in a geographic region. Used by over 2,000 public and private institutions, IMPLAN is the most widely employed and accepted regional economic analysis software for predicting economic impacts.	Certified
HarborSym	The HarborSym Suite - widening model, deepening model, container model, data analysis post-processor model and a tide-tool model – will be used as part of the Benefit Analysis.	Certified

b. Engineering Models. The following approved engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification/ Approval Status
MPFATE - Multiple Placement Fate of Dredged Material	MPFATE was developed under the Corps' Dredging Research Program (DRP) (Hales 1995) and was formerly known as Open Water Disposal Area Management Simulation (ODAMS) program (Moritz and Randall 1995).). MPFATE is a site management tool that bridges the gap between the Short Term FATE of dredged material (STFATE) model and the Long Term FATE of dredged material (LTFATE). It will be used to study the disposal of material in the ODMDS	Approved
STFATE- Short Term FATE of dredged material	STFATE simulates the placement of a single load of dredged material STFATE models conventional placement (bottom dumping) where the vast majority of the dredged material released from a barge or hopper dredge descends rapidly to the bottom in a relatively high density jet known as the convective descent phase. The dynamic collapse phase begins when the jet impacts the bottom. The more dense material immediately deposits, while the less dense particles are spread outward as a density flow when the vertical energy is transferred into horizontal momentum. Over time the less dense material also deposits. It will be used to study the disposal of material in the ODMDS	Approved
LTFATE Long Term FATE of dredged material	LTFATE predicts the long term stability (days to years) of dredged material mounds. The LTFATE model combines hydrodynamics (waves, currents, and tides) and sediment transport algorithms to predict the stability of dredged material mounds composed of grain sizes ranging from small gravel/coarse sand down to silts and clays. It will be used to study the disposal of material in the ODMDS .	Approved
Advanced Circulation Model (ADCIRC) 2DDI (2003)	Finite element 2-D hydrodynamic model; the version 2DDI is vertically-integrated and solves a vertically-integrated continuity equation for water surface elevation; no storm or hurricane windfield models or statistical analysis tools are included with model, they must be acquired separately; ADCIRC performs well using Vince Cardone's planetary boundary layer model windfields; statistical analyses using ADCIRC model storm surge simulations are compatible with the USACE Empirical Simulation Technique (EST) as well as joint probability methods. It will used to assess changes to the storm surge due to the deepening of the entrance channel.	Approved

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification/ Approval Status
STWAVE - STeady State spectral WAVE	STWAVE simulates depth-induced wave refraction and shoaling, current-induced refraction and shoaling, depth- and steepness-induced wave breaking, diffraction, parametric wave growth because of wind input, and wave-wave interaction and white capping that redistribute and dissipate energy in a growing wave field. It will be used in the assessment of the impacts to the shoreline due to the channel modifications.	Approved
Environmental Fluid Dynamics Code (EFDC)	State-of-the-art hydrodynamic model used to simulate aquatic systems in one, two, and three dimensions. It solves three-dimensional, vertically hydrostatic, free surface, turbulent averaged equations of motion for a variable-density fluid. Dynamically-coupled transport equations for turbulent kinetic energy, turbulent length scale, salinity and temperature are also solved. The EFDC model allows for drying and wetting in shallow areas by a mass conservation scheme. It will be used to determine the hydrodynamic, salinity and sediment changes within the harbor and river of the alternatives.	Approved
ERDC Ship/Tow Simulator	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 the U.S. Army Engineer Research and Development Center, Coastal and Hydraulics Laboratory, the accurately portray currents, wind and wave conditions, shallow water effects, bank forces, ship handling, ship to ship interaction (in a meeting and passing or overtaking and passing situation), fender forces, anchor forces, and tug assistance. It will be used to evaluate the safety of ship maneuverability of the alternatives.	Approved

c. Environmental Models: PDT plans to coordinate selection of the Habitat Suitability Index Models previously approved by the Eco-PCX with the appropriate resource agencies.

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. Formal ATR of the Draft Feasibility Report and EIS, with technical appendices, would occur between Milestones #2 (Tentatively Selected Plan) and #3 (Agency Decision), and is currently scheduled for completion in September 2014. The cost of this review has yet to be determined. ATR of the Final Feasibility Report and EIS is currently scheduled for February 2015. The cost of this review has also yet to be determined. The overall cost of ATR involvement in this feasibility is study is estimated to be $240,000.

b. Type I IEPR Schedule and Cost. Type I IEPR of the Draft Feasibility Report and EIS, with technical appendices, is scheduled for October 2014. It is estimated to cost approximately $250,000.

c. Model Certification/Approval Schedule and Cost. It is not anticipated that models used for this study will require approval or certification. All models used in the study have previously been certified and approved. If however it is deemed necessary to use a model that is not approved and or certified then this review plan will be updated accordingly.

Task	Responsible Office	Finish
IPR1	All	Oct-2012
Milestone #1	All	Nov-2012
Milestone #2	All	Jun-2014
ATR of Draft Integrated Report & DEIS	ATR	Sep-2014
Policy Review of Draft Integrated Report & DEIS	SAD/HQUSACE	Sep-2014
IEPR of Draft Integrated Report & DEIS	SAC/DDNPCX	Oct-2014
Milestone #3	All	Nov-2014
ATR of Final Integrated Report & EIS	ATR	Feb-2015
Policy Review of Final Integrated Report & EIS	SAD/HQUSACE	Apr-2015
Milestone #4	All	Apr-2015
State and Federal Agency Review of Final Integrated Report & EIS	SAC	May-2015
Milestone #5 (Chief of Engineers Report)	HQUSACE	Aug-2015
Submission to ASA(CW)	HQUSACE	Aug-2015

11. PUBLIC PARTICIPATION

a. Public review of the document will occur after ATR of the draft feasibility report and concurrence by HQUSACE that the document is ready for public release. The period will last at least 30 days, as required by law. Significant public comments that result in changes to the formulation will require an additional ATR.

b. The public review of necessary state or Federal permits will also take place during this period.

c. A formal state and agency review will occur concurrently with the public review.

d. However, it is anticipated that intensive coordination with these agencies will have occurred concurrent with the planning process.

e. Upon completion of the review period, comments will be consolidated and addressed, if needed. A comment resolution meeting will take place, if needed, to decide upon the best resolution of comments. A summary of the comments and resolutions will be included in the document.

12. REVIEW PLAN APPROVAL AND UPDATES

The MSC Commander is responsible for approving this Review Plan, as may be delegated. The Commander's approval reflects vertical team input (involving district, MSC, RMO, 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. The home district is

responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval will be documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) must be re-approved by the MSC Commander (consistent with any delegation) following the process used for initially approving the plan. The latest version of the Review Plan, along with the MSC Commanders' approval memorandum, will be posted on the Home District's webpage (without Attachments 2 and 5, which include personally identifiable information (PII)). The latest Review Plan will also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

- Charleston District Project Manager, (843) 329-8153
- South Atlantic Division Planning and Policy, (404) 562-5226
- Chief, Deep Draft Navigation PCX , (251) 694-3884

ATTACHMENT 1: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. 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 US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (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[sm].

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ _____

Name Date
Review Management Office Representative
Office Symbol

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 _____ _____

Name Date
Chief, Engineering Division
Office Symbol

SIGNATURE _____ _____

Name Date
Chief, Planning Division
Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 2: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number